WWF FOREST CARBON INITIATIVE DISCUSSION PAPER

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DISCUSSION PAPER:

Guidebook to support the development of early action REDD+ activities

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WWF Forest Carbon Initiative
Discussion Paper
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About this Discussion Paper

This discussion paper was commissioned by WWF's Forest Carbon Initiative and authored by Pedro Moura Costa. It is intended as a guidebook to support the development of early action REDD+ activities.

The information and opinions expressed in this discussion paper are solely the responsibility of the author and do not necessarily reflect the views of WWF.

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Background

Currently, there is widespread agreement that urgent action is needed to reduce emissions from deforestation and forest degradation (REDD). This necessitates that capital be mobilized and parties that contribute to financing and implementing of REDD+ activities be engaged.

To maximise environmental impact and maintain the momentum created by public and investor interest and political support, projects and activities should be designed even before a final, international REDD+ regime is agreed. A series of programmes and individual initiatives are already in place to start the process of designing programmes, activities and projects that contribute to reduced deforestation. In the context of the United Nations Framework Convention on Climate Change (UNFCCC), the most prominent initiatives are the UN-REDD programme (www.un-redd.org) and the Forest Carbon Partnership Facility (FCPF, www.forestcarbonpartnership.org), which are assisting developing countries in preparing for a future full UN-backed REDD+ regime (see Appendix 1). At the same time, NGOs and private sector organisations are also piloting and designing individual projects in anticipation of a UN or US-backed regime.

Irrespective of the final rules and regulations and outcomes of these programmes, it is likely that there will be competition for financial resources. In order for Rainforest Nations, regional governments, community groups, private landowners, and other forest stewards to attract capital for funding forest protection and emission reductions, there must be a common understanding of the expectations between 'buyers' and 'sellers' as they relate to environmental requirements, contractual obligations and risks.

Special attention is needed to ensure that the environmental integrity of these activities and that project developers and investors avoid commercial pitfalls derived from poorly defined objectives, terms and conditions. This is particularly relevant in the case of early action initiatives, as they are conceived in the absence of a clear regulatory framework, rules and procedures.

The purpose of this guidebook is to inform the design of REDD+ activities and projects. By providing an overview of the common requirements of institutions that fund forest protection activities, this guidebook is particularly aimed at forest 'owners' seeking to attract carbon finance for forest protection.

This guidebook is not intended to guide policy formulation or the design of emission reduction activities, or to guide activities being developed under the UN-REDD or FCPF processes. Rather, this guidebook focuses on how to create conditions conducive for independent initiatives to be designed and implemented, drawing on lessons learned through the evolution of carbon markets, from the first carbon projects of the early 1990s to the Clean Development Mechanism (CDM) and voluntary markets of today.

Introduction

This guidebook provides guidance to those attempting to attract REDD+ finance to activities being implemented prior to the development of a fully regulated REDD+ regime.

An initial issue for consideration is how to create carbon credits that are environmentally and socially sound, so that they have a greater likelihood of being recognised in the future. It is important, therefore, to define the minimum requirements for the creation of a carbon credit[1] that may be accepted by future regulatory regimes (i.e. a 'compliance-grade' carbon credit).

At the same time, the skill sets and functional roles required to develop and implement REDD+ activities must be put in place. These range from the relationships among those directly involved in the development of the project, to the variety of supporting services that are required for successful projects (e.g. lawyers, verification companies, consultants). Likewise, appropriate contractual formats and commercial relationships between parties involved in the process of creation and transfer of carbon credits must be defined, including such issues as the allocation of risks and responsibilities among participants.

As has been observed in similar sectors (the CDM, for instance), technical and human resource constraints can have significant negative effects in the development of these programmes and activities. In the case of REDD+, similar bottlenecks could occur if all aspects of the process are not addressed at the outset. It is worth analysing the development of now more mature emission reduction programmes to help inform the design of future projects and programmes, and to accelerate the development of the support services required by these activities.

Aside from the individual efforts of project developers and investors, Rainforest Nations can also adopt a proactive role in designing national REDD+ programmes. Government support is critical as it is expected to reduce investor risk and increase capital flows to national REDD+ priorities. The international public sector can also play an important role in promoting early action investment by creating enabling environments for engagement in REDD+ and reducing risks to investors and developers. The types of activities and support measures that host countries and the international public sector can put in place are discussed at the end of this guidebook.

[1] In this report, the generic terms 'carbon credits' and 'carbon offsets' are used somewhat interchangeably. Specific types of carbon credits are referred to by their precise terms.

1. Commodity specification: defining compliance-grade carbon

Even if REDD+ activities end up not fully complying with the specificities of a future regulatory regime, they must nevertheless be environmentally sound, especially with regard to the greenhouse gas (GHG) emission reductions achieved, as well as socially desirable by respecting the rights of indigenous peoples and local communities. For early action REDD+ activities to be recognized by future regulatory regimes, it is important that these activities are able to withstand any future scrutiny of their environmental and social effectiveness. These aspects must therefore be addressed at the project outset. Furthermore, to ensure their long term success, REDD+ activities must integrate with host nation initiatives and meet the requirements of buyer countries.

To increase the chances of retroactive acceptance, such activities must be based on the best practices and knowledge at the time of project design. In practical terms, activities should be designed to incorporate the main elements required by existing compliance and voluntary regimes. In other words, they must aim to generate 'compliance-grade carbon' credits even if these are not yet 'compliance carbon'.

Dozens of carbon forestry projects were developed in the early 1990s by organisations that sought to incorporate best practice related to project design, carbon inventory, monitoring of carbon flows, and elements of social involvement and participation. Indeed, these early projects enabled the development of most of the current knowledge related to the technical aspects of today's GHG compliance regimes (the Kyoto Protocol's CDM and JI mechanisms – see Glossary in Appendix 7), such as the requirements of additionality, baselines, leakage, permanence, monitoring and quantification of relevant pools and flows, and the inception of independent verification to ensure environmental safeguarding (see Appendix 2 for definitions of technical requirements).

Today, there is not yet a universally-accepted set of standards, procedures and requirements for the development of REDD+ projects. Furthermore, it is possible that more than a single scheme will arise, each adopting somewhat different requirements, making it difficult to predict exactly what a final standard would contain (see, for instance, Appendix 3 for the different approaches of the US and the UNFCCC). It is likely, however, that any such schemes will include the main technical requirements listed above to ensure credible emission reductions and social involvement.

In the absence of a universal standard, early investors could base their projects on the requirements of other schemes, such as the CDM, the Voluntary Carbon Standard (VCS), the Climate, Community and Biodiversity Alliance (CCBA), the California Climate Action Registry (CCAR), and the American Carbon Registry.

Permanence and leakage

REDD+ projects must address the particularly important requirements for permanence of carbon stocks and reduced chance of leakage, as these aspects can seriously undermine the environmental integrity of forestry projects.

Permanence relates to the length of time for which carbon will remain stored after having been fixed in vegetation. In reality, the concern is about lack of permanence, or 'reversibility' of the benefits of storage, as a result of the possible loss of carbon stocks created or conserved by a project, whether deliberate or as a result of undesirable events (e.g., natural disasters). Permanence is the main technical issue that differentiates forestry-based GHG mitigation projects from emission reduction projects.

Leakage is the displacement of GHG emissions from the project area to another area due to a relocation of GHG emitting activities (e.g. rather than logging occurring in the project area, having this activity simply move to another area). Under the CDM, leakage is defined as the net change of anthropogenic emissions by sources of GHGs which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity. While leakage can occur in any type of emission reduction project, it is particularly difficult to detect in large and complex systems such as deforestation trends at the landscape level.[2]

2. Functional roles of project participants

Any project activity or enterprise that generates a transferrable output (in this case, carbon credits) requires that at least the following three functional roles be performed[3]:

a) **Investor** – the party that puts capital at risk to fund the implementation of all, or part of, project activities. Given the nascent nature of the carbon sector, investments are usually based on 'equity' or 'investment capital', as it is difficult for carbon forestry projects to attract debt finance (i.e. loans)[4]. In the case of these projects, the Investor could also be the Donor Agency or International REDD Fund that may provide capital for the REDD+ activities;

b) **Developer** – the party that coordinates the implementation of project activities in the field. 'Developer' is the most generic and encompassing of these roles, as this activity could be performed by a variety of actors, including NGOs, rural communities, forest managers, forestry companies, consultancies, national or international entrepreneurs, government agencies, etc.;

c) **Buyer** – the final 'user' of the credits. This can be industrial companies that need credits for compliance with emissions regulations, governments that need credits for meeting national targets, NGOs that want to retire credits for environmental purposes, or individuals and corporations willing to neutralise or 'offset' their GHG emissions. Again, in the case of these projects the 'Buyer' could, and often will, be the Donor Agency or International REDD Fund that wants to generate emission reductions from REDD+ activities. For the purposes of this report, this could also include speculators that buy and sell carbon credits for profit generation.

As markets and regulatory frameworks mature, other roles appear or become more important or necessary. With respect to the Kyoto Protocol's flexibility mechanisms, for instance, a whole industry of support services was created to complement the three roles listed above, including Designated Operational Entities (DOEs, (the verification and certification companies contracted to independently verify carbon claims), governmental

[2] Aukland, L., Moura Costa, P. & Brown, S., 2003: A conceptual framework and its application for addressing leakage: the case of avoided deforestation. *Climate Policy,* 3, 123-136.

[3] Generic terms were adopted to refer to these conceptual roles, accepting that in many cases, the terms used may not exactly reflect the actual profile of the participant.

[4] Investor here is not considered the "Financier". Investor is referred to as the provider of risk capital, i.e., equity. "Financiers" are referred to as those that lend capital for these projects. Given the incipient nature of this market, lenders are virtually non-existent for carbon-only projects. In many cases, financiers may lend to projects that can provide adequate financial returns based on other aspects of the operation (e.g., electricity or timber sales), but in some of these cases, these returns may contravene the requirement of project additionality (see Appendix 2 for a discussion on 'additionality'). This conflict between profitability and additionality has been a challenge for projects under the CDM, especially given that debt finance is virtually non-existent in early stage markets and projects.

Designated National Authorities (DNAs) or focal points, carbon credit registries, lawyers, brokers, trading exchanges, Research and Development providers, monitoring specialists, software developers, specialised media and information services, consultants, investment bankers, and other types of service providers.

As observed in the case of the CDM, technical and human resource constraints have severely affected the development of this sector from its inception through to today. Bottlenecks occurred in many aspects of CDM, including at the regulatory level (low funding and staffing for the CDM EB and its Secretariat), overloading of the DOEs, slow development of DNAs, shortage of specialized monitoring services, etc.

The first REDD+ activities are expected to operate in nascent conditions and similar bottlenecks may be created if these are not anticipated at the outset. It is worth analysing these past processes to help design projects and programmes in the future, and attempt to accelerate the development of the support services required by these activities.

3. Relationships between project participants

While Section 2 defines the main roles required for the development of a REDD+ project activity, it is often the case that a party may play more than one role or that multiple combinations of these relationships may exist.

The most common combinations of relationships between these parties are:

a) **Buyer is also the Investor and Developer** – i.e. the final user of the carbon credits invests and develops the project activities that would create carbon credits for their own account. This was the case in a series of the early projects developed in the 1990s in which buyers had to create all the infrastructure to enable them to invest in activities on the ground, manage the development of such activities, and finally contract for the transfer of such carbon offsets for their parent entities (see case study in Box 1). While some of these may have led to successful initiatives, it should be noted that such a degree of 'vertical integration' is unlikely to be the most efficient and replicable model for the future.

b) **Buyer is also the Investor but contracts with separate Developer –** i.e. the 'Buyer' invests in the creation of carbon offsets, but the actual implementation of field activities is conducted by a separate, more specialized (and usually local) 'Developer'. This was the most common arrangement of the early projects of the 1990s. In most cases, the initiative was driven by the 'Buyer'/'Investor', who identified a preferred country and activity and then selected a 'Developer' to conduct the activities. Gradually, awareness of a potential source of finance has led developers to design carbon projects and then seek investors/buyers to finance their activities such as, for instance, the process of applications for the various World Bank carbon funds (e.g. the WB Prototype Carbon Fund).

c) **Developer is also the Investor and sells carbon credits to Buyer** – i.e. 'Developers' invest in the creation of carbon credits and sell them to 'Buyers' who may need them for compliance or voluntary purposes. This is the most common process used for the creation of Certified Emission Reductions (CERs) under the CDM, or Verified Emission Reductions (VERs) for the voluntary markets, since the development of the Kyoto Protocol in 1997.

d) **Investor, Developer and Buyer are separate entities** – as the market for carbon credits mature, relationships between parties will also evolve towards more typical investment-development-sales processes with complete specialization of functional roles in the production process. Investors provide the capital, 'Developers' implement activities and 'Buyers' purchase the final output. The CDM has nearly reached this level of maturity but is still hindered by the remaining high levels of uncertainty related to its evolving rules and lack of definition as to its fate post-2012.

In addition, other roles would be supplied by specialized service providers as listed in Section 2. The role of finance provider (i.e. lender) remains emergent, given that the uncertainties related to the carbon markets, even in the case of the CDM, still prevent financiers from lending to the sector.

Box 1:
Face Foundation's early investments in forest rehabilitation in Malaysia, 1992

The Innoprise-Face Foundation Rainforest Rehabilitation Project (INFAPRO) is one of the first large-scale forestry-based carbon offset projects in the world. Initiated in 1992, its objective is to rehabilitate 25,000 ha of degraded areas by enrichment planting and forest reclamation, using indigenous tree species such as *dipterocarps*, fast growing pioneers, and forest fruit trees. It is a co-operative venture between the Sabah Foundation, a semi-government forestry organisation in the state of Sabah, Malaysia, and the Face Foundation of the Netherlands. Under this contract, Face pays for all the project costs, from establishing nurseries, planting and tending trees, hiring and training staff, vehicles, R&D, etc., in exchange for all carbon credits created by the project. The total investment committed by the Face Foundation amounts to US$ 15 million. The project is expected to sequester at least 4.25 million tonnes of carbon (15.6 million tonnes CO_2) during its lifetime at an average cost of US$ 3.52 per ton of carbon (US$ 0.95 per t CO_2).

The planting phase will last for 25 years and the forests will be maintained for 99 years. The long-term nature of the project enables the maintenance and silvicultural treatments required to sustain growth rates during the project's life. At the end of the first 60-year growth cycle, timber exploitation of these forests is anticipated, with timber belonging to the Sabah Foundation. However, timber harvesting will have to be done in a careful way, so that a healthy residual stand can again regenerate a well-stocked forest in order to maintain a carbon pool for the FACE Foundation, which has the exclusive rights to the carbon sequestered through the 99 years of the project.

As the Foundation is a semi-government organisation with the mandate of improving people's welfare in the state of Sabah, the project is also expected to generate considerable social benefits, including an anticipated 230 jobs in the planting phase, as well as substantial research and training of Malaysian staff.

Source: Moura Costa, P.H. 1996. Tropical forestry practices for carbon sequestration: A review and case study from Southeast Asia. Ambio 25:279-283.

4. What is being contracted?

Depending upon the combination of roles and relationships that are used in projects, different contractual arrangements may be required. Activities or projects taking place under established programmes (e.g. FCPF, UN-REDD) may have their own procedures and contract templates. Independent projects, however, would require designation of the roles and responsibilities of the parties involved in the agreement.

In the case of the early projects of the 1990s, most contracts were for the provision of services and for conducting specific activities that led to the creation of carbon sequestration or emission reductions. For instance, contracts were for such activities as the establishment

of tree nurseries, tree planting, land purchase, surveillance and safeguarding of protected areas, and agroforestry, as opposed to contracting for the delivery of a certain volume of emission reductions.

In most cases, the contracts were based on an 'open book' approach, in which the investor/buyer would pay for all the costs, and possibly a modest profit margin, associated with the implementation of these activities, in exchange for the rights to the carbon offsets created. Contracts, therefore, had to refer to units such as 'number of trees planted', 'area of land purchased/protected', or 'frequency of surveillance or monitoring activities', as opposed to tonnes of CO_2e emission reductions or sequestration.

As functional relationships changed and the sector matured, contractual arrangements also evolved. Today contracts tend to be based on the quantity and quality of the product sold and purchased (i.e. carbon credits). This is the case in most CDM, JI and voluntary projects. The unit used in contracts changed from 'trees planted', for instance, to CERs, ERUs and VERs created (i.e. the underlying commodity is a 'tonne of CO_2 emission reductions or sequestration'). Currently, carbon credits are typically sold at a price, not at cost, dictated by supply and demand for these in their specific markets.

While the concept of a carbon offset has evolved to the level of a commodity (tCO_2e), concerns about the additional benefits of GHG mitigation projects have led to additional requirements related to their social and environmental effects. The rules of the CDM, for instance, require that projects contribute to the sustainable development and socio-economic priorities of host countries and projects are required to conduct stakeholder consultations and environmental impact assessments (EIAs). Given that the assessment of a project's contribution to sustainable development lies with the host country, the actual social and environmental (other than GHG-related) benefits of these projects vary significantly from country to country.

This variability of impacts associated with projects has led to the concept of 'Carbon plus', where some buyers voluntarily require additional safeguards or benefits from projects. An example of this includes the expanded stakeholder consultation process required by the Gold Standard (www.cdmgoldstandard.org). These concerns are particularly relevant in the case of forestry projects, as their implementation can have very positive, but also negative, effects on biodiversity, water storage and quality, and social issues. To ensure that the treatment of these issues is properly addressed, the Carbon, Communities and Biodiversity standard has been designed and adopted by many voluntary projects and even by CDM projects aiming at 'quality differentiation'. As this concept of Carbon-plus evolves, additional skills, contracts, etc., will be required for the creation of the commodity. Interaction with other environmental or forest governance initiatives (e.g. FLEG-T, FSC, HCVF, commodity round-tables), would increase the environmental effectiveness and credibility of projects.

5. Timing of payments

Any contract between parties requires specific agreement on the timing of payments. Implementation of any carbon project activity requires the deployment of capital prior to the creation of emission reductions and carbon credits. In more mature sectors, projects usually get funded through a combination of loans (i.e. debt finance) and investment capital (i.e. equity). As discussed in Section 3 above, while the sector remains nascent, developers have restricted access to external investment capital and/or debt finance. Investment, therefore, would need to come from investors, developers or even buyers (see Section 3).

Depending upon the timing of payments for REDD+ activities or carbon credits, the capital needs of projects would change, as well as the risks associated with capital utilization. The most common proposals for the timing of payments for REDD+ activities and/or carbon credits are:

a) **Upfront payments (*ex ante* payments)** – where buyers or investors pay for the costs of conducting REDD+ activities, and sometimes for expected future carbon credits, at the beginning of the project, so that developers can implement the project. As expected, however, advance payments greatly increase uncertainty and risk to buyers. Such risks are, in turn, reflected in the levels of payments made to developers that often equate to the costs of conducting such activities without an additional profit margin.

b) **Payment on delivery (*ex post* crediting)** – most CDM, JI and voluntary projects today are only issued payments for their carbon credits upon delivery. In this modality, projects command better values for their carbon credits (usually a price which compensates for their costs plus a profit margin to compensate for capital deployment and risks). At the same time, there remains the need by developers to raise capital to implement project activities.

While the term "payment on delivery" suggests that a transaction is concluded, in the case of forestry, the need to ensure permanence of carbon stocks protected or sequestered creates an additional requirement. If carbon stocks must be maintained for a given time (i.e. the 'permanence period') before their full environmental value is realized, any payment prior to the end of this permanence period would be at risk of a possible reversal. In this case, there may be the need for guarantees, penalties or safeguards to ensure that contractual obligations are performed. Ultimately, the length of this permanence period and the liabilities and/or obligations of the seller are both policy decisions that must still be defined by the regulatory process.

Early projects often dealt with the need to ensure permanence of carbon stocks by heavily discounting their carbon claims, given their inability to provide other types of guarantees. In the case of the CDM afforestation and reforestation projects, this is dealt with by creating carbon credits with a temporary life-span (t-CERs and L-CERs) that are of little interest to buyers as evidenced by the negligible contribution of these types of projects to the market as a whole. Another approach to dealing with possible reversal of gains is to create 'buffers', in which a proportion of carbon credits created by the projects are kept as a reserve to insure against potential re-emissions. The concept of insurance buffers was first introduced in 1997 as part of the SGS' Carbon Offset Verification Service[5], and is currently used by the VCS to provide insurance against re-emissions (www.v-c-s.org).

Timing of payments is directly linked with developers' need for capital. This, in turn, is linked with developers' ability to provide guarantees to capital providers. This, in particular, can be problematic as most developers expected to be involved in the implementation of REDD+ activities would most likely not have the assets or credit ratings required to provide firm guarantees. A particularly helpful use of concessional finance provided by the public sector, philanthropy or NGOs could be to provide guarantees for developers in developing countries to enable them to secure finance for the implementation of REDD+ activities.

[5] Moura Costa P, Stuart M, Pinard M and Phillips G (2000), Elements of a certification system for forestry-based carbon offset projects, in *Mitigation and Adaptation Strategies for Global Change* 5:39-50.

6. Risks and uncertainties

The inherent risks and uncertainties associated with climate change regulation remain the most important factor affecting investment appetite and capital flows to REDD+ activities. The same was observed for all classes of carbon assets before the Kyoto Protocol provided assurance that carbon credits would be used for compliance purposes. To a certain extent, uncertainty related to the fate of the CDM post-2012 continues to prevent investment in projects with long gestation periods.

In order to deal with this issue, it is useful to make a distinction between risks and uncertainties:

- **Risks** are defined here as the likelihood of certain events happening and negatively affecting a carbon project. In general, risk factors can be identified and their frequency and impact estimated based on historical series of previous occurrences;

- **Uncertainties**, on the other hand, relate to events that cannot be clearly defined, quantified or mitigated. A change of policy, with uncertain timing or impact, is something that cannot be predicted, planned for, or mitigated. Usually there are no historical precedents to enable predictions related to these uncertainty factors and in many cases these are related to factors with binary outcomes (e.g. approval or rejection of a given policy proposal).

Because they can be quantified, investors can manage risk either through adjusting prices, expected returns or through mitigation measures. Because uncertainties cannot be clearly defined, investors tend to be uncertainty averse.

Fortunately, the major uncertainties surrounding carbon markets are related to the regulatory process itself. In many cases, policy makers have a strong degree of influence on these processes and could agree on approaches to mitigate their impacts. For instance, even though uncertainty remains as to the exact framework of a future REDD+ regime, an unambiguous decision to recognise early action would remove a significant barrier preventing investors and developers from initiating REDD+ activities today.

At the same time, it is also important that developers and investors are aware of the risks related to regulatory uncertainty and behaviour. Since the early 1990s, the evolution of the UNFCCC climate regime has been severely affected by high levels of uncertainty, illustrated by the non-recognition of carbon projects from phase to phase of the market development (see Box 2), the continuous changes of methodologies of the CDM, and the lack of long term visibility on the next phase of the Kyoto Protocol post-2012.

Carbon forestry projects, in particular, are exposed to a wider range of risks and uncertainties, as these include aspects related to the long term nature of forests and the potential re-emission of carbon stored in vegetation. Table 1 below shows the main causes of risk and uncertainty related to forest carbon projects. A more detailed list is provided in Appendix 4.

Box 2:
The various regulatory schemes of the evolving carbon markets

The history of the carbon markets is populated with 'pilot phases' and voluntary schemes that both contributed to the development of the carbon markets as well as reinforced the perception of risks surrounding these markets today. In the early 1990s, American and European companies invested in early Joint Implementation (JI) projects with a hope that the emission reductions generated might be used for compliance purposes sometime in the future. With the start of the more formal Activities Implemented Jointly (AIJ) pilot phase in 1995, the UNFCCC officially rejected the concept of using credits from such projects for meeting the objectives of any UN compliance regime. Projects were supposed to be conducted for experience only, and consequently, investment in new projects came to a halt.

In 1997, the AIJ phase was superseded by the CDM (and a new definition of JI), which finally embraced the concept of project-based crediting for meeting compliance targets. But in none of these transitions were the projects from previous schemes accepted into the new schemes. Such disregard for early action is likely to discourage any significant investments in early action projects in the absence of better policy definition of compliance requirements. Furthermore, given the lack of incentives for participation in these earlier schemes, their outputs were totally unrepresentative of the way that the compliance market would finally operate, as illustrated by the differences in capital flows observed during the AIJ and the CDM phases.

Source: Moura Costa and Stuart, Commonwealth Forestry Review 77: 191-202, September 1998

Table 1: Summary of risks and uncertainties affecting REDD+ projects

Uncertainty and risk factors	Description
International policy and climate change regime	Absence of or significant delays in establishing a global framework on REDD+, adoption of low emission reduction targets reducing REDD+ demand, rejection of project activities or trading, restrictions of the use of REDD+ in a future compliance regime reducing flows to this sector, non-recognition of early action invalidating any early investments made prior to a comprehensive climate regime.
Host country climate policy	Non-ratification of climate agreement, non acceptance of REDD+ for compliance, non recognition of early action, poor regulatory capacity.
Host country political, economic and governance factors	Such factors as political, economic instability, poor governance and corruption all contribute to a negative environment for long term investments.
Market factors	Low demand for credits due to low emission reduction targets, low demand for REDD+ credits due to perception of poor quality or because of restrictions (for instance, in the EU ETS), oversupply of REDD+ or other carbon credits creating low price scenarios and affecting ability to sell REDD+ credits. Absence or delay of international registries and clearing houses preventing the transfer of credits from sellers to buyers.
Regulatory authority and its systems	Delays in the establishment of a functional regulatory authority, low capacity to process applications and project activities, delays in project approvals, changes in rules and procedures, among other factors, leading to significant impacts on project uptake.
Project implementation and performance	Failure to secure finance, build and operate the project according to plans, failure in registering and verifying emission reductions, poor performance in implementation of field activities, loss of forest to illegal logging, deforestation or fires.
Technical issues related to carbon accounting	Baseline revisions reducing future carbon credit flows, excessive leakage, poor measurements leading to reductions in initial projections of carbon outputs.

7. Allocation of risks among parties

As seen in the section above, forest carbon projects are exposed to a longer list of risks and uncertainties than other carbon projects. A recurring policy debate relates to how these risks should be allocated between parties in carbon credit transactions. Specifically, whether buyers should absorb risks of project failure (i.e. the 'buyer beware' principle) or whether this is the role of sellers (i.e. 'seller beware').

Ultimately, risk is always incorporated in any transaction either in the demand for guarantees and/or in the price paid for the service or commodity (i.e. carbon credits). Whenever risk is not properly reflected in the price of a transaction or commodity, this imbalance creates opportunities for speculators to capture this valuation error (i.e. through arbitrage). Table 2 below shows how the level of risks associated with CDM transactions have directly affected CER prices in the market.

Beyond the allocation of risks among individual participants, another dimension relates to risk allocation between the nations involved in these transactions. Should host nations shoulder the responsibility of ensuring that any deliveries are honoured or should buying nations accept the risk of carbon re-emissions that may derive from poorly-designed national programs, measures or governance?

Countries that do not, or cannot, provide assurances of good governance will have their carbon credits sold at a discount because buyers would need to compensate for possible or eventual reversal of emissions or benefits. Alternatively, if prices for carbon credits or REDD+ activities were fixed through the adoption of a universal standard price (as proposed, for instance, by the International Working Group-Interim Finance for REDD), higher risk countries would be less able to attract investment than lower risk countries.

Table 2: Price of carbon credits sold under different contractual terms, in relation to a carbon credit contract with no delivery risk to the buyer (100%)
See definition of acronyms in Appendix 7.

Relative price	Contractual terms	Implications and risks for seller
100%	Those typical of EUA trading – no risk for Buyers and Sellers cover all transaction costs.	Only EU companies have EUAs.
75%	CERs with delivery guaranteed by AA-rated companies. Policy risks assumed by Buyers.	Only AA-rated Sellers can enter into these contracts. Huge transaction costs and needs for collateral.
63%	CERs sold by entities with no credit rating but guaranteeing delivery and subject to mark-to market penalties. Seller covers all transaction costs, and keeps a buffer reserve of unsold CERs to provide guarantee for possible delivery shortfalls.	High risk to Sellers. If project underperforms, Seller has to buy credits in the market, exposed to high spot prices. Sellers have to pledge assets as collateral, which can be called in case of no replacement. Sellers have to incur high transaction costs and absorb the risk of not being able to sell credits kept in buffer reserve after they are released.
50%	CERs sold without delivery guarantees, but keeping buffer reserve and covering transaction costs.	Seller has to bear transaction costs and absorb risk of not being able to sell credits in buffer reserve.
44%	Same as above, with Seller keeping buffer reserve but not covering transaction costs.	Seller does not need to cover transaction costs, but has risk of unsold buffer reserve.
38%	Same as above, but not keeping buffer reserve and not covering transaction costs.	No risks to Seller.
25%	Same as above, but Buyer provides advance payment.	No risk to Seller and access to capital, but lower price.
19%	VERs – no delivery obligation, no CDM registration, but subject to results of independent verification.	No risk to Seller but low price.
10%	ERs – no delivery obligation, no CDM, no requirement for independent verification.	No risk to Seller but very low price.

8. Risk mitigation and regulatory frameworks

As seen above, risk and uncertainty are essential components of carbon price and investment flows. In the absence of a supportive framework, developers in developing countries would have difficulty accessing capital, information, and the skill sets required for participation in REDD+ activities. To a certain extent, some of this segmentation was observed in the CDM, where smaller developers in poorer regions or countries could not overcome the barriers of participation in a UN-driven international programme.

At the same time, a variety of risk and uncertainty factors can be significantly decreased if there is stronger government support, frameworks, coordination and assurance. Increasing levels of host country and international institutional support can be expected to lower the risks related to REDD+ development, increase investment flows, and increase empowerment of local developers and their level of participation in this activity. Indeed, this is the type of support currently provided by the UN-REDD and FCPF initiatives.

Table 3 below shows an example of the types of risks that can be reduced or mitigated by certain governmental interventions, programmes, and measures to support REDD+ in their countries (see Section 10).

Table 3: Policy measures that could be introduced to mitigate risk and uncertainty from REDD+ projects and activities

Uncertainty and risk factors	Mitigation measures promoted by policy frameworks
International policy and climate change regime	Uncertainty will remain until there is a clearer outline of the basic tenets of a future UN REDD regime. Much uncertainty could be removed if there were clear commitments to recognise early action before the final details of the regime are in place.
Host country climate policy	Host countries willing to maximise the attraction of capital and investment into REDD+ related activities should reduce uncertainty for investors. This would require unambiguous signals of support for investment in REDD+ and recognition of early action. An example of such government engagement in promoting investment into forest carbon activities is the Costa Rican national GHG programme developed in the late 1990s (Appendix 5).
Host country political, economic and governance factors	Participation in processes to enhance transparency and governance would increase investor confidence and attract finance. Examples include support for timber legality schemes (e.g. FLEG-T), support for timber certification schemes (e.g. FSC), participation in sustainable agricultural processes (e.g. commodity round tables), etc.
Market factors	The risk of low demand for REDD+ credits can be mitigated by ensuring that emission reduction targets are high enough and that the contribution of REDD+ is meaningful. Additional market risks come from regulatory intervention and distortion of market activities. The international community could greatly increase capital flows into GHG mitigation, including REDD+, by lifting barriers to the trading of such credits such as, for instance, the use of forestry credits in the EU ETS.
Regulatory authority and its systems	Regulatory authorities must be given the necessary resources, mandate and support to function properly. The regulatory agency must be equipped with staff appointed on technical merits, as opposed to political basis, and working on a full time regime. At the same time, the agency must be accountable for results-orientated performance, rather than process-driven.
Technical issues related to carbon accounting	Technical challenges related to baseline setting, identification and compensation of leakage, and maintenance of permanence, could be reduced if some of these functions were supported by government schemes. The nesting of project-based activities within national baselines, for instance, would reduce some of the risks related to these technical activities and the need for guarantees by developers. Alternatively, if the international REDD+ regime were to adopt stock-based payments, there would be no need for baseline determination and leakage quantification (see Appendix 6).

9. Contracts

Any activity involving more than one party requires a contractual relationship dictating the roles and responsibilities of the different parties. Contracts should reflect all the factors listed in the previous sections, including the definition of the commodity, as well as the volume, quality, timing, and price of the commodity, allocation of risks and, in some cases, penalties for underperformance.

Depending on the parties involved and the product or service being transacted, contracts can vary enormously, as shown below:

- **Customised contracts** - early contracts based on the implementation of activities were highly customized, and specifically tailored to the peculiarities of the activity and the parties involved. They were typically based on upfront payments for the costs of activities, as well as assurances and conditions associated with the performance of activities. Customised contracts are expensive to create and can involve lengthy and expensive negotiations of terms;

- **Emission Reduction Purchase Agreements (ERPAs)** - contracts for the purchase and sale of CERs from CDM projects gradually evolved to a more standardized format embodied in the ERPAs. The creation of ERPA templates was originally promoted by the International Emissions Trading Association (IETA) in order to facilitate CDM transactions. ERPAs are typically based on payment–on-delivery of a certain volume of CERs issued to a UN account for a price negotiated at the outset. Price is usually fixed for the duration of the contract period (often to the end of 2012), although sometimes prices are pegged to other indicators (for instance, to EUAs). Given that these contracts are agreed at the outset, but delivery and payment happens in the future, they are referred to as **'forward contracts'**. While there is still a certain degree of variation among different ERPAs, the standardization of some terms and definitions (e.g. CERs, UN accounts, etc.) has greatly reduced transaction costs and negotiation times;

- **Standardised contracts** – as markets evolve, contracts can become even more standardised with most of the terms clearly defined, leaving only a few variables to be agreed between buyer and seller. These usually include quantity, timing of delivery and price of a standard commodity. Usually, these contracts are backed by a credit assessment of the counterparties and guarantees between the parties. This degree of standardisation lies behind the International Swaps and Derivatives Association (ISDA) agreements that are currently used for emissions trading within EU ETS participants;

- **Futures contracts** - unlike forward contracts, these are agreements that contain standard terms and conditions among themselves, including delivery places and dates, volume, technical specifications, and trading and credit procedures. Because of this degree of standardization, these contracts can be traded as if they were the underlying commodity. Future contracts are traded through exchanges (as opposed to 'over the counter', which is the case of forward contracts) and enable parties to hedge price risks associated with these commodities.

Activities or projects taking place under established programmes (e.g. FCPF, UN-REDD, etc.) may have their own procedures and contract templates. Independent projects, however, would require appropriately documented agreements with relation to the roles and responsibilities of the parties involved.

10. What can Rainforest Nations do to attract REDD+ investment?

Most of the points listed in this document are relevant to projects happening in the absence of government-backed programmes. As discussed in Section 6, however, the risks related to project investment and development in developing countries could create significant barriers to capital flows to REDD+ activities in Rainforest Nations. At the same time, as discussed in Section 8, national and international governments could provide support to reduce risks and attract capital to REDD+.

This section outlines the types of activities that could be developed by Rainforest Nations to increase the attractiveness of investment in their countries, while at the same time maintaining a higher degree of control over the capital flows. The latter point is very important as greater control would enable host nations to promote activities that fit their national priorities and development plans.

The activities listed here are divided into three categories, according to the degree of involvement of host nations' governments. At the lowest level, governments only provide the minimum safeguards that investors would require to deploy capital in REDD+ activities. At a higher level, this could include certain 'pre-operational' activities to pave the way for investors to deploy capital. At the highest level, host nations would treat REDD+ as an economic activity that requires full government support and investment in order to maximise capital flows to their national plans and priorities.

a) Minimum level of government support

Governments interested in attracting REDD+ investment and projects would need to provide a minimum level of support to national and international participants. At the very least, this includes ratification of the relevant UN agreement, participation in the international negotiations related to REDD+, acceptance of REDD+ activities within its territory, and recognition of the role of sub-national activities (projects) as eligible for receiving carbon credits or some other form of financial recognition. In addition, some countries may decide to recognize the emission reductions created by projects prior to a formal climate agreement in order to promote early action.

In order for host countries to create enabling environments for investment in REDD+, they would need to recognise the rights of the parties that invested or developed such activities to the emission reductions created. The allocation of such rights would need to be transferred or documented through agreements and contracts between the parties involved which, in turn, would require that the host country develops clear guidelines or regulations for this type of activity. Few countries currently have legislation regulating rights over carbon claims but as they arise, they should not go counter to the rights of early investors.

Similarly to carbon rights, a reliable and transparent system of treating land ownership and forest resource use is required to enable investment in the development of land use activities that prevent deforestation and forest degradation. Otherwise, one could initiate an activity in an area that is subsequently changed to another use or ownership. In the case of countries that allow for private ownership, the main concern is that ownership is not changed (i.e. expropriation) and that the land registry is clear (in many cases, it is unclear or allows double counting of land ownership). In countries where land is owned by the state, it is necessary to understand the system of allocation of land use rights. Additionally, any land use rights of indigenous or community uses must be clear, so that project activity does not interfere in other uses, but instead integrates with the plans and aspirations of the users of the land.

The establishment of a focal point for climate change projects is also a basic first step needed for the coordination of investment and project development in Rainforest Nations. The establishment of a Designated National Authority (DNA) is a requirement for CDM projects, for instance, and a similar requirement is expected to exist for REDD+ activities. This focal point could, at the very least, be the initial point of contact between those willing to invest in and develop REDD+ activities and the government of the host country. Ideally, the focal point should also be the repository of all information related to the country's sustainable development priorities with relation to land use and forestry, as well as data sources related to these activities.

With respect to data needs, a minimum amount of information is needed to enable the development of effective REDD+ projects and to enable the quantification of emission reductions. This includes, at least:

- Mapping of forest types;
- Biomass and carbon content of different forest types;
- Historical rates of forest loss;
- Agents of deforestation, root causes and motivations;
- Any factors that may lead to a change in historical trends of deforestation (e.g. developmental plans, road construction, urbanisation plans, changes in laws);
- Land uses, rights, population trends, etc.

A project developer would need access to this information to develop a baseline of forest and carbon loss, an initial estimation of carbon emission reductions expected from the project activity, and, in the future, to continuously monitor project progress in relation to baselines. In many cases, this information is available; in others, investing in the collection of primary data (inventories, satellite images, etc.) may be needed, which becomes very onerous. Focal points should be able to direct project developers to the best sources of information available in the country.

b) Medium level support

Host countries may decide to have a higher level of control over investment flows and to proactively ensure their integration with national plans and priorities.

A first step would be to create and support a more active focal point, able to promote REDD+ investment and guide investors to the people, institutions and interventions that they identify as relevant. Furthermore, if countries are to have active control over what they accept, reject, or promote, it is important that they assign this responsibility to a focal point able to easily communicate with foreign and domestic developers and investors. The role of this focal point agency could range from an information provision function to a more involved role in the development of REDD+ priorities or national plans.

A means of directing investment into national priorities could be for the host nation to coordinate the process of land use planning and create data sets relevant to the development of priority activities. These would be made available to investors and developers willing to participate in these government-supported programmes. Information could include:

- **Mapping of national and sub-national deforestation rates** – this would inform where priority areas are in terms of reducing current rates of forest and carbon loss, based on past trends. Past trends could be compiled from series of satellite

photographs, preferably covering at least the past 10 years, so that trends can be identified and projected in the future. Ideally, this could also include expected trends in the future, based on changes in circumstances envisaged with relation to forest and agriculture legislation, road construction, urbanisation trends, etc.;

- **Zoning of social-economic activities in different forest areas** – any project design must be designed based upon the prevalent land uses that currently lead to forest loss (i.e. the drivers of deforestation). A land use map associated with the stratification of forest loss would be extremely useful in assisting to identify different types of interventions that could be introduced to counter the most prevalent deforestation drivers. Additionally, this could also assist in the process of planning the participatory approach and consultation processes required to involve existing land users in the process of developing REDD+ activities;

- **Zoning of land tenure classes** – associated with the land use maps described above, information on the typical or most prevalent land tenure classes provides important insights into the motivation of deforestation drivers and ways to promote changes of behaviour;

- **Zoning of biomass and/or carbon density and social-economic activities in different forest areas** – development of maps of different forest types, biomass and carbon contents could be derived from inventories of biomass or carbon, as per IPCC guidelines, and translated into areas as per a stratification of forest types. Combined with the projection of forest loss, the biomass/carbon stratification would enable the calculation of carbon loss in different strata;

- **Stratification and zoning of biodiversity** – in addition to carbon content, another important information set is the level of biodiversity in different forest types or land strata. This may depend not only on forest types, but also on the level of intervention in the past (i.e. primary or secondary forest, whether it has been affected by fire, etc.). High Conservation Value assessments would be useful in determining priority areas, from a conservation and biodiversity point of view, to be conserved;

- **Zoning of REDD+ priority areas** –host nations could stratify the country in terms of REDD+ priority areas and possible types of intervention. This could take into consideration all the information listed above, particularly areas of high forest and carbon loss, land uses and tenure classes, biodiversity values, and high conservation value assessments. This would, effectively, form the basis of a national level programme and enable host countries to guide the REDD+ investment and development process according to their own priorities and general developmental plans.

c) Highest level support

In addition to the activities listed above, countries could take an even more proactive approach, treating REDD+ as a new economic sector that is actively promoted and supported by the country in order to attract foreign investment and protect forest resources.

Ultimately, countries could invest in the development of an appropriate infrastructure and promote the reforms necessary to improve the investment environment in a country. These could include:

- Development of national baselines that lay out a trajectory for reducing deforestation over time. For the US, this is going to be critical to enabling the creation of REDD+ credits for trading in the short- to medium-term. In order to attract investment, the country will be required to establish accounting frameworks that allow nested projects within the national baseline;

- Development of national guidelines for REDD+ project development, including, among others, eligibility criteria, clear policy on revenue sharing with primary stakeholders and government and clear legislation on taxation of REDD+ revenues;

- Development of clear legislation and regulation promoting the concept of payment for environmental services (e.g. conservation concessions) and the creation and transfer of carbon rights;

- Development of monitoring and surveillance information systems to collect data on deforestation and provide data for such things as baselines and identification of leakage;

- Development of REDD+ project registries at the national level and coordinating the flow of emission reduction credits created by different projects and programmes. This should aim to harmonize national and project level accounting, integrate data and prevent double counting;

- Creation of support funds, credit lines, insurance and guarantee systems, and other financial incentives that could be provided for early stage investment in forestry activities. This could include systems of guarantees of REDD+ projects to compensate for any loss of permanence or leakage;

- Development of a fiscal policy supportive of REDD+ investment, with differentiated levels of incentives depending on the type of activity;

- Development of REDD+ 'Investment Promotion Agencies' coordinating capital flows and integration of REDD+ project activities and programmes. This could include coordinated investment schemes, with information prospectus, promotional material and international road shows;

- Land and/or resource tenure reform to ensure a clear and transparent way of allocating land and forest resources;

- Integration of forestry and agriculture plans with an emphasis on intensification of agriculture and adoption of sustainable agricultural practices;

- Governance reform with particular emphasis on land use and forestry agencies aimed at enforceability of forest law and discouragement of illegal activities;

- Development of clear and supportive modalities of treatment of foreign investment.

Examples of country-led forestry carbon programmes include the Costa Rican national programme (see Appendix 5), the Guyana Low-Carbon Development Strategy, and the Amazon Fund of Brazil.

11. What can Annex 1 countries do to support REDD+ investment?

Annex 1 countries could play an important role in creating an enabling environment for investment in REDD+. Indeed, most of the funding for the creation of REDD+ frameworks worldwide is currently donated by Annex 1 countries to initiate a process of capacity building and 'readiness activities'.

In addition to the various readiness activities underway, it would be desirable if 'donors' could also contribute to the following activities:

- **Early action recognition** – agreeing on an approach that allows carbon credits created at this early stage to be used for compliance with the targets established by a future climate regime;

- **Funding for development of early projects** –donors to provide concessional finance for demonstration or pilot projects;

- **Guarantees and risk reduction** – a possible use of public funds at this early stage and beyond could be to reduce the risk to investors in REDD+ by introducing guarantee or insurance schemes, or by adopting risk sharing approaches. A promising approach is the multi-project buffer pool adopted by the VCS;

- **Arbitration mechanisms** – it is inevitable that REDD+ investment and development activities will, in some cases, lead to disputes between the parties involved. In the case of the CDM, for instance, investors have very little scope for appeal and no recourse against CDM Executive Board decisions. Furthermore, the poor enforcement of contracts in some developing countries is a significant concern for international investors. The introduction of clear arbitration procedures could greatly reduce the risk levels associated with REDD+ investment and increase capital flows;

- **Registries of REDD+ credits** – to enable tracking of the creation of credits and the transfer of credits during their 'lifetime'. This would enable assessment of REDD+ supply and demand, as well as provide protection against possible 'double counting' and fraudulent sales and transfers. The system of focal points for the issuance of credits of the CDM, for instance, does provide an important protection to carbon credit buyers which could be adopted by a future REDD+ regime;

- **Funding for public-private-NGO relationships** – given the complexity of land use programmes, it is likely that in many situations, the approaches needed to introduce sustainable practices and REDD+ would involve a combination of actors from different sectors. Funding could be made available to foster the development of such partnerships and multi-sectoral initiatives.

Irrespective of which approaches are adopted to link markets to REDD+, it is important to recognise that the varying circumstances of different countries would make them more or less conducive to attracting and utilising foreign investment. Capacity and structural barriers have prevented many African countries from participating in the CDM to the same extent to which Latin American or Asian countries participate[6]. Furthermore, within countries, it is also important that any links with markets happen in a coordinated manner, which ensures that

[6] Clean Development Mechanism: 2008 in brief. UNFCCC publication, cdm-info@unfccc.int

safeguards are in place to enable equitable participation of indigenous peoples and local communities[7].

An interim financing strategy for REDD+ should focus on enhancing the capacity of different countries to deal with not only donor financing, but also a future transition to carbon markets (or any earlier market links). In some cases, innovative approaches would need to be adopted to circumvent host countries' shortfalls in order to enable them to participate in carbon markets.

This would be important to ensure that this new source of finance is utilised effectively by the widest possible range of Rainforest Nations, while maximising the output of REDD+ financing efforts.

[7] See for instance, Bass S., Dubois D., Ford J., Moura Costa P., Pinard M., Tipper R., Wilson C, Rural Livelihoods and Carbon Management: An Issues Paper. October 1999, or

Aukland L, Moura Costa P, Bass S, Huq S, Landell-Mills N, Tipper R and Carr R, Laying the Foundations for Clean Development: Preparing the Land Use Sector. A quick guide to the Clean Development Mechanism, prepared for the UK Department for International Development (DFID).

APPENDICES

Appendix 1:
The Bali Action Plan and major international REDD funding initiatives

Known as the "Bali Action Plan", UNFCCC-COP 13. Decision 2/CP.13 "Reducing emissions from deforestation in developing countries: approaches to stimulate action", that was agreed in December 2007 (http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=8):

1. ***Invites*** Parties to further strengthen and support ongoing efforts to reduce emissions from deforestation and forest degradation on a voluntary basis;

2. ***Encourages*** all Parties, in a position to do so, to support capacity-building, provide technical assistance, facilitate the transfer of technology to improve, inter alia, data collection, estimation of emissions from deforestation and forest degradation, monitoring and reporting, and address the institutional needs of developing countries to estimate and reduce emissions from deforestation and forest degradation;

3. ***Further encourages*** Parties to explore a range of actions, identify options and undertake efforts, including demonstration activities, to address the drivers of deforestation relevant to their national circumstances, with a view to reducing emissions from deforestation and forest degradation and thus enhancing forest carbon stocks due to sustainable management of forests;

4. ***Encourages***, without prejudice to future decisions of the Conference of the Parties, the use of the indicative guidance provided in the annex to this decision as an aid in undertaking and evaluating the range of demonstration activities;

5. ***Invites*** Parties, in particular Parties included in Annex II to the Convention, to mobilize resources to support efforts in relation to the actions referred to in paragraphs 1.3 above.

Since then a number of bilateral and multilateral initiatives have been established to provide financing and technical assistance to help developing countries to acquire the necessary capacity to participate in a future REDD+ mechanism within the framework of the UNFCCC by strengthening national capacity to develop and implement "policies and measures" to reduce deforestation and forest degradation and to monitor, report and verify the results. Three major international initiatives that began during 2008 are providing support to national processes in more than 35 countries (see below).

Programme and Objectives	Participating Countries
World Bank – Forest Carbon Partnership Facility The FCPF has the dual objectives of building capacity for REDD in developing countries in tropical and subtropical regions, and testing a program of performance-based incentive payments in some pilot countries, on a relatively small scale, in order to set the stage for a much larger system of positive incentives and financing flows in the future. Two separate mechanisms have been set up to support these objectives: **Readiness Mechanism:** The FCPF's initial activities relate to technical assistance and capacity building for REDD in IBRD and IDA member countries in the tropics across Africa, East Asia and Pacific, Latin America and the Caribbean and South Asia. Specifically, the FCPF is assisting countries to arrive at a credible estimate of their national forest carbon stocks and sources of forest emissions, work out their national reference scenarios for emissions from deforestation and forest degradation based on past emission rates for future emissions estimates, calculate opportunity costs of possible REDD interventions, adopt and complement national strategies for stemming deforestation and forest degradation, and design national monitoring, reporting and verification systems for REDD. These activities are referred to as 'REDD Readiness' and supported by the Readiness Fund of the FCPF. **Target Capitalization: US$ 150 million.** **Carbon Finance Mechanism:** It is expected that around five countries that will have made significant progress towards REDD readiness will also participate in the Carbon Finance Mechanism and receive financing from the Carbon Fund, through which the Facility will implement and evaluate pilot incentive programs for REDD based on a system of compensated reductions. The selected countries, having: (a) demonstrated ownership on REDD and adequate monitoring capacity; and (b) established a credible reference scenario and options for reducing emissions; will benefit from performance-based payments for having verifiably reduced emissions from deforestation and/or forest degradation through their Emission Reductions Programs. The structure of these payments will build on the options for REDD that are currently being discussed within the United Nations Framework Convention on Climate Change (UNFCCC) process, with payments made to help address the causes of deforestation and degradation. Within the Carbon Finance Mechanism, payments will only be made to countries that achieve measurable and verifiable emission reductions. **Target Capitalization: US$ 200 million.** **Additional information at:** http://www.forestcarbonpartnership.org/fcp/node/11	***Donor Countries (via various national agencies)*** **Readiness Fund** Australia Finland France Japan Netherlands Norway Spain Switzerland United Kingdom USA **Investment Fund** Germany Norway European Commission The Nature Conservancy (NGO) ***REDD Countries*** Argentina Bolivia Cameroon Cambodia Central African Republic Chile Colombia Costa Rica Democratic Republic of Congo El Salvador Equatorial Guinea Ethiopia Gabon Ghana Guatemala Guyana Honduras Indonesia Kenya Lao PDR Liberia Madagascar Mexico Mozambique Nepal Nicaragua Panama Papua New Guinea Paraguay Peru Surinam Tanzania Thailand Uganda Vanuatu Vietnam

Programme and Objectives	Participating Countries
UN-REDD The UN-REDD Programme, a collaborative partnership between FAO, UNDP and UNEP, was created in response to, and in support of, the UNFCCC decision on REDD at COP 13 and the Bali Action Plan. The Programme supports countries to develop capacity to reduce emissions from deforestation and forest degradation and to implement a future REDD mechanism in a post-2012 climate regime. It builds on the convening power of its participating UN agencies, their diverse expertise and vast networks, and "delivers as One UN". **Current Funding: US$18 Million. Target: US$ 35 million** **Additional information at:** http://www.un-redd.org/Home/tabid/565/language/en-US/Default.aspx	**Pilot Countries** Bolivia Democratic Republic of Congo Indonesia Panama Papua New Guinea Paraguay Tanzania Vietnam Zambia (Plan to expand to 20 countries)
AFD-NGO Partnership (Agence Francaise de Developpement, Conservation International, Wildlife Conservation, WWF) Financial and technical support to strengthen the capacity of national governments and other stakeholders in the six countries of the Congo Basin to contribute to reducing the risk of global warming through actions designed to reduce emissions from deforestation, forest and land degradation, to maintain or enhance high conservation value carbon stocks, and to implement early action projects for climate mitigation and adaptation that provide tangible benefits to primary stakeholders – including local communities and indigenous peoples – and to engage the private sector in their implementation. **Current commitment: US$ 2.5 million**	**Congo Basin** Cameroon Central African Republic Democratic Republic of Congo Equatorial Guinea Gabon Republic of Congo

Appendix 2:
Definitions of technical terms related to REDD+

Current negotiations on the structure of a future REDD+ regime tend to focus on the use of a baseline-and-credit approach for the calculation of the emission reductions generated. In this scheme, emission reductions are measured against a 'business as usual' (BAU) baseline and the reductions must be additional to what would have happened under the baseline scenario. An alternative to the baseline-and-credit approach is to reward for forest carbon stocks. A description of this approach is outlined in Appendix 6.

Definitions of the main terms related to the baseline-and-credit approach are given below, as well as the current discussions about definitions of deforestation and forest degradation.

Additionality **–** Under established Kyoto mechanisms, emissions reductions from project activities must be measurable, long term GHG emissions reductions and/or removal enhancements that would not have occurred in the absence of a particular project, policy or activity[8]. Additionality is defined as the difference in emissions between a baseline trend and the new emission reduction intervention. Additionality is also discussed in a policy context. A project, policy or activity is additional if it can be demonstrated that, in its absence, the proposed measures would not be implemented, or the mandatory policy or regulation would be systematically not enforced and that non-compliance with those requirements is widespread in the country/region, or that the project will lead to a greater level of enforcement of the existing mandatory policy or regulation. This, in turn, requires the determination of a baseline scenario against which REDD+ activities will be measured.

Baselines **–** A REDD+ project will need to specify how emissions reductions are achieved and measured. The baseline, or reference level, defines the reference period and scope against which the project activities are being measured. Baseline refers to the business as usual (BAU) scenario determined either by projecting a historical trend to the future (historical baseline), or modeling a future trend (predictive modeling), establishing what would happen in the absence of the REDD+ activity. Reference levels (or crediting baseline) refer to the benchmark for rewarding the project developers or country if emissions are below the BAU baseline, against which the additionality of a given activity may be determined[9].

Leakage **–** Leakage is the displacement of GHG emissions from the project area to another area due to a relocation of GHG emitting activities. Under the CDM, leakage is defined as the net change of anthropogenic emissions by sources of GHGs which occur outside the project boundary, and which are measurable and attributable to the CDM project activity[10] .

Permanence **–** Relates to the length of time for which carbon will remain stored after having been fixed in vegetation. In reality, the concern is about lack of permanence, or 'reversibility' of the benefits of storage, as a result of the possible loss of carbon stocks created or

[8] Moura Costa P, Stuart M, Pinard M and Phillips G., 2000. Elements of a certification system for forestry-based carbon offset projects, in *Mitigation and Adaptation Strategies for Global Change* 5:39-50, and, Moura Costa P, Troni J, Bovee V and Guest J., 2002. Determination of baselines and monitoring protocols for non-LUCF projects, written for the UK Department for Environment Food and Rural Affairs (DEFRA) June 2002.

[9] See discussions on baselines and reference levels in Angelsen, A., Brown, S., Loisel, C., Peskett, L., Streck, C. and Zarin, D., 2009. Reducing emissions from deforestation and forest degradation (REDD): An options assessment report. Prepared for the Government of Norway, Meridian Institute.

[10] Aukland, L., Moura Costa, P. & Brown, S., 2003. A conceptual framework and its application for addressing leakage: The case of avoided deforestation. *Climate Policy,* 3, 123-136.

conserved by a project, whether deliberate or as a result of undesirable events (e.g. natural disasters). Permanence is the main technical issue that differentiates forestry-based GHG mitigation projects from emission reduction projects[11].

Deforestation **–** In order to create rewards for REDD+ activities, the terms 'deforestation' and 'degradation' need to be clearly defined as they will define and frame a future REDD+ mechanism by establishing what kind of actions are eligible. This relates back to a definition of 'forests', given that 'deforestation' means the shift of a given land area classified as a 'forest' to 'non-forested' land. Similarly, 'degradation' implies carbon stock losses within a 'forest' area, without shifting it to a 'non-forest' category. Hence, the definition of forests determines the vegetation morphology (e.g. thresholds of forest crown cover or carbon stocks), prevailing land uses, or other characteristics that are crucial for defining eligible areas and vegetation types for REDD+.

The definition of forests under REDD+ is likely to follow the definitions established by the FAO or Kyoto definitions, although other approaches have been suggested in the past, even in the context of the UNFCCC. Under the Kyoto Protocol and its CDM, forests are defined as having 10-30% crown cover, covering at least 0.05-1 ha, and reaching at least 2-5 m in tree height. Some advantages of this approach would be the closeness to practices in other international fora, most importantly within the FAO, and countries' established reporting standards. In addition, crown-cover indicators are particularly amenable to remote-sensing based monitoring technologies, which will be an integral REDD+ component. The main disadvantage would be the potential to limit the coverage of the REDD+ mechanism, as such definitions are bound to be biased towards high-density forest types and risk excluding areas with low crown covers and carbon stocks (e.g. savannah woodlands and agroforestry)

The main options for defining eligible REDD+ activities and areas are:

- Following the precedent set by the Kyoto Protocol and its CDM, which define thresholds for crown cover, area, and height of woody vegetation. Nonetheless, it would be possible to change the definitional values of the CDM or to introduce greater ranges and flexibility regarding choices of an individual country. REDD+ could also allow for more than one definition in a country, with great variations between ecosystems.
- Avoiding defining 'forests' and, by inversion, 'deforestation' and 'degradation' altogether. Without any exact definition of 'forest' and 'deforestation', a REDD+ mechanism would not be tied to or restricted to land-use changes and eligible areas. It could then cover carbon losses from ecosystems much more generally, whether linked to deforestation or, in fact, to forest area or not, as long as carbon benefits could be credibly demonstrated. This would have advantages in terms of flexibility but also imply that areas managed for agriculture or grazing could be, or would need to be, included in a country's or a project's carbon accounting.
- Defining alternative variables such as prevailing land use (e.g. forestry vs. agriculture), ecological biomes (e.g. humid forest vs. savannah woodlands, or annual precipitation thresholds), official governmental land-use classification (e.g. forest vs. croplands) or carbon content (e.g. woody vegetation above vs. below a certain threshold value).

Similarly, there are different approaches to defining 'deforestation', such as simple changes between the above categories, or distinguishing between 'human-induced' and 'natural' changes.

[11] Moura-Costa, P.H. and C. Wilson, 2000. An equivalence factor between CO_2 avoided emissions and sequestration: Description and applications in forestry. *Mitigation and Adaptation Strategies for Global Change* 5: 51-60.

Appendix 3:
UNFCCC and US regulatory context

The two main regulatory arenas which have the potential to shape an international REDD+ regime are the UN and US-led policy initiatives. While there are other domestic climate change regimes and even markets (e.g. in the EU, UK, and Australia), none of these at present include major international forestry components.

Discussions are framed in different ways in the UN and US contexts. The UN process is embraced by most countries that are currently Parties to the Kyoto Protocol of the UNFCCC. These include most developing countries, the EU, Japan and Canada. The process of negotiations is based on the timetable and structure set up by the UNFCCC for agreeing on a post-2012 climate change treaty. In early 2009, the US also declared its intention to engage pro-actively in this process.

REDD negotiations under the UNFCCC are carried out by an Ad-hoc Working Group on Long-Term Cooperative Action established in the Bali Action Plan (2007), working in the arena of the Subsidiary Body for Scientific and Technological Advice (SBSTA) and reporting to the Conference of the Parties (COP) meetings where negotiations are held in parallel. The COP-15 to the UNFCCC is tasked with agreeing on a successor treaty to the Kyoto Protocol, which expires at the end of 2012.

The US process, on the other hand, is dependent on the approval of Federal level legislation by both the House of Representatives (Congress) and the Senate. Over the last 15 years, a series of climate change bills have been proposed by Congress but have failed to secure enough votes for passage. In June 2009, the American Clean Energy and Security Act (ACESA, also called the Waxman–Markey bill after the Congressmen who introduced it) was passed by the US House of Representatives. Cap-and-trade legislation has yet to be passed by the Senate but could occur as early as 2010.

Appendix 4:
Detailed list of risks (r) and uncertainties (u) affecting early action REDD+ projects

Risks and Uncertainty factors	Type (r/u)	Description
International policy and climate change regime		
Absence of global framework on REDD+	u	Expectation of possible failure to approve an international agreement could prevent early investments.
Delays of entry into force of international agreement	u	The unknown timeframe for entry into force of an international agreement could create uncertainties of returns and deter investment. The 8-year gap between the Kyoto conference of parties in 1997 and the entry into force of the CDM has affected the level of investment that could have otherwise taken place in the sector.
Adoption of non-ambitious emission caps	u	If an international agreement does not introduce meaningful emission reduction targets, this could prevent any incentive for financial transfers or for the establishment of meaningful carbon prices.
Rejection of project-based activities	u	Even if an international REDD+ regime is agreed, this may not recognise or credit sub-national or project-based activities.
Rejection of carbon trading	u	Even if project-based activities are allowed, there may be restrictions on full market participation and trading of REDD+ units or credits.
Non recognition of early action	u	There is a possibility that projects and credits generated by early action are not recognised by any future regulatory regime or that they are only partially accepted (i.e. by the imposition of heavy reductions of estimated volumes) or that only credits generated after the start of the regulatory regimes are accepted. At each new phase of the UNFCCC evolution, there has never been any recognition of credits and projects created or initiated in previous phases (e.g. early JI to AIJ, to CDM and JI).
Creation of caps on REDD+ credits	u	There has been much discussion on the restriction of the use of REDD+ credits in an international regime.
Segregation of REDD+ credits through the adoption of a dual markets regime	u	This has been proposed as a tool to avoid REDD+ credits 'swamping' international carbon markets and reducing carbon prices. If this were to happen, it would reduce demand and liquidity for carbon credits created through REDD+.
Barriers to trade	u	Barriers to trade include restrictions that could prevent credits from certain locations or circumstances from being freely traded. In the case of the CDM, for instance, there have been additional requirements from certain buyer countries not accepting certain types of projects, such as the EU ETS rejecting the entry of forestry credits and considering excluding credits from large hydro or certain industrial gases.
Non eligibility of certain sub-categories of REDD+	u	The final rules adopted by a future regime could preclude the participation of certain activities or impose conditionalities that restrict projects in certain locations.

Risks and Uncertainty factors	Type (r/u)	Description
International policy and climate change regime		
Changes in rules for REDD+ participation	u	Any change in regulations after the beginning of a process would create significant uncertainty, particularly if such changes were to apply retroactively. The short history of the CDM has numerous examples of changes which negatively affected market participants.
Agreement on targets and rules for short time frames only	u	One of the problems of the CDM and the EU ETS is that the rules and commitments of these schemes are valid for periods of time too short in length (phase 1 of CDM runs out in 2012, together with Phase 2 of the ETS) which results in a high level of uncertainty about the rules of subsequent phases and prevents long term commitments and investments in emission reduction activities. REDD+ and forestry in general require long term commitments and time frames.
Host country climate policy		
Non-ratification of agreement by host country	u	Even if an international agreement comes into force, a risk exists that some individual countries may not ratify it.
Non recognition of carbon rights	u	Some developing countries may adhere to an international agreement but impose restrictions at the domestic level, such as not awarding the right for individual projects to receive carbon credits for their REDD+ activities or not recognising any early action.
Rejection of transfer of carbon credits/rights	u	There could be barriers created by host countries with relation to the transfer of carbon credits to third parties.
No host country approval	u	Risk that certain projects may not receive host country approval exists, particularly in the case of early action projects.
Delays of project approval by host countries	u	As in the case of the CDM, many projects have been severely affected by the slow process of analysis and approval by some host countries.
Changes in project eligibility and approval rules	u	Any change in regulations after the beginning of a process would create significant uncertainty, particularly if such changes were to apply retroactively.
Changes in credit sharing or minimum price requirements	u	As observed in the CDM, there is a risk that some countries may retroactively require that buyers increase prices previously agreed with developers.
Lack of processing capacity of host country regulators	u	If each individual project needs to be vetted by a host country agency, there is a risk that such agencies may not be sufficiently equipped to process applications in an expedient manner.
Host country political and economic factors		
Political instability	u	Unstable governments with inadequate governance and law enforcement frameworks create additional levels of uncertainty and risks.
Land and/or asset expropriation	u	Land or assets (including carbon credits) could be seized by certain governments.

Risks and Uncertainty factors	Type (r/u)	Description
Host country political and economic factors		
Corruption	u	Depending upon the level of governance and law enforcement, corruption could create significant barriers to investment.
Strikes, social unrest	u	Unstable governments could give rise to social unrest, strikes and other forms of disorder or lack of governance.
Economic instability	u	Countries suffering from economic instability create risks and uncertainty for investors, particularly in the case of long term activities such as those related to forestry and REDD+. High inflation, in particular, can have very detrimental impacts on project budgets.
Changes in fiscal regime	u	Fiscal policy stability and coherence are essential elements of long term financial planning. The prospects of unexpected changes create uncertainty and barriers to investment.
Exchange rate variations	r	Any investment in a different currency would be affected by variations in exchange rates. Countries with volatile currencies create additional risks for foreign investment.
Market factors		
Low demand for credits	r	Depending upon the level of emission reduction targets adopted by an international agreement, demand for carbon credits could be too low to enable carbon prices capable of promoting investment.
Low demand for REDD+ credits	r	As in the point above, any restrictions on the use of REDD+ credits could create disincentives for the development of REDD+ activities. A similar effect was observed in the CDM, in which restrictions on the demand for forestry credits resulted in negligible amounts of participation of this asset class in the market as a whole.
Oversupply for REDD+ credits	r	The acceptance of REDD+ into an international climate change regime could trigger the creation of significant volumes of carbon credits. If this supply potential is higher than the global demand (determined by the targets adopted and any restrictions imposed on the use of REDD+ credits), this could result in significant price reductions for this type of credit.
Oversupply of other credit classes	r	Other types of activities could lead to the creation of large volumes of credits reducing carbon prices as a whole. Activities with potential to generate high volumes include avoided gas flaring, carbon capture and storage, and large scale energy efficiency programmes. If there are perceived disadvantages or conditionalities on the use of REDD+ credits in relation to credits from other activities, this could result in a rejection of REDD+ credits or a relative discount to other credits. This was observed in the case of T-CERs from forestry projects in the CDM.
Oversupply of AAUs	u	A current risk of carbon markets is that some Annex 1 countries with surplus allowances (e.g. those of the former Soviet Bloc) could sell them to other countries, thereby reducing overall demand for carbon credits from emission reduction projects.
Regulatory authority and its systems		
Delays of establishment of a regulatory system	u	The implementation of an international agreement will require the creation of regulatory capacity that includes systems, procedures, staffing, capacity and infrastructure. As was the case of the CDM, this could take years to establish, resulting in high levels of uncertainty until a regulatory system is in place.

Risks and Uncertainty factors	Type (r/u)	Description
Regulatory authority and its systems		
Delays in the establishment of registries and clearing houses	u	For credits to be transferred from sellers to buyers, it will be necessary to establish national and international registries and clearing houses to consolidate and coordinate all transfers of credits and transactions. If they are not put in place soon enough, or are not properly interlinked, this could create serious delays for the ability of transactions to be settled. The International Transaction Log of the CDM and its links with the European registries, for instance, has suffered from severe delays that have affected market participants in Europe and developing countries in the past.
Lack of processing capacity of international regulators	u	If uptake of REDD+ activities is high, there is a risk that the regulatory agency may experience capacity constraints. This was a chronic problem of the CDM, specially acute during the first years after its creation.
Lack of processing capacity of verification agencies	u	If independent verification were required, any provider of such services would need to have large amounts of qualified staff. In the case of the CDM, this became one of the main bottlenecks. This problem was exacerbated by frequent changes in rules which required frequently re-training staff, repeated questioning of activities by the CDM EB which created discomfort among verifiers in terms of issuing decisions, and by difficulty in retaining staff.
Delays in project approvals	u	The combination of the above mentioned factors could lead to significant delays in the project approval processes. In the case of the CDM, project approval cycles today average 180 days, significantly longer than was anticipated.
Rejection of new REDD+ methodologies	u	If a future REDD+ regime utilises a similar approach to project-based methodologies as used in the CDM, JI and VCS, methodologies will need to be proposed, analysed and approved before being accepted for use. There is a risk that some methodologies will not be accepted or that the approval process will be very lengthy.
Changes in existing methodologies	u	Any changes in existing and previously approved methodologies can create significant problems for developers and investors. These types of projects have a long pre-operational phase, in between capital being deployed and projects being ready to use methodologies. Methodology changes have happened often in the CDM and in some cases, created problems for developers, particularly if such changes were retroactively applied.
Changes in approval process	u	Any change in regulations after the beginning of a process would create significant uncertainty, particularly if such changes were to apply retroactively.
Over conservativeness of approaches	u	In order to demonstrate moderation, verification companies and regulatory agencies may adopt very conservative approaches that could result in significant reductions in carbon credit generation from initial project assessments. The reductions in output, in turn, could negatively affect project returns and feasibility, but this would only known after the project is up and running.

Risks and Uncertainty factors	Type (r/u)	Description
Project implementation and performance		
Failure to register project activities	u	Projects may not be approved for participation in a future REDD+ regime if they do not comply with the yet to be finalised rules.
Failure to verify emission reductions	u	Projects may fail to demonstrate emission reductions to a level that verification companies are comfortable with.
Failure to secure finance for project or subsequent phases	r	Developers may fail to secure finance to implement projects, project components or project phases. This risk may be enhanced if the uncertainties related to the regulatory framework persist.
Non-performance, growth rates	r	Any project involving vegetation growth may encounter set backs related to growth rates being lower than expected.
Non-performance, implementation rates	r	Projects may fail to implement project activities according to the planned original schedule and time-line.
Lack of permanence	r	Projects remain exposed to risks of forest re-emissions for a variety of reasons, including fires, illegal logging, deforestation, etc.
Natural disasters	r	Fire and flooding, in particular, can cause significant damage to forests over the lifetime of a project.
Illegal logging	r	Large areas of forest remain exposed to illegal exploitation throughout the life of the project.
Breach of contract	r	Developers or service providers may renege on contractual terms if commercial conditions change in the future. Long term projects are particularly exposed to this risk, as market conditions for certain services, activities or even offset can change significantly over time.
Default of contractual obligations	r	Developers or service providers may default on contract obligations.
Technical issues related to carbon accounting		
Future revisions of baselines	u	Future reassessments of baselines can render a project activity 'non-additional' in the future, or reduce the amount of carbon credits that the project generates. This, in turn, can have very negative effects on project returns and feasibility. Furthermore, in some cases, the project activity itself helps to catalyse changes in the baseline that, in turn, penalise the project itself.
Compensation for leakage	u	Leakage can occur if emissions reduced in the project areas are deemed to have shifted to another area. It is possible to estimate, but not to entirely control, the amount of leakage that may occur as a consequence of the project. If a project has to compensate for a larger amount of leakage than originally estimated, it could negate any returns that the project would make and render it non-feasible.
Adjustment for measurement uncertainty	r	Measurement of project stocks and flows have inherent risks of uncertainty. If these must be deducted from the carbon gains using a too conservative approach, this could lead to significant reductions in project returns.

Appendix 5:
The Costa Rican system of direct payment for environmental services

In 1997, in anticipation of the UNFCCC Kyoto meeting and prior to the creation of the CDM, Costa Rica launched two complementary national level carbon sequestration programmes based on sustainable forest management and on forest conservation. In spite of Costa Rica's efforts and the support of other forested countries, the forestry activities included in these programmes were denied eligibility for participation in the CDM. As discussions on the role of forestry and forest conservation again gains momentum, it is appropriate that the pioneering and sophisticated aspects of the Costa Rican initiatives are analysed in the context of proposals for any future REDD+ regime.

The Costa Rican system involved two complementary programmes based on forest conservation and sustainable forest management. The objective of the Protected Areas Programme (PAP) was to reduce deforestation rates by consolidating the national parks network through the purchase of privately-owned land inside the parks. The programme aimed at consolidating 570,000 ha within 28 national parks and claiming the carbon savings derived from avoided deforestation, which historically averaged 3% per year. Costa Rica expected to avoid the release of about 18 million tonnes of carbon (66 m t CO_2) through the implementation of the PAP. These savings were independently verified by the international certification company SGS Forestry and carbon credits were issued accordingly.

Commercialisation of CO_2 reduction credits would be done through the system of Certified Tradable Offsets (CTOs) issued by the Costa Rican Office on Joint Implementation (OCIC - Executive Decree N. 25066 Minae, 1996). These CTOs were carbon credits based on the amount of CO_2 fixed in forests similar to the CERs that were subsequently created by the CDM, and were to be sold with the assistance of international carbon brokers. The first batch of CTOs (200,000 tons of carbon) was sold to a Norwegian consortium at US$ 10/tonne C (US$ 2.70/t CO_2), for a total of US$ 2 million. At a projected price of US$ 10 per tonne of carbon, Costa Rica expected to raise US$ 180 million through the Protected Areas Programme.

In order to complement the PAP, Costa Rica also worked on a second national level land use project, the Private Forestry Programme (PFP). The PFP encouraged land owners to opt for forestry-related land uses by providing direct payment for environmental services. Environmental services included CO_2 fixation, water quality, biodiversity, and landscape beauty. These monetary incentives aimed to increase the attractiveness of forestry compared to higher-impact forms of land use. Incentives were to be paid to land owners over a period of 5 years following the signing of a contract to keep their land under a specified type of utilisation for a minimum period of 20 years. Farmers who received these incentives assigned the rights to the environmental services of the government, who bundled them for potential sale. The resources for initiating the PFP programme were raised by a domestic 15 % tax on fossil fuels, which was expected to raise US$ 21 million per year. It was hoped that future payments to farmers would be based on the sales of resultant CTOs.

The value of PFP incentives varied. There were three main areas of interest: conservation of existing forests; selective harvesting for sustainable wood production; and reforestation or natural regeneration of degraded pasture or agricultural land. In the case of private forest conservation, farmers would receive a total of US$ 280/ha, through a series of annual

payments. They were also able to waive payment of land tax. Those opting for natural forest management would receive US$ 47/ha/year, up to a total of US$ 235/ha, in addition to the revenue derived from timber harvesting. In order to enforce compliance with low impact logging guidelines, the law required that any harvesting operation must be supervised by a trained forester. Farmers who chose to reforest part of their agricultural land would receive a series of payments related to the costs of plantation establishment, up to a total of US$ 558/ha. An additional benefit of the PFP is that it served as a leakage mitigation measure for the PAP. By providing an alternative set of incentives for those landowners that were displaced by the PAP, the PFP would prevent a significant increase in un-sustainable land use from the other programme.

The institution coordinating the administration of the incentives was called Fonafifo (Fondo Nacional de Financiamento Forestal - Forestry Financing Fund), an office created by the MINAE (Ministerio del Ambiente y Energia - Ministry of Energy and Environment). Fonafifo had the role of receiving and analysing applications, conducting field verifications, carrying out the payments and monitoring field implementation of forestry projects.

Beyond CTOs, Costa Rica also worked on ways to charge the economic sectors which most benefit from these services. One example is the creation of a system to charge hydroelectric plants for the conservation of their water catchments, at a rate of US$10/ha/year. A similar mechanism was being created for remunerating farmers in eco-tourism regions. In the case of biodiversity, genetic prospecting contracts were created between INBio (the Costa Rica institute of genetic resources) and international chemical companies. The first such contracts was signed with Merck, the large Swiss company, and stipulated that Merck pay Costa Rica 10% of the profits from any product derived from their forests.

In addition to these national programmes, Costa Rica also hosted independent private sector carbon forestry projects given the country's positive environment for investment in this type of activity. The combination of national level monitoring and the role that the PFP had in reducing potential leakage enhanced the effectiveness of these independent land use carbon projects.

The Costa Rican system of payment for environmental services provides a useful case study of how developing countries can engage in REDD+ in a well-planned and controlled manner. Many of the issues addressed by the project are currently back on the agenda with relation to REDD+ systems, such as national versus sub-national projects, integration of public and private-sector participants, leakage control, approaches for engagement of small holders, and mechanisms for the disbursement of financial resources. Furthermore, this programme also demonstrates how carbon finance can be channelled by developing countries into their national priorities. The programmes were entirely conceived by the Costa Rican government and, consequently, totally aligned with their sustainable development objectives. As international interest in REDD+ grows, this is a model that can be adapted to the circumstances of other developing countries.

Appendix 6:
Baseline-and-credit or stock based approaches

Most discussion about the crediting of avoided deforestation are based on the concept of setting up baselines against which credit is given for avoiding the previous projections of forest loss. Baseline-and-credit is the approach adopted by the current Flexible Mechanisms of the Kyoto Protocol (JI and CDM) and has been used by most voluntary projects since the early 1990s.

The advantages of baseline-and-credit approaches include:

- It is better focused on the threats which are attempting to be neutralized (i.e. GHG emissions in the case of CDM, forest loss through deforestation and forest degradation in the case of REDD);
- It is fully compatible with the approaches of JI, CDM and voluntary projects.

At the same time, concerns about the challenges related to baseline setting, determination of additionality, prevention of leakage, and the guarantee of permanence have been raised in the context of the baseline-and-credit approach. One of the reasons why all these technical issues are viewed as barriers is that the theoretical construct of a baseline is based on an activity that will never happen. By definition, a REDD+ baseline is based on the avoidance of a flow of greenhouse gases (GHGs) from forest carbon stocks to the atmosphere. Consequently, these can never be measured but, instead, must be inferred from theoretical or empirical assumptions. It is evident, therefore, that the use of a baseline-and-credit approach for the treatment of REDD+ will always be subject to a certain amount of uncertainty.

An alternate approach, which avoids the challenges of baselines and additionality, is based on providing a payment for all forest carbon stocks, irrespective of level of threat, for as long as they remain in place[12]. Payments are made on a frequent basis, based on the carbon stocks quantified through monitoring. If carbon stocks are seen to be lower in a subsequent monitoring period, payments are adjusted accordingly.

An advantage of the carbon stock maintenance concept is that it allows carbon storage to be treated as a service that can be stopped at any time, therefore requiring less long term

[12] See, for instance:
Moura Costa, P., 1996. Tropical Forestry Practices for Carbon Sequestration. In: Dipterocarp Forest Ecosystems – Towards Sustainable Management. A. Schulte and D. Schone (Eds). *World Scientific*, Singapore, pp 308-334,

Pedroni, L., and C. Streck 2007. Mobilizing public and private resources for the protection of tropical rainforests: The need to create incentives for immediate investments in the reduction of emissions from deforestation within the international climate change regime. CATIE and Climate Focus, 5 pp.,

Prior, S, C. Streck, and O'Sullivan, R., 2006. Incentivising avoided deforestation: A stock based methodology. Submission to the COP UNFCCC in response to the call for views on the issue of avoided deforestation issued at the 11th session of the COP. Submitted by the Centre for International Sustainable Development Law,

Strassburg, B., K. Turner, B. Fisher, R. Schaeffer, and A. Lovett, 2008. An empirically-derived mechanism of combined incentives to reduce emissions from deforestation. CSERGE Working Paper ECM 08-01, Centre for Social and Economic Research on the Global Environment, University of East Anglia, Norwich, UK,

Cattaneo, A. 2009. A stock-flow mechanism to reduce emissions from deforestation. Woods Hole Research Centre, unpublished manuscript, 8pp.

guarantees between the contracting parties. This is important as governments are often reluctant to adopt measures with indefinite consequences.

Advantages of using the carbon stock maintenance approach include:

- It does not require determination of additionality (i.e. the approach is based on rewarding for existing forests as opposed to avoiding forest loss);
- Consequently, it does not require baseline setting and the determination of credible threats, which are considered the main challenges in proving additionality;
- There is no risk of leakage, as payments are made for stock maintenance as opposed to preventing deforestation agents from operating inside the project area with the risk that they simply move outside the project boundaries;
- There is no requirement to ensure long term permanence of carbon stocks, as payments are made only for existing stocks on an *ex post* basis.

In addition, the use of this approach would also address some of the political and ethical concerns previously raised, for the following reasons:

- It is a positive approach, based on payment for the provision of environmental services, as opposed to halting negative environmental impacts. It remunerates countries for providing a public good (forests and environmental services) as opposed to rewarding them for a change in behaviour;
- It rewards countries with historically low deforestation rates, while also creating incentives for countries with high deforestation rates to reduce rates in order to maintain their carbon stocks;
- It removes perverse incentives associated with creating forest threats to inflate baselines;
- It encourages law enforcement as a means of safeguarding a national asset (forests and carbon stocks);
- As it does not require long term commitments to maintain forests, it does not infringe on sovereign rights to determine long term land use and development strategies. Furthermore, it does not create any liabilities associated with lengthy obligations;
- Given that it explicitly rewards good forest stewardship, it could clearly be structured in ways that have positive distributional effects for carbon finance generated.

An obvious question, though is why should forest carbon stocks be paid for and not other forms of carbon stocks (e.g. fossil fuel reserves). The answer to this question should be related to the wider values of forests related to the environment (i.e. the biodiversity and hydrological benefits of maintaining these carbon stocks), society (their importance to the livelihoods of many stakeholders), as well as climatic systems. With relation to the latter, unlike other sources of carbon stocks, the loss of forests creates additional impacts on global climate beyond the direct effect of GHG emissions. In particular, the impact of forests on evaporation and rainfall systems, albedo levels, and in the maintenance of their own sequestration capacity, all justify attributing a higher value for the maintenance of forests in

relation to other stocks of carbon. Furthermore, forests provide basic services and sustain the livelihood of 1.2 billion of the world's poorest.

At the same time, it is also necessary to find long-term solutions for reducing GHG emissions from forests and society as a whole. If compensation for forest carbon stock maintenance was used within a finite time horizon, this would create a window during which solutions for other sources of emissions would be tackled, while halting the irreversible process of forest loss.

In practice, a better solution would be to have a mix of both, through a hybrid system of stocks and flows. A modality of stock flow approach was proposed by A. Cataneo[13]. In his proposal, however, there is still the need to establish baselines, prove additionality, and deal with leakage and permanence. An alternative approach would be to treat payments based on the environmental value of stocks using the tonne-year approach (i.e., paying an yearly rent of approximately 1/50th of the value stored in forests[14]) but deducting emissions based on the actual volume emitted at that time. This differentiated treatment of storage and emissions would discourage deforestation while providing a simpler means to remunerate for carbon stocks.

In conceptual terms, stock based approaches are the basis for domestic (or even international) emission trading schemes based on REDD+. Forest 'owners' could receive emission allowances based on the amount of stocks that they hold. These allowances would be less than the emissions from average deforestation rate for the region, and can be transacted between parties that want to protect and those that need to deforest.

[13] Cattaneo, A., 2009. A stock-flow mechanism to reduce emissions from deforestation. Woods Hole Research Centre, unpublished manuscript, 8pp.

[14] See description of tonne year approach in Moura Costa, P. and C. Wilson, 2000. An equivalence factor between CO_2 avoided emissions and sequestration: Description and applications in forestry. *Mitigation and Adaptation Strategies for Global Change* 5: 51-60.

Appendix 7:
Glossary of terms related to climate change mitigation projects

Since the early 1990s, a variety of terms have been used to refer to different project-level climate change mitigation mechanisms and their outputs. The meanings of these terms have gradually changed. Below are some of the definitions that have been used. Most bear some relation to stipulations of the UN Framework Convention on Climate Change (UNFCCC) signed in 1992, whose provisions are fleshed out by the Kyoto Protocol, signed in December 1997.

MECHANISMS (1) --- EARLY PRE-KYOTO DEFINITIONS

Joint Implementation (JI) – The concept of joint implementation (JI) was introduced by Norway into pre-UNCED negotiations in 1991. This was reflected in Article 4.2(a) of the UNFCCC which gives Annex I countries (see below) the option of contributing to the Convention's objectives by implementing policies and measures jointly with other countries. The investing participants in these projects could presumably claim emission reduction 'credits' for the activities financed, and these credits could then be used to lower greenhouse gas related liabilities (e.g. carbon taxes, emission caps) in their home countries.

Activities Implemented Jointly (AIJ) – In the first Conference of the Parties (COP1) to the UNFCCC held in 1995 in Berlin, a Pilot Phase of Activities Implemented Jointly (AIJ) was created. During the AIJ Pilot Phase, projects were conducted with the objective of establishing protocols and experiences, but without allowing carbon credit transfer between developed and developing countries. The AIJ Pilot Phase was to be continued at least until the year 2000.

MECHANISMS (2) --- POST-KYOTO DEFINITIONS

The Kyoto Protocol of the UNFCCC created three instruments, collectively known as the 'flexible mechanisms', to facilitate accomplishment of the objectives of the Convention. A new terminology was adopted to refer to these mechanisms, as detailed below.

Joint Implementation (JI) – Set out in Article 6 of the Protocol, JI refers to climate change mitigation projects implemented between two Annex 1 countries (see below). JI allows for the creation, acquisition and transfer of "emission reduction units" or ERUs.

The Clean Development Mechanism (CDM) – The CDM was established by Article 12 of the Protocol and refers to climate change mitigation projects undertaken between Annex 1 countries and non-Annex 1 countries (see below). This new mechanism, whilst resembling JI, has important points of difference. In particular, project investments must contribute to the sustainable development of the non-Annex 1 host country, and must also be independently certified. This latter requirement gives rise to the term "certified emissions reductions", or CERs, which describe the output of CDM projects and which, under the terms of Article 12, can be banked from the year 2000, eight years before the first commitment period (2008-2012).

QUELRO (Quantified Emission Limitation and Reduction Obligations) trading – Article 17 of the Protocol allows for emissions-capped Annex B countries to transfer among themselves portions of their Assigned Amount Units (AAUs) of greenhouse gas emissions.

Under this mechanism, countries that emit less than they are allowed under the Protocol (their AAUs) can sell surplus allowances to those countries that have surpassed their AAUs. Such transfers do not necessarily have to be directly linked to emission reductions from specific projects.

EU ETS (European Union Emissions Trading Scheme (EU ETS) – The EU ETS is not a Kyoto mechanism but a domestic European scheme to help European parties meet their Kyoto targets. The EU ETS is a cap-and-trade system which allows participants from eligible countries to trade European Union Allowances. The EU ETS runs for eight years, from 2005 to 2007, and 2008 to 2012 to match the first Kyoto Commitment Period.

WHICH COUNTRIES IN WHICH MECHANISMS?

Annex 1 countries – These are the 36 industrialised countries and economies in transition listed in Annex 1 of the UNFCCC. Their responsibilities under the Convention are various, and include a non-binding commitment to reducing their greenhouse gas emissions to 1990 levels by the year 2000.

Annex B countries – These are the 39 emissions-capped industrialised countries and economies in transition listed in Annex B of the Kyoto Protocol. Legally-binding emission reduction obligations for Annex B countries range from an 8% decrease (e.g. EC) to a 10% increase (e.g. Iceland) on 1990 levels by the first commitment period of the Protocol, 2008 – 2012.

Annex 1 or Annex B? – In practice, Annex 1 of the Convention and Annex B of the Protocol are used almost interchangeably. However, strictly speaking, it is the Annex 1 countries that can invest in JI/CDM projects as well as host JI projects, and non-Annex 1 countries that can host CDM projects, even though it is the Annex B countries that have the emission reduction obligations under the Protocol. Note that Belarussia and Turkey are listed in Annex 1 but not Annex B; and that Croatia, Lichtenstein, Monaco and Slovenia are listed in Annex B but not Annex 1.

EMISSION REDUCTION 'UNITS'

Carbon offsets – Used in a variety of contexts, most commonly either to mean the output of carbon sequestration projects in the forestry sector, or more generally to refer to the output of any climate change mitigation project.

Carbon credits – As for carbon offsets, though with added connotations of (1) being used as 'credits' in companies' or countries' emission accounts to counter 'debits' (i.e. emissions), and (2) being tradable, or at least fungible with the emission permit trading system.

Emission Reduction Units (ERUs) – The technical term for the output of JI projects, as defined by the Kyoto Protocol. 1 ERU represents 1 tCO_2e emission reduction.

Certified Emission Reductions (CERs) – The technical term for the output of CDM projects, as defined by the Kyoto Protocol. 1 CER represents 1 tCO_2e emission reduction.

Assigned Amount Units (AAUs) – Are units issued by Parties to the Kyoto Protocol into their national registry up to their assigned amount, calculated by reference to their base year emissions and their quantified emission limitation and reduction commitment (expressed as a percentage).

Temporary certified emission reduction (tCER) – Defined in 5/CMP.1, Annex, paragraph 1 as a CER issued to project participants in an afforestation or reforestation project activity

under the CDM which, subject to the provisions of section K below, expires at the end of the commitment period following the one in which they are issued. tCERs therefore differ from long-term certified emission reductions (lCERs) in that tCERs expire at the end of the commitment period subsequent to the one in which they were issued, while lCERs expire at the end of the crediting period for the project.

Long-term certified emission reduction (lCERs) – A CER issued for an afforestation or reforestation project activity under the CDM which expires at the end of the crediting period of the afforestation or reforestation project activity under the CDM for which it was issued. lCERs therefore differ from temporary certified emission reductions (tCERs) in that lCERs expire at the end of the crediting period of the project, while tCERs expire at the end of the commitment period in which they were issued.

REDD Units – Carbon emission reduction units created by REDD activities.

Voluntary Emission Reductions or Verified Emissions Reductions (VERs) – Both refer to the emerging market for carbon credits outside the Kyoto Protocol compliance regime and represent 1 tCO_2e emission reduction.

EU Allowances (EUAs) – Are issued to installations which have a cap on their emissions under the EU Emissions Trading Scheme (EU ETS). An installation must hold and surrender EU allowances and/or project based carbon credits equal to its monitored carbon dioxide emissions by the annual EU ETS reconciliation date. EU allowances are also the main unit which will be traded in the EU ETS. One EU allowance = 1 t CO2e.

The mission of WWF is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by

- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- reducing pollution and wasteful consumption

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