



CLIMATE FOCUS

**Engaging the Private
Sector in the Potential
Generation of REDD+
Carbon Credits**
An Analysis of Issues



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Generation of REDD+ Carbon Credits
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List of Acronyms

A/R	Afforestation/Reforestation
AAU	Assigned Amount Units
AIE	Accredited Independent Entities
BAU	Business-as-usual
CCB	Climate, Community and Biodiversity
CDM	Clean Development Mechanism
COP	Conference of the Parties
CSR	Corporate social responsibility
DOE	Designated Operational Entity
EBRD	European Bank for Reconstruction and Development
ERT	Expert Review Team
ERU	Emission Reduction Unit
ES	Ecosystem Services
EU ETS	European Union Emission Trading System
FDI	Foreign direct investment
FONAFIFO	Fondo Nacional de Financiamiento Forestal
GHG	Greenhouse Gas
IBRD	International Bank for Reconstruction and Development
IFF	Intergovernmental Forum on Forests
IPCC GPG	Intergovernmental Panel on Climate Change Good Practice Guidance
JI	Joint Implementation
MIGA	Multilateral Investment Guarantee Agency
MRV	Measuring, Reporting, and Verification
NAMA	Nationally Appropriate Mitigation Action
ODA	Official development assistance
PES	Payments for Environmental Services
PRP	Prince's Rainforest Project
RED	Reducing Emissions from Deforestation
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	Reducing Emissions from Deforestation and forest Degradation, conservation, sustainable management of forests and the enhancement of forest carbon stocks
RMU	Removal Unit
tCO ₂ e	Tonnes of CO ₂ equivalent
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
VCS	Voluntary Carbon Standard
VER	Verified Emission Reductions



Executive Summary

Background

Reducing emissions from deforestation and forest degradation is a prominent agenda item within the international climate change negotiations. It is also significant in many domestic discussions on climate change and mitigation.

Some of the issues discussed internationally and domestically include how to pay for reducing emissions from deforestation and degradation and whether or not the private sector should be involved. **If the private sector is involved, this leads to additional considerations such as the extent of involvement, how policy choices can either encourage or discourage the private sector, and how to maintain environmental integrity.**

Climate Focus, Winrock International, and Ecofys undertook a study for the UK Department for International Development of the UK Government (DFID) on engaging the private sector in the potential generation of carbon credits from Reduced Emissions from Deforestation and forest Degradation in developing countries¹ (REDD+). The study ran from November 2009 through April 2010. This document summarizes its main findings.

Paying for REDD and Private Sector Involvement

Determining incentives for REDD+ is prominent within the international climate change negotiations and many domestic policy fora. The actual cost to halve global deforestation (as opposed to capacity building preparatory measures to do so) is estimated at USD17 billion to USD28 billion per year.² Developed countries have pledged interim or “fast-start” REDD+ financing,³ including USD3.5 billion package at the 2009 UN climate conference in Copenhagen, although it is not yet clear how these funds, if they materialize, will be distributed and managed. **There is clearly a funding shortfall between public sector funding and financial needs – particularly when it comes to actual payments or other compensation for emission reductions.** It is not decided who will pay this difference, though many speculate that the private sector will be expected to cover some if not all of the funding gap.

Engaging the private sector in REDD+ market mechanisms has sparked some concerns if a quest for financial returns is allowed to compromise environmental integrity. This concern is likely overstated. It should be possible to mitigate the risks that private sector finance will endanger the social and environmental goals of REDD+ through careful design and regular review of the process. This will require balancing rules that promote private investment and certainty of the environmental outcomes. Eligibility criteria can exclude high-risk and unsustainable projects, programs and other activities; ongoing requirements can ensure the long-term sustainability of REDD+ activities.

Given the size of the funding gap and the ability to regulate private investment the benefits of private sector engagement outweigh the risks. If the private sector is not involved, it will be left to governments from developed and developing countries to meet the full costs of REDD+.

The quantity and quality of private sector investment in REDD+ depends on the perceived risk of the opportunity. The risk is significantly impacted by the design of REDD+ mechanisms and supporting policy. If REDD+ rules and policy create too much risk, the private sector will simply not invest in REDD+ at the levels required (if at all) in favour of lower risk opportunities in other sectors. This report considers two options to design REDD+ markets plus four options to reduce investment risk and raise upfront finance.

¹ The full reference to this topic in UNFCCC texts includes enhancement of forest carbon stocks, sustainable forest management and conservation, in total referred to REDDplus or REDD+. The scope of REDD/REDD+ is not the subject of this paper, but it is understood that the scope of the paper includes the full set of agreed activities.

² As in Pagiola and Bosquet, 2009 who cite that Bolivia, Brazil, Cameroon, the Democratic Republic of Congo, Ghana, Indonesia, Malaysia and Papua New Guinea represent 70% of global emissions from deforestation.

³ Pledges made in December 2009 in Copenhagen by six countries (the US, Australia, Britain, France, Japan, and Norway) amount to USD 3.5 billion package in the years 2010-2012 to fund immediate steps to develop REDD+. It is not clear whether this funding is in addition to existing pledges or inclusive of them.

Designing REDD+ Markets

Option 1: Sovereign Participation in REDD+ Markets

The first market option considered examines a scenario where the country participates in international REDD+ markets at the country level only. There is no linkage between domestic action and international REDD+ markets other than through the government – i.e. all REDD+ credits are held by the government and never transferred to local actors. The government would be liable for REDD+ generation and delivery under government contracts for the sale of REDD+ credits. In turn, it would decide on and support national REDD+ action. Environmental integrity is ensured through national reference levels and national level measurement, reporting and verification (MRV).

This option is favoured by a number of governments but not the private sector who see little scope for investing in REDD+ activities in developing countries.

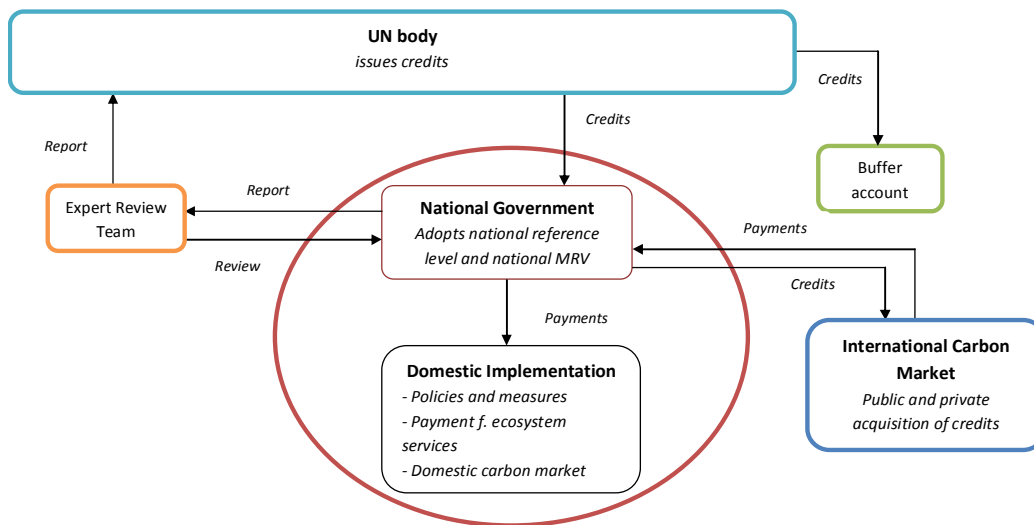


Figure 1: Structure of REDD+ credit and financial transfers when only the sovereign nation participates in international carbon markets

Option 2: Subnational Crediting of REDD+ Activities

Under this scenario, subnational policy measures, programs and REDD+ projects (jointly: subnational activities) could be rewarded with internationally approved carbon credits. Such activities and project would have to be authorized by the government and would be integrated in the national MRV framework for REDD+ which would ensure environmental integrity. There are a number of variations to this option, two of which are described. Both of these fall under the general concept of a nested approach, with some modifications.⁴

Variation 1 is loosely modelled after the Kyoto Protocol's Clean Development Mechanism (CDM), with similar institutional requirements of independent review and issuance of credits. Subnational credits would be issued directly to accounts of subnational actors – they would not pass through the government's accounts first. The government would also receive credits for national reductions less any credits allocated to subnational activities successfully implemented within the country less any credits transferred to a buffer account.

⁴ It should be noted that the Nested Approach proposed by Pedroni L, Dutschke M., Streck C., and Porrúa M. in "Creating incentives for avoiding further deforestation: the nested approach" that appeared in Climate Policy 9 (2009) 207–220, also envisioned starting with project level activities only, before scaling up to national level MRV that may include subnational activities nested within this. The details for this nesting were not fleshed out.

If national emissions exceed the national reference scenario or there are less national credits generated than subnational credits due,⁵ priority should be given to (i) drawing on the buffer account to ensure national emissions meet the national reference scenario; (ii) maintaining the buffer account if it was depleted in previous years; (iii) distribution of credits to subnational actors; (iv) distribution to the government. This prioritization puts environmental integrity of the system first. If private sector investments are to be encouraged, other priorities are possible and/or the buffer account could be segmented, with one segment dedicated to insuring subnational actors and the other towards safeguarding overall environmental integrity.

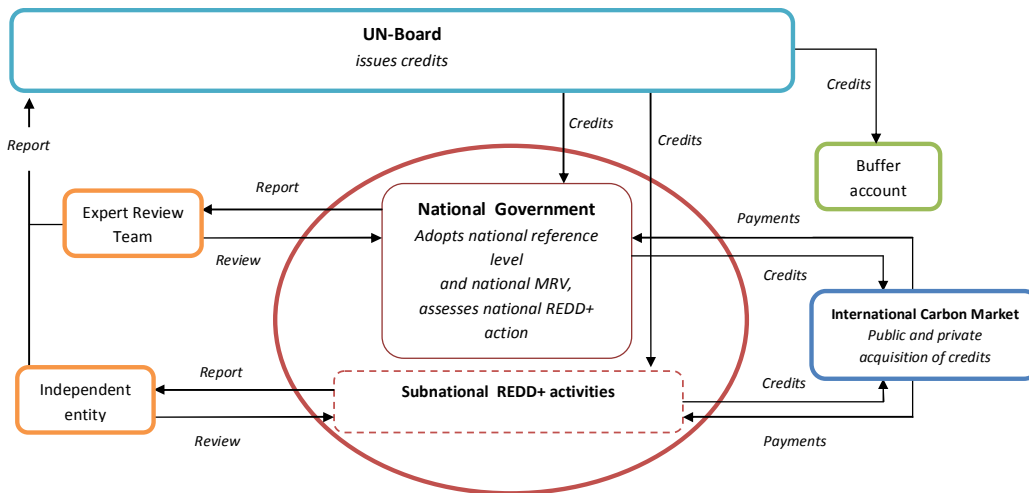


Figure 2: Option 2 Variation 1; International Issuance of National and Subnational Credits

Variation 2 of Market Option 2 is modelled on the Kyoto Protocol's Joint Implementation (JI) procedures for issuing credits with some modifications for crediting against national reference scenarios. It involves issuance of credits to governments who may convert these credits to internationally recognized REDD+ credits and pass them on to authorized non-state (private or public) actors.

There are a couple of versions for assessing subnational activities. Subnational activities could be assessed by either (i) nationally accredited entities (as in the case of the EU emission trading scheme (EU ETS)); or (ii) internationally or nationally accredited entities. The assessment would cover baseline setting, MRV, and determination that an activity has generated credits (including taking into account domestic leakage). The government would be responsible for distributing REDD+ credits for subnational activities.

⁵ This could occur if one or more authorized subnational activities perform as expected (including once leakage is accounted for), but national deforestation or degradation is not reduced by the corresponding amount due to increases in other areas not associated with the subnational activities.

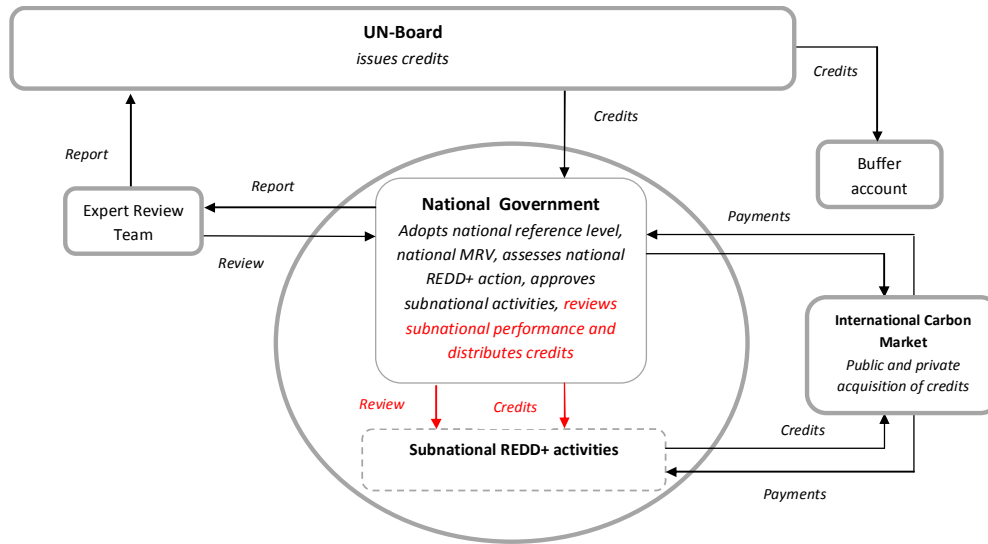


Figure 3: Option 2 Variation 2; International Issuance of National Credits and National Issuance or Distribution of Subnational Credits (one version). Red indicates differences to Variation 1.

Market Option 2 places higher institutional demands on government – the government is responsible for national MRV and could also assume responsibility for a number of tasks associated with subnational activities such as approving reference levels, verifying reductions/removals, and distributing credits. Each of these additional tasks increases the institutional requirements of the government. As institutional demands increase, so will dependence on host country performance, making private sector investment susceptible to weak governance.

The paper discusses a number of options for mitigating host country performance risk under Market Option 2, including buffer accounts, mitigation payments, guarantees and insurance.

Domestic Implementation of REDD+ Measures

Domestic implementation can include market and non-market measures. *Market measures* can include domestic emissions trading or payment for ecosystem services (PES) systems that do not link to the international REDD+ market. *Non-market measures* can include (i) policies and measures to counter drivers of deforestation, such as changes to forest management or land use planning more generally; and (ii) institutional strengthening and governance reform to support effective implementation of policies and measures.

At the moment, few countries meet the standards needed to develop domestic market mechanisms. In the developing world, Chile, Brazil, China and India fulfil most of the criteria, but these countries still face challenges. Given developing countries' lack of experience and institutions to design and operate effective market-based policies, the approach has been criticized as ineffective compared to command-and-control programs.⁶ However, experience in developing countries with command-and-control regulations is not encouraging either – most examples have proved ineffectual at forcing the private sector to adhere to technology and operational standards and largely failed to initiate large-scale change.⁷

Reducing Investment Risk and Raising Finance

Guarantees and insurance are two options to reduce private sector investment risk. Securitization and bonds are two options to raise upfront finance for government sponsored REDD+ programs. These are applicable to each of the different options for engaging in REDD+ markets.

⁶ Bell and Russell, 2002; Russell and Vaughan, 2003 as cited in Blackman 2009.

⁷ Russell and Vaughan 2003; Eskeland and Jimenez 1992 as cited in Blackman 2009

Guarantees

One of the most significant risks for private investment in REDD+ is performance risk by the government. This includes risks associated with government programs succeeding along with political risks associated with changes in government, policies or laws that result in the government being unable or unwilling to honour agreements they strike with private investors in REDD+ activities. Political risk guarantees, partial risk guarantees, or payment default guarantees can cover these risks and are typically provided by host country governments (sovereign guarantee) and/or multilateral institutions such as the World Bank, MIGA, and regional development banks. While guarantees can be very useful for mitigating risk and increasing private sector willingness to invest in REDD+ subnational activities, they do not address underlying barriers to private sector finance – they treat the symptoms and not the cause of these barriers. The number of guarantees that multilateral institutions and host governments can enter into is also limited.

Insurance

The insurance sector can provide insurance for REDD+ subnational activities in order to help leverage private sector investments by reducing the overall risk seen by the investor. There are two key factors that will influence the willingness of the private insurance sector to enter the REDD+ market – risk and scale. Insurance products for REDD+ subnational activities are the most appropriate for middle income countries where insurers have some experience of some of the risks involved, and the countries are already attractive hosts for REDD+ projects. In these cases, insurance of REDD+ projects would actively help overcome barriers to getting REDD+ projects started. However, in countries where there are serious risk concerns, insurance companies would be unwilling to set up programmes from the start.

Securitization

One way to provide up-front finance for REDD+ is through securitizing future REDD+ credits/emission reductions. Under this approach an entity within a REDD+ country receives the right to manage the future expected emission reductions / REDD+ credits. This entity then issues a security, which could be traded on a local or international stock exchange. Each REDD+ security would embody the right to request the REDD+ National Registry Administrator (once a registry has been established and REDD+ credits have been issued), to transfer one REDD+ credit from the REDD+ registry to another country's registry. The price would be determined at public auctions. Over time the value of REDD+ securities would grow as the underlying REDD+ action takes place through the funding of policies and projects.

At the moment it is questionable whether the local and international investor community is ready to appreciate REDD+ securities, since it depends on a long-term view of the future of international and national climate and REDD+ markets. Securitization will only raise small amounts of funding at the moment because of low interest by institutional investors, making it questionable whether it is worth taking such risks. Other sources of mobilizing upfront financing may be more feasible. However, reliable demand assessments can only be made when the characters and properties of the proposed certificates as financial instrument are clearly presented to the potential investors.

Bonds

The idea of a REDD+ bond scheme has been proposed as an effective way of leveraging significant levels of finance from the private sector. Unlike the proposed securitization of REDD+ credits, REDD+ bonds would mobilize funds secured by developed countries or commercial banks that would be passed on to REDD+ countries. REDD+ Bonds would thus not depend on market approaches for REDD+. A number of ways to structure REDD+ bonds are possible. The Prince's Rainforest Project (PRP) outlines one option for such a REDD+ bond (or 'Rainforest Bond'). However, the view expressed by a leading global bank actively involved in funding forestry initiatives was that there is currently too much risk and uncertainty for investors to participate in a Rainforest Bond. Annex I countries and the World Bank have also expressed reservation with respect to REDD+ Bonds.



Conclusion

The report concludes with a comparative analysis of the options presented above. The options are compared against the following criteria; (i) whether the option will effectively stimulate private sector engagement; (ii) environmental integrity; (iii) institutional requirements; (iv) speed to implement; and (v) political acceptability.

For the options for designing REDD+ markets, option 1 and variation 2 of option 2 were found to place the highest institutional demands on developing countries, the slowest to implement, and had the highest risk for private sector to generate a return on investment. Setting reference levels was simplest in option 1. Avoiding double counting was possible in both versions of option 2, but this was more complex than in option 1. Domestic leakage was managed equally well in all options with national MRV. Option 1 had the highest acceptance within countries, but lowest within the private sector. Both variations of option 2 had medium acceptance amongst countries, with variation 1 having the greatest appeal to the private sector.

The options for structuring REDD+ markets are mutually exclusive within a country at any point in time. However, the options are not mutually exclusive within a broader international REDD+ market mechanism. Different countries could adopt different options, and a country could also graduate from one option to another over time. The tools to reduce investment risk or support upfront finance can be combined with any of the market structuring options.

1



1. Introduction

Reducing emissions from deforestation and forest degradation is a prominent agenda item within the international climate change negotiations. It is also significant in many domestic discussions around climate change and mitigation.

One of the issues discussed internationally and domestically is how to pay for reducing emissions from deforestation and degradation and whether or not the private sector should be involved. If the private sector is involved, this creates a set of additional issues including the extent of their involvement, how policy choices can either encourage or discourage the private sector, and safeguarding environmental integrity.

Climate Focus, Winrock International, and Ecofys have conducted a project for the UK Department for International Development of the UK Government (DFID) on engaging the private sector in the potential generation of carbon from Reduced Emissions from Deforestation and forest Degradation in developing countries⁸ (REDD+). The project was implemented from November 2009 till March 2010. This report represents the findings of this project.

1.1. Objective

The objective of this study is to analyse the role the private sector could play in investing in activities that could generate carbon market credits from REDD+ and the implications this has for designing such market mechanisms. The research focuses on ways in which the private sector could be incentivised to invest in REDD+ activities when the crediting baseline is set at a national level.

1.2. Materials and Methods

The report was conducted as a desk study complemented by telephone interviews and peer review by private sector actors working in the carbon market. Interviews were held with the following:

- CMIA Forest Working Group members
- David Tepper
- Forest Trends
- Eyre Consulting
- HSBC
- EnviroMarket
- Bank of America Merrill Lynch
- World Bank (Carbon Finance Unit)

The report was started 1 December 2009 and the final report was completed 1 June 2010.

1.3. Report Structure

The report is divided into three main parts and concludes with a summary comparative analysis.

Part 1: Sections 1, 2

⁸ The full reference to this topic in UNFCCC texts includes enhancement of forest carbon stocks, sustainable forest management and conservation, in total referred to REDDplus or REDD+. The scope of REDD/REDD+ is not the subject of this paper, but it is understood that the scope of the paper includes the full set of agreed activities.



The first part consists of this introduction which summarizes the report's objectives followed by an overview of definitions and assumptions. Section 2 sets out the general conditions for engaging the private sector into REDD+.

Part 2: Sections 3, 4

The second part focuses on carbon market mechanism and the role of the private sector under two different market design options. This part covers sections 3 and 4.

Section 3 looks at one market model that involves government level trading of REDD+ credits and separate domestic policies and measures that are not linked to international carbon markets.

Section 4 examines two models that allow internationally recognized crediting for REDD+ projects or programs within a national accounting scheme. These are both variations of what is commonly known as a nested or docking approach.

Part 3: Section 5

The third part – consisting of section 5 – looks at options to reduce investment risk and raise upfront finance. It reviews guarantees and insurance as two options to reduce private sector investment risk followed by securitization and bonds as two options to raise upfront finance for government sponsored REDD+ programs.

Conclusion: Section 6

The report is concluded with a comparative summary analysis in section 6. The analysis compares the options presented in sections 3-5 against criteria of (i) whether the option will effectively stimulate private sector engagement; (ii) environmental integrity; (iii) institutional requirements; (iv) speed to implement; and (v) political acceptability.

1.4. Definitions and Assumptions

The following definitions and assumptions are used throughout this report. Additional definitions and assumptions used in particular scenarios are discussed in those sections.

Assumptions

REDD+ will be defined as “Reducing Emissions from Deforestation and forest Degradation, and the role of conservation, sustainable management of forests and the enhancement of forest carbon stocks”.

We assume there will be a market for REDD+ credits; i.e. REDD+ credits will be able to be used by countries to meet compliance obligations under a future UNFCCC regime. They can also be used by the private sector to meet obligations imposed on them under domestic legislation. Some non-market options are still assessed for completeness.

REDD+ activities is used as a generic term that applies to any investment or other measure that will generate REDD+ credits. It may include national or subnational projects, programs, or policies carried out by the government or private actors such as project developers, NGOs, or local communities.

Reference Levels and Additionality

The adoption of a national reference level and issuance of internationally tradable REDD+ credits for subnational activities, are the most significant assumptions for analyzing how sovereign and subnational participation could work in practice. There are other models for allocating and rewarding REDD+ action through carbon trading mechanisms, most importantly the allocation of REDD+ allowances under a defined cap (cap-and-trade). These are not considered by this report as they are politically unlikely.

The generation of carbon credits under REDD+ will require a ‘reference level’ or ‘baseline’ against which interventions can be evaluated and performance assessed. We distinguish between a business-as-usual (BAU)



baseline and a crediting reference level.⁹ A BAU baseline is a projection of future emissions in a given area, region or country in the absence of a REDD+ mechanism. A crediting level would serve as the benchmark for rewarding a country if emissions are below that level.¹⁰ The crediting level can be the BAU baseline; it can be a BAU baseline adjusted for particular circumstances, such as GDP or forest coverage; or it can be a below the BAU scenario if a country does wish to account for some emission reductions as “own effort”.

A general concern relating to reference level relates to achieving global additionality; that is that the sum of countries’ crediting reference levels cannot exceed the global historical deforestation rate. In the political context of REDD+ we can expect that crediting levels will vary depending on the status of the forest estate of a country, the development level of a country and its respective capabilities. However, it is unlikely that many developing countries will accept a crediting level that is more stringent than their BAU scenario and it is unlikely that reference levels for all countries will be simultaneously approved thus global additionality and complete environmental integrity could be compromised.

Monitoring

Monitoring refers to the collection of data and information at the relevant scale, and performance of the necessary calculations for estimating emission or removals of greenhouse gases (GHGs) (and their associated uncertainties). In other words it refers to the collection of data on the changes in carbon stocks and changes in the spatial extent of forests and how these data are combined to arrive at the estimates. The results from monitoring provide a measure of the performance of REDD+ interventions against a crediting reference scenario.

Reporting

Under the UNFCCC, there are five general principles that guide the reporting of emissions and removals of GHGs: transparency, consistency, comparability, completeness, and accuracy. For key categories and significant carbon pools, the principles imply the application of higher tiers and approaches, i.e. having country-specific data on all the significant pools stratified by climate, forest, soil and conversion type at a fine to medium spatial scale and explicitly tracking land-cover conversions.

The principles of completeness and accuracy at the national scale for REDD+ reporting will be particularly challenging for many developing countries; but could be less of a challenge at subnational scales (e.g. could be more homogeneous and few land use transitions). Overcoming the lack of completeness and high uncertainty in estimates from REDD+ activities could be achieved by either the use of the principle of conservativeness¹¹ and discount factors or use the guidance in the IPCC Good Practice Guidance that promotes accuracy and requires a full uncertainty analysis.

Verification

Verification serves to provide credibility that claimed offset credits have environmental and atmospheric integrity.

Reporting and crediting of GHG emission reductions and enhancement of carbon stocks under REDD+ relies upon the robustness of the science underpinning the methodologies, the associated credibility of the resulting estimates, and on the way this information is compiled and presented.¹² The purpose of verification is to assess

⁹ Meridian Institute, *Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report*, 2009, prepared for the Government of Norway, by Arild Angelsen, Sandra Brown, Cyril Loisel, Leo Peskett, Charlotte Streck, and Daniel Zarin. Available at: <http://www.REDD-OAR.org>.

¹⁰ Busch et al., *Comparing climate and cost impacts of reference levels for reducing emissions from deforestation*. 2009, Environ. Res. Lett. 4 (2009) 044006 (11pp) doi:10.1088/1748-9326/4/4/044006; Griscom, B, et al., *Sensitivity of amounts and distribution of tropical forest credits depending on baseline rates*, 2009 Environ. Sci. Policy, 12:897-911.

¹¹ “Conservativeness” means that when completeness, accuracy and precision cannot be achieved, the reported emissions reductions or enhancements in C stocks should be underestimated, or at least the risk of overestimation should be minimized, so as not to overestimate the true impact of REDD activities on the atmosphere.

¹² GOF-C-GOLD, *Reducing greenhouse gas emissions from deforestation and degradation in developing countries: a sourcebook of methods and procedures for monitoring, measuring and reporting*, 2008, Ch.6. GOF-C-GOLD Report version COP13-2, (GOF-C-GOLD Project Office, Natural Resources Canada, Alberta, Canada



that the information is well-documented, based on IPCC methodologies and transparent and consistent with the reporting requirements outlined in UNFCCC guidelines.

The verification process used for reviewing annual GHG inventories of developed countries with an emission reduction commitment could be used as the model for verification of monitoring and reporting of implementation of REDD+ activities. However, this method may not be rigorous enough for market-based offset mechanism. Much experience has been gained during the verification process for offset projects under the CDM and voluntary market that may provide a basis for developing more rigorous standards for REDD+ in a private market mechanism.

2

2. General Considerations

2.1. Introduction

Private sector involvement in REDD+ is essential because of the scale of finance needed.¹³ However, concerns do exist in relation to private sector engagement if the quest for financial returns is allowed to compromise environmental integrity.

One of the most significant risks associated with the engagement of the private sector relates to the long-term market structure. This risk is a challenge for policy-makers who must design a well-functioning system, learn from experiences of the carbon market and other markets so far, and put safeguards in place should it become clear that elements of the supply or demand side structures are not functioning properly.

The same is true for environmental integrity. It should be possible to mitigate the risks that private sector finance will endanger the environmental goals of REDD+ projects through careful design and regular review of the process. A balance will need to tread between certainty for investors and certainty of the environmental outcomes. Eligibility criteria can exclude high-risk and unsustainable projects, programs and other activities; ongoing requirements can ensure the long-term sustainability of REDD+ activities.

However, on balance, the benefits of private sector engagement outweigh the risks. It seems that the level of finance required for REDD+ can only be mobilized through involvement of private capital. The amounts of money pledged in Copenhagen in December 2009 by various governments seemed to match the amount needed to effectively tackle the REDD+ readiness challenge. However, there is still uncertainty about how these numbers relate to previous pledges, overlap with other sources already accounted for e.g. revenues from auctions of EU allowances, and what proportion of these pledges already included a private sector element.

To be most successful, the available public funds should be used carefully and in a well-targeted and timely manner to secure institutions, build relevant capacity, set up and ensure measurement, reporting and verification (MRV) and national accounting systems and standards. At the same time, private funds should be secured for additional funding, with appropriate regulations or standards to safeguard social and environmental integrity.

This section will present different policy interventions that directly and indirectly create incentives for private sector involvement in REDD+. It will then define criteria for assessing REDD+ policy options that will be used in the comparative analysis that summarizes and concludes this report.

A number of the policy interventions will be applied to the options developed and analysed in sections 4 through 6 which range from market to non-market approaches, focusing on the different role of the private sector in each. We differentiate among market approaches and supporting tools including (i) government to government trades that do not involve subnational crediting; (ii) approaches that directly assign credits/benefits to subnational entities; and (iii) supporting tools to reduce investment risk and raise upfront finance such as guarantees, insurance, securitization of credits, and bonds. The two options that primarily involve the private sector in carbon markets are options (i) and (ii).

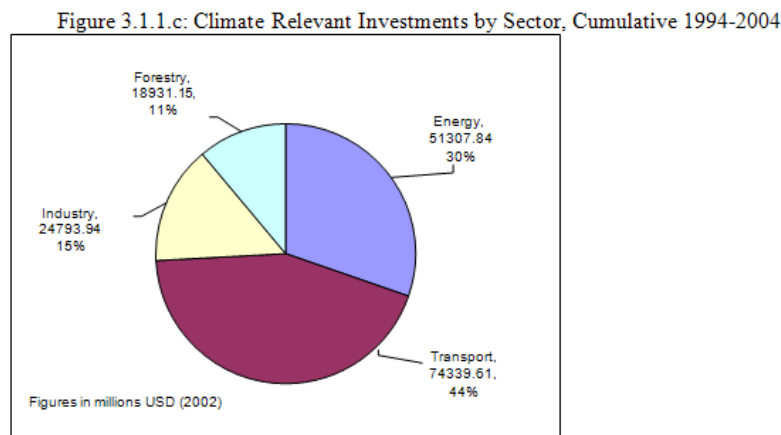
2.2. Traditional Private Sector Investment in the Forest Sector

Private sector financing in the forest sector

¹³ See reference to Eliasch review above of cost of halving deforestation. Eliasch Review, *Climate Change: Financing Global Forests*, 2008, available at: [http://www.occ.gov.uk/activities/eliasch/Full_report_eliasch_review\(1\).pdf](http://www.occ.gov.uk/activities/eliasch/Full_report_eliasch_review(1).pdf)

International funding for forestry was about USD1.1 billion annually during the last decade with presumably far lower for forest protection and conservation.¹⁴ Multilateral and development bank financing and lending is primarily to downstream industries, rather than for natural forest assets or conservation. The International Finance Corporation reports its forest sector portfolio is dominated by industrial processing in downstream industries (87%) and plantations (13%); no investments in natural tropical forests have been made during the last 25 years.¹⁵

Figure 4: MDB Funding¹⁶



Source: Annual Reports from 1994 – 2004, as listed in Section 6: References.

The main investment sources in the forestry sector are private (93%) and represented about 1.5% of global direct investment in 2004 (valued at USD63 billion). The vast majority is from domestic sources (>90%) rather than foreign investment.¹⁷ The majority of foreign direct investment (FDI) flows into developed countries' forest industries (1.9%) as opposed to developing countries (0.4%), further widening the financing gap between developed and developing countries.¹⁸ These investments are mostly to plantations for pulp, paper, and biofuels. There is also a divide between the primary asset (forests and related material) and financing for forest industries, which enjoys much better access to global capital markets.

¹⁴ Ebeling, J., Yasue, M., *Generating carbon finance through avoided deforestation and its potential to create climatic, conservation, and human development benefits*, 2008, Philosophical Transactions of the Royal Society B.; Tomaselli, I., *Creating a New Business Model for Forests Investments*, 2006, available at <http://www.itto.int>

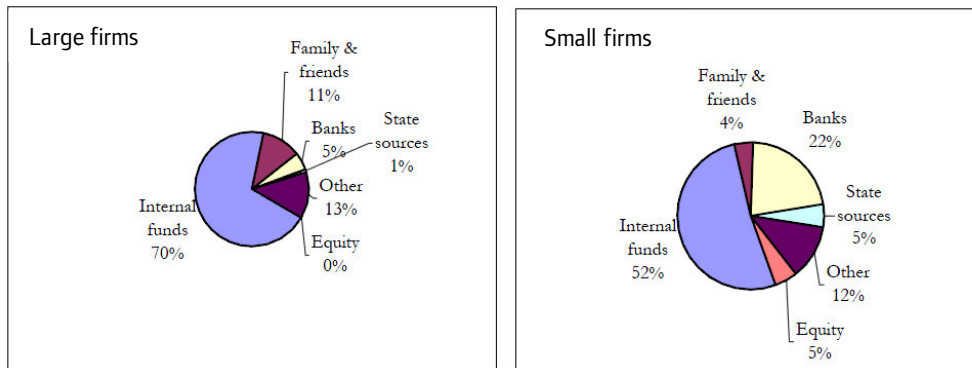
¹⁵ IFC, *Increasing Private Sector Impact in the Forest Sector. Leveraging Private Finance in Support of Sustainable Forestry*, 2009, Presentation to World Forestry Congress October 22

¹⁶ Gentry, B. S. et al., *Overview Report on the Experience of International Financial Institutions and International Funds in Investing in Climate Change Mitigation in Developing Countries*, 2005, UNFCCC Special Services Agreement No. 05/B034, p. 15

¹⁷ UNCTAD (2005) as cited in Tomaselli, 2006

¹⁸ UNCTAD (2005) as cited in Tomaselli, 2006

Figure 5: Sources of Financing: Large and small firms¹⁹



Domestic forest investment is heavily reliant on firms’ internal cash flows, particularly in developing countries where lending and equity capital are difficult to access. Public sectors subsidies also continue to play an extremely large role – as much as 75% of establishment costs in the plantation sector.

The main actors, and their investment capacity, are outlined in table 1 below. The table highlights the increasingly central role of the private sector as forest products are processed into commodities and manufactured goods for international trade. Those engaged in natural forestry management and timber production are relatively small and distributed according to access to state assets in many cases (firm size is dramatically different in vertically integrated pulp and paper plantations). As the forestry sectors moves from raw materials to finished products, investors are increasingly consolidated and strategic favouring large multinational or institutional investors concerned with market power (owning large swaths of a particular sector to exert control over supply and price) than returns on particular investments.²⁰ This mirrors a shift from domestic to international financing implying that tropical forest and timber industry investments remain predominately domestic at the base of the forestry supply chain.

Table 1: Forest sector and trade: Main actors and investors²¹

Sector	Dominant players	Investment	
		Capacity	Priority
Primary (natural resources)	Governments	Variable	Environment/social/economic
	Communities	Low	Territory/maintenance
	Private sector	Low/medium	Production/revenue
Secondary (processing)	Private sector	Low/Medium	Productivity/revenue
Tertiary (trade)	International companies	High	Market power

¹⁹ World Bank Development Report 2004 in Canby, K. Raditz, C., *Opportunities and Constraints to Investment. Natural Tropical Forest Industries*, 2005, Forest Trends

²⁰ See Tomaselli, 2006

²¹ See Tomaselli, 2006



The current market for wood and forestry products, facing the worst downturn since the 1970s, is undergoing fundamental structural changes. Wood for energy and pulpwood is assuming prominence in the sector, which is shifting away from natural tropical forests as a source of timber and wood products – at least where the forestry sector is well regulated. Illegal logging remains rampant in countries from Latin America to Asia, depressing global prices and already modest financial incentives for sustainable management by 7% - 16%. An increasing percentage of the sector is being pushed and pulled by demand and supply-side pressures to improve management regimes.²² As one market player put it: “Many investors will stay away from forest operations in natural forests regardless of the quality of the forest investment opportunity because of general poor investment climate in country as a whole”.²³

Quantifying the economic impact of private sector investment into REDD+ is only possible by examining country-specific sectors and proposed policies. Assessing the broad spectrum of policies for the forest sector, and their effect on private sector investment and involvement, requires further research.

Implications for REDD+ investments

The private sector and FDI does not traditionally have a strong presence in forest resource management in developing countries. The forest sector is characterized by (i) domestic investments; (ii) variable levels of FDI; (iii) insufficient and inadequate regulation that depresses incentives for investing; and (iv) inadequate incentives to improve management practices. This is compounded by insufficient public finance into forest conservation and natural forests.

These challenges are not insurmountable in a well designed REDD+ mechanism: REDD+ should be designed to provide a strong financial incentive to improve forest governance and management and stimulate FDI investment into the forest sector in developing countries. While REDD+ creates a “chicken or the egg” conundrum between governance reform and private sector investment – the following sections outline those factors that motivate private sector investment and specific policies that can engage domestic and foreign investment.

2.3. Motivating the Private Sector

Incentives

The for-profit segment of the private sector is expected to be interested in participating in REDD+ for the following reasons:

1. *Profit:* Investments in REDD+ could provide profit through emissions trading. This will be larger if REDD+ is recognized within compliance markets.
2. *Risk management:* Investors – such as hedge funds – look for profit across a diverse portfolio. Investment in REDD+ projects may represent an opportunity to diversify their investment portfolio.
3. *Compliance:* Companies will seek to invest into the generation or acquisition of REDD+ credits to meet their own carbon compliance obligations, or those that they anticipate for the future.
4. *Corporate Social Responsibility (CSR):* Some companies are interested in investing in activities for an environmental, social or charitable purpose. REDD+ could form part of a portfolio of such activities.
5. *Broader sustainability:* Companies that have a significant stake in the sustainability of a particular geographical region may make investments to support the environmental and political stability of that region. REDD+ could be seen as a prudent approach for maintaining a healthy business environment.

Deterrents

Risks that will affect the ability for the private sector to generate returns will act as deterrents to private sector investments. A series of risks are set out below, as well as some suggestions about how these risks could be overcome.

²² Jenkins, M., *Natural Tropical Forests. Opportunities and Constraints to Investment*, 2006, Forest Trends, PowerPoint Presentation for the Forest Investment Forum, Mexico

²³ *ibid.*



The private sector is likely to invest in REDD+ if engagement is sufficiently attractive, and the risks in the table below can be effectively mitigated or avoided. Many of these are the same that governments face when implementing REDD+ policies, such as; government liability if the country fails to perform; institutional requirements and obligations; and ownership, issuance, and distribution of credits. Therefore, solutions to managing risk from the public and private perspective can be devised in tandem.

Table 2: Private sector risks and risk mitigation options for REDD+ investments

Risk to Private Sector	Risk Assessment	Risk Mitigation
<p>International REDD+ Policy Risk: An international REDD+ mechanism does not enter into force</p>	<p>Are there investors that commit in the absence of an international legal framework? Does investment depend on the generation and delivery of compliance grade REDD+ credits?</p>	<p>Contractual arrangements which define the obligations of the parties in the absence of an international REDD+ mechanism. Definition of REDD+ proxies that could serve as a substitute of REDD+ credits (for government buyers).</p>
<p>REDD+ Eligibility Risk: Eligibility to participate in a REDD+ mechanism</p>	<p>Evaluate the respective REDD+ country's status in meeting eligibility criteria. Continuous monitoring of relevant eligibility criteria. Evaluation of the various REDD+ country's institutional capacity.</p>	<p>Ensure that capacity and funding for achieving and maintaining eligibility is in place. Check sufficient funding in the national REDD+ implementation to maintain eligibility. Establish warning systems if a country is likely to lose eligibility. Obtain a guarantee from the World Bank or developed country governments.</p>
<p>Government Implementation Risk: Failure to implement national REDD+ policies and measures</p>	<p>Appraise policies and institutions including history and performance. Assess governance and capacity risks.</p>	<p>Design of REDD+ mechanism (see 4.6 and 5.6 below). Guarantees and insurance (see 6.2 and 6.3 below).</p>
<p>Market Risk: Low price in REDD+ credits</p>	<p>Development of a carbon strategy factoring different prices and timing in purchasing and selling REDD+ credits.</p>	<p>Negotiate appropriate price structures that reduce exposure to price volatility.</p>

3



3. Sovereign REDD+ Markets

3.1. Description

There is not yet an international agreement to include REDD+ in any future international emissions trading regime, let alone a decision on how this may happen in practice. Multiple scenarios for creating a REDD+ market mechanism are possible. The options discussed in this report are mutually exclusive within a country (i.e. a single country could not adopt Market Option 1 and Market Option 2 at the same time) but not mutually exclusive between countries (i.e. Brazil could adopt Market Option 1 and Indonesia could adopt Market Option 2). Market Option 1 examines a scenario where the country participates in international REDD+ markets at the country level only. Domestic implementation is de-linked from the international carbon market and controlled by the national government.

Government's International Role

The REDD+ country adopts a national reference level and agrees to implement national MRV systems. National performance against the reference level could be assessed by the national government against international MRV guidelines and then confirmed by a body similar to the Kyoto Protocol Expert Review Team. National REDD+ credits would be issued either by the host country in accordance with UNFCCC guidelines, or issued by an independent body mandated by the UNFCCC Conference of the Parties (COP). The REDD+ credits generated by national REDD+ activities and allocated to the government could be sold into the international carbon market. Key features of the mechanism such as MRV requirements, credit issuance, permanence rules, and fungibility of credits are defined by the UNFCCC.

Text Box 1 Option to Safeguard Permanence at the National Level: National Buffer Accounts

A portion of the national credits could be set aside in a buffer account and would not be available for trading. The buffer concept addresses concerns over reversals – i.e. that forests would not remain protected in the future. If emissions increase at a point in the future, credits from the buffer account could be used to compensate this increase to ensure overall environmental integrity in the system. The account is then replenished the next time credits are issued. The account could be treated like the commitment period reserve of Annex B countries under the Kyoto Protocol, such that if the account is not maintained the country would no longer be eligible to participate in trading. There are two basic ways for calculating the amount of credits sent to and held in the buffer account. The amount of credits held in the account could be capped (i.e. at least x tonnes) so that once the account is full, 100% of the credits generated by the country would be available for trading. Alternatively, a percentage of credits could be transferred to the buffer account each time credits are created so that the account continues to grow as the number of credits generated by a country increases. Variations or combinations of these approaches are also possible. For example, a percentage could be transferred, with the amount decreasing over time if there are no reversals. Another option is to transfer a percentage, but cap the total volume in any given year (e.g. x% up to y tonnes transferred per year) or cap the buffer account as a whole (e.g. x% each time credits are issued up until a total amount of y tonnes is held in the account).

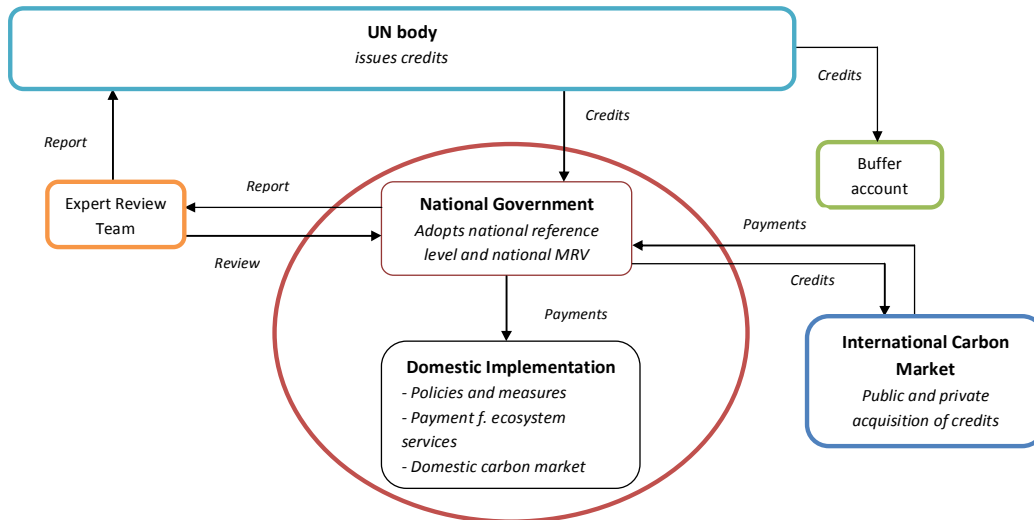


Figure 6: Structure of REDD+ credit and financial transfers when only the sovereign nation participates in international carbon markets

Institutional Requirements

International

As a general rule, as the involvement and responsibility of the government increases, so will the requirements for strong institutions and good governance for REDD+ to be successful. Private sector investors will be less inclined to invest in REDD+ if central governments were significantly involved in REDD+ implementation, yet lacked sufficient governance or capacity to demonstrate that they could effectively reduce emissions.²⁴ To meet international criteria the government would at a minimum need to be able to establish a national reference level and implement national MRV. Setting the national reference scenario will inevitably be a combination of determining the national BAU scenario and international negotiation. This will require a certain level of knowledge of a country's forests and technical expertise within developing countries. The generation of REDD+ credits that could be traded in the carbon market will require the institutional capacity to undertake national MRV at high levels of accuracy and precision. This will require sufficient local capacity to assess carbon stocks in different forest strata and monitor land cover and stock changes over time.

Domestic

In the domestic implementation of this option, there is no linkage between domestic action and international REDD+ markets other than through the government – i.e. all REDD+ credits are held by the government and never transferred to local actors. All international REDD+ funds are channelled through or directed by the government. This includes market and non-market sources of international funding. Domestic implementation can include market and non-market measures.

Market measures can include domestic emissions trading or payment for ecosystem services (PES) systems that do not link to the international REDD+ market. Domestic REDD+ markets could involve the upfront allocation of allowances under a cap-and-trade scheme or, more likely, create incentives for forest owners or authorised entities

²⁴ See Estrada M., Corbera E., and Brown K., *Reducing Greenhouse Gas Emissions From Deforestation In Developing Countries: Revisiting The Assumptions*, December 2007, Tyndall Centre for Climate Change Research, Working Paper 115. This view was expressed at the workshop "International Roundtable on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries," organized by Climate Focus, the Tropical Agricultural Research and Higher Education Center (CATIE), and Avoided Deforestation Partners, held in Brussels, October 24–25, 2007. See www.adpartners.org for a summary of the workshop. It is also reflected in EcoSecurities Position Statement on REDD released in December 2008.



to reduce emissions against a project specific reference level. Resulting REDD+ credits could be traded domestically and possibly linked to a broader national cap-and-trade scheme. Internal market-based systems could also rely on PES where the government subsidizes particular, desired action through fiscal incentives. Such schemes can include tradable permits or rely on cash payments only.

Non-market measures can include (i) policies and measures to counter drivers of deforestation, such as changes to forest management or land use planning more generally; and (ii) institutional strengthening and governance reform to support effective implementation of policies and measures.

Domestic market mechanisms will require strong institutions, with cap-and-trade mechanisms requiring the strongest institutions followed by baseline-and-credit then PES approaches. Cap-and-trade requirements are most closely analogous to capital markets (see Text Box 2 below). They require strong institutions to implement and enforce regulations to provide certainty and safeguard market confidence. Institutions will need to be able to develop trading regulations, develop and run registries, oversee MRV, distribute allowances, assess performance and issue credits (where offsets are allowed), enforce regulations, and make administrative decisions. Baseline-and-credit approaches that do not require trading (only) require MRV, performance assessment, credit issuance, enforcement, and administrative decision making requirements. PES schemes are even more streamlined, with less complex MRV and performance assessment, enforcement, and administrative decision making.

Text Box 2: Stock Markets in Emerging Economies: An Analogy for Markets in REDD+ Credits

Stock markets and other markets in intangible assets are probably the closest analogy to domestic markets for REDD+ credits in developing countries. The key requirement to develop sound capital markets in emerging economies is investor confidence. This can only be fostered if the following prerequisites are met:²⁵

First, regulations and market institutions need to ensure investor protection. The market must be fair, efficient, and transparent. Investors must be assured that the rules of the game are fair, equitably applied, and effectively enforced. *Second*, the rules and institutions need to ensure fair treatment of outside investors. Investors in public companies – in particular minority shareholders – need to be assured that there is adequate financial disclosure on public companies. There also needs to be prohibition of self-dealing by insiders, and adequate arrangements for governance and representation.

These prerequisites have been found to be very hard to meet for emerging markets. The most significant challenges of meeting the prerequisites include lack of investor protection; insufficient transparency in securities trading; problems with registration of shares; problems with enforcement of property rights; entrenched culture of “cronyism” with high levels of self dealing (i.e. direct or indirect preferential treatment to certain insider groups); inadequate or non-existent rules and regulations; and serious problems with enforcement of rules and regulations. Additional problems include; low quality or inconsistent accounting standards; poor or non-existent corporate governance standards; lack of investor compensation schemes; insufficient knowledge of basic capital market rules and practices among

²⁵ Working Group on Capital Markets Development of the Federation of Euro-Asian Stock Exchanges, *Best Practices for the Development of Stock Exchanges in Transition Economies*, 2002, OECD Istanbul Centre for Private Sector Development, p. 13, 14.



investors; a weak bankruptcy system; no rules for take-overs; the absence of large and active domestic institutional investors; inadequate clearing and settlement systems; the need to establish a simplified tax regime for securities; grey areas of legislation due to inconsistencies in the legal and regulatory framework; the absence of (modern) legislation for the operation of contractual savings entities; lack of competition in domestic financial markets.²⁶

This is supported by empirical evidence on stock market development which finds that “countries with sounder macroeconomic policies, better institutional environments, and more efficient legal systems, especially regarding the protection of minority investors, have more developed domestic markets.”²⁷ The requirements for establishing functioning stock markets in emerging economies – including the prerequisites to creating market certainty and the challenges in achieving these prerequisites – are likely to apply to any attempts to develop sophisticated domestic REDD+ market mechanisms.

At the moment, few countries meet the standards needed to develop domestic market mechanisms. In the developing world, Chile, Brazil, China and India fulfill most of these criteria, but even these countries are not without problems. Given developing countries’ lack of experience and institutions to design and operate effective market-based policies, the approach has been criticized as ineffective compared to command-and-control programs.²⁸ However, experience in developing countries with command-and-control regulations is not encouraging either– most examples have proved ineffectual at forcing the private sector to adhere to technology and operational standards and largely failed to initiate large-scale change.²⁹

Table 3: Summary of implementation challenges and institutional requirements for domestic market mechanisms

<i>Option</i>	<i>Implementation challenges</i>	<i>Institutional requirements</i>
Domestic cap and trade covering REDD+	Very high	Very high
Domestic cap and trade with REDD+ offsets	Very high	Very high
Baseline and credit	Moderate	High
PES	Moderate	Moderate

3.2. Role of the Private Sector

Role of the Private Sector in the Government’s International Dealings

Under Market Option 1, government’s dealings with the international private sector would be limited to (i) selling credits to the private sector (or industrialized governments) or (ii) seeking upfront investment that the government could then use to implement domestic policies and measures.

The sale of internationally issued REDD+ credits to industrialized governments or to the private sector could be in the form of:

²⁶ Working Group on Capital Markets Development of the Federation of Euro-Asian Stock Exchanges, *Best Practices for the Development of Stock Exchanges in Transition Economies*, 2002, OECD Istanbul Centre for Private Sector Development, p. 14, 15.

²⁷ See Torre A. And Schmukler S., *Stock Market Development under Globalization: Whither the Gains from Reforms?*, 2006, World Bank, p. 1.

²⁸ Bell and Russell, 2002; Russell and Vaughan, 2003 as cited in Blackman 2009.

²⁹ Russell and Vaughan 2003; Eskeland and Jimenez 1992 as cited in Blackman 2009



1. Advance sales: Price and terms agreed with buyer before REDD+ credits are generated. Money paid after contract execution and in advance of delivery.
2. Forward sale and purchase agreements: Price and terms agreed with buyer before REDD+ credits are generated. Payments for credits made on delivery.
3. Spot sales: Sale negotiated after generation of REDD+ credits. Delivery and payment occur very closely together.
4. Call or put options: Sale of the right to buy or sell REDD+ credits at a defined point in future.
5. Structured transactions: REDD+ credits can also be transacted under more sophisticated transactions involving lending instruments.

Role of the Private Sector in Domestic Market Mechanisms

The potential for the private sector to engage in domestic market-based schemes is limited in most developing countries. A lack of government authority, inadequate resources, technical expertise, and ineffectual institutions means that even when political will exists to impose environmental requirements, neither market-based nor conventional regulatory programs can be adequately implemented.³⁰ This does not mean such efforts are futile. There are opportunities – even when conditions are not ideal – for market-oriented regulations to contribute to environmental protection, including activities for REDD+ that set the stage for environmental benefits and broader improvements in regulatory and private sector capacity.

To determine whether or not the private sector will in fact engage in purely domestic REDD+ markets the feasibility of implementing each the following four options mentioned above need to be assessed:

1. Cap-and-trade systems where forestry is a capped sector;
2. Cap-and-trade systems where REDD+ is a source of domestic offsets;
3. Baseline-and-credit systems where the government pays for reductions against a activity specific baseline or benchmark;
4. Payment for Ecosystem Services systems that generate REDD+ outcomes.

Applying the general principles of good governance and administrative law to the four options will require developing country governments to (i) pass domestic legislation establishing the domestic scheme; (ii) fund (and possibly establish) domestic regulatory bodies that are responsible for overseeing implementation of the scheme; (iii) monitor performance of domestic participants; (iv) determine who should receive payments or be subject to any sanctions; and (v) make payments to successful participants/collect fines from unsuccessful participants. Each of these tasks will need to be carried out efficiently and transparently to be successful.

The first two options for domestic cap-and-trade systems would put some of the financial burden of climate change mitigation onto developing country economies. This could, in theory be (at least partially if not completely) offset by re-distribution of income countries would receive from international REDD+ payments. However the potential negative impact on economic growth makes these options politically unattractive to most developing country governments.³¹ Politics aside, if a government chooses to implement one of these options they will likely face similar issues and challenges as identified with establishing capital markets in developing countries (see text box 2). Unless the government can instil confidence in any domestic REDD+ market, any such market will have an uphill battle to stimulate domestic let alone international private sector investment.

Annex I describes case studies for domestic PES and pollution trading programs in Costa Rica and Chile. The third and fourth options (baseline-and-credit schemes and PES) can also be financed by international REDD+ payments the government receives but do not have the same potential for broader economy wide impacts.

³⁰ Kruger, J., Grover, K, and Schreifels, J. 2003. *Building Institutions to Address Air Pollution in Developing Countries: The Cap and Trade Approach, 2003*, OECD Global Forum on Sustainable Development: Emissions Trading Concerted Action on Tradeable Emissions Permits. Paris 17-18

³¹ Mexico is discussing establishing a domestic emissions trading scheme.



Baseline-and-credit payments are accounted in tCO₂e reduced or sequestered (compliance-grade accounting) and PES systems are linked to REDD+ proxies such as payments per ha of forest conserved, payments for cancellation or modification of logging concessions, implementation of sustainable forest management techniques, etc. When considering any of these systems any compliance-grade accounting creates additional complexity for governments to implement. In addition to the more sophisticated MRV requirements, esoteric concepts such as baselines, leakage, and payments for the absence of an intangible thing (an emission reduction) will need to be defined (and enforceable) in local law. Depending on how the system is designed, relatively low amounts of carbon sequestered by each participating entity may also lead to prohibitive transaction costs. Accounting and payment based on REDD+ proxies will likely be simpler and more efficient in the implementation. It may however create environmental inefficiencies, since payments may predominately go to entities that would not have deforested anyway (see the case study below on the Costa Rican experiences).

The potential role of the private sector in each option is set out in table 4.

Table 4: Potential role of the private sector in domestic trading schemes

<i>Option</i>	<i>Potential Role of Private Sector</i>
Domestic cap and trade covering REDD+	Underlying obligation to meet cap will limit the potential to generate a return on investment and any engagement by the private sector.
Domestic cap and trade with REDD+ offsets	Investment in activities that generate offsets for the domestic market.
Baseline and credit	Investment in activities that generate credits for compensation from the government.
PES	Investment in activities that are paid for or rewarded by the government.

Role of the Private Sector in Domestic Non-Market Policies and Measures

The role of the private sector in the non-market policies and measures to reduce deforestation will vary from policy to policy. Some policies will entail a specific role for private sector, whereas others may include or affect the private sector in a variety of ways. For example, policies that support agricultural intensification to reduce pressure on native forests will directly involve private agricultural businesses. This involvement may range from smallholder subsistence farmers gaining access to improved seed stock, fertilizers, or irrigation equipment, to subsidies or policy changes to attract foreign direct investments into large-scale commercial agribusiness that can support agricultural intensification. In comparison, governance reform that involves enforcement of existing policies and reduction of illegal logging will have cross cutting implications on the overall investment climate in the forest sector.³² Pollution charges are discussed as an example of non-market measures below.

3.3. Acceptance

Political Acceptance

There is general agreement among countries actively participating in the UN level REDD+ negotiations that the performance of REDD+ should be measured against national reference levels. Countries are divided in their views on whether an international link to subnational activities should be established. Papua New Guinea and a number of EU countries are strongly advocating for national systems only. These countries see generally a smaller role for the private sector investing in REDD+. They envisage national implementation based on non-market measures or national emission trading solutions.

³² It should be noted that in most instances it is possible to envision general policies and measures that reduce illegal logging also requiring specific and direct roles of the private sector to carry out the policy. For example, using software developed by a private company to help track timber and demonstrate chain of custody and reduce illegal logging will directly involve the private sector software company. However, the effect of reducing illegal logging will have much broader implications for the private sector engagement in the forest sector. As noted above in section 3.2, illegal logging depresses global timber prices and cuts the financial incentives for sustainable management by 7- 16%. Reducing illegal logging should increase global prices and the return on sustainable management, making this a more profitable investment opportunity.

A number of developing countries, such as Mexico, Brazil or China have announced that they would consider the establishment of domestic emission trading schemes. China has been piloting emission trading at the provincial level. These schemes are however pilots and lack the sophistication of broader developed country emission trading schemes. Emission trading requires participating and covered entities belief in the government's ability to define an intangible and regulatory community which comes without physical collateral and to enforce the resulting rights. It further requires the ability to operate and control complex data systems, issue timely permits and avoid criminal behaviour within the schemes. Emission trading requires therefore a strong rule of law and effective rule making. The implementation of the EU emission trading scheme provides a case study for complications related to the implementation of sophisticated emission trading schemes. Such complications relate to the implementation of trading infrastructure (registries, data collection systems), market oversight (avoidance of fraud, release of information) and the management of price volatility. The implementation of more complex emission trading schemes is therefore only an option for countries with robust and stable legal and governance systems. Even in those countries the political acceptance for cap-and-trade may be low as it generally goes along with implementing national emission reduction commitments.

Other developing countries may still implement baseline-and-credit systems which are easier to administrate, but still require the ability to create and manage domestic REDD+ credit issuance and trading. The simplest and probably most effective way how developing countries can create market based incentives for REDD+ is by establishing activity-based PES system. Such systems have been implemented in various countries including Mexico and Costa Rica.

3.4. Environmental Integrity

Reference Levels and Additionality

As all issued credits will be under this option directly assigned to the sovereign government there will only be a single, national reference level. The environmental integrity of this reference level will be dependent on the process used to establish it and whether or not global additionality will be targeted. Griscom et al.³³ demonstrate that a mean historical rate of deforestation is an accurate predictor (2.5% error) of global deforestation rates over 5 year periods but that the various methods proposed to avoid perverse incentives and to reward and not penalize countries with high forest cover and current low rates of deforestation lead to two orders of magnitude difference in the number of credits issued and consequently significant issues in terms of environmental integrity.

Establishing national crediting reference levels for countries at different stages of development is challenging and the subject of debate in the international climate change discussions. Several approaches have been proposed for setting reference levels but little progress has been made as to how they will function to achieve the desired outcome. Crediting reference levels for countries need to be set to encourage all countries with forests to be engaged in a REDD+ mechanism so that international shifting of activities is captured. But it is also important that global additionality be achieved to ensure environmental integrity.

Under a system where the only direct participation in REDD+ markets is sovereign, subnational projects and programs will function exclusively within credits awarded at a national level against national reference levels. Thus the environmental integrity of any domestic system is largely irrelevant from the UNFCCC perspective.

MRV

A national reference level should be linked with a national map of initial forest area (national benchmark map). The forest area benchmark map would show where forests exist and how they are stratified (for example, by threat for deforestation or degradation, carbon stocks, or for other national needs). This map will then form the basis for subsequent national monitoring. For optimal environmental integrity, monitoring of areas of deforestation, degradation and forestation would be annual to bi-annual and would track gross changes in each class, and be

³³ Griscom, B, et al., *Sensitivity of amounts and distribution of tropical forest credits depending on baseline rates*, 2009, Environ. Sci. Policy, 12:897-911.



performed with remote sensing data and in a GIS. Net accounting would allow decreases in forest areas to be offset by plantations or abandonment of land to secondary forests despite significant differences in carbon stocks. Gross accounting would allow for the tracking of land use and associated long term carbon stocks post deforestation.³⁴

Domestic leakage is not an issue because the program and MRV is national. For a sovereign program, reporting should adhere to the highest standards described (i.e. an uncertainty analysis as recommended by IPCC GPG). Verification could be accomplished using the approach for Annex 1 countries, i.e. a UNFCCC selected panel of experts.

The buffer account is proposed to serve as an insurance instrument and will be important for retaining environmental credibility of offset credits under REDD+. The buffer provides assurance to REDD+ credit buyers for any instances when the performance drops below the reference level. A buffer system underlines the importance of a good reference level paired with accurate monitoring and reporting with quantifiable precision. The amount of credits allocated to the buffer will depend on internationally recognized risk assessment (e.g. as produced by the World Bank).

3.5. Liabilities

Government liability can be divided into international liability and domestic liability. International liability is the liability the government will have with its international relationships whereas domestic liability is the liability the government will have with respect to domestic implementation.

International Liability

If the REDD+ country raises funds by selling REDD+ credits under forward contracts or using such credits as collateral for a loan or equity investment, the country can be held liable for the delivery of credits or make up with paying the replacement value. The REDD+ country would also assume liability associated with any funding it received to implement REDD+ initiatives that were repaid with REDD+ credits or proceeds from the sale of REDD+ credits. Similarly, the government would also be exposed to the uncertainty surrounding (i) how many REDD+ credits are generated, and (ii) the market price for those credits at the time of sale. Market risk may be reduced where forward sales are entered into at predetermined prices, but these prices are typically discounted and such contracts often contain damages provisions associated with under delivery – especially if there are any advanced payments.

A permanence failure may result in a lack of new credits being issued in future crediting periods. Depending on the international rules it may also result in the temporary loss of the eligibility to participate in REDD+ credit transfers. It is highly unlikely that a permanence failure would result in a direct financial liability. However, this lack of direct liability under the UNFCCC would be separate from any commercial transactions the government may enter into to sell its REDD+ credits.

Domestic Liability

If any domestic schemes are funded by the government's sale of REDD+ credits internationally, the government (and participants in these schemes) would be exposed to risks associated with the country as a whole not generating sufficient REDD+ credits to cover domestic costs. This could be due to under delivery of credits, low credit prices, or both. Depending on how the scheme was established, the government may be liable to e.g. make PES payments or pay for domestic credits generated in an internal baseline and credit scheme. If communities or investors view any of these risks as unacceptably high, they will not be motivated to support or invest in REDD projects.

³⁴ Meridian Institute. 2009. "Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report." Prepared for the Government of Norway, by Arild Angelsen, Sandra Brown, Cyril Loisel, Leo Peskett, Charlotte Streck, and Daniel Zarin. Available at: <http://www.REDD-OAR.org>.

4

4. Subnational Crediting of REDD+

4.1. Description

Under Market Option 2 builds on Market Option 1 but allows the additional direct international crediting of subnational REDD+ activities. Domestic actors could participate directly in international REDD+ markets. It describes 2 variations of this option, both of which could be considered different approaches to implementation of a “nested” approach to REDD+ implementation. Under this scenario, the international REDD+ mechanism would allow the direct crediting or rewarding of subnational action with credits recognized internationally. There are a number of variations to this option, two of which are described below. Both variations assume some common features to the mechanism;

1. The developing country government would adopt a national reference level with national MRV for performance.
2. Subnational REDD+ activities and reference levels would be legally accepted and REDD+ credits can be issued for authorized subnational activities.
3. The government would approve all subnational activities at their inception.
4. Credited subnational emission reductions/removals would be deducted from nationally credited emission reductions/removals.
5. A portion of credits issued for subnational action would be transferred to a buffer account.
6. National and subnational REDD+ credits could be sold into the international carbon market.
7. The sale of REDD+ credits could be either to industrialized country governments or to the private sector.
8. Key features of the mechanism such as MRV requirements, credit issuance, permanence rules, and fungibility of credits would be defined at the level of the UNFCCC.

Variation 1: International Issuance of National and Subnational Credits

Under this variation REDD+ emission reductions/removals for national and subnational REDD+ action would be verified following an international procedure involving independent accredited auditors or expert review teams. REDD+ credits for national action would be issued internationally and transferred to a REDD+ country registry account. REDD+ credits for subnational action would also be issued by an international body (as in the case of CDM) and transferred to the designated registry account.

Emission reductions/removals generated at the national and subnational level would be account for as in Market Option 1 (sovereign REDD+ markets). Subnational activities would be approved by the national government and formally recognized under the REDD+ mechanism once they demonstrate they meet certain eligibility and design criteria. Baseline setting and project documentation would be assessed by an independent entity against internationally set criteria. These entities could play the role designated operational entities/ accredited independent entities play in verifying emission reductions in CDM and Joint Implementation (JI) respectively.

Subnational credits would be issued directly to accounts of subnational actors. They would not pass through the government’s accounts first. The number of national credits a government receives would correspond to national level reductions/removals due to policies and measures implemented by the government *less* any credits allocated to subnational activities successfully implemented within the country *less* any credits transferred to the buffer account.

If national emissions exceed the national reference scenario or there are less national credits generated than subnational credits due,³⁵ priority should be given to (i) drawing on the buffer account to ensure national emissions meet the national reference scenario; (ii) maintaining the buffer account if it was depleted in previous years;³⁶ (iii) distribution of credits to subnational actors; (iv) distribution to the government. This prioritization puts environmental integrity of the system first. If private sector investments are to be encouraged, distribution to subnational actors could be raised to the second priority, so that the buffer account could be used to distribute credits to them. This could also be achieved by segmenting the buffer account, with one segment dedicated to insuring subnational actors and the other towards safeguarding overall environmental integrity. Whatever formulation is chosen, the allocation of credits into any national buffer account should be set by international rules (similar to the commitment period reserve for Annex I countries).

COP approved modalities and procedures would additionally set out details on how reference scenarios are set and decided on (for national and subnational assessments), MRV requirements, treatment of domestic leakage, and rules on issuance of credits to avoid double counting. The international modalities and procedures would also need to detail the technical administrative aspects of the system such as who conducts the assessment (e.g. rules on DOE/AIE eligibility, ERT procedures), by whom, to whom and how credits are issued (e.g. X days after receipt of a request for issuance by the responsible international body), traded (who is entitled to request transfer of credits between accounts, how this works etc), used (cancellation, banking etc) *inter alia*. I.e. they would need to cover similar topics as the Marrakesh Accords.

See figure 7 below for a diagram setting out the key elements of this variation.

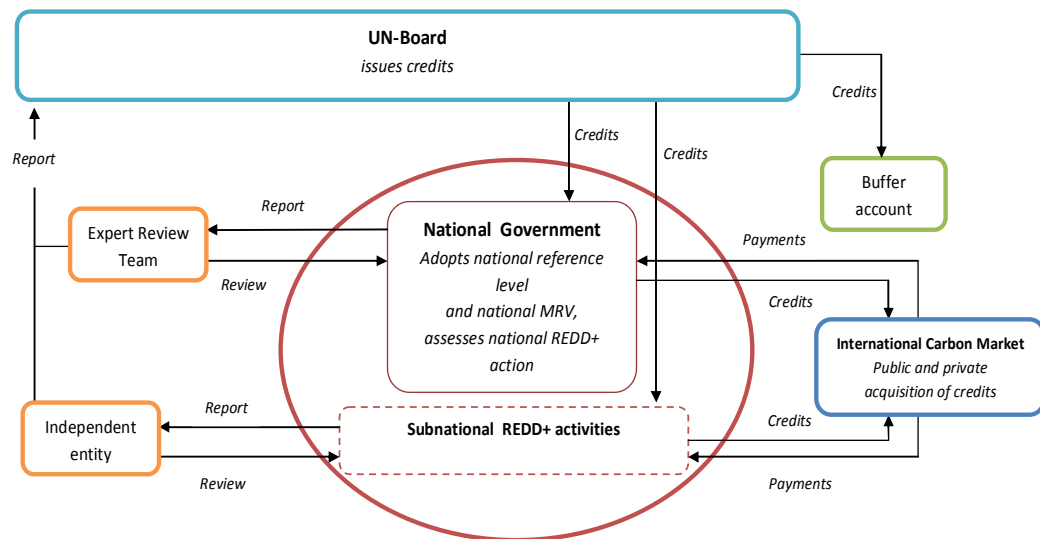


Figure 7: Option 2 Variation 1; International Issuance of National and Subnational Credits

³⁵ This could occur if one or more authorized subnational activities perform as expected (including once leakage is accounted for), but national deforestation or degradation is not reduced by the corresponding amount due to increases in other areas not associated with the subnational activities.

³⁶ This may happen if in a previous year national emissions were higher than the reference scenario and the shortfall was made up from credits from the buffer account. The depleted buffer account is then re-filled the next time credits are issued.

Variation 2: International Issuance of National Credits and National Issuance or Distribution of Subnational Credits

This variation is modelled on JI procedures for issuing credits with some modifications for crediting against national reference scenarios. It assumes the up-front or annual issuance of credits to governments who may distribute internationally recognized REDD+ credits to authorized subnational entities. Basic principles of project design are decided on the international level with leaving it either to the host country or an international body to review individual project applications.

Subnational activities would be assessed by either (i) by internationally accredited entities (as in the case of Track II JI); or (ii) nationally accredited entities (as in the case of the EU ETS); or (iii) by internationally or nationally accredited entities (as in the case of Track I JI). The assessment would cover baseline setting, MRV, and determination that an activity has generated credits (including taking into account domestic leakage). The assessment could be based on detailed and internationally approved criteria as a default standard, or it could be based on nationally defined criteria based on general guidance from international rules if the country wanted to develop its own standards.

The government would be responsible for allocating REDD+ credits to authorized, subnational activities. Crediting could occur either via (i) a simple distribution of credits received by the national government; or (ii) via the conversion of national credits into credits associated with specific subnational activities (similar to JI conversion of AAUs or RMUs into ERUs). Assessment of national performance, issuance of national level credits, and transfer of credits into the buffer account is the same as variation 1.³⁷

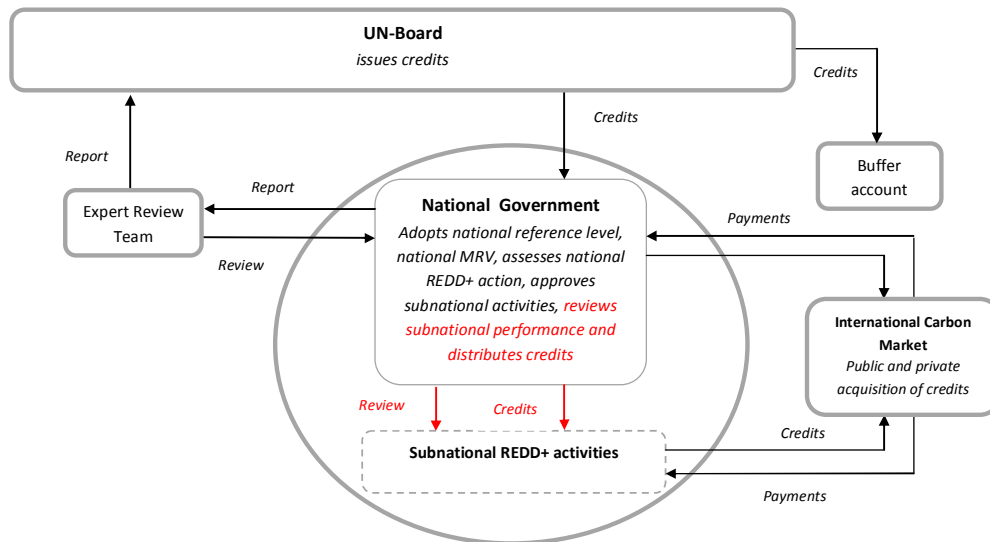


Figure 8: Option 2 Variation 2; International Issuance of National Credits and National Issuance or Distribution of Subnational Credits (one version). Red indicates differences to Variation 1.

Institutional Requirements

As the involvement and responsibility of the government increases, so will the requirements for strong institutions and good governance for REDD+ to be successful.

³⁷ Additional variations that involve (i) national issuance of national credits and international issuance of subnational credits; or (ii) national issuance of national and subnational credits are highly unlikely and not considered further.



The institutional requirements for variation 1 are less onerous as it shifts much of the responsibility for assessing subnational activities and distribution of credits to international entities such as independent verifiers or UN agencies. It does, however, still require the government to adopt a national reference level and conduct national MRV.

Variation 2 places higher institutional demands on government, in particular if the government is responsible for national MRV and would also assume responsibility for a number of tasks associated with subnational activities such as approving reference levels, verifying reductions/removals, and distributing credits. Each of these additional tasks increases the institutional requirements of the government.

The institutional requirements for variation 2 are also similar to those for JI. Most JI countries had met the eligibility requirements to participate in Track 1 JI by 2008 – the start date for issuing ERUs. The dependence on host country government adds sovereign control, but also political risk to the system. Local JI approval procedures often delay project development and create uncertainty. This is compounded in countries that show high levels of corruption.³⁸ As a result many investors have expressed little confidence in host country's ability to successfully support JI projects in the long term and transfer ERUs to the investor. Not surprisingly, most registered JI projects today come from the Czech Republic, Poland, New Zealand and Germany.

4.2. Role of the Private Sector

Both variations should help attract private sector FDI into subnational REDD+ activities. The private sector could play a range of roles in these activities, ranging from arms length purchase of REDD+ credits, to development of subnational activities, to supply of debt or equity finance for subnational activities.

The private sector has indicated an interest in investing in REDD+ projects in developing countries if sovereign risk can be contained. The amount of sovereign risk associated with this scenario will vary depending on how it is implemented and the countries it is implemented in. As a general rule the greater the dependence on the government the greater the risk for private sector investment. Variation 1 has less dependence on developing country governments than variation 2. Liability, risk, and risk allocation is discussed in more detail in section 4.6 below.

It is important to emphasize that government involvement does not necessarily mean the private sector will not invest. Government involvement and participation in REDD+ is expected and will be essential to tackle deforestation in the long term. However, placing unreasonable expectations on governments that lack the capacity, institutions, or general governance to carry out the tasks expected will simply increase risk and decrease private sector investment.

³⁸ Anna Korppoo, *Report of the UNFCCC Technical workshop on Joint Implementation*, 13-14 February 2007, Bonn, cited in Hoogzaad J. and Streck C., *A Mechanism with a Bright Future: Joint Implementation*, 2009, in *Legal Aspects of Carbon Trading: Kyoto Copenhagen, and Beyond* ed. Freestone D. and Streck C., Oxford University Press



Table 5: Summary of responsibilities for variation 1 and 2

Task	Responsibility				
	UNFCCC agency	REDD+ country	Internationally approved third party (e.g. CDM DOE)	Third party approved by and accountable to REDD+ country government (e.g. JI track 1 AIE)	Developer/manager of subnational activity
Proposing national reference level	No	Variation 1 and 2	No	No	No
Checking national reference level	Variation 1 and 2 (independent review team)	No	No	No	No
Monitoring, Reporting – national	No (may support in variation 1)	Variation 1 and 2	Variation 1 (possibly)	No	No
Verification - national	Variation 1 and 2 (Independent review team)	Variation 2	No	No	No
Monitoring, Reporting – subnational	No	No	No	No	Variation 1 and 2
Verification – subnational	No	Variation 2	Variation 1	Variation 2	No
Approval of subnational activities – participation	No	Variation 1 and 2	No	No	No
Approval of subnational activities – reference scenario	No	Variation 2	Variation 1	Variation 2	No
Credit Issuance – National	Variation 1 and 2	No	No	No	No
Credit issuance/distribution – subnational	Variation 1	Variation 2	No	No	No



4.3. Acceptance

Political Acceptance

The acceptance of subnational crediting under an international REDD+ mechanism is one of the most controversial outstanding issues among UNFCCC REDD+ negotiators. While the idea of subnational crediting is embedded in many readiness plans for REDD+ countries, the treatment of such crediting internationally is not yet decided. Some countries, such as Colombia, argue strongly in favour of subnational crediting. Colombia argues that the government does not control the full national territory of the country and does therefore not wish to be held liable for deforestation in the areas that are not under government control. Other countries see direct subnational crediting as important element to attract foreign investments in REDD+. Such direct investment into REDD+ is exactly what yet another group of countries wishes to avoid by arguing that all funds should be channelled via the government.

4.4. Environmental Integrity

Variation 1: International Issuance of National and Subnational Credits

The option presented under variation 1 gives control directly to subnational entities for activities and programs implemented. Government approval will be required to have project documentation that will detail baselines, additionality and methods to monitor carbon stocks, emissions and leakage. Domestic leakage would need to be identified, monitored, and subtracted from subnational emission reductions to ensure subnational credits are not being claimed at the expense of the national accounting system or other subnational activities. This is in the interest of the government and other subnational actors operating in the country.

Reference Levels

The optimal approach for countries would be to define location-specific reference levels which would define, across the country, areas expected to be deforested, degraded or afforested in each given year. Under this approach, subnational programs and activities would adopt the subnational reference level and achieve emission reductions/removals relative to this 'baseline'. Subnational activities could precede a national reference level and national crediting.³⁹

Environmental integrity would then be linked to: (i) the integrity of the internationally-approved national reference level, and (ii) the quality assurance of the methods used in developing the location component of the reference level. Where no national location-specific reference level exists, subnational programs and activities would be obliged to develop their own baseline. Under the voluntary market (e.g. under the VCS), standards and methods exist that can ensure a high environmental integrity for such baselines.

Ultimately, however, it is the national reference level and national monitoring that will determine the number of credits issued and thus the impact on the atmosphere. Environmental integrity should therefore be focused on the national level.

MRV

Where separate crediting occurs nationally and subnationally, MRV will also occur separately. MRV at a national level should proceed as discussed in section 2.3. At a subnational level again the standards and methods developed by the voluntary market could be followed. Typically monitoring must occur at least every 3-5 years with monitoring of forest area change, carbon stocks, project emissions and both activity shifting and market-driven (market effects) leakage.

It is recommended that subnational programs and projects would have to maintain a buffer against the risk of the reversal of credits already issued. The size of the buffer is generally determined by risk factors specific to the project such as institutional risks, risks of climatic or geologic catastrophe, risk of fire or risks from the inability to

³⁹ Pedroni et al. *Creating incentives for avoiding further deforestation: the nested approach*, 2009, *Climate Policy*: 9: 207-220.



protect the area against human actions. The option may also exist to increase the size of the buffer and not require subnational entities to specifically monitor leakage.

The most significant MRV issue for a system where direct subnational crediting occurs is double counting. Any credits issued subnationally must be subtracted from credits estimated to be achieved by the national monitoring and accounting system.

The argument has been made that uncertainty of the assessments at a national level will be greater than the subnational credits that would be deducted. Even though there could be different levels of precision between national and subnational estimates, what is reported in both cases will be a value that incorporates the uncertainty analysis. What is important is that subnational activities should not be penalized for inadequacies at the national level and that to maintain integrity, subnational deductions should always occur regardless of differences in uncertainty.

Variation 2: International Issuance of National Credits and National Issuance or Distribution of Subnational Credits

Under variation 2, international credits are issued based on the national reference level and national monitoring but the national government can subsequently issue or distribute the same credits to subnational programs or projects.

Under this variation, the private sector could invest directly in subnational programs and expect to receive international credits tied to the area on-the-ground where the investment occurred. As such variation 2 is a hybrid between variation 1 (international issuance of subnational credits) and section 2 (sovereign REDD+ markets).

Ultimately, however, it is the national reference level and national monitoring that will determine the number of credits issued and thus the impact on the atmosphere. Environmental integrity should therefore be focused on the national level. The benefit of variation 2 is that it allows the private sector to directly invest in on-the-ground activities that impact the national reporting and to receive internationally recognized and fungible credits for doing so.

The key issue for the private sector will be the trust that (i) the host government will allocate according to international guidelines and the approved verified emission reductions, and (ii) that the performing and approved subnational activity will not be held liable for national underperformance. Rules for the distribution of REDD+ credits to subnational project proponents could be supported by COP guidance.

4.5. Liabilities and Risk

International Liability - Government

Similar consideration discussed in the sovereign market option *vis-à-vis* government liability will also apply. The only complication associated with subnational crediting is where subnational credits takes priority over credits issued to the government. The government will need to take the amount of subnationally issued credits into consideration when it relies on any income it may expect from the sale of REDD+ credits it receives directly.⁴⁰

Domestic Liability – Government and Private

Any domestic schemes the government funds will be exposed to the risk that the government does not generate sufficient income from the sale of credits to fund the initiatives. Similarly, the re-distribution of credits to subnational activities in Variation 2 will also be subject to the risk that the government does not receive sufficient credits. Many private sector investors rate this risk as high in JI host countries. The government's liability will be affected by the relationship it has with subnational actors that are due credits. These domestic relations could include (i) legally binding obligations for the government to transfer credits or pay compensation if the activity performs; (ii) commit to transferring credits if they are available; or (iii) splitting the risk between the government and the subnational actors.

⁴⁰ This could be in addition to e.g. a tax on subnational credits or revenue raised via income tax from subnational entities.



Allocating and Mitigating Credit Risk – Government and Private

The main challenge with subnational crediting attracting private investment is allocating and mitigating the risk that the country will not generate sufficient credits to honour subnational emission reductions/removals. This risk adds to the general risk that performance based payments (via markets or funds) may be insufficient to finance REDD+ activities implemented at the national scale.

Table 6 below sets out a hypothetical country X that has 1,500 total national emissions, which is also the reference scenario. It approves 5 subnational activities that expect to generate 250 reductions, and undertakes its own policies and measures that it expects will generate an additional 200 reductions. At the first verification 2 subnational activities have generated the reductions as planned, 1 has generated half, and the remaining projects did not reduce any emissions. This takes into account project level leakage that may have occurred at each site. The governments' policies and measures have also failed, resulting in half the expected reductions. As a result there are 225 emission reductions at the national level, and subnational activities generated 125 emission reductions.

Table 6: Subnational and national emissions of country X

Activity	Reference Emissions	Planned reductions	Emissions at t 1	Delivered reductions
Activity 1	100	50	50	50
Activity 2	100	50	50	50
Activity 3	100	50	75	25
Activity 4	100	50	100	0
Activity 5	100	50	100	0
Total subnational	500	250	375	125
National (excluding subnational)	1,000	200	900	100
Total national	1,500	450	1,475	225

Variation 1 proposes allocating credits to subnational activities independently of government REDD+ crediting. In this case the government would be liable for any commitments it had made to delivery 200 credits to buyers, or to fund its national policies from the sale of these credits. Variation 2 puts this decision of who get the limited number of credits in the hands of the government. From the private sector perspective, variation 1 has less risk as the private sector can rely on UNFCCC mandated rules and international institutions on this allocation. In variation 2, there will always be risks associated with governments failing to honour their commitments as a result of e.g. a change in government, budget shortfalls that "require" the government retain the 200 credits it expected, or other failures of good governance (i.e. corruption). This risk will not be the same for all countries implementing REDD+ - those countries with stable political systems, good governance, and better credit ratings will have lower risks than those with historically bad governance and poor credit ratings.

The government risk of authorizing more subnational credits than it receives nationally can be mitigated by conservative and robust eligibility rules and MRV systems. The government may in this case even be a net



beneficiary of subnational activities (if fewer credits are issued to subnational activities than emission reductions/removals generated).

The scenario described above contains further risk if the government's plans failed completely, resulting in e.g. 1,100 emissions at t1, and only 25 net emissions nationally. This would also be the case if emissions went up in any of the subnational activities. In this scenario there are insufficient credits to allocate credits to all the performing subnational activities.

There are a number of options to mitigate the risks outlined above, including; (i) buffer accounts; (ii) mitigation payments; (iii) guarantees (other than by the government); (iv) insurance.

Buffer accounts

Buffer accounts can be used to create an effective insurance pool against performance failure of the government or private sector. The downside to buffer accounts is that they are in effect a tax on the country and on the subnational activity that reduces the return on REDD+ investment.

Mitigation payments

Mitigation payments are payments that projects that fail make to projects that perform. This shifts the consequences of underperformance to the entity that caused the national level failure. In the example above the government failed so the government would be liable. If the subnational projects failed such that their emissions increased, then the sponsors of these activities would be liable to pay mitigation payments. The downside to mitigation payments is that the beneficiary is exposed to the credit rating of the entity that failed. If the sponsors behind a failed subnational activity are bankrupt or do not have the funds to compensate the performing activities the system does not work. This is also true if the government is the entity that failed.

The mitigation payment concept can be modified so that there is a mitigation fund or other body that collects and re-distributes revenue as needed. The fund would need to be independently managed in a transparent manner. It could be funded by underperforming REDD+ activities along with other sources such as taxes on activities that drive deforestation (e.g. logging, agriculture etc). This may, however, be politically challenging to implement.

Guarantees and insurance

Guarantees and insurance can also shift risk away from the government to third party guarantors or insurance provider. Guarantees and insurance are discussed in more detail in section 4.

Other Risks and Implications for Private Sector Investment

Variation 1 is modelled on the CDM and variation 2 is modelled on JI, making each of these mechanisms useful analogies to identify risks or barriers to private sector investment.

Variation 1

The main risks faced by CDM project developers are (i) regulatory risks associated with Executive Board decisions, (ii) delays in project validation and emission reduction verification associated with verifier's inefficiency or lack of capacity, (iii) market risk associated with price volatility and to a lesser extent credit eligibility in domestic trading schemes such as the EU ETS (for example, the EU has placed restrictions on large hydro electric projects and is considering placing new restrictions on credits from industrial gases). All these risks are associated with the international system or emissions trading schemes in developed countries. CDM related host country risk is limited to project approval, which is minor in most sectors of most countries. As the international risks apply equally to all projects in all countries, investment risk in CDM projects is closely associated with general investment risk in the given country – in most cases there are minimal additional layers of CDM specific host country risk on top of this.

Variation 2

The more significant dampeners on JI to date have been (i) little or no Assigned Amount Unit (AAU) headroom in many Annex I countries, which need to use all their AAUs for compliance; (ii) government inefficiencies and governance issues surrounding JI approval in some countries; and (iii) lack of political will among host country



government officials; and (iv) AAU conversion risk. The risk attached to the conversion of AAUs into emission reduction units before they are issued to project developers is seen as significantly higher than the one attached to the CDM process.

Similar risks will exist if this type of model is used in REDD+. As compared to variation 1, this variation adds an additional layer of host country risk into the system. In JI the level of JI specific host country risk is correlated to underlying risks of investing in the country (hence higher risk in Russia compared to Germany or New Zealand). Applying this to REDD+, this means that those host countries with high levels of general investment risk (e.g. those with poor governance or low credit ratings) will be expected to produce higher levels of REDD+ specific governance risks. As compared to variation 1, variation 2 can therefore be expected to create more investment risk generally in REDD+.

5

5. Reducing Risk and Raising Finance

5.1. Introduction

The previous sections focused on market mechanisms to engage the private sector in REDD+ activities. This section explores mechanisms for reducing the investment risk in REDD+ and raise upfront finance for REDD+ initiatives from the private sector – a key component of REDD+ implementation. Four options will be discussed – guarantees, securities, bonds, and insurance.

Upfront Financing for REDD+

The majority of REDD+ countries will need upfront financing to address emissions from deforestation or forest degradation. Upfront financing will be needed to bridge finance needs until international, performance based REDD+ funds are allocated. Upfront finance will be needed to take the following action:

1. Finance policy reforms that address REDD+
2. Increase institutional and enforcement capacities
3. Create REDD+ incentive schemes through PES and carbon finance schemes
4. Remove perverse incentives and modify tax schemes supporting deforestation, adoption of countervailing measures
5. Provide upfront financing for direct conservation or other government funded REDD+ projects

To date REDD+ buyers or financiers (sovereign or private) have shown little appetite for making upfront payments. It is likely that most REDD+ payments from buyers will only come once REDD+ credits have been transferred and/or once the actual reduction in emissions from deforestation has been verified. This means that there will be the need to raise upfront funds for the implementation of a REDD+ scheme.

5.2. Reducing Risk: Guarantees

Overview

A number of proposals call for guarantees to help manage risk the private sector is exposed to when investing in REDD+. Guarantees can cover a number of risks and range anywhere from unconditional performance guarantees to limited guarantees that cover specific events, are limited by time, or capped at a certain amount. One of the most significant risks for private investment in REDD+ is performance risk by the government. This includes risks associated with government programs succeeding along with political risks associated with changes in government, policies or laws that result in the government being unable or unwilling to honour agreements they strike with private investors in REDD+ activities. This risk exists in the options discussed in section 3 and 4 above, with highest political risk found in option in section 3. Political risk guarantees, partial risk guarantees, or payment default guarantees can cover these risks and are typically provided by host country governments (sovereign guarantee) and/or multilateral institutions such as the World Bank, MIGA, and regional development banks.

World Bank Partial Risk Guarantees

A World Bank partial risk guarantee covering REDD+ credit delivery risk would support REDD+ upfront finance in the following manner:

Step 1 – The Government and the REDD+ purchaser enter into a contract for the present payment of monies in return for the future delivery of REDD+ credits.

Step 2 – The World Bank extends a partial risk guarantee to the REDD+ purchaser covering the government's obligations under the REDD+ contract. The World Bank guarantee can only provide monetary compensation up to

the amount guaranteed (e.g. a percentage of the REDD+ sale proceeds) but cannot ensure specific performance in the transfer of REDD+ credits or cover their replacement value which is unquantifiable at the time the Guarantee Agreement is entered into.

Step 3 – The REDD+ government backstops the World Bank exposure by entering into an Indemnity Agreement where the Government reimburses the Bank if there is a payout under the guarantee.

Step 4A– There is a dispute between the government and the purchaser on the validity or quality of REDD+ credits. If a dispute resolution proceeding (i.e.an arbitration) is resolved in favour of the purchaser a monetary award is paid.

Step 4B– (Note this procedural step is necessary because the World Bank guarantee only covers a debt obligation. This step does not affect the substance of the guarantee mechanism.) There is in place a letter of credit (“LC”), up to the amount of the World Bank guarantee, to cover the monetary award. If the Government does not pay the award, the purchaser would draw on the Letter of Credit and the Bank would immediately repay the Letter of Credit loan and seek reimbursement from the government.

The structure of this type of guarantee is set out in figure 9 below.

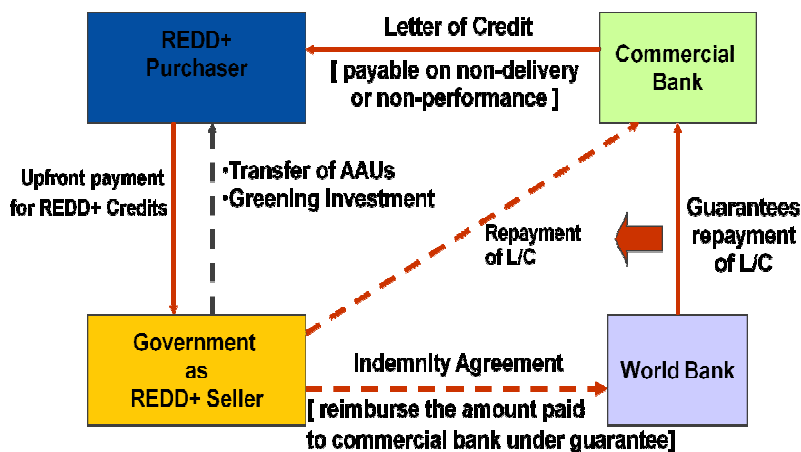


Figure 9: Structure of World Bank Partial Risk Guarantee

The strength of the Bank partial risk guarantee rests on the Indemnity Agreement between the government and the World Bank. The decision of a government to request the partial risk guarantee is a signal to the market of the government’s commitment to the transaction. A government’s default under a commercial agreement between a REDD+ credit purchaser and the government would be transformed by the guarantee into an obligation between the Bank and the government. To date none of the Bank’s partial risk guarantees have ever been called.

Co-guarantee with other political risk coverage providers

As the Bank partial risk guarantee is very effective in mitigating government performance risks, the objective of a co-guarantee is to attract other political risk coverage providers and to minimize the Bank guaranteed amount. Other political risk providers could co-finance the transaction on a *pari passu* basis or the Bank guarantee could provide first loss coverage which triggers the co-financier’s coverage after the Bank guarantee has been drawn. The target Bank guarantee amount should ideally be 20% to 30% of the REDD+ purchaser’s total financial exposure. The REDD+ purchaser might seek complete 100% risk coverage or the purchaser might be able to assume some manageable exposure. The pricing of a Bank partial guarantee is identical to the pricing of an IBRD loan. However, the guarantee fees are paid by the REDD+ purchaser and not by the Government. The guarantee fee at 1% per annum on the guaranteed amount is substantially below commercial rates.

*Co-guaranteeing with MIGA*

The Bank and MIGA have co-guaranteed a number of transactions. MIGA guarantee would be available as a co-guarantor if the REDD+ purchaser is a private enterprise or a government owned entity that operates on a commercial basis.

Co-guaranteeing with commercial risk insurers

This possibility needs to be explored. The pricing from private political risk insurers would be high. A first loss structure might be an option.

Buffer Account and Guarantees – Mitigating Private Sector Project Risk

A national buffer account could be included in guarantees in two ways – either as the risk being guaranteed and/or acting as the guarantor. In both cases the effect would be to reduce host country risk for private sector investors.

Guaranteeing the buffer account

If the buffer account is used as a source of credits that can be distributed to subnational REDD+ activities the value of the buffer account could be enhanced if a third party were able to stand behind the account and guarantee the availability of credits for subnational REDD+ activities. The guarantor in this case could be a multilateral organization such as the World Bank or other international entity. The government could act as guarantor, but this may not add much additional security if the government has a poor credit rating.

Buffer account as guarantor

The buffer account could also provide performance guarantees to subnational projects as a way of attracting additional private investment into these activities. These guarantees would be structured such that if a subnational activity did not perform, the credits it would have generated could be drawn from the buffer account, which would then need to be re-filled from credits generated elsewhere in the country to ensure environmental integrity. This is similar to the securitization concept discussed below.

Conclusion

While guarantees can be very useful for mitigating risk and increasing private sector willingness to invest in REDD+ subnational activities, they do not address underlying barriers to private sector finance – they treat the symptoms and not the cause of these barriers. The number of guarantees that multilateral institutions and host governments can enter into is also limited.

Other options that address problems of governance and uncertain revenue from projects need to be explored.⁴¹ These additional options may include establishing initiative specific trust funds with robust governance to manage revenue streams. Multilateral institutions, host country government representatives, and private investors could all be represented in the governance structure to ensure all interests are represented. Further options include traditional governance reform such as policy reform, anti-corruption initiatives, and capacity building.

5.3. Reducing Risk: Insurance

The insurance sector can provide insurance for REDD+ projects and programmes in order to help leverage private sector investments by reducing the overall risk seen by the investor. This type of insurance could be provided by a fund set aside through governmental contributions, which could be used to target e.g. national underperformance. Alternately, this type of insurance could be provided by private sector insurers, or a mix of public and private sector insurance solutions.

⁴¹ Hoffman S., *The law and business of international project finance, second edition, 2001*, Transnational Publishers and Kluwer Law International, p.27.



There are two key factors that will influence the willingness of the private insurance sector to enter the REDD+ market. These are risk and scale.

Risk

There are a range of risks relevant to REDD+ investments and these can be very specific to the countries, regions and types of forests involved. As a result, insurers will require very clear and detailed risk profiles. Clear sets of information e.g. country risk ratings etc. could be of use here.

Risks can be various – some are known and measurable such as those relating to natural impacts on forests e.g. fire, pests, disease and extreme events. Other risks will relate specifically to REDD+ action and mechanisms such as permanence risks, country risks, carbon policy risks etc. From the perspective of the project owner or operator, it would be ideal for the insurance mechanisms to cover as much risk as possible, yet information on this range of risk will be limited. For the environmental risks, these will vary in terms of volatility e.g. extreme events, and risk level for certain regions/areas, whilst information may be completely lacking on the REDD+ specific risks. This lack of information will make actuarial modelling difficult for insurers. Furthermore, the insurance will need to cover a long timescale, which will be another important element of policy design.

Host governments can play an important role in mitigating the risk element by setting up national catastrophe funds. Once such funds are in place, these could be matched with private sector money.

Scale

Elements of scale are important to insurers – the larger the scale, the easier it is to balance risks and probabilities and ensure that insurance payouts are available in all eventualities. Therefore, insurers are likely to become involved where larger areas, whole countries, or regions are involved in REDD+.

On the other hand, some important elements of REDD+ can be best monitored at the small scale. For example, the involvement of local people and communities is a powerful way to ensure permanence of deforestation solutions. By involving local people, microfinance could also be used to carry out projects and banks could also become involved in small-scale loans.

From an insurance perspective, the organisation of REDD+ is best at the national or international level to allow for the scaling issues related to risk. However, implementation at the local level would help ensure the success of projects and programmes which would in turn reduce insurance premiums.

Other challenges

In setting up insurance mechanisms for REDD+ projects it is also important that ownership of the insurance policies are clear – these must map on to the owners of the risk and are likely to be closely linked to land tenure.

The insurance industry is only partly engaged in forestry issues so far – there is little broad international experience of forestry insurance and currently Forest Re, Munich Re and Swiss Re are the main three players. The insurance sector needs to be better engaged in order to increase the viability of insurance-related options.

Conclusion

Insurance products for REDD+ projects and programmes are probably most appropriate for middle income countries where insurers have experience of at least some of the risks involved, and the countries are already attractive hosts for REDD+ projects. In these cases, insurance of REDD+ projects would actively help overcome barriers to getting REDD+ projects started. However, in countries where there are serious risk concerns, insurance companies would be unwilling to set up programmes at the outset, and any insurance probably wouldn't overcome the greatest barriers to successful implementation of REDD+ anyway.

5.4. Raising Upfront Finance: Securitizing REDD+ Credits



Description

Another way to provide up-front finance for REDD+ is through securitizing future REDD+ credits/emission reductions. Under this approach an entity within a REDD+ country receives the right to manage the future expected emission reductions / REDD+ credits. This entity then issues a security, which could be traded on a local or international stock exchange. Each REDD+ security would embody the right to request the REDD+ National Registry Administrator (once a registry has been established and REDD+ credits have been issued), to transfer one REDD+ credit from the REDD+ registry to another country's registry. The price would be determined at public auctions. Over time the value of REDD+ securities would grow as the underlying REDD+ action takes place through the funding of policies and projects.

The securities could be placed and traded in accordance with the local or international legislation on securities. Where there is a bilateral agreement between a project developer and an investor on the implementation of an emission reducing activity, REDD+ securities could be issued directly for a project, which could then be sold to provide upfront financing. A discount may apply to such a direct allocation. The sale of the REDD+ securities would raise funds for the implementation of the project.

The securitization proposal can be seen as the front-end to a REDD+ financing system. It determines the way in which funds are raised, but the concept of securitization alone does not determine the way in which funds are disbursed. This would be administered through a separate, independent set of REDD+ policies and management structure.

Advantages

There are some distinct advantages of securitization which allows raising funding via the issue of a separate financial instrument rather than the underlying REDD+ credits.

As regulations already exist for the issuance of securities to financial institutions and the general public, fund raising could take place within an already regulated and transparent framework. Such a framework does not exist today for the (future) sale of REDD+ credits.

The current uncertainty over the basis for private sector companies' participation in the purchase and trade REDD+ credits could be avoided by the issuance of REDD+ securities with appropriate and careful legal definition of the rights associated with holding the REDD+ securities. The REDD+ securities should also be traded more freely than REDD+ credits would be.

The instrument can appeal to a wider investment universe than REDD+ only, and can therefore increase demand for and thus the price of the instrument. Since it may attract speculative and venture capital, it may achieve higher prices and attract foreign capital to REDD+ countries. Prices would be determined in a transparent manner and it may help to limit corruption.

Hurdles and Risks

Demand for the proposed certificates will be determined by the price and quality. As REDD+ credits are generated and issued ex-post, any securitization of credits in advance of their generation and delivery come with a de-facto guarantee from the government that REDD+ credits will in fact be available in the future when the security is called upon.

There is a question whether local or international investors are prepared to take the risk associated with REDD+ securities. From our consultations with experts on various emerging economy financial markets, there is reason to believe that there is only a limited number of potential investors for such certificates for the following reasons.

Firstly, among domestic institutional investors, it is likely that the largest ones, such as pension funds, have limited freedom in their investment choices and would not be allowed to invest in such new high risk instruments (except maybe in a very limited manner). Offering (additional) sovereign guarantees on the instruments may not be a very attractive proposal for these institutional investors as it would represent another exposure to sovereign risk to



which they are probably over-exposed already through government bonds. Other institutional investors, such as insurance companies and mutual/investment funds are much smaller in size and/or not high risk takers in developing countries and should not be relied on to invest heavily in REDD+ securities.

Secondly, there are not large numbers of international investors ready to invest in new high risk instruments. Sub-sovereign international investors may have limited use for REDD+ credits, and would require an appropriate return on their investment.

It is not clear whether local stock exchanges, if existing, would support the idea of trading REDD+ securities. If there are any problems with the instrument this may adversely impact the exchange's credibility. Listing a new high-risk financial instrument will therefore create risks for the exchange. This is particularly important at the moment, as stock exchanges in emerging economies are trying to build credibility *vis-à-vis* existing exchanges, all of whom are in sharp competition. In order to ensure credibility and mitigate risks the scheme would need to be supported by a strong legal and contractual framework for the certificates. It is therefore unlikely that existing laws will be able to support such REDD+ credit securitization without amendment. See additional discussion on challenges of developing credible stock exchanges in emerging economies in section 3.2 above.

If potential buyers are asked to hold these certificates, the proposed scheme implies taking three additional risks: the REDD+ country market risk and the risk associated with the converting the security into a REDD+ credit. Given that the whole REDD+ credit market is new and considered highly risky already, it does not appear attractive for potential buyers to be asked to take on stock exchange market risk in addition. The conversion risk is also potentially significant – as noted above in sections 5.2 and 5.6 this risk is seen as high in some JI countries. In REDD+ schemes with ex-post crediting this risk will be higher than in JI (where the AAUs are already issued) as the security has additional risks associated with the generation of credits or the strength of the government's implicit guarantee to provide REDD+ credits when called upon to do so.

The value of REDD+ securities and the functioning of the system depend on the REDD+ country's eligibility to transfer REDD+ credits. In case the country is not eligible to transfer REDD+ credits, it will be unable to fulfil its promise embodied in a REDD+ security. REDD+ countries would have to manage this default risk. It may be easier to manage and mitigate this risk if associated with international level transactions or guarantees as opposed to the REDD+ countries providing a market wide guarantee.

A second limitation on the value is that investors will need to see a return for the investment they make in REDD+ securities. As a result of the high risk and uncertainty attached to the instrument, it is likely to be listed at a highly discounted price, at least initially. This means naturally that they will discount significantly the purchase price based on the expected liquidation value in the future and their own discount rate. This discount represents a value loss for REDD+ countries compared to the amount that the country could raise by selling REDD+ credits directly to potential buyers once the credits have been generated.

Conclusion

At the moment it is questionable whether the local and international investor community is ready to appreciate the issuance of REDD+ securities, since it depends on a long-term view of the future of international and national climate and REDD+ markets. Given the small amounts of funding it is likely to be able to raise through such certificates as a result of the low potential interest by institutional investors, it may not be worth taking such risks. Other sources of mobilizing upfront financing may be more feasible.

A feasible alternative of the proposal would also be for REDD+ credits to issue a type of Promissory Note to interested buyers of future REDD+ credits, where the Note represents its commitment to sell a determined amount of REDD+ credits to those buyers upon some specific conditions being met.

5.5. Raising Upfront Finance: REDD+ Bonds



The idea of a REDD+ bond scheme has been proposed as an effective way of leveraging significant levels of finance from the private sector. Other than the proposed securitization of REDD+ credits, REDD+ bonds would mobilize funds with developed country governments that would be passed on to REDD+ countries. REDD+ Bonds would thus not depend on market approaches for REDD+. The finance raised through bonds can be delivered to developing countries as loans. These loans are potentially at lower interest rates than such countries would otherwise have access to on the commercial borrowing markets, because of the general credit rating of these countries.

The structure could, arguably, be different with the developing country directly offering the bonds, but such a structure would alter the rating of the bond and therefore reduce the attractiveness of the bond to investors.

The Prince's Rainforest Project (PRP) outlined its vision of such a REDD+ bond (or 'Rainforest Bond') in the report *An Emergency Package for Tropical Forests*, published in March 2009.⁴² The PRP report identifies four main elements in the design of such a bond: Credit risk, term, repayment schedule, yield.

Credit risk

It is key that the Rainforest Bond is AAA-rated by the major credit rating agencies. This will ensure that the bond has access to the largest pools of institutional investment capital. AAA-rated institutions include the World Bank and International Finance Corporation, as well as most developed country governments. It follows that a bond backed one of these entities would be AAA-rated.

Term

Bonds are issued with anything from one-year to 40-year maturities. It is proposed that a Rainforest Bond would likely use a term of 10 or more years, because of the short-term financing needs of the forested nations and the likely demand from institutional investors.

Repayment schedule

A number of repayment options are possible, of which the most common is payment of fixed annual interest, or 'coupon'. Other options include a 'zero coupon' bond, where and the principal plus interest is paid on bond maturity, and an 'amortizing' bond, which repays a portion of the principal together with the coupon each year.

The repayment schedule needs to balance the investment opportunities for the private sector against the liabilities of the bond issuers. A zero coupon bond shifts all of the liability to maturity; however this is less likely to be attractive to private investors. Amortizing bonds involves relatively large, equal payments each year over the term of the bond, which are less likely to appeal to bond issuers. A coupon bond requires small, annual interest payments until the time of maturity, when the full principal will be due. This arrangement tends to suit both private investors and bond issuers. In practice, the burden of interest payments can be shifted across time by issuing multiple bonds and paying coupons out of a sinking fund.⁴³

Ultimately, the money to repay the bonds (both coupons and principal) comes from contractual agreements with developed countries. These governments can generate the money to make these payments from any means that they choose, several of which are proposed in the PRP report e.g. levy on insurance premiums, auctioning of allowances from cap and trade schemes, levies on aviation or shipping fuels, etc. In the REDD+ bond scheme proposed by the PRP REDD+ credits are not used to repay the bonds.

Yield

⁴² Kevin Conrad, the Executive Director of the Coalition for Rainforest Nations sat on the steering group.

⁴³ Definition from www.investopedia.com: A Sinking fund is a means of repaying funds that were borrowed through a bond issue. The issuer makes periodic payments to a trustee who retires part of the issue by purchasing the bonds in the open market. The presence of a sinking fund means that the issuing company/body is less likely to default on the repayment of the remaining principal upon maturity since the amount of the final repayment is substantially less. This added safety affects the interest rate at which the company is able to offer bonds in the marketplace.



The Rainforest Bond would need to offer investors a return that is comparable to other AAA-rated fixed income securities. This is expressed as a 'spread' over securities issued by government entities, for example the US Treasury or HM Treasury in the UK. A consequence of the recent market turmoil is that the spread of World Bank and other supranational bonds over government securities has tended to increase.

Government Liabilities

The role of governments in the development of REDD+ bonds is critical to their success. The PRP identified a number of factors that would determine the size and schedule of the liabilities that they would be willing to undertake. These are:

1. Amount and timing of bonds issued, which in turn is influenced by the participation of rainforest countries.
2. Bond design, specifically the term, repayment schedule and yield.
3. Scale and timing of other financial mechanisms and sources of funding.

Developed countries' liabilities would need to be underwritten in order to achieve the AAA-rating. The PRP proposes two possible approaches – sharing future REDD+ payments with rainforest countries and linking to a sister Green Investment Fund.

Sharing future REDD+ payments

Under this proposal developed countries take on the liability to fund REDD+ projects today, and agree with the recipient country to share part of the payments from any international REDD+ regime that only the developing country would otherwise receive on the basis of its REDD+ action.

The developed countries issuing bonds could sign agreements with certain REDD+ countries before issuing any bonds. These agreements would need to set out the scale of the upfront funding from the developed country (to be raised by bonds) and also quantify the number of REDD+ credits or similar that the developed country could see as a return.

This type of approach to guarantee the investment has benefits and disadvantages. The scheme would make a clear link between funding and delivery of goals – making it clear to recipient nations that the money is for use on REDD+ projects. On the other hand, this linkage is precisely what the bond designers were trying to avoid – it will make the bonds liable to all of the uncertainties about the delivery of REDD+ credits in the market place, pricing and supply/demand factors, and may therefore fail to actually guarantee the bonds at all.

Furthermore, this type of approach may limit the geographical spread of the recipient nations. If developed countries need to sign pre-arranged guarantee agreements linked to REDD+ delivery before bonds are issued, bond money could only go to countries with whom agreements were signed. This may prevent bond money from going to very promising REDD+ initiatives either in smaller nations, or with those that were not able to sign agreements during the early stages of bond development.

Link to a sister Green Investment Fund

Linkage to a 'sister' Green Investment Fund which invests in clean development projects and generates sufficient financial return to cover its own capital costs and to contribute towards the principal and interest costs of the rainforest payment (as outlined below).

Although this structure may be preferred to the first option, because it removes the delivery of bond returns from the uncertainty of the REDD+ market, some concerns have been raised that it would be very challenging to raise the level of return necessary from green investment funds over the timescale proposed.

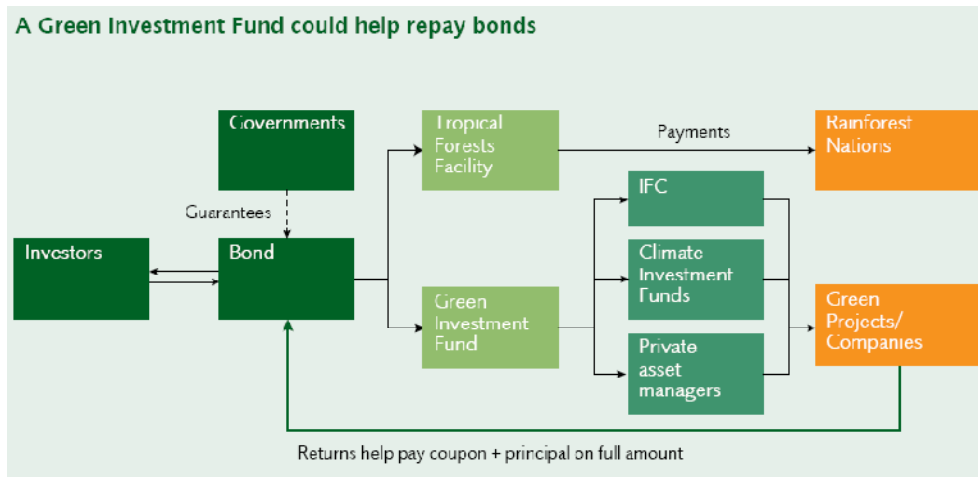


Figure 10: Schematic showing how a green investment fund could be used to repay REDD+ bonds⁴⁴

Economic Potential

The Global Canopy Program estimates that between USD4 and USD20 billion can be accessed from the bond markets for investment in REDD+ initiatives.⁴⁵ To place this in context, governments and government-backed entities issued over USD3 trillion in bonds in 2008,⁴⁶ of which USD400 billion were Sovereign, Supranational and Agency Bonds.

Conclusion

Bonds are seen by some commentators as an attractive way to raise investment for REDD+ initiatives, primarily because they offer the possibility of raising large amounts of funding quickly. However, the view expressed by a leading global bank actively involved in funding forestry initiatives was that there is currently too much risk and uncertainty for investors to participate in a Rainforest Bond. Annex I countries and the World Bank have also expressed reservation with respect to REDD+ Bonds.

The fundamental concern raised was that it is not yet clear where the investor value lies – what will ultimately pay off the bond where investors are simply paying for the “lack of change” of the forest. This concern could be partly solved if there were a clear compliance-driven REDD+ regime in place that established clear, long-term demand for REDD+ credits. Investors are generally more comfortable with financing power generation or waste projects, where the returns are more tangible (i.e. revenue streams can be quantified).

A further concern for investors related to the permanence of the REDD+ market and the possibility that credits will become worthless should the market drivers disappear. This type of policy risk is inherent in the REDD+ market in general and will not necessarily disappear completely even if a full REDD+ international, compliance driven market is secured.

These concerns exist despite the fact that a REDD+ bond scheme is designed to allay all of these fears- by leaving it to developed countries to commit to payment contracts to ensure the ratings of the bonds, the investors do not need to treat REDD+ bonds differently from any other AAA rated bonds.

⁴⁴ The Prince’s Rainforest Project, *An Emergency Package for Tropical Forests*, 2009, available at: <http://www.rainforestsos.org/pages/emergency-package/>

⁴⁵ Global Canopy Programme, *The Little Climate Finance Book, A guide to financing options for forests climate change*.2009, in collaboration with Overseas Development Institute, Oxford Institute for Energy Studies, Australian National University. Available at: <http://www.globalcanopy.org/main.php?m=117&sm=224&t=1>

⁴⁶ Equivalent to approximately 2.5% of the combined value of the EU and US bond markets in 2008.

6

6. Summary Assessment

This section assesses the options discussed in the previous sections. Table 7 introduces and describes the criteria that will be used to evaluate each of the options and table 8 evaluates each of options against these criteria.

Table 7: Assessment criteria

<i>Assessment Matrix</i>	<i>Description of the Criteria Evaluated</i>
Private sector engagement	<p>Issues that affect risk to private sector participation including:</p> <ul style="list-style-type: none"> • Government eligibility to participate in mechanism (e.g. onerous vs. minimal eligibility criteria). • Effective implementation of the measure within the country. • Risk associated with generation of benefits within the national system (i.e. dependence on national performance to generate a return on national or subnational investments) • Delivery risk associated with transfer of benefits to private sector operating within the country (e.g. financial benefits, REDD+ credits, or other incentives). • Delivery risk associated with transfer of REDD+ credits internationally (i.e. risk associated with purchasing credits from the government directly)
Environmental integrity	<p>Metrics to verify the reduction of GHG emissions in accordance with international best practices, including:</p> <ul style="list-style-type: none"> • Leakage (whether the option can track domestic leakage) • Double counting (whether the option can prevent double counting) • Setting reference levels (complexity of doing so)
Institutional requirements	<p>Difficulty in meeting domestic and international administration requirements to make the option operational.</p>
Implementation rate	<p>Whether the option can be introduced quickly or not in a wide number of countries.</p>
Acceptance	<p>Whether or not the approach receives support amongst the Parties and the private sector.</p>



Table 8: Assessment overview

Key: 1 = significant risk/demanding; 2 = medium risk/medium requirements; 3 = low risk/not demanding; NA = not applicable; M = mitigation options possible; C = complex; LC = less complex;

Option	Private sector engagement					Environmental integrity			Institutional requirements		Implementation rate	Acceptance	
	Gov't eligible	Implementation	Generation	Delivery: domestic	Delivery: internat'l	Leakage	Double counting	Ref levels	International	Domestic		Party	Private Sector
Sovereign market participation	3	1, 2	1, 2 M	1 - 3	1 - 3 M	3	NA	LC	3	1, 2	Slow for most	High	Low
Sovereign and subnational market participation – Variation 1	3	2, 3	1, 2 M	2, 3 M	1 - 3 M	3	2	C	3	3	Fast in most	Medium	High
Sovereign and subnational market participation – Variation 2	3	1, 2	1, 2 M	1, 2 M	1 - 3 M	3	2	C	1, 2	1, 2	Slow to fast depending on how designed	Medium - Low	Medium - High



For the options for designing REDD+ markets, option 1 and variation 2 of option 2 were found to place the highest institutional demands on developing countries, the slowest to implement, and had the highest risk for private sector to generate a return on investment. Setting reference levels was simplest in option 1. Avoiding double counting was possible in both versions of option 2, but this was more complex than in option 1. Domestic leakage was managed equally well in all options with national MRV. Option 1 had the highest acceptance within countries, but lowest within the private sector. Both variations of option 2 had medium acceptance amongst countries, with variation 1 having the greatest appeal to the private sector.

The three market structuring options (i) sovereign market participation; (ii) sovereign and subnational market participation – variation 1; and (iii) sovereign and subnational market participation – variation 2 are mutually exclusive within a country at any point in time. However, the options are not mutually exclusive within a broader international REDD+ market mechanism and 3 different countries could each adopt a different system without affecting the integrity of the market as a whole. A country could also evolve from one option to another over time.

The remaining options that reduce investment risk or support upfront finance can be combined with the 3 market structuring options. Some – such as guarantees and insurance – could be combined within a given system.

Annex 1

Annex I Case Studies: Domestic Financing Instruments

Assessing the economic potential of establishing domestic emissions trading or PES schemes, or the plethora of policies and measures that could be used to address REDD+ is beyond the scope of this paper. However, a selection of policies and measures are briefly discussed. They are divided into market mechanisms and non-market mechanisms.

Market Mechanisms

PES system: Costa Rica

The 1996 Forestry Law created FONAFIFO (a unified fund resulting from merger of various existing environmental funds) and the Payment for Ecosystem Services (PES) program. The PES program (through the FONAFIFO institution) defines eligibility criteria for areas that can be managed to offer one or more of the following ecosystem services: mitigation of GHGs, protection of water or biodiversity, and scenic beauty. Owners of these areas apply to receive payments to carry out protection, reforestation or agroforestry activities, which the program deems will ensure the provision of those ecosystem services. Payments are made to land owners, or project participants, as direct deposits in different proportions across the time period of the agreement depending on the activity to be carried out- for example, for reforestation, participants receive 20% of the payment total each year for 5 years, assuming the reforestation is maintained. The economic value of the ecosystem service actually delivered through the protection of land in the program has only rarely been calculated and by various accounts, unsatisfactorily. The price or value of the ecosystem service (ES) is defined by the program rules, not determined by supply and demand for the particular service. A 2005 evaluation notes that no efforts had been made to improve the targeting of the payments via, for example, differentiating them based on the cost of ES production.⁴⁷

The Forestry Law defined and initiated the use of various sources of finance for the ecosystem services program: public budget derived from a selective fuel tax, water fees, loans from international entities such as the World Bank, forestry credits, investment in Ecosystem Services Certificates, and agreements with private sector companies. The latter two is primarily how private money enters the FONAFIFO system. Thus it is through regulation that FONAFIFO was given the authority to issue securities and bonds, negotiate projects, receive grants and loans, tax fuel revenue, and collect forest sector revenues for its PES program. Subsequently, investments in CDM projects in Costa Rica were also designated to pass through FONAFIFO. Market instruments are used to attract resources to supplement the (insufficient) fuel tax revenues. Private investment in FONAFIFO occurs via purchase of ES Certificates or via agreements for ES for amounts that are negotiated. Money FONAFIFO receives from these sources then gets invested in forest management in areas surrounding the buyer/investor, thus securing improved delivery of the ecosystem service in the case of water. In the case of GHGs the Certificate recipient does not receive verified or clearly quantified emission reduction or removal certificates. The main value is in CSR marketing. The fund's website reports 39 Agreements or sale of Ecosystem Services Certificates since 2003 across the country, totalling USD7.6 million dollars to date. Bonds have been issued to raise funds from businesses and institutions, particularly for the Reforesta reforestation program. The repayment of the bonds to investors is not clear, but it is expected to come as interest earned on the investment, not via the monetization of the ecosystem services implicit in the reforestation. FONAFIFO transfers funding obtained to forest owners participating in the program, many of whom themselves are small private businesses.

⁴⁷ Evaluation of the World Bank- GEF Ecomarkets Project in Costa Rica, 2005, Erin Sills, Gary Hartshorn, Paul Ferraro, Barry Spergel, available at : http://www2.gsu.edu/~wwwcec/docs/doc%20updates/NCSU_Blue_Ribbon_Panel_Final.pdf



The program claims that the integration of private sector in many institutions and decision making bodies contributed to the success and growth of the program.⁴⁸ The 2005 World Bank evaluation⁴⁹ also cited effective partnerships with private sector. Having the trust fund administered by a bank rather than FONAFIFO gave flexibility to the system in the use of funding in that agreements with the Fund could be governed by private law.

Notwithstanding the improved financial instruments, voluntary agreements with private sector may be insufficient to generate significant funding given that improved public relations seems the main driver for their action, and this can be easily reduced in tough economic times or when no longer a priority. In addition, free riding remains possible for private actors,⁵⁰ as the program is unable to exclude certain areas from participation, even though there are private beneficiaries of the ecosystem services in the area that could pay instead.

With respect to environmental integrity of the Costa Rican system, support for forest protection and a transition from significant deforestation to net annual gain in forest area are often cited outcomes. However, recent studies question the degree to which the program has led a reduction in deforestation.⁵¹

*Emissions trading schemes: Santiago, Chile*⁵²

Chile implemented a cap-and-trade program in Santiago in 1997 with the objective of reducing particulates from stationary sources. While criticized for frequent rule changes, lack of market activity and opaque rules, air quality in the Santiago Metropolitan Region improved dramatically between 1992 and 2005 after the emission trading program was implemented with concentrations of air particulates falling by about 40%. The success, however, was not entirely due to the market approach taken be regulated. In fact, very little activity was seen on the emissions trading market. The pollution reduces successes, it seems, were motivated by the perceived need to reduce emission under the cap-and-trade system, even if an acute shortage of permits did not develop, along with greater availability of cleaner natural gas and the desire among polluters to get off a list of facilities that must shutdown during air quality emergencies. The lack of activity on the market exchange was attributed to the small number of emitters in the scheme, opaque trading rules, lack of market intermediaries, unwieldy permit approvals, and a lack of market liquidity.

The Chilean experience suggests that while an active market exchange is not essential to achieving emission reductions, the political and economic framework it creates motivates significant behavioral changes for environmental improvements. The ultimate benefits of the trading system included: new pollution sources unknown to authorities voluntarily identified themselves to claim emission permits (similar experiences were observed in other countries);⁵³ emission sources internalized the cost of pollution and found innovative ways to cut emissions; and sources switched to natural gas as a cost-effective way to meet presumed reduction targets.

Other

Additional trading schemes have been identified in China, Mexico and the Philippines. Additional review and analysis of the efficacy of these schemes is beyond the scope of this paper.

1. China: Pilot SO₂ emission trading schemes are underway in seven Chinese provinces, and air pollution charges have been place since 1982. The SO₂ schemes may be integrated into a broader national architecture.

⁴⁸ FONAFIFO, Min de Medio Ambiente, 2005

⁴⁹ Evaluation of the World Bank- GEF Ecomarkets Project in Costa Rica, 2005, Erin Sills, Gary Hartshorn, Paul Ferraro, Barry Spergel

⁵⁰ Evaluation of the World Bank, *ibid.*

⁵¹ World Bank Evaluation 2005, *ibidem*; Fundecor 2007; Arturo Sanchez-Azofeifa et al. in Conservation Biology 2007; Rodrigo Sierra and Eric Russman in Ecological Economics 2006.

⁵² Schreifels, EPA

⁵³ Montero, et al, 2000; O’Ryan, 2002 as cited in Schreifels.



2. Mexico: The Environment ministry (Semarnat) proposed an "aspirational goal" of curbing Mexico's emissions by 50 percent from 2000 levels by 2050 through a domestic emissions trading scheme with Mexico's three state-owned energy producers. This would eventually be linked to carbon markets in the United States and Canada. The state-owned oil company Petróleos Mexicanos (PEMEX) launched voluntary internal GHG emissions trading in 2001.⁵⁴
3. Philippines: Emission trading included in amendments to the Filipino Clean Air Act.

⁵⁴ Point Carbon 2009