ASSESSMENT OF EXISTING GLOBAL FINANCIAL INITIATIVES AND MONITORING ASPECTS OF CARBON SINKS IN FOREST ECOSYSTEMS – THE ISSUE OF REDD

Lisa Westholm, Sabine Henders, Madelene Ostwald and Eskil Mattsson

Focali Report

2009:01

focali.se
Forest, climate & livelihood research network

Focali - Forest, Climate and Livelihood research network - is a Swedish knowledge-based network aiming to ensure Sida and other Swedish authorities access to scientific knowledge in order to effectively use forestry measures to reach climate and poverty objectives. Focali also aims to increase the flow of relevant information between academia, government authorities, and civil society.

Focali is a part of the **Forest Initiative** which is a strategic partnership between Sida, the Swedish Forest Agency and the Swedish Forestry Association. Sida provides funding for Focali. Focali currently consists of representatives from **University of Gothenburg**: Departments of Earth Sciences, Human and Economic Geography, Plant and Environmental Sciences, Economics, School of Global Studies; **Chalmers:** Division of Physical Resource Theory; **Linköping University:** Centre for Climate Science and Policy Research; **Swedish University of Agricultural Sciences:** Department of Forest Ecology and Management, Swedbio. The Focali secretariat is placed at the Environmental Economics Unit at the **School of Business, Economics and Law**, University of Gothenburg.

This report is part of a series of publications within three themes that Focali is undertaking. Responsibility for its contents rests entirely with the author(s).

Theme I *"Assessment of existing global monitoring and financial instruments for carbon sinks in forest ecosystems."* – Theme leader Madelene Ostwald, Linköping University

Theme II *"Making REDD work for the poor"* - Theme leader: Robin Biddulph, University of Gothenburg

Theme III *"Climate assessed Sustainable Forest Management"* – Theme leader: Göran Wallin, University of Gothenburg

This publication is based on work from Theme I and can be quoted as: Westholm, L., Henders, S., Ostwald, M., and Mattsson, E. 2009. Assessment of existing global financial initiatives and monitoring aspects of carbon sinks in forest ecosystems – The issue of REDD, Focali Report No 2009:1. Forest, Climate and Livelihood Research Network, Sweden

More on Focali can be found on www.focali.se
Postal address:
Att. Focali
Environmental Economics Unit
School of Business, Economics and Law, University of Gothenburg
Box 640
405 30 Gothenburg, Sweden

ISBN: 978-91-86402-00-6

The **Forest Initiative** is a strategic partnership between **Sida**, **the Swedish Forest Agency** and **the Swedish Forestry Association**. The overall objective of the Initiative is poverty reduction through promotion of sustainable management and administration of forest resources within Swedish development cooperation. Sida is the main donor of the Forest Initiative, which is based on the belief that forests play an important role for poor people and can contribute to economic and social development as well as a better environment.

This document has been financed through the Forest Initiative and does not necessarily reflect the view of the three main partners of the Initiative. Responsibility for its contents rests entirely with the author(s).

The Forest Initiative Partnership

SKOGSSTYRELSEN
SWEDISH FOREST AGENCY

SKOGEN
THE SWEDISH FORESTRY ASSOCIATION

Sida

SUMMARY

The objective of this report is to explore the topic of carbon sinks in forest ecosystems, focusing on the issue of REDD. The report covers different angles: i) an overview of existing financial and methodological initiatives that currently invest in preparation and capacity building of potential REDD host countries, but also in REDD pilot projects, ii) the preparedness of potential host countries (Bolivia, Cameroon, Costa Rica and Sri Lanka) to establish baselines and implement a REDD system that contributes to sustainable development, and iii) the funding structure and channels of a major investor country (Norway). The focus of our analysis lies on two REDD-related issues; baseline establishment and sustainable development.

Initiatives: Seven main REDD initiatives are assessed that have the objective of feeding into the climate change negotiations. However, at the same time, many of them are awaiting the results of the negotiations in order to know what methodologies to use. This is also true for the UN-REDD and the WB FCPF, the most mature initiatives at present. The dual role of the pilot REDD initiatives demand on the one hand that they act quickly, but on the other hand prevents them from taking full action. The questions regarding methodologies are many and how they are resolved will ultimately be a matter of negotiation. Before the negotiations are concluded, the initiatives aim at taking a broad approach that allows them to prepare countries for REDD.

Our four case countries have been chosen to represent different characteristics that REDD countries may have and under which the outcome of REDD activities can be expected to differ. The countries have been analysed based on their readiness for REDD in terms of baseline preparation and sustainable development.

Readiness for baseline development: The readiness for establishing baseline scenarios has been assessed using several criteria: i) the availability of information and data sets, ii) the availability of national forest inventories, and iii) ongoing activities and developments with regards to REDD. There are countries that have remote sensing inventories of forest area available, such as Bolivia, Cameroon and Costa Rica, but few field inventories have been made. There are other countries such as Sri Lanka where forest inventories and data collection have not been a priority in the past, and where information is not readily available. The lack of field data is often due to remote and inaccessible forest areas in combination with limited financial and technical resources to conduct field missions. Furthermore, even for countries such as Costa Rica, which have conducted rather extensive forest inventories, estimations of biomass are usually not part of the inventory. This kind of

data is needed in order to reliably determine carbon stocks in different forest types. Large discrepancies due to a lack of accuracy in available data make comparative analyses problematic.

Readiness for sustainable development: For assessing the potential for monitoring and generating sustainable development benefits, a number of indicators were used: i) land tenure and property rights, ii) institutions for participation and stakeholder dialogue, iii) existing data and monitoring of indigenous peoples and forest dwellers' dependence on forests and iv) institutions for conserving/promoting and monitoring biodiversity and other ecosystem services provided by forests. The study shows that most countries still have a long way to go in strengthening institutions. Our case countries, like many other developing countries, lack fully defined property rights and institutions for enforcing them. The most positive example is Bolivia, where there is a law in place for recognising indigenous peoples' land rights and right to collective ownership. All four countries lack monitoring and disaggregated data of socio-economic factors for local communities. In terms of biodiversity, the ambitions are often larger than the available funds for conservation and monitoring.

Investor's perspective: Norway has dedicated large amounts of money to REDD in the coming years and has chosen to channel these investments through the budget of official development assistance (ODA). The different investment channels used by Norway, such as multilateral initiatives and bilateral agreements, have been analysed and assessed according to some key criteria. Whereas Norway uses all funding channels currently available, for an investor with access to smaller sums than USD 500 million a year, a more focused approach could be recommended.

Key messages:

From this study we can highlight the following **challenges**:

Initiatives

- Initiatives have dual roles feeding into the negotiations and relying on their outcome to proceed;
- Coordination; several nations host more than one initiative demanding resources and action in different areas, which calls for REDD coordination;
- Funds from the North have to be trustworthy, transparent and long-term; can this be ensured through ODA or investments for future carbon markets?

- Ongoing initiatives create an "A" team with nations becoming more ready for REDD; the question is what this means in terms of equal opportunities for countries currently not included in any of the initiatives. Will countries such as Sri Lanka ever be able to participate in a REDD scheme?

Host countries

- Few countries are ready for REDD in terms of data availability and capacity, even though some are more ready than others. How to help the others and which of them?
- Other development goals need to be secured and opportunity costs calculated; it is important that the use of ODA for REDD development does not diverge funds from other development objectives.

General issues in REDD design

- Climate integrity; i) ensure actual reductions of GHG in the atmosphere and ii) ensure that REDD is not used to continue or increase emissions in other sectors;
- Emissions displacement; How to avoid leakage to non-participating countries/regions or how to include all nations/regions to guarantee non-leakage - depending on design?
- Inclusion of nations with low historical deforestation rates to avoid emission displacement;
- Costs of REDD will rise with increasing demand for land-based resources i.e. bioenergy and food- what is the economic potential of REDD under these scenarios?

From this study we can highlight the following **potentials:**

- REDD is attracting investors, hence large sums of money are available for forest issues in the tropics;
- For investor nations with limited REDD budgets a more focused approach in terms of investment channels could be recommended than that practised by Norway;
- Early investments provide more opportunities, including valuable contacts and access to markets;
- REDD is a common issue for North and South in future international climate negotiations and could become a valuable negotiation item for non- Annex I countries;
- Tropical forest nations have a commodity that is in high demand
- Opportunities for support of tenure and land users' rights

- International focus on forest in general: Sustainable Forest Management with capacity building for inventories, institutions, remote sensing and knowledge

From this study we can give the following key messages to a potential investor:

The result from our assessment of Norway as an investor highlights an exceptionally large budget for REDD investment, including a wide range of initiatives and bilateral options., which concludes that:

- For investors such as aid agencies, with limited budgets, strategies with clear focus is proposed, hence the investment volume is crucial in shaping an investment.

- For the integrity of the foreign aid system, the international climate negotiations system and the REDD system itself we propose:

    - a very transparent description of money flows and intentions in the investments on REDD;

    - an assessment of using other channels than ODA.

- With the focus on REDD in relation to a system-oriented approach on land use calls for:

    - a greater attention to general SFM, which is of relevance also for countries not targeted as REDD host countries at present;

    - the necessity of building countries' forest inventory and monitoring abilities, which is an area where aid and support can contribute.

TABLE OF CONTENTS

SUMMARY **4**

TABLE OF CONTENTS **8**

1. BACKGROUND AND RATIONALE **11**

1.2 OBJECTIVES AND AIMS OF THE REPORT 13
1.3 REDD – CONTEXT AND CURRENT STATE OF DISCUSSIONS 16

2. FINANCIAL AND BASELINE INITIATIVES TARGETING REDD **18**

2.1 FINANCIAL INITIATIVES SUPPORTING REDD 18
2.1.1 UN-REDD *19*
2.1.2 WB Forest Carbon Partnership Facility (FCPF) *22*
2.1.3 WB Forest Investment Program (FIP) *24*
2.1.4 GEF Tropical Forest Account (TFA) *25*
2.1.5 The Congo Basin Forest Fund (CBFF) *25*
2.1.6 Fundo Amazônia, Amazon Fund *26*
2.1.7 Australia's International Forest Carbon Initiative (IFCI) *27*
2.1.8 Other initiatives *28*
2.2 BASELINE -METHODOLOGICAL INITIATIVES 30
2.2.1 Available methods for national estimations of forest carbon stocks *30*
2.2.2 FAO Global Forest Resources Assessment (FRA 2010) *31*
2.2.3 Global Observation for Forest and Land Cover Dynamics *32*
2.2.4 The Group on Earth Observations –"Forest Carbon Tracking" *33*
2.2.5 Capacity Development for Reducing Emissions from Deforestation and Forest Degradation (CD REDD) *33*
2.2.6 U.S. National Aeronautics and Space Administration (NASA) and U.S Geological Survey (USGS) *34*

3. CASE STUDIES – READINESS FOR REDD **35**

3.1 BASELINE SETTING AND READINESS FOR REDD 35
3.2 SUSTAINABLE DEVELOPMENT AND READINESS FOR REDD 37
3.1 BOLIVIA 38
3.1.1 Background *38*
3.1.2 Baseline data and readiness for REDD - What is available? *39*
3.1.3 What is currently being done? *40*
3.1.4 Challenges – What is needed? *42*
3.1.5 Readiness for establishing a REDD baseline *42*
3.1.6 Sustainable development and readiness for REDD *43*
3.2 CAMEROON 45
3.2.1 Background *45*
3.2.2 Baseline data and readiness for REDD - What is available? *46*
3.2.3 What is currently being done? *48*
3.2.4 Challenges – What is needed? *49*

3.2.5 Readiness for establishing a REDD baseline *50*
3.2.6 Sustainable development and readiness for REDD *50*
3.3 COSTA RICA 53
3.3.1 Background *53*
3.3.2 Baseline data and readiness for REDD -What is available? *54*
3.3.3 What is currently being done? *55*
3.3.4 Challenges - What is needed? *56*
3.3.5 Readiness to establish a REDD baseline *57*
3.3.6 Sustainable development and readiness for REDD *57*
3.4 SRI LANKA 59
3.4.1 Background *59*
3.4.2 Baseline data and readiness for REDD - What is available? *60*
3.4.3 What is currently being done? *61*
3.4.4 Challenges – What is needed? *61*
3.4.5 Readiness for establishing a REDD baseline *62*
3.4.6 Sustainable development and readiness for REDD *63*

4. CASE STUDY OF INVESTOR COUNTRY – THE CASE OF NORWAY 65

4.1 INTRODUCTION: NORWAY AND CLIMATE CHANGE 65
4.2 THE INTERNATIONAL CLIMATE AND FOREST INITIATIVE 68
4.2.1 Strategic investment criteria *68*
4.2.2 Structure of investment and partnerships *69*
4.2.3 Norway's motivation and choice of funding channels *72*
4.2.4 Funding sources *73*

5. ANALYSIS OF BASELINE AND SUSTAINABILITY 75

5.1 REDD DEMONSTRATION INITIATIVES 75
5.2 TECHNICAL READINESS FOR BASELINE ESTABLISHMENT 77
5.2.1 Baseline approaches of the initiatives *77*
5.2.2 Forest cover and deforestation in case countries *78*
5.2.3 Technical readiness of REDD host countries *79*
5.3 SUSTAINABLE DEVELOPMENT AND CO-BENEFITS 83
5.3.1 Initiatives' approach *83*
5.3.2 Host country readiness for sustainable development in a REDD context *84*
5.4 THE INVESTOR'S PERSPECTIVE 86
5.4.1 Investment channels *86*
5.4.2 Choice of activities *88*
5.4.3 Structure of investment *88*

6. KEY MESSAGES FOR POTENTIAL INVESTORS 89

ACRONYMS 90

GLOSSARY 93

REFERENCES 96

APPENDIX 1.....**105**

APPENDIX 2.....**106**

1. BACKGROUND AND RATIONALE

This report takes its starting point from the general climate policy debate and its relation to land use and forestry issues in developing countries. In addition, to a certain extent it touches upon the issue of emerging markets for carbon sinks in forest ecosystems and their income generating potential. The focus of both the climate policy debate on forestry and these markets is on tropical developing countries due to higher carbon content in above ground biomass and high rates of deforestation in tropical forest ecosystems, compared to temperate and boreal ecosystems (Watson et al., 2000).

In terms of international climate policy, the one single most important issue discussed at present is reducing emissions from deforestation and forest degradation (REDD) (see e.g. FCCC/SBSTA/2008). In essence, REDD implies compensating forest nations or owners for not cutting down carbon-rich forests; thus avoiding carbon dioxide (CO_2) emissions. The international community's interest in preparing developing countries for hosting REDD projects has been massive. Programs and facilities such as the World Bank Forest Carbon Partnership Facility (FCPF) and the UN-REDD programme fund have been created in order to generate flows of financial resources from industrial countries to tropical countries.

The issues that have been raised regarding terrestrial carbon sinks, and carbon markets are not new. They have been present in other arenas before the current REDD concept was born, and the discussion could be aided by taking a look at similar mechanisms and initiatives already in place. The market for voluntary emissions reductions (VERs) will be one area to learn from, in terms of how forest-based schemes such as REDD can work in practice. Several standards for certification, with specified methodologies, have been developed in the last years, since it became obvious that the market struggled with issues of credibility and double accounting of forestry projects. The objectives of standards such as the Climate, Community and Biodiversity Standards (CCBS), the Voluntary Carbon Standard (VCS) and the Plan Vivo are to standardise project design, implementation and monitoring to ensure environmental and social credibility in forest projects (Kollmuss et al., 2008). Apart from the voluntary market, experiences in the development of afforestation and deforestation (A/R) projects under the Clean Development Mechanism (CDM) can also hold lessons for a REDD mechanism, even though A/R CDM counts with only six registered projects (five of these registered in 2009) out of 1665 CDM projects (June 2009). However, the proposed national-scale approach of REDD poses new difficulties that may not have been present in earlier project-scale schemes.

The issues discussed related to forestry projects in general and REDD in particular, are:

- displacement of emissions, i.e. leakage;
- establishing reference scenarios as a starting point for measuring emission reductions over time, i.e. baseline setting;
- measuring, (monitoring), reporting and verifying (MRV, central in the Bali Action Plan) emissions and their levels over time;
- whether approaches should be national or sub-national or combined;
- whether a mechanism should be fund based or market based;
- capacity-building (Topic of Theme III of FOCALI 'Climate adapted Sustainable Forest Management');
- impact on poor people (Topic of Theme II of FOCALI 'Making REDD work for the poor').

From an investor's perspective all the above mentioned issues are associated with risk. For example, the more accurately a nation is able to define a baseline, the higher is an investor's willingness to pay. The group of forest nations is heterogeneous in terms of their capability of reducing these risks. While some countries might be well prepared for meeting the investor's or initiatives' demands for low risk and availability of quality data, other countries may have a harder time. Cooperation and development aid can assist in capacity building.

1.2 OBJECTIVES AND AIMS OF THE REPORT

The objective of this report is to explore the topic of carbon sinks in forest ecosystems from different angles, focusing on REDD. These different angles cover i) an overview of existing financial and methodological initiatives that invest in capacity building for potential future REDD host countries, and in REDD pilot projects, ii) the preparedness of selected host countries for establishing baselines and implement a REDD system that contributes to sustainable development, and iii) the analysis of a REDD investor's funding structure and channels.

The specific aims of this paper are:

- to describe ongoing financial mechanisms for REDD activities in forest ecosystems;
- to assess four potential REDD case nations with different characteristics;
- to present an investor nation case using Norway as an example;
- to discuss potentials and challenges of different REDD issues in terms of i) initiatives, ii) potential host countries and iii) investor perspectives;
- to highlight areas where international cooperation and aid can assist in capacity building within the forest sector.

The potential REDD countries assessed in this report are Bolivia, Cameroon, Costa Rica and Sri Lanka. They represent a geographical spread, have different track records in terms of deforestation and reforestation, have different capacities in terms of forest and natural resource management institutions, and some of them are targeted by the existing REDD initiatives. Some are countries that Sida will work with in the near future.

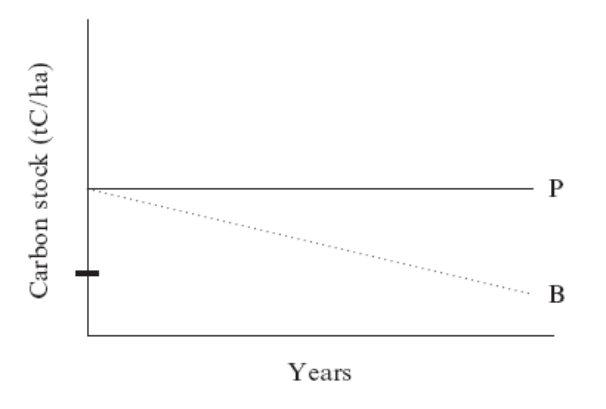
The assessments are based on data available through official sources and documents found at regular library and web sources. In addition, the authors' ongoing research on baseline and leakage has been incorporated.

While describing the funding and methodological initiatives currently under way in the field of REDD, the assessments conducted in this report mainly focus on two criteria. These criteria are baseline scenario and sustainable development, which have been chosen to reflect one technical aspect of the carbon sink issue and one qualitative aspect related to poverty alleviation in the developing world. Below, in Box 1 and 2, is the description of these concepts as they are used in this report.

BOX 1

Baseline is…

…a reference scenario or a time line that describes the behaviour, performance or quality under a Business-As-Usual scenario. In the figure below, a baseline for a degrading forest is the line B, representing a decrease carbon stock over time. The carbon stock has to be calculated over time and take into account issues of natural variability, human impact, frequency of measurements and extent over time.



Source: Ravindranath and Ostwald, 2008

In the case of REDD the carbon content of a specific forest area is the main parameter. When a project, mechanism or initiative aims to increase carbon stock or decrease/avoid the loss of carbon stock, estimates of the intervention have to be performed. These estimates are represented by line P in the figure, representing a balanced carbon stock. The area between the baseline (B) and the project (P) represents the additional carbon stored.

Setting a baseline is troublesome (Angelsen, 2008) due to the non-linear process of deforestation, shifting greatly from year to year (see e.g. Person and Azar, 2007). Furthermore, setting a baseline can be hampered by the lack of data on extent and status of forests in many developing countries because of dysfunctional or non-existing inventories and monitoring systems. There are many available methods for baseline development and will be described further under Section 2.2 Baseline/Methodological initiatives.

BOX 2

Sustainable development is…

…a wide concept that can be defined in many ways and include a range of aspects. One of the most famous and widely spread definitions was made by the so called Brundtland Report written by the Commission on Environment and Development in 1987. The report defined sustainable development as

"*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*"

Commission on Environment and Development, 1987

It further identifies two key concepts in this definition; needs, especially those of the world's poor, and the idea that the environment's ability to meet those needs is limited by constraints in the state of technology and social organisation. In our study we do not intend to capture the whole range of aspects of sustainable development. However, it is often discussed what impact carbon forestry projects in general and REDD in particular have, and could come to have, on sustainable development and poverty. We aim at getting an overview of how the different REDD initiatives work with these issues. Further, we want to analyse the preparedness of the countries in our case studies. For this purpose we will focus on the connection between REDD and the conventions of the Rio Declaration; the Convention on Biological Diversity (CBD) and the Convention on Combating Desertification (CCD) and to some extent on issues of local communities, forest dwellers and indigenous peoples. Poverty, local communities and indigenous peoples are more thoroughly treated in the FOCALI network study Theme II "Making REDD work for the poor". More on the application of sustainability is found in section 3.2 Sustainable development and readiness for REDD.

1.3 REDD – CONTEXT AND CURRENT STATE OF DISCUSSIONS

REDD discussions take place in the context of the UN negotiations of an international climate change mitigation regime beyond the Kyoto Protocol's first commitment period 2008-2012, as well as emerging regional mitigation regimes. The international political framework for REDD is still to be determined and a variety of options are being discussed. Although far from certain, it is likely that market-based mechanisms will play a role in future REDD regimes. At least it is widely agreed that approaches to REDD using carbon markets and crediting are likely to generate the largest financial flows (Ebeling et al., 2008). Several options are currently being discussed, among them whether accounting should take place at national or project level, or in a hybrid form, combining both levels. National-level accounting would entail the lowest risk of carbon leakage; yet, it is more dependent on good governance in host countries, and low levels of preparedness could lead to delays in the implementation of REDD (Angelsen et al., 2008). Moreover, private investment in governmental programs is unlikely to take place at a large scale. Direct participation of the private sector, e.g. through projects, is more likely to attract the required level of financial and human resources to REDD efforts (Pedroni, 2007). Project-level crediting, therefore, would probably attract more non-governmental and private sector actors and their expertise. However, project level crediting makes it harder to control within-country leakage, and thereby to ensure a national reduction in deforestation rates. It is unlikely that national level accounting alone would be efficient enough, especially in short and medium terms, to reduce levels of deforestation to a significant degree. It is equally unlikely that purely project-based accounting would achieve the goals, because it is difficult to control leakage and coordinate projects throughout a country without a centralized institution of control.

Therefore, an option could be a hybrid approach (Angelsen et al., 2008); the so called *nested approach* (first presented coherently by Pedroni et al., 2007). This nested approach proposes the coexistence of national and project level accounting, in a system where REDD credits are generated by projects and distributed by the governments; or, alternatively, allows countries to initiate REDD efforts through sub-national activities and gradually move towards a national approach. However, the nested approach presents the challenge of harmonization between the two levels. The nested approach involves national accounting as well as project-level accounting, which would require the standardisation of quality control and accounting.

The success of all of these approaches is based on sound determination of realistic emission reference levels in the future REDD host countries. In this field as well, several options are still being discussed, with the main arguments calling for the use of historical baselines for countries that have shown high deforestation rates in the past. This is argued by low deforestation countries which might experience high pressure on their forests in the future and would not be eligible to participate in REDD under historical baseline approaches. Another claim made on a future REDD scheme is the fair sharing of benefits, to avoid that the money paid by the international community for forest conservation is lost in corrupt state systems rather than reaching the forest stewards that realise the conservation activities on the ground. A topic very high on the agendas in this context is the participation and recognition of rights of indigenous peoples. For this reason, REDD host countries not only need to be able to provide reference baselines that are based on sound information and ground measurements, but they also need to have procedures in place for recognition and benefit sharing of REDD revenues between the government and the actors on the ground. Currently, the topics of reference level determination and the participation and involvement of indigenous groups in REDD are two topics that receive most of the attention. As they are crucial issues that will need to be addressed in some way by the UN decisions, this report focuses on the analyses of host countries according to these two main features: availability of baseline information, and procedures to ensure sustainability.

2. FINANCIAL AND BASELINE INITIATIVES TARGETING REDD

2.1 FINANCIAL INITIATIVES SUPPORTING REDD

In the Bali Action Plan (UNFCCC, 2007), adopted at the 13th Conference of the Parties (COP13) in Bali, 2007, Parties are encouraged to "*explore a range of actions, identify and undertake efforts, including demonstration activities*" so as to address the drivers of deforestation and reduce emissions. Since the meeting, a number of proposals have been presented regarding how to create incentives and mobilise resources for REDD activities. Several pilot projects and initiatives have also been launched with the aim of developing methods for REDD. For an overview of donors, initiatives and tropical forest countries involved see Appendix 1.

The objective of this chapter is to assess some of the existing initiatives supporting the work around baseline/reference scenarios and sustainable development. Of the initiatives launched, a majority is still in a phase of development and the practical experiences made and lessons learned are limited. The two major global schemes; the UN-REDD and the World Bank Forest Carbon Partnership Facility (FCPF), aim at gaining valuable experiences that can feed into the work to include forest activities in a post-Kyoto agreement. The World Bank and the Global Environment Facility (GEF) have also launched additional initiatives, which are to complement already existing ones. The Congo Basin Forest Fund and the Amazon Fund are recently launched initiatives whose purposes are to achieve reductions of deforestation rates in a limited geographical area and they do not aim as directly at feeding into coming agreements. In addition to these, there are several bilateral initiatives around the world as well as private schemes initiated by Non-Governmental Organisations (NGOs) or business actors. This study does not contain a comprehensive assessment of all of them. Rather, it focuses on a few initiatives that may come to play an important role in negotiations of future climate change agreements and that can provide experiences to draw on for future REDD schemes. A full list of initiatives included in our study and their approach to baseline and sustainable development is found in Appendix 2.

2.1.1 UN-REDD

The UN-REDD Programme is a collaborative effort of the FAO, UNDP and UNEP. It aims at steering REDD funding towards sustainable forest management (SFM) in order to achieve economic and social benefits as well as climate benefits and reduced emissions. Furthermore, it has the immediate goal of assessing the potential for creating a mechanism that ensures "*actual, lasting, achievable, reliable and measurable emission reductions while maintaining and improving the other ecosystem services forests provide*" (UNDP, 2009).

The UN-REDD was established to support the efforts and dialogue on the inclusion of REDD provisions in a post-2012 climate regime. It is one of several initiatives aimed at developing methodologies for, and at incentivising discussion on REDD. Therefore, close cooperation with other REDD initiatives will be essential for avoiding overlaps and drawing from each other's experiences and expertise to ensure efficient use of time and resources (FAO, UNDP & UNEP, 2008). Cooperation has already been initiated with the World Bank FCPF and GEF Tropical Forest Account.

The programme will have two components. One is to assist developing countries in preparing and implementing REDD strategies and the other is to support the development of normative solutions and standardised approaches for a UNFCCC REDD instrument. Governments will determine the scope of activities and the roles of participating organizations. UN Country teams will then support national actions led by host governments according to guidelines already established for UN Joint Programmes. UN-REDD aims at ensuring "*full national ownership of the process*" (Holmgren, 2008).

Nine countries have been selected to pilot the UN-REDD Programme. The countries are Bolivia, Democratic Republic of Congo (DR Congo), Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Vietnam and Zambia (UN-REDD, 2009c). The initial 18 months phase will be funded by the only donor so far; Norway, who has deposited 12 million USD and has committed to deposit a total of roughly 52 million USD (UNDP, 2009). While additional contributions are welcome, no more funds have been solicited by the UN agencies for this initial phase. In May of 2009, 25 million USD were approved in support of pilot programs in five countries (DR Congo, Indonesia, Papua New Guinea, Tanzania, and Vietnam) and one international support function. The initial phase will run until March 2010. Although this is less than a year away the practical implementation of the Programme is yet to be realised. At a side event to the COP14 in Poznan Kaveh Zahedi from the UN-REDD Programme/UNEP stated that there is no end date for preparing countries for REDD (UN, 2008).

The areas for support will depend on the needs of individual countries but potential areas have been identified as follows (FAO, UNDP & UNEP 2008):

1. Scoping and alliance building;
2. ***REDD Readiness for Monitoring and Assessment;***
3. ***REDD Dialogue;***
4. ***National REDD strategy;***
5. Support for implementing the REDD measures;
6. REDD Data Management;
7. REDD Payment Structuring;
8. ***REDD Payment Distribution.***

For the focus areas of this study; i.e. baseline scenario and sustainable development, the most relevant areas are the second, third, fourth, and eighth.

Baseline and monitoring

Readiness support (point 2 above) may be provided to the extent that it does not overlap with support from other initiatives, such as FCPF and Australian International Forest Carbon Initiative (IFCI). Following guidance from the UNFCCC, the UN-REDD can assist in establishing baseline scenarios based on historic emissions and/or future models and building up systems and capacity for monitoring, reporting and assessment (FAO, UNDP & UNEP, 2008). How a baseline scenario is defined will ultimately be a matter of negotiation. The indicative guidance from the COP13 asks that the reference scenario should be based on historical emissions and national circumstances, but it has not been further detailed how this shall be done (UN-REDD, 2009a). In the meanwhile, before a methodology has been decided, the UN-REDD will collect as much and as neutral information as possible regarding historic emissions (Peter Holmgren, FAO, 2009-02-18 pers. communication). Time series based on satellite images will be one of the main tools. For this purpose the FAO will further develop a remote sensing method used in the 2010 Global Forest Resources Assessment (see section 2.2) that uses systematic samples for studying changes in land use over time. Through statistical analysis, deforestation (and afforestation) rates can be traced. Forest degradation, however, cannot be traced with this method.

Sustainable development

The UN-REDD Programme stresses that REDD activities have the potential to create co-benefits for the many people dependent on forests for their livelihood (FAO, UNDP & UNEP, 2008). However, it is also recognised that there may be a trade-off between REDD benefits and social, economic and other environmental benefits. Institutional capacity-building for

governance and participatory processes are means that will be used for mitigating this risk and promote a sustainable REDD implementation. For this purpose, the UN-REDD will support a REDD Dialogue (point 3 above) which brings stakeholders together. Furthermore, the formulation of a national REDD strategy (point 4 above) which is integrated into the existing planning processes for national development is meant to ensure that REDD benefits are not achieved at the expense of e.g. poverty reduction or job creation. Finally, a crucial factor for a project's potential for generating sustainable development and benefits for poor people is the distribution of payments (point 8 above). Promoting strong democratic processes in local institutions and demanding transparent audit procedures as well as placing other conditions on payments will be strategies for avoiding elite capture of payments. The UN-REDD Programme aims at testing various distribution mechanisms and at drawing on experiences of UN organisations from pro-poor performance-oriented transfers (FAO, UNDP & UNEP, 2008). These experiences include a number of performance-based grant systems aimed at promoting positive change in local governance. Options could include bundled payment mechanisms and incentives, pro-poor co-benefit indicators for REDD interventions and a REDD policy index, assessing the targeting efficiency of REDD programmes. During the first half of 2009 the UN-REDD Programme aims at conducting studies on options for monitoring and reporting co-benefits and at developing methods and tools for monitoring (UN-REDD, 2009b).

The UN-REDD sees strong political commitment on the national side as crucial for the success of its activities. Another important factor is transparency in reporting systems, which will be essential for when emission reductions are to be sold. Peter Holmgren, director of the Environment, Climate Change and Bioenergy Division at FAO and responsible for the work with UN-REDD identifies five key considerations that will have to be addressed by the UN-REDD (2008):

- Basic accounting parameters, e.g. how to include forest degradation;
- Lack of knowledge regarding the economic potential for REDD credits and how this will be affected by the accuracy in accounting;
- Keeping technological and methodological options open with respect to accuracy, periodicity and other aspects that determine the level of investments needed;
- Implementation of REDD may lead to unknown requirements for monitoring and reporting at the local level;
- The need for monitoring of co-benefits and their role within the system are still unknown.

2.1.2 WB Forest Carbon Partnership Facility (FCPF)

The World Bank Forest Carbon Partnership Facility (FCPF) was designed to create incentives for REDD by providing funding for sustainable forest use. It aims at building the capacity of developing countries with tropical forests to join in REDD efforts, as well as at testing a system for providing an incentive per ton of reduced CO_2 emissions through Emission Reductions Programs in a number of pilot countries (World Bank, 2009a). The FCPF will scale up experiences gained on a project level by the WB BioCarbon Fund to a national level. Ultimately, it aims at gaining experiences and lessons learned that can serve for the development of a larger scheme on REDD compensation and at feeding into a coming agreement on REDD under the UNFCCC. Just as the UN-REDD, the FCPF has been launched but is not fully operational yet. 37 countries[1] have been selected to participate in the Facility as of June 2009 (World Bank, 2009a).

The FCPF will operate through two mechanisms; the Readiness Mechanism and the Carbon Finance Mechanism. The two mechanisms are funded by two separate trust funds. There are ten donor participants[2] (all governments) in the Readiness Fund. So far, the donors have promised to contribute 169 million USD (World Bank, 2008b), of which Norway has contributed 40 million USD (Norway, 2009). The targeted volume of the facility is approximately 300 million USD (World Bank, 2009a).

The Readiness Mechanism will work to facilitate for developing countries estimating their forest carbon stocks and emission sources as well as defining a baseline/reference scenario and calculating opportunity costs of REDD interventions. This is called Readiness for REDD. The core elements of Readiness, as defined in the FCPF Informational Memorandum (World Bank, 2008a), are:

- Reference scenario;
- REDD strategy;
- Monitoring system.

[1] Argentina, Bolivia, Cambodia, Cameroon, 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, Republic of Congo, Suriname, Tanzania, Thailand, Uganda, Vanuatu, Vietnam

[2] Australia, Finland, France, Germany, Japan, Netherlands, Norway, Spain, UK, USA

The countries that participate in the mechanism submit Readiness Plans (R-Plans) where they lay out and organise the steps needed to achieve readiness. The first step towards achieving readiness in terms of establishing a baseline includes assessing historical emissions, identifying drivers of deforestation and identifying different options for reference scenarios. The second step; adoption, comprises conducting consultations on possible reference scenarios and the publishing the selected scenarios.

Baseline and monitoring

The national government should lead the work with setting a reference scenario, with limited technical and financial support from the FCPF, but closely cooperating with scientific institutions (World Bank, 2008a). Once a reference scenario has been established, through data analysis and in consultation with experts and stakeholders, it will be adopted and published. The reference scenario should be credible, taking into account recent historical emissions and a credible assessment of future emissions. Although the IPCC Good Practice Guidance (IPCC, 2003) and guidance from the UNFCCC should be the basis for the analysis, the FCPF may test different methodologies and models depending on country preferences and priorities.

Sustainable development

The REDD strategy to reduce emissions below the established baseline will be based on an analysis of the causes of deforestation and forest degradation and should be developed in consultation with all relevant stakeholders. In addition to identifying cost-efficient and socially acceptable options for emission reduction and potential improvements of land tenure and governance structures and forest law enforcement, the strategy will define responsibilities and regulation and distribution of future revenues from REDD. A high degree of consultation with concerned parties such as indigenous peoples' organisations and civil society is meant to be an important feature of the mechanism. However, the primary focus of the mechanism is REDD and it does not intend to comprehend all forest-related issues or provide a solution to a wider rural-development agenda (World Bank, 2008a). Rather, it will build on existing country activities supporting sustainable land use and forest management. Finally, readiness implies designing and implementing a basic system for monitoring and verifying REDD. This requires building capacity and training national institutions as well as reviewing and adapting forest data for REDD purposes.

Based on the reference scenarios developed under the Readiness Mechanism and their monitoring capacity, a few countries will be selected as pilots for the Carbon Finance Mechanism where they will be compensated for emission reductions according to systems

discussed in the UNFCCC process. In the selection of countries reference will be given to those that present innovative approaches to reducing deforestation rates and forest degradation as well as to monitoring and reporting (IPCC, 2003). Payments are intended to provide incentives for stakeholders within recipient countries, such as indigenous peoples, forest dwellers and private sector to achieve long-term sustainability in REDD projects. While national governments are central in all agreements negotiated, these local stakeholders are expected to take part in activities as well as receive a share of revenues.

2.1.3 WB Forest Investment Program (FIP)

Another global initiative is the Forest Investment Program (FIP), a program under the World Bank Strategic Climate Fund that aims to pilot investments that lead to significant reductions in deforestation and forest degradation and to demonstrate new approaches to sustainable forest management that lead to reduced emissions. The FIP shall demonstrate what can be achieved through scaling up resources and activities so as to achieve change at a national level. The FIP will have four specific objectives (World Bank, 2009b):

1. To finance large scale investments in the implementation of policies and measures identified in national multi-stakeholder REDD planning processes;
2. To promote transformational change by providing large scale international funding that supports processes of change towards conservation and sustainable use of forests resulting in significant emission reductions;
3. To ensure outcomes and effectiveness of interventions by applying rigorous impact assessments;
4. To pilot models that can feed into the UNFCCC negotiations on REDD concerning how to leverage additional and sustained financial resources from the public and private sector.

The FIP aims at complementing other environmental agreements and processes such as the Convention on Biological Diversity and the Convention to Combat Desertification. It should safeguard high conservation value forests and not support the conversion or degradation of these. The FIP will coordinate its efforts with existing initiatives such as the FCPF and the UN-REDD. Inclusion of relevant stakeholders, such as indigenous peoples, private sector and NGOs will be part of the FIP strategy. A special initiative to promote indigenous peoples participation is also being proposed. Funding a few projects with the potential of achieving major transformational impact will be prioritised over investing in many projects with

limited impact potential. Norway has pledged 50 million USD in funding to the program and Australia has promised 7 million USD (Climate Funds Update, 2009).

Monitoring will be the responsibility of the Multilateral Development Banks that will report to the FIP Sub-Committee. According to the program it is meant to be results based, promoting measurable outcomes with regards to REDD, livelihoods, climate resilience and other forest benefits (World Bank, 2009b). However, the key performance criteria should address emission reductions achieved and emissions avoided.

2.1.4 GEF Tropical Forest Account (TFA)

At the Bali meeting in December of 2007, the future launch of a GEF Tropical Forest Account was announced. The facility will fund projects in 17 countries[3] in the target regions the Congo Basin, the Amazon and New Guinea and Borneo. The focus will lie on conserving large intact tropical forests in order to achieve low cost proactive action (GEF, 2009). The Tropical Forest Account was also designed as a SFM mechanism. A number of projects, in Brazil and the Congo Basin, have been granted funding but none have started implementation so far.

2.1.5 The Congo Basin Forest Fund (CBFF)

The CBFF is an initiative to protect the forests of the Congo Basin that hosts about one fifth of the World's closed canopy tropical forests. The fund is a multi-donor trust fund managed by the African Development Bank. It "*invites proposals for transformative and innovative initiatives from the governments and civil society and private sector of the Congo Basin to slow the rate of deforestation, through developing the capacity of the people and institutions in the countries of the Congo Basin to manage their forest*" (CBFF, 2008). The fund was set up to complement existing initiatives in the Congo Basin and operates in close collaboration with other actors that are active in the region, particularly COMIFAC (Commission for the Forests of Central Africa). Project proposals may be submitted by governments, NGOs, civil

[3] Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela, Cameroon, Central African Republic, Democratic Republic of Congo, Republic of Congo, Equatorial Guinea, Gabon, Indonesia, Papua New Guinea

society organisations, and other technical partners in the COMIFAC region[4]. The proposals will be judged according to criteria of innovation, conformity with CBFF's overall objectives and conformity with the COMIFAC convergence plan. It has been decided that the CBFF shall focus on three of the strategic areas of the convergence plan, namely; knowledge of the resource, poverty reduction and new funding mechanisms. The framework document also mentions gender sensitivity as an important criterion (AfDB, 2008).

Initially, the Fund is financed by the Norwegian and British governments who have contributed a total of 70 million USD each. The purpose of the fund is to serve a global public good and therefore all technical and financial partners, especially the G8 countries, are invited to contribute (AfDB, 2008). A first call for proposals was made in June of 2008. Of the 188 proposals submitted, 94 met the criteria. A new call for proposals will be made in the 3rd quarter of 2009. So far, six projects (in Cameroon, Central African Republic, DR Congo, Republic of Congo and Gabon) have been approved and are to receive funding (CBFF, 2009). The project activities range from stabilising carbon emissions through sustainable financing and improved livelihoods, to phasing out slash-and-burn farming, promoting community land tenure rights, quantification of carbon stocks and emissions, and strengthening the capacity of NGOs in order to ensure participation in REDD policies.

2.1.6 Fundo Amazônia, Amazon Fund

The Amazon Fund was created by the Brazilian president Lula in August 2008. It was established to invest in measures to prevent, monitor and combat deforestation as well as in promotion of conservation and sustainable forest management in the Amazon. The identified areas of investment are (Brazil, 2008):

- Management of public forests and protected areas;
- Environmental control, monitoring and supervision;
- Sustainable forest management;
- Economic activities based on sustainable forest use;
- Ecological and economical zoning, territorial regularisation;
- Conservation and sustainable use of biodiversity;
- Reforestation.

[4] Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Equatorial Guinea, Gabon, Rep. of Congo, Rwanda, Sao Tomé and Principe

Additionally, the fund aims at supporting and developing systems for monitoring of deforestation in other biomes in Brazil and other tropical countries.

The Fund is expected to mobilize 21 billion USD from domestic and foreign sources before 2021. Initially, it will count with 1 billion USD for the first eight years of activities, a sum that has been donated by the Norwegian government (BNDES, 2008). Projects proposals can be presented by local governments, NGOs or companies and will be revised, approved and monitored by the Brazilian Development Bank (BNDES). Donors will receive certificates recognising their contribution to the Fund. Apart from the name of the donor and the amount contributed these documents will contain information regarding the equivalent value in tonnes of carbon (Brazil, 2008). However, the certificates will be nominal, non-transferable and are not to be counted as carbon credits, i.e. they cannot be sold on the global carbon markets. In order to issue certificates, the Ministry of Environment will define a sequestration limit on an annual basis, based on two criteria:

1. Effective reduction of emissions from deforestation as certified by the technical committee of the Fund;
2. Value equivalent to the contribution, per ton of emissions reduced, expressed in Brazilian Reais per ton of carbon.

The technical committee will be composed of well-renowned scientists appointed by the Ministry of Environment. The Fund will also count with an Orienting Committee, composed by representatives from the federal government and concerned ministries, the governing bank, NGOs, indigenous peoples' organizations, agricultural workers, industry, the national forum for forest activities and scientific communities. The main task of the Orienting Committee will be to establish directives and criteria for the application of resources of the Fund (Brazil, 2008).

2.1.7 Australia's International Forest Carbon Initiative (IFCI)

The IFCI is Australia's effort to meet the agreements met in Bali at COP13 on establishing mechanisms for action to reduce emissions from deforestation and forest degradation. The initiative aims to "*demonstrate that reducing emissions from deforestation and forest degradation can be part of an equitable and effective international agreement on climate change*" and to develop practical demonstration activities, mainly in Indonesia and Papua New Guinea (Australia, 2008a). Through the initiative Australia hopes to:

- Increase international forest carbon monitoring and accounting capacity by assisting developing countries (Indonesia and Papua New Guinea) in developing systems for monitoring and accounting based on Australia's National Carbon Accounting System;
- Undertake practical demonstration activities to show how reducing emissions from deforestation can be included in a future international climate change framework: a number of approaches to REDD will be tried out and countries will receive assistance in developing SFM, governance, law enforcement and regulatory frameworks;
- Support international efforts to develop market-based approaches to address deforestation and take a lead role in international climate change negotiations cooperating closely with the World Bank FCPF.

Australia proposes to use national baselines based on recent historic emissions and national circumstances, alternatively the lowest level of deforestation and forest degradation that a country would like to achieve compared to business as usual or negotiated baselines (Australia, 2008b). The country also sees the possibility of a hybrid approach. The initiative aims at showing how REDD can achieve emission reductions while providing forest-dependent communities with livelihoods and promoting sustainable resource management (Australia, 2008a).

2.1.8 Other initiatives

Apart from the initiatives mentioned above there are a number of organisations, mechanisms and funds working to reduce deforestation and promote mitigation and adaptation activities in forests through market-based mechanisms or improved governance and law enforcement. The GEF has two funds aimed at supporting adaptation activities, including forestry, in developing countries; the Special Climate Change Fund and the Least Developed Countries Fund. The International Tropical Timber Organisation has been promised 3.5 million USD by Norway to a program on Reducing Deforestation and Forest Degradation and Enhancing Environmental Services in Tropical Forests (ITTO, 2008b). This is part of the organisation's work to meet its expert group meeting recommendation to "*develop guidelines for climate change mitigation and adaptation options in tropical forests and for accounting for carbon in forest management plans and ITTO projects*" (ITTO, 2008a).

The European Union has proposed a Global Forest Carbon Mechanism including performance-based financial support, based on the principle of common but differentiated

responsibilities, to be included in a post-Kyoto agreement (EU, 2008a). This should eventually lead to the inclusion of deforestation in carbon markets. In 2003 the European Union has also established an initiative called FLEGT – Forest Law Enforcement, Governance and Trade, aimed at strengthening forest governance in order to reduce illegal logging and deforestation in Central Africa, Russia, Tropical South America and Southeast Asia. Through FLEGT, the EU enters into bilateral Voluntary Partnership Agreements with the targeted countries which allows for control of imported timber in order to ensure that is has been legally logged. With ensuring the legality of forest operations as a vital first step, FLEGT ultimately aims at encouraging SFM (EU, 2008b). The FLEGT initiative is however being carried out completely independent from current discussions on REDD in the context of carbon markets.

2.2 BASELINE -METHODOLOGICAL INITIATIVES

In many developing countries there is a lack of reliable country-level data on forest areas and related carbon stocks, emissions and trends due to non-existent inventories and poor monitoring systems. The capacity to acquire and analyze forest data needed to assess REDD is often also limited. Establishing baselines or reference scenarios is to a large extent a technical issue, but it has profound implications for the environmental integrity, cost efficiency and distribution of REDD funds (Angelsen et al., 2009; Killeen et al., 2007). This section highlights some of the methodological initiatives to prepare developing countries for the improved forest monitoring needed for a future REDD scheme. Most of the initiatives mentioned earlier (e.g. UN REDD and WB FCPF) address methodological needs, but the initiatives below have been developed to focus exclusively on fostering methodological and technical readiness.

2.2.1 Available methods for national estimations of forest carbon stocks

Various options exist to estimate forest carbon stocks in developing countries and they will most likely improve in response to the outcomes of the UNFCCC negotiations. IPCC Tier 1 estimates (simplest methodology using globally-available data) of national level forest carbon stocks can be used by countries and policy-makers to provide rough approximations for estimating a nation's carbon stocks and setting baselines and estimate leakage and additionality.

Virtually all current global estimates of emissions from tropical deforestation are based on a small number of biome-average datasets where a single representative value of forest carbon per unit area (e.g. tonnes of C per ha) is applied to broad forest categories or biomes. This type of general approach lacks significantly in accuracy. Nonetheless, these biome average results provide an important starting point for a country to assess the relative magnitude of their emissions from deforestation and degradation using an IPCC Tier 1 approach (Gibbs et al., 2007).

Each country should use professional knowledge based on financial, time and capacity restrictions in deciding whether to use higher Tier methods. In many countries it could currently be more reasonable to rely on ground-based inventories rather than remotely sensed data to estimate forest carbon stocks since labour costs are often low compared to

installing and managing high technological remote-sensing equipment and expertise. Nevertheless, satellite-based estimates of forest carbon stocks will be more accessible over the next years when technical capacities are strengthened and long remote sensing archives (such as Landsat) become freely available. Assembling additional ground-based data through appropriate sampling design that accounts for both forest type and condition will be necessary to enhance accuracy regardless of method. It will be a critical next step for increasing the understanding of carbon stocks and fluxes in tropical forests (Ravindranath and Ostwald, 2008).

2.2.2 FAO Global Forest Resources Assessment (FRA 2010)

The FAO has been carrying out periodic Global Forest Resources Assessments (FRAs) for over 60 years. This has been the most important global data source with country specific forest data. For some countries, FAO data is based on a few national sources, inadequate sampling and inconsistent methods, with relatively high uncertainties as a result (Gibbs et al., 2007). The FRA 2005 only provides monitored data for 1990 and 2000 while data for the year 2005 is extrapolated (Anke et al., 2008). The FRA 2010 will include a new and comprehensive global remote sensing survey that will complement the national reporting.

With satellite data from 1975, 1990, 2000 and 2005, forest cover will be surveyed world-wide at about 13 500 plots, providing a sampling intensity of 1% of the global land cover. This assessment will generate unprecedented information on global forest change. Insight into land uses that are replacing forests will be acquired and changes in biomes that transcend national boundaries identified. Moreover, the understanding of the global contributions of forests to greenhouse gas emissions and reductions will be improved (Holmgren et al., 2007).

The FRA 2010 survey aims at the following key outcomes (FAO, 2009a):

- Baseline information such as trends in deforestation rates, afforestation and natural expansion of forests on a global and regional level over the past 30 years;
- A commonly agreed methodology and framework for monitoring forest change;
- Provision of free access to remote sensing imagery;
- Improved capacity in all countries for monitoring, assessing and reporting on forests and land use changes.

One of the objectives is to help countries report on land use and land-use change to the UNFCCC and the Kyoto Protocol, with the remote sensing survey providing a common measurement baseline. The system of data collection and analysis used in the survey can help many countries establish an environmental monitoring system. The survey design can also be linked to a more rigorous national reporting system or help countries build more comprehensive forest inventory systems needed for REDD.

2.2.3 Global Observation for Forest and Land Cover Dynamics

Global Observation for Forest and Land Cover Dynamics (GOFC-GOLD) is a coordinated international effort of the scientific community, space agencies, and the users of earth observation data and data products to develop and assess methods, tools and products for land cover measurements and monitoring, using space-borne and in-situ observations.

Based on the need to develop methodologies and tools for estimating emissions from deforestation with a satisfactory level of certainty, focusing on scientific, technical and methodological issues relevant in the REDD context, GOFC-GOLD established an ad hoc working group in 2005. The working group developed the REDD Sourcebook, providing technical guidance on national forest monitoring and carbon accounting. The sourcebook provides additional explanations, clarifications, and methodologies to support early action on REDD and mechanisms for building national REDD monitoring systems (GOFC-GOLD, 2008). Within this framework, countries can start to develop a national monitoring system and establish a historical deforestation reference scenario using Landsat satellite data. The sourcebook provides guidance how to develop reference emission scenarios and design a system for monitoring and estimating CO_2 emissions from deforestation and forest degradation at the national scale.

The aim is to provide transparent methods and procedures that are designed to produce accurate estimates of changes in forest area and carbon stocks and CO_2 emissions from deforestation and degradation, in a user-friendly format. The sourcebook is meant to complement the Good Practice Guidance on Land-Use Land-Use Change and Forestry (IPCC, 2003) and the Guidelines for National Greenhouse Gas Inventories (IPCC-AFOLU, 2006) by providing additional explanations, clarifications and enhanced methodologies for obtaining and analyzing key data. The first draft of the sourcebook was presented during a side-event at COP13 in Bali. The second version was presented at SBSTA 30 in June 2009. Further methods and technical details are to be specified and added in line with the ongoing negotiations and coming decisions.

2.2.4 The Group on Earth Observations –"Forest Carbon Tracking"

The Group on Earth Observations (GEO) coordinates efforts to build a Global Earth Observation System of Systems, or GEOSS (GEO, 2009a). GEO was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the members of the G8. It is a voluntary partnership of governments and international organizations. It provides a framework for members to develop new projects and coordinate their strategies and investments. GEO's members include 77 governments, the European Commission, and 56 intergovernmental, international, and regional organizations.

Despite past efforts, there is still a lack of international, acceptable, consistent and accurate data on global forest change and related carbon stocks. Drawing upon these concerns, a GEO sub-Task on 'Forest Carbon Tracking' was established to demonstrate that coordinated Earth Observations can provide the basis for reliable, consistent, accurate and continuous information services to support Forest Carbon Tracking (GEO, 2009b). Through accessible and planned GEO efforts in forest monitoring and associated modelling the task provides timely of observations required for global routine use. In close collaboration with national governments, space agencies, and relevant technical experts, the task will establish robust methodologies, satellite acquisition plans and a series of regional pilot studies, in order to provide a template for a consistent and reliable global carbon monitoring system.

2.2.5 Capacity Development for Reducing Emissions from Deforestation and Forest Degradation (CD REDD)

The Capacity Development initiative for REDD (CD REDD) is carried out by the Coalition for Rainforest Nations with the support of the GTZ (German Technical Cooperation Agency), the German Ministry of Environment, the World Bank FCPF, the GEF, the Brazilian Space Research Agency, the Indian Forest Service and GOFC-GOLD (see section 2.2.3). The main intention of this capacity development action is to prepare developing countries for assessing carbon emissions and removals from forest land through methodologies recognized by the IPCC Good Practice Guidance (IPCC, 2003). The results are meant to be demonstrable, transparent, verifiable, and consistently estimated over time.

Global workshops and training courses at the international level are the core of the initiative and these will be organized on topics of common interest and provide the opportunity for information sharing among countries. CD REDD is open to all potential REDD countries and at least two persons from each country have been financially supported to attend all workshops. Experts from national institutions in charge of preparing 'National Communications', as required by the UNFCCC, have also been invited. The workshops are intended to be an important step in terms of diplomacy and the implementation process on deforestation and climate change (CD REDD, 2008).

2.2.6 U.S. National Aeronautics and Space Administration (NASA) and U.S Geological Survey (USGS)

NASA's Land-cover and Land-Use Change (LCLUC) program uses remote sensing to monitor global land cover change and improve understanding of human relations with the environment. It provides a scientific foundation for assessing the sustainability, vulnerability and resilience of land use systems. NASA LCLUC is also involved in a joint initiative with the US Geological Survey (USGS), called the Global Land Survey (GLS). GLS will provide freely available global time-series of moderate resolution satellite data, pre-processed to be directly comparable between dates, in order to facilitate access to the data required to estimate forest and land cover change. This type of data is useful for monitoring forest change, but it is expensive for users working in tropical forest countries. NASA and USGS are currently generating a data set for 2005, which will complement previous global data sets. The intention for the 2010 data set is to develop it into an international initiative within the framework of the Group on Earth Observations (GEO), by including data from various international satellites with comparable resolution.

USGS also releases satellite data at no cost. By the end of 2008 the entire archive of data collected from the Landsat series, as far back as 1972, and current daily new acquisitions were made available with free access. This release is to make land observation data available to a global science community for monitoring land surface changes over a multi-decade period (UNFCCC, 2009a).

3. CASE STUDIES – READINESS FOR REDD

The countries chosen for our case studies are Bolivia, Cameroon, Costa Rica and Sri Lanka. The case studies are intended to highlight the barriers hampering the REDD process in potential REDD nations. The countries represent a geographical spread, have different track records in terms of deforestation and reforestation and have different capacity in terms of forest and natural resource management institutions. Some of them are targeted for the World Bank Forest Carbon Partnership Facility (FCPF) and the UN-REDD processes, and/or are countries that Sida will work with in the near future. The countries have been assessed according to their readiness to actively participate in a future REDD scheme. The study includes analysis of how far they are able to a) establish a deforestation and degradation reference scenario (technical readiness) and b) provide a sustainability framework in terms of stakeholder involvement and environmental sustainability in addition to climate factors.

3.1 BASELINE SETTING AND READINESS FOR REDD

In the following chapter, the availability of forest data is analyzed for the four countries in order to achieve an overview of their preparedness to establish a historical (and/or future) reference scenario of emissions from deforestation and forest degradation. The assessment focuses on the availability of inventory data, both on the ground and through satellite analysis of forest area, deforestation rates, degradation activities, as well as biomass and carbon stocks. In addition, an attempt is made to determine quality and reliability of existing data, and to identify information gaps and challenges. An overview of ongoing REDD activities to help the countries to improve their databases and to prepare for the formulation of a baseline is given, and finally, the country's readiness for establishing a baseline scenario is assessed.

Information sources used for these assessments were mainly the countries' national communications to the UNFCCC, the Readiness PINs they submitted to the World Bank FCPF, and a range of dedicated scientific studies. An overview of the countries and forest related data is presented in Table 1.

Table 1: Available information on forest cover monitoring.

Country	Population (CIA, 2009)	Population density (based on data from CIA, 2009)	Forest area (FAO, 2008) km^2	Forest cover % (FAO 2008)	Forest cover %*	Gross deforestation* ha/yr
Bolivia	9 775 246	9/km^2	587400	53.5	46.8 - 51.4	150000 (2000)
Cameroon	18 879 301	40/km^2	212450	44.5 - 44.7	47.4 (1975)	153700
Costa Rica	4 253 877	83/km^2	23910	46.8	37.1	16450 (1996)
Sri Lanka	21 324 791	325/km^2	19330	29.5 - 30.9	24	54000 (1984-1994)

**Source: Each country's National Communication to the UNFCCC.*

Generally, it is hard to find accurate data, even on supposedly 'simple' information such as forest area. Figures vary, between, but also within sources. For example, it is not uncommon for a country's National Communication report to the UNFCCC to give ambiguous information. Even the FAO data contains discrepancies. The access to accurate data is crucial for defining baseline scenarios and producing this type of data will be a main priority if REDD is to be implemented on a large scale.

3.2 SUSTAINABLE DEVELOPMENT AND READINESS FOR REDD

Sustainable development is a wide concept that includes social, economic and environmental factors (see Box 2). Forests and forestry have the potential to link these issues, and contribute to economic and social development while also contributing to the objectives of the UN Rio Conventions; the Convention to Combat Desertification (CCD), the Convention on Biodiversity (CBD) and the Framework Convention on Climate Change (UNFCCC). However, this link is not automatic. Rather, linking forestry with sustainable development requires planning, policy framework and strong institutions. The voice of indigenous peoples has been relatively strong in the REDD discussions. Biodiversity has been given a less prominent role, but it is none the less important. Ultimately, the effectiveness of both participation and biodiversity provisions in REDD-schemes are yet to be observed and they will require preparation and political will on international as well as at national and a local level.

Predicting a country's preparedness and possibilities for implementing a sustainable REDD scheme is complicated and requires in-depth knowledge of a number of institutional, political, environmental and economic factors. For the scope of this study we will use a number of indicators in order to make a first assessment of our four cases' readiness for REDD in terms of sustainable development. These indicators give us an image of their previous activities in the field of sustainable development and of what relevant institutions are already in place. The indicators are:

- Land tenure and property rights;
- Institutions for participation and stakeholder dialogue regarding forest policy or other;
- Existing data and monitoring of indigenous peoples and forest dwellers' dependence on forest and forest and land use;
- Institutions for (and previous experiences from) conserving/promoting and monitoring biodiversity and other ecosystem services provided by forests.

3.1 BOLIVIA

3.1.1 Background

Bolivia has a forest area of approximately 587 000 km^2, covering just over 50% of the country's land surface (FAO, 2008). The deforestation rate is about 150,000 ha per year, or 0.26%.

Historical deforestation

Historically, the mid 1980s, Bolivia's deforestation rate was only moderate, with colonisation programs as the main driver of deforestation. These programs aimed at stimulating domestic food production and led to a medium-scale expansion of small-holder farming in the lowlands. However, with a limited demand for import substitution goods and trade barriers, the growth of commercial farming, and hence deforestation remained limited. In the mid-1980s the import substitution model was substituted with structural adjustment policies (Pacheco, 2006), which aimed at increasing exports. This led to a rapid expansion of agricultural frontiers, to a large extent driven by soybean production. After a slow down in the late 1990s this expansion picked up pace again in the early 2000s. In the past years there has also been an increase in cattle ranching. These events caused a steep increase in deforestation rates. The transformation of forests for agricultural purposes has been strongly concentrated to the department of Santa Cruz, but new development points have emerged in the departments of Beni, Pando, the north of La Paz and the area of the Chaco (Bolivia, 2000).

Apart from economic policies, land tenure structures have had an effect on deforestation in Bolivia. A process of regularisation of land rights has led to a decline in public land and an increased competition for land rights. In addition, the titling process has provided incentives to deforest in order for current landholders to solidify their claims (Pacheco, 2006). The land titling process aims at regularising ownership rights, especially in reference to indigenous peoples. In 1996 a new forest law was passed that democratised forestry and forest ownership by promoting communal participation and tenure (de Jong et al., 2006). It was part of a process of fiscal and political decentralisation of land issues. Among other things, the law regulates forest concessions, management plans and land use and creates incentives for restoration of degraded lands (Bolivia, 2000).

Current deforestation

According to Bolivia's National Communication to the UNFCCC, land use change and forestry are the main sources of greenhouse gas emissions, by far a much larger emitter than the energy sector, which is the second largest source (Bolivia, 2000). In addition to the advance of the agricultural frontier, slash and burn practices of migrants and colonists, forest fires, infrastructure development and, to a marginal extent, mining are identified as the main direct causes of deforestation (Bolivia, 2008b). Underlying causes are low land prices, weaknesses in governance in forest and agricultural sectors, impacts of climate change in the Andean zone and finally, timber harvesting which leads to additional colonisation and deforestation. Further, forest law enforcement deals with issues of lack of resources, deficient institutions for land titling, lack of coordination in land use planning and inefficient sharing of institutional responsibilities.

Reforestation measures have not been able to decrease the level of deforestation. Rather, it has been increasing since the 1980s. In the National Communication, submitted in 2000, hope was put to the Clean Development Mechanism (CDM) for providing support for technological change in the land use sector. Just recently (June 2009) Bolivia's first afforestation and deforestation CDM project was approved. Other options identified for mitigation are strengthening the protection and surveillance mechanisms in protected areas and changing management practices towards a sustainable forest management (Bolivia, 2000).

Sida has an agreement of cooperation with Bolivia, and Sweden intends to pursue long-term development cooperation in the country (Sida, 2009). Bolivia is one of the countries who proposed REDD in 2005 - they have been working towards it for several years. Both technically and politically they are among the most advanced potential REDD countries, currently actively participating in REDD negotiations as well as preparing a national monitoring system. The country's application to the WB FCPF included a list of explicit activities they require financial and technical support for. Bolivia has also been chosen to participate in the UN-REDD Programme and the GEF Tropical Forest Account. For the UN-REDD Programme Bolivia is one of the quick start pilot countries and will be part of the first phase of project implementation.

3.1.2 Baseline data and readiness for REDD - What is available?

Bolivia has not conducted a national forest inventory yet, i.e. ground-level data at national scale is not available. Inventory data can only be found in the management plans of individual logging concessions, which have to do inventories every five years (Seifert Grantzin, 2009). In addition, there is a network of over 500 biomass sample plots covering a total of 1 000 ha in different eco regions, which are operated by several research institutes. Derived from these biomass plots, in combination with destructive sampling, a range of locally applicable, species-specific allometric equations are available for Bolivia. These are partly provided by the Noel Kempff Mercado Project, and partly by the Bolivian Institute for Forest Research (Bolivia, 2008b).

First estimates of emissions from the LULUCF sector have been done in Bolivia's GHG inventory for the national communication to the UNFCCC in 2000. Deforestation data is available for some protected areas and indigenous territories; however it is neither complete nor consistent (Bolivia, 2008a). There is no set of field data available for the national territory of Bolivia (Seifert Grantzin 2009).

Several state offices and the Noel Kempff Mercado National History Museum (MHNKM) monitor land use change in specific areas with the help of satellite images. For example, the Forests Superintendent monitors deforestation in real time with twice weekly data from a MODIS sensor since 2005. This system has been designed to track illegal interventions, not to detect area change. However, it generates the relevant input to guide ground-truthing and validation efforts as well as prosecution and penalization of illegal activities, and is thus a key measure to effectively reduce deforestation (Bolivia, 2008a). Further, the MHNKM, supported by Conservation International Bolivia, are processing satellite images to update the 2005-forward data base. Combining the different available bands and annual coverage, land use images are available at national scale for the years 1975 to 2007 (Landsat TM, Landsat ETM, MODIS). Recently, images have also been collected for the detection of degradation starting from year 2005 (Landsat, Aster, Spot). However, they are currently limited to three pilot regions and the methodology is still being tested (Bolivia, 2008a).

3.1.3 What is currently being done?

Bolivia is quite advanced when it comes to monitoring land use change and degradation with satellite images; however the observations derived from analyzing these images need to be complemented with field data. Bolivia plans to use the existing database of satellite images and ongoing monitoring activities as a starting point for a future REDD monitoring system (Bolivia 2008).

The main mission underway at present is the assessment of historical emissions from deforestation and/or forest degradation, and projections into the future in order to establish a deforestation reference scenario. In this context, Bolivia is receiving technical and financial support from a number of donors such as the Netherlands, the German Development cooperation, the German Financial Cooperation, the European Space Agency, and Conservation International. Activities focus on a broad range of sectors, from field data collection and development of a satellite monitoring system, to economic studies on opportunity costs, and indigenous coordination strategies and training workshops.

So far it has not been possible to establish a comprehensive biomass inventory covering all the Bolivian forests. The Government is currently preparing a national biomass inventory system in conjunction with different scientific institutions in the country. Some pilot activities are already underway in combining remote sensing and biomass measurements that inform a REDD national emission accounting system (Bolivia, 2008a). Satellite images from 1990, 2000 and 2004 have been analyzed by the Noel Kempff project (MHNKM). This was followed by a homogenization process of the temporal cover of GeoCover 1990 and the data from 2004-2005, processed by MHNKM. Currently, negotiations are underway for funding of the processing of land use change detection between 2000 and 2005, also to be conducted by MHNKM.

With the support of German and Dutch development cooperation, and national technical entities, in coordination with the Climate Change Office, a project is investigating the feasibility of detecting and quantifying the impacts of degradation in three pilot sites applying the methodology developed by Souza et al. (2005). The first results indicate that it is feasible to detect the pattern of the degradation in the Amazon forest and in the transitional forest. Additionally, Bolivia and Cameroon are counterparts in a project aimed at producing forest mask and mapping related land use change. In addition, first attempts at designing and implementing a sampling system for collection of field data for degradation in Bolivia are well underway. The definition of the national reference emission scenario will build on these efforts, implementing an annual high resolution deforestation monitoring combining annual wall-to-wall and area frame sampling schemes.

In addition to these technical efforts to establish a reference scenario, the Bolivian government works at the economic and policy levels, through conducting studies on opportunity costs of land use and economic scenarios for development. These technical studies will analyze opportunity costs for land use and land use change, scenarios for economic development and associated deforestation rates, as well as regional and local

deforestation trends. A series of technical-scientific workshops at expert level are supported by Conservation International Bolivia.

3.1.4 Challenges – What is needed?

Although Bolivia is quite well equipped technologically, there are several challenges to the formulation of a baseline and the eventual establishments of a functional REDD monitoring system (Bolivia, 2008a). Among these are:

- **Data and information challenges**
  - Lack of understanding of the drivers of deforestation, especially macroeconomic and microeconomic factors (commodity and input prices, agricultural operating costs, etc);
  - Urgently needed field data to ground-truth estimates and observations derived from satellite images;
  - Large discrepancies between sources, e.g. data contained in the FAO forest database differs greatly from information cited in Bolivia's national communication to the UNFCCC, and to information in the FCPF R-PIN, due to variations in methods and sample sizes.
- **Technical challenges**
  - Frequent cloud cover and haze makes it difficult to get conducive satellite images and alternative technologies are costly;
  - Lack of access to state of the art technology for monitoring forest degradation.
- **Institutional challenges**
  - Weak real-time monitoring and prosecution capacities;
  - Diverging land claims due to the lack of a transparent, nationwide cadastre;
  - Inefficient coordination between local, regional and national level land use planning, due to the fact that different institutions share responsibilities on forestry and agricultural law enforcement.

3.1.5 Readiness for establishing a REDD baseline

Considering the processes currently underway in Bolivia, chances are high that a national deforestation baseline can be determined in future. According to the information collected, Bolivia seems to be in control of the process and aware of institutional shortcomings and information gaps. Together with a variety of donors, the country is actively working towards the establishment of a baseline, a process in which they are quite advanced. The FCPF Readiness PIN (Bolivia, 2008a) outlines a clear picture of the planned future REDD system and its functioning.

3.1.6 Sustainable development and readiness for REDD

In the mid-1990s Bolivia started a process of land titling and regularisation. This process has been delayed and there are still many conflicts over land to be solved. For example, only about 50% of indigenous lands have been legalised as native communal lands (Bolivia 2008b). This means that there is no accurate and comprehensive cadastral information available for indigenous lands, but even less so for the expansions and small-scale logging of smallholders. This is likely to have an impact on REDD initiatives implemented in the country. Also, while communities and peasants are granted extensive rights on paper, there are many problems with implementation of laws and lack of coordination between responsible government agencies and local authorities (de Jong et al., 2006). In addition to this, there is a lack of resources and capacity within communities which makes it difficult for them to manage lands and forests. When assistance is not available from the National Forest Authority or regional NGOs, communities therefore often sign contracts with timber processing companies in order to cover costs for forest inventories and preparation of forest management plans. This means that the power over forest management is still to a large extent in the hands of the economic elite (de Jong et al., 2006).

Bolivia has about 35 indigenous peoples (CIDOB, 2007). REDD activities mainly affect the peoples of the Bolivian lowlands which are represented by the CIDOB (Confederación de Pueblos Indígenas de Bolivia), but they also affect peasants, of which the majority are represented by Peasant Unions, and forest dweller associations (ASLs), which are less well organised (Bolivia, 2008b). The Bolivian government aims at involving social grassroot organisations and indigenous peoples' organisations in consultations on the development of new strategies and policies. This has been an important strategy, especially since the change of government in 2005. A coordination mechanism is currently being developed for further enhancing the participation of the five organisations that organise the country's indigenous peoples. Bolivia emphasises the need to involve stakeholders, especially indigenous peoples, in REDD programs and operating within the United Nations

Declaration on the Rights of Indigenous Peoples (UNDRIP) (Bolivia, 2008a). Stakeholders from these indigenous organisations as well as other actors in the forestry sector were consulted in the elaboration of a national position on REDD (Bolivia, 2008b). According to the R-PIN these consultations will continue to be an important part of the design and implementation of REDD strategies. Capacity building efforts are also being planned in order to improve the participation of indigenous peoples and forest dwellers in the Readiness process.

The Bolivian National Institute of Statistics, together with other entities, monitors socio-economic indicators on a national and departmental level (Bolivia, 2008b). In cooperation with the UNDP they have also developed indicators for the impact of public policies on a municipal level. The Climate Action Project Noel Kempff Mercado has developed a methodology for monitoring socio-economic impacts of its activities. Existing monitoring schemes would have to be adapted, developed and integrated in order to create more comprehensive data for application to REDD activities. Biodiversity conservation is currently being monitored at various levels and this monitoring could be further strengthened by the implementation of a REDD scheme (Bolivia, 2008b).

3.2 CAMEROON

3.2.1 Background

Cameroon is a tropical country in Central Africa and part of the Congo Basin. It contains the largest piece of rainforest on the African continent and the second largest area of contiguous moist tropical forest of the world (Joint Research Centre, 2006). The country has a forest area of approximately 212 000 km^2, covering around 45% of the country's land surface (FAO, 2008). The deforestation rate is 153 700 ha per year, or 0.72%, according to the National communication, although latest assessments have yielded much lower rates (see below).

Historical deforestation

Cameroon's economy boomed between the late 1970s until 1985 when it experienced a deep economic crisis (Mertens et al., 2000). The crisis led to a shift from cash crops to food crops, which increased the demand for land and led to increased deforestation (Bellassen and Gitz, 2008). In an attempt to decrease their vulnerability to fluctuations in prices and other macroeconomic changes, many people also diversified their cultivations, which further contributed to the increased demand for land (Mertens et al., 2000). Additionally, as the country impoverished, many people moved from the cities back to rainforested areas (Bellassen and Gitz, 2008). In 1989 a structural adjustment program was implemented, which also affected land use and population movements. The share of forest products in exports increased from 4% in 1984-1985 to 15% in 1992-1993, thereby assuming second place, after petroleum, in the national exports account (Cameroon, 2005).

A new phase for forest policy was entered in the mid-1990s. The new forest policy aims at achieving the protection of national forests, involvement of local communities in forest conservation and management, forest management for increased contribution of forests to GDP and at ensuring renewal of forest resources for reforestation and sustainable production (Cameroon, 2005). A new Forestry Law was approved in 1994. It aimed at an ecologically respectful and a socially responsible sustainable forest management. In 1996 a framework law on the management of the environment was adopted which dictated that an environmental impact assessment must be submitted prior the implementation of any economic activity (Cameroon, 2008). In 1999 the Forest and Environmental Sector Programme was adopted, leading to the implementation of a policy for the sustainable and participative management of forest and wildlife resources. The programme also aimed at

making 20% of the national territory protected areas, implementing SFM in all forest management units and at developing participatory management. Community forests were established, which are managed by local communities that get temporary usufruct rights over a forest area after the submission and approval of a management plan. The law gives the local community management rights for 25 years.

Current deforestation

Nowadays, despite the intentions to protect and conserve forests, a number of direct and indirect factors cause significant deforestation in the country. Population growth and shifting cultivation are generally assumed to be the main drivers of deforestation (Mertens et al., 2000). Economic changes have had profound impacts on population movements and land use. Also, the development of agricultural activities, illegal exploitation of timber, exploitation of fuel wood, industrial exploitation, development of the mining sector, development of infrastructure and forest fires are important drivers of deforestation (Cameroon, 2008).

Cameroon is in the process of entering into a Voluntary Partnership Agreement with the EU as part of the FLEGT initiative to combat illegal logging (ITTO, 2007). Cameroon has also been chosen to participate in the Congo Basin Forest Fund, the World Bank FCPF and the GEF Tropical Forest Account. Of the six CBFF projects that had received funding in mid-May of 2009, five were to take place in Cameroon. These five projects include a project for stabilising carbon emissions in the Sangha Tri-National forest complex (straddling Cameroon, Republic of Congo and Central African Republic) through sustainable financing and improved livelihoods; a project for cooperation with regional NGOs in Cameroon, Central African Republic, Gabon, Republic of Congo and DR Congo; a project for quantifying carbon stocks and emissions in the forests of Cameroon and the Republic of Congo; a project seeking to promote reforestation of degraded areas and value-addition for Non-Timber Forest Products in the South West Province of Cameroon; and a project aimed at strengthening the capacity of NGOs in Cameroon, Central African Republic, Republic of Congo, DR Congo and Gabon so as to ensure community participation in the REDD process (CBFF, 2009).

3.2.2 Baseline data and readiness for REDD - What is available?

In collaboration with the Canadian Development Agency four out of seven phases of a national forest inventory have been realised (in 1982, 1983, 1984-85 and 1990), covering about 50% of the country's territory (FAO, 2007). More recently, Cameroon was one of 15 countries participating in FAO's National Forest Monitoring and Assessment, receiving support for a national assessment of status, trends, uses and benefits of its forest resources. In the course of this initiative, Cameroon implemented a national forest inventory of forest cover and land use in collaboration with the FAO (FAO, 2007). The inventory also includes socio-economic data. The report presents estimations of forest in terms of cover and land use, forest types, ecological zones as well as management and ownership structures. It also includes estimations of volume, by forest type and forest use and estimations of biomass and carbon stocks.

In addition to this data source, a number of specific inventories for planning and development purposes have been realized, mainly for forest concessions. Together, these inventories give an overview of the forest situation in Cameroon, although with focus on the southern parts of the country (tropical forests of the Congo Basin), whereas the northern parts are less known and studied.

At national scale, the Global Forest Watch Initiative is the only forest monitoring programme currently underway in Cameroon (Cameroon, 2008). The initiative is a regional level project for the monitoring of forest exploitation throughout the country based on the use of remote sensing and GIS. It results from a partnership agreement between the Ministry of Forestry (MINFOF) and the World Resource Institute. The initiative has led to the elaboration of an exhaustive database and cartographic coverage of forestry activities, which also serves as a reference tool for the MINFOF in the monitoring and control of forest interventions. Actualization of exploitation zones and concession attributes are carried out on a regular basis, and an interactive forestry atlas is produced every two years (Cameroon, 2008).

In addition to this, several small scale remote sensing operations have been developed by the FAO and the Observatory for Central African Forests (OFAC). OFAC also represents the Central Africa's regional GOFC-GOLD (see section 2.2.3) network, trying to improve the quality and availability of satellite images of forest and land cover in the Congo Basin, and to produce useful information on the same (OFAC, 2009).

The EU funded project FORAF is carried out by the Joint Research Center and its partners, which have delivered the first detailed estimates of deforestation in the Congo Basin based on a fine sampling of satellite images from 1990 and 2000. FORAF has enabled the

production of the first homogenous cartographic cover of deforestation and forest degradation in the Congo Basin countries.

Based on the inventory field data and the satellite interpretations of 1990 and 2000, a few preliminary estimates of deforestation rates are available for Cameroon and the Congo Basin. For Cameroon these estimates are based on different methodologies and periods; however they all show historic deforestation and degradation rates inferior to 1% (Cameroon, 2008). OFAC estimates net deforestation to be 0.19% (gross deforestation 0.28%) or an annual loss of 37 000 ha for Cameroon. Net measured forest degradation is 0.02%. The Forestry Resource evaluation programme realised by the FAO (FAO, 2005), proposes a deforestation rate of 0.9% over the 1990-2000 period and 1% from 2000 to 2005. Forest degradation was not taken into consideration in the 2005 FRA programme.

Although these rates are preliminary estimates, yielded from the first monitoring and observation efforts, they show that deforestation and forest degradation rates in Cameroon are relatively low in comparison with those of other countries in the inter-tropical zone (Latin America, Asia). Yet they are superior to those of neighbouring Congo Basin countries (Cameroon, 2008), and as the FAO estimates show, they are increasing over the years.

3.2.3 What is currently being done?

Although Cameroon has some good starting points in terms of field data and forest inventories, detailed information on biomass and carbon stocks is not available. The German Technical Cooperation Agency (GTZ) collaborates with the Central African Forest Commission (COMIFAC) in the development of a range of REDD tools for Cameroon. One component of this project foresees the development of a national biomass and GHG emissions inventory for the forestry sector in collaboration with MINFOF, Global Forest Watch and WWF. The project seeks to develop technical recommendations on the establishment of a national biomass inventory and monitoring system in line with IPCC guidelines. In addition, a national biomass map for 2005 will be produced.

Closely related to this project is an initiative funded by the Congo Basin Forest Fund, which aims to quantify forest carbon emissions from forest loss and degradation in Cameroon and the Republic of Congo, using IPCC guidelines for accounting. Activities include an update of forest cover change from 2005-2010 and will add missing years going back to the 1990s (CBFF, 2009).

In 2007 GTZ together with COMIFAC initiated a pilot project with the objective of establishing valid scientific projections of potential carbon biomass loss within the REDD framework in Bolivia and Cameroon. This project will produce a map of the forestry zone and an analysis of the changes in forest cover over the period 1990, 2000 and 2005 based on the analysis of satellite images. The Cameroon study provides a framework for implementing similar projects in the Congo Basin region. Among other activities implemented so far are the development and testing of methods for monitoring deforestation and degradation using national coverage satellite data and the modification and implementation of a method for monitoring forest degradation in a pilot area in the South-east of Cameroon (Gomez, 2009). National results for Cameroon are intended to be available at the end of 2009, before the UNFCCC conference in Copenhagen. In this way, Cameroon would have the opportunity to take informed decisions and assess technical and economical viability of implementing REDD as a post-Kyoto mechanism.

Finally, the WWF is developing a REDD approach for several countries in order to support the development of a portfolio of project ideas that would be eligible for carbon compensation schemes. The objective is to establish on the ground activities that support the development of framework criteria and standards for carbon forestry projects in given host countries, and to contribute to the development of national REDD strategies (Cameroon, 2008).

On a technical – organizational level, it would make sense to bundle and concentrate the purchase and processing of satellite images of the Congo Basin region. Currently, discussions with different partners are underway for the installation of a direct reception station for satellite images in Libreville, Gabon. However, installing such a station in the region risks taking very long and thus not coinciding with the REDD negotiation timeframe (Cameroon, 2008).

3.2.4 Challenges – What is needed?

Although a number of REDD activities are being implemented in Cameroon and the Congo Basin, there is a range of problems and challenges to the establishment of a credible reference scenario. Problems prevail in field data quality and availability as well as on the technical side of satellite imagery.

- **Data and information challenges**

- Quality of data is low due to different methodologies applied in the inventories, a lack of completeness, non-representative data, etc. resulting in diverging figures regarding forest area;
- Existing measurements and sample plots need to be up scaled in order to be representative for the entire country. Forest dynamics have been studied locally but not on a large scale (Cameroon, 2008).

- **Technical challenges**
  - The large number of days with cloud cover or haze over the country make satellite images show just white fog;
  - Availability of satellite images for Central Africa has been restricted: since 2003, technical problems with the principle captor used in the region (LANDSAT ETM+) forced users to turn to other data sources.

3.2.5 Readiness for establishing a REDD baseline

Several initiatives are working in Cameroon to develop GHG inventories, a forest cover and deforestation monitoring programme, as well as functioning on-the-ground pilot activities. Politically and financially, the country is therefore well prepared for a future REDD scheme and will be able to take informed decisions and relatively fast actions. Technical problems are expected to be solved in the coming years, not least through Cameroon's participation in the Congo Basin Forest Fund, investing in activities to foster readiness for REDD.

Being a country with a historically low deforestation rate, reference scenarios and forecasting should take future pressures on forests into account, and not focus merely on historical data for calculating a baseline. The country's REDD strategy will be based on the estimation of future emissions from deforestation and forest degradation and on the modelling of changes in forest cover based on econometric and spatial models (Cameroon, 2008).

3.2.6 Sustainable development and readiness for REDD

Cameroon expects the adoption of a REDD strategy to enhance the understanding of ecosystems and biodiversity protection, help preserve the traditional lifestyles of forest

dwellers, improve the forestry sector as a whole, develop its touristic potential and help fight erosion and desertification (Cameroon, 2008).

There are several laws related to biodiversity conservation. However, implementation and enforcement of these laws are weak and corruption is widespread in natural resource management (Cameroon, 2009). Recently, the minister responsible for Forests and Wildlife, in collaboration with NGOs, has taken measures to sanction non-compliance with laws and to expel illegal land occupants. Forest clearing for agriculture and logging activities has great impact on biodiversity. For the tropical dense forests, a number of priority activities have been identified to promote biodiversity conservation. Among the most important and most highly prioritised are the promotion of SFM and building development and strengthening capacity for SFM and forest protection. Cameroon's national report to the CBD (Cameroon, 2009) recognises the links between climate change and biodiversity and aims at developing early warning systems for natural factors, especially related to climate change and desertification. There have been attempts on local or regional level to include local communities in the implementation of the CBD. However, a number of factors have slowed the implementation of the Convention. One is the lack of financial resources; another is a lack of institutional as well as human capacity. In some cases, traditional management practices collide with biodiversity interests and impede implementation of the Convention. Finally, the lack of national inventories makes monitoring difficult.

So far, the level of achievement of the objectives for priority actions for biodiversity has not been properly assessed. Since the termination of a GEF funded project on biodiversity conservation and management there is no monitoring of biodiversity conservation in the country, even though management plans for Forest Management Units and community forests should include an analysis of the biodiversity situation. There are no current plans to implement such a monitoring system; rather, the country hopes that certification of forests through Forest Stewardship Council "*will lead to an improvement in the understanding of biodiversity*" (Cameroon, 2008). In other words monitoring and data collection on biodiversity will be up to private actors.

The case of monitoring rural livelihoods is more or less the same as for biodiversity; a social study must be included in forest management plans, but the demands are stricter for FSC certification and there are no direct plans on implementing a national system for data collection. The establishment of community forests was part of a decentralisation of forest management that tried to satisfy a number of conflicting interests (Ezzine de Blas et al., 2009). It was also a response to demands from the World Bank. This type of community ownership has no basis in traditional forms of ownership and may sometimes conflict with

them. The reform has led to commercial logging companies agreeing with communities to log their forests. For the communities this is a response to the lack of market access. For logging companies it has led to an increased access to forests that would otherwise have been inaccessible to them (Ezzine de Blas et al., 2009). Consequently, the community forests lead to a decreased involvement in forest management by the communities themselves. They have not had the impact on local development that they were aimed at. Communities get incomes from their agreements with logging companies and therefore their benefits are enough to keep them applying for community forest concessions, but rules need to be simplified in order for communities to benefit further from them.

The Cameroonian census does not make any differentiation for ethnic groups (Cameroon, 2008). Therefore, there are no accurate figures available on the size of the country's indigenous populations and there is a lack of knowledge regarding the role of forests for these peoples. Estimations have been made of the relative importance of non-timber products and services provided by forests and trees and their role in household economies (FAO, 2007).

Of the country's estimated 230 ethnic groups the Cameroonian R-PIN mentions the Pygmy peoples as the ones that would be most directly affected by REDD activities (Cameroon, 2008). They are highly dependent on forests for their livelihood and have suffered the consequences of deforestation. These peoples do not have their own organisation, but rather, their interests and rights are to a large extent watched by NGOs, both Cameroonian and international. No stakeholder consultations with forest dwellers have been realised so far in the REDD process. The lack of recognition of indigenous peoples rights on state owned lands has been brought forward as one of the concerns regarding their inclusion in REDD activities and their possibility to benefit from them (UN-REDD, 2008).

In March of 2008 the World Bank held a workshop in Burundi where representatives from the bank and from indigenous peoples of Central and East Africa met to discuss issues regarding REDD and the FCPF in relation to indigenous peoples and forest dwellers. At the meeting, concerns were raised regarding the situation of indigenous peoples in Cameroon, and especially the situation of the Pygmies (World Bank, 2008c). It was pointed out that indigenous groups in the country have already seen their lands decrease and they have not benefited from incomes generated from forests. Therefore, they want guarantees that this trend will not continue with the FCPF REDD activities. Solutions requested were that stakeholder consultations be held in forest areas, not in the cities, as well as equitable sharing of incomes between communities and acceleration of good governance.

3.3 COSTA RICA

3.3.1 Background

Costa Rica is a tropical country in Central America with a forest area of approximately 24000 km^2 or around 40% of the country's surface (depending on the source) (FAO, 2008; Costa Rica, 2000).

Historical deforestation

Historically, Costa Rica was among the countries with the highest deforestation rates in the world. The country was most severely deforested between 1950 and 1980 (Kleinn et al., 2005, when it had a reported deforestation rate of 3.9% per year. The Costa Rican National Communication to the UNFCCC reports that in fact, rates were even higher during this period (Costa Rica, 2000). Costa Rica's forest policy can be divided into three phases. The first period lasted until 1970 and was characterised by a laissez-faire approach where citizens were encouraged to cut down forests in order to improve the land and thereby obtain property rights (Ibarra and Hirakuri, 2007). The second phase was an interventionist period that lasted during the 1970s and 1980s. During this period conservation areas were greatly expanded and logging activities heavily regulated in an attempt to reduce the rapid deforestation. However, weak monitoring led to poor results in enforcing the new laws and deforestation rates continued to be high (Costa Rica, 2000). The last phase, from the 1990s and onwards, is a hybrid period, characterised by a combination of intervention and a market based approach.

In 1996 a new forest law was adopted, which aimed at the sustainable use of natural resources through decentralisation of natural resource management and increased civil society participation (Ibarra and Hirakuri, 2007). The new forest law transferred responsibilities from the public to the private sector. A National Forestry Office comprised by members from the private sector, mainly commercial interests, was created with the task of proposing forestry policies and raising investments. The responsibility for control of logging operations was partially transferred to the private sector as forest engineers, by taking an oath of public faith, gained the authority for monitoring logging activities and forest management plans. The new Forest Law established the national program for Payment for Environmental Services (PES) (Costa Rica, 2000). A National System of Conservation Areas (SINAC) was also established. It was supposed to promote the decentralisation of natural resource management. However, it suffered from a lack of capacity and resources, which made this process difficult. Additionally, corruption and

bribery has been a way of circumventing this lack of resources that slows down the approval of logging permits and management plans (Ibarra and Hirakuri, 2007).

Current deforestation

Although deforestation has been literally halted by now, and the country is a net reforestation state with a rate of +0.54% annually (Costa Rica, 2008), there are still deforestation activities going on. One of the main drivers is unsecure land tenure rights. Because of the uncertainty regarding property rights, farmers that obtain logging concessions are often prone to log as soon as possible, not knowing if they will still have access to timber the next year (Ibarra and Hirakuri, 2007). In addition, a lack of institutional and governance capacity is an important driver of deforestation as well as a lack of resources for monitoring and law enforcement, the high opportunity cost of non-forested land, deficiencies in the legal and juridical framework regarding forests and logging and complex procedures for receiving logging concessions (Costa Rica, 2008). There have also been problems in guaranteeing areas for absolute protection or payment for environmental services and protecting them from being sold (Costa Rica, 2000). There is a need to consolidate SINAC and further guarantee the sustainability of private forest activities. The government sees the sale of emission reduction credits as a viable option for achieving this.

Despite its successful control of deforestation and low deforestation rate Costa Rica is interested in participating in a future REDD scheme and being incentivized to maintain low deforestation rates. The country has been chosen to participate in the World Bank FCPF. The Readiness Pin submitted by the country identifies the lack of resources and institutional capacity together with deficiencies in the system for land classification as areas where REDD funding could play an important role.

3.3.2 Baseline data and readiness for REDD -What is available?

Costa Rica has completed a National Forest Monitoring and Assessment in collaboration with the FAO. A pilot study for the National Forest Inventory, which contributed to the development of methodologies for national forest inventories, was realised in 2000-2001 (FAO, 2009b). The inventory was performed through aerial photo interpretation combined with field inventories on several levels (Kleinn et al., 2001). The inventory assessed a number of variables, among others land tenure, erosion, crown cover, disturbance, timber exploitation and land use.

There are numerous historical studies and a monitoring study of the forest cover made by different institutions. However, they focus on forest area and do not contain any biomass or carbon measurements and estimates. Therefore, there is currently no national forest monitoring system in the country capable of estimating the changes of carbon stocks in the forest. Existing historical data is often inconsistent because collection was based on different methodologies. Even today, studies such as the GHG inventory for the National Communication are being done independently from existing forest information gathered by research institutions, universities and study centres (Costa Rica, 2008).

Since the 1990s remote sensing inventories have been realised, and a range of satellite images and assessments of forest cover are available for Costa Rica. Satellite-based forest cover inventories have been conducted by the National Forest Finance Fund (FONAFIFO) every five years since 1997. In addition, the conservation NGO FUNDECOR conducts periodic studies of protected areas, using Spot satellite images. The research centres CATIE and ITCR also conduct forest cover studies using Landsat satellite images (Costa Rica, 2008). The Forest Cover Monitoring Study of Costa Rica 2005 (FONAFIFO, 2008) compared images from the years 2000 and 2005, and yielded information on the decreasing loss of forest cover in the last years:

- During the period 2000-2005 the gross loss of forest cover was 23 689 ha, equalling an average of 4 600 ha per year, or a deforestation rate of 0.09%.
- In the same time interval, the forest area expanded by 169 000 ha in the national territory, equalling an average of 33 980 ha per year, or a reforestation rate of 0.66%.

The net deforestation was +0.57% per year during that period (FONAFIFO, 2007). There are indications of forest degradation processes in the country, but very little information is available. Currently it is not possible to provide reliable estimates on the impact of these processes (Costa Rica, 2008).

All assessments are based on cartographic information recently updated in a US-financed project to renew the geographic, atmospheric and environmental information of Costa Rica. This project is a cooperation between NASA and the Costa Rican National Center of High Technology, and has covered 100% of the national territory in two subsequent phases.

3.3.3 What is currently being done?

Costa Rica is currently implementing projects aimed at further developing existing schemes, such as the second generation PES scheme Ecomarkets II, which is financed by GEF and the World Bank. The project includes strengthening institutional organization and further developing markets for ecosystem services (Costa Rica, 2008). Future REDD payments would complement the funds of Ecomarkets II and contribute to the sustainability to the PES Program. REDD funds are also expected to support the National Strategy on Climate Change, by opening a national market for the reduction of emissions where the price of carbon credits is expected to be high if transaction costs are low. This would make it possible to increase the prices currently paid for PES so as to better compete with alternative land uses.

Costa Rica aims at obtaining funding from the WB FCPF for an upgrade of the forest inventory and information systems available in the country, and to solidify the existing schemes of Payment for Ecosystem Services. In addition, the FCPF would be used to finance legislation, land classification, institutional strengthening, dissemination of information and awareness raising among the population (Costa Rica, 2008).

3.3.4 Challenges - What is needed?

Although Costa Rica has worked for many years with developing monitoring of forests and forest cover as part of the PES scheme, and has managed to significantly reduce the national deforestation rate, many challenges still remain.

- **Data and information challenges**
    - The changes in carbon stock due to deforestation, degradation and forest restoration are not yet sufficiently well known;
    - Information cannot be expected to be accurate or up to date because current estimates are based on extrapolated measurement data from individual sample plots.
- **Technical challenges**
    - problems with the usefulness of satellite images due to large amounts of clouds and haze covering especially the forested regions of the country;
    - satellite images deliver retrospective information, whereas real time monitoring is only done in areas participating in the PES scheme (Costa Rica, 2008).

3.3.5 Readiness to establish a REDD baseline

Costa Rica is very advanced in terms of establishing and operating national systems of Payments for Ecosystem Services. With the help of the PES programme and a change in forest policies the country has managed to reduce its deforestation rates significantly since the 1980s, and turn the country from a net source to a net forest sink i.e. deforestation has turned to net reforestation. Existing data has been used to give an overview of historical and current deforestation rates, and forest monitoring started relatively early. Costa Rica would therefore be in a good position to establish a baseline for deforestation, although forest degradation has not been taken into account at all so far. However, the country cannot be regarded as a typical REDD country struggling to reduce deforestation and forest destruction. Costa Rica would be better served receiving REDD funding for maintaining and further developing its national forest conservation programme. Strengthening this programme will require a more efficient PES scheme, better monitoring and analysis of forest cover change, and a more holistic approach to reducing deforestation (Kaimowitz, 2008). Costa Rica is planning on using its forest resources to achieve the announced objective to become carbon neutral by 2021 (Costa Rica, 2008).

3.3.6 Sustainable development and readiness for REDD

According to the R-PIN submitted to the WB FCPF there is plenty of information regarding the extent and demographics of indigenous territories as well as indigenous management practices in Costa Rica (Costa Rica, 2008). A cadastral inventory is currently being conducted of all lands belonging to the Agrarian Development Institute, Protected Areas and Indigenous Territories. To the extent that sufficient funds are available, the project also aims at solving existent discrepancies in land titling. The National Forest Development Plan and the National Biodiversity Strategy are two strategic planning instruments that provide guidance for the forestry sector (Costa Rica, 2008). The social and rural livelihood impacts of current forest projects such as the PES are not being monitored. Nor is any national monitoring of biodiversity. However, the Ecomarkets II program, a scaling up and mainstreaming of the PES programme, will require such a monitoring system and it is expected to be implemented soon. Likewise, a national system for monitoring forestry's impact on livelihoods is expected to be set up as part of the Ecomarkets II.

The Costa Rican PES scheme has been criticised for not benefiting smallholders, but rather focusing on large scale landowners (World Resources Institute, 2005). Since secure land

tenure is the foundation that defines who receives payments, the landless and those with insecure tenure are excluded from the program. Also, the program excludes some traditional land uses such as grazing, which makes it impossible for poor families to participate without replacement activities. High transaction costs is another factor that makes participation difficult for poor families and smallholders, as well as a lack of credits and capital for changing land management practices. With the Ecomarkets II, efforts will also be made to facilitate participation of small-holders in PES.

In Costa Rica the eight indigenous peoples comprehend only about 1,5% of the population (Zueras, 2008). The majority lives in Indian reservations in the south of the country. The indigenous peoples of Costa Rica lack proper organisation and resources (UN-REDD, 2008). The government has been criticised for discriminating the indigenous peoples and not consulting them in matters that directly affect them. The Costa Rican R-PIN focuses mainly on coordination and consultation with private forest sector actors, whereas less attention is given to consultations with indigenous peoples and peasant organisations (Costa Rica, 2008).

In the area of biodiversity the Costa Rican Third National Report to the CBD identifies a number of positive and negative aspects of the country's work in progress (Costa Rica, 2006). Only in some areas of the convention has the country established national goals. There is a great willingness within the country to work with the conservation of forests, both among governmental and private actors. However, there is a lack of coordination between institutions. There have been difficulties finding resources for a PES system based on biodiversity services. Consequently, there is a lack of financial resources for biodiversity conservation. The lack of human capacity is another obstacle. The country has not succeeded in coordinating the work with different conventions, such as the UNFCCC, the CCD and the CBD, but with financial support from the GEF a coordination mechanism is being developed (Costa Rica, 2006).

3.4 SRI LANKA

3.4.1 Background

Sri Lanka is an island state in the Indian Ocean, south of the Indian subcontinent. It has a forest area of 19 330 km^2, representing a forest cover of roughly 30%. Annual deforestation according to the country's National Communication to the UNFCCC is 54 000 hectares (Sri Lanka, 2000). Due to ongoing conflict in the country, Sri Lanka has not been active in pursuing the REDD issue or applying for funds, since the topic of forest resources is currently not a prioritised item on the political agenda.

Historical deforestation

Rapid population growth has led to agricultural expansion and, consequently, encroachment on forest areas causing rapid deforestation and forest degradation during the last century (Bandaratillake and Sarath Fernando, 2003). The deforestation rate decreased in the 1990s, partly because a number of large agricultural expansion schemes were completed. However, in absence of sufficient surveying and demarcation of state forests, illegal logging and encroachment has been a problem. In addition, ineffective forest management, inadequate legal framework, lack of attention paid to non-timber forest products and outdated and inefficient machinery, among other things, have contributed to a scarcity of wood, soil erosion, loss of soil fertility, irregular water supply and reduced carbon sequestration.

The first Sri Lankan forest policy was published in 1929. Since then it has been revised and re-published on several occasions, most recently in 1995 (Liyanaarachchi, 2004). The 1995 forest policy, called the Forestry Sector Master Plan (Sri Lanka, 1995), had three principal objectives; the conservation of forests for posterity, increased forest cover and productivity and enhanced contribution of forests to social and economic welfare. In 1990 the government banned all logging of natural forests (Perera, 2001). High priority has been given to adhering to international conventions and initiatives, through the National Forest Policy and the National Wildlife Policy (1999) among others (Bandaratillake and Sarath Fernando, 2003). The country has a tradition of conservation and in 1997 about 14% of its area was conserved (FAO, 1997).

Current deforestation

Despite past and present forest conservation efforts, there is still net deforestation in Sri Lanka, with severe implications for the country as a whole (FAO, 2001). Sri Lanka has lost more than 60% of its crown cover (Ratnayake et al., 2002; Legg and Jewell, 1995). In FAO's "*An overview of forest policies in Asia*" (Bandaratillake and Sarath Fernando, 2003) a number of problems contributing to the continued deforestation and forest degradation are identified. Among the problems mentioned are an outdated forest legislation, a lack of coordination between forest legislation and other legislation, lack of interagency linkages, lack of transparency and participation.

The ongoing conflict in the country may also have contributed to deforestation by increasing the demand for timber for construction and causing displacement of small scale farmers (Mattsson et al., 2008). The government has also cleared forests in the north and east of the country where rebel forces took refuge. Rural communities' dependency on forests for their livelihood has decreased since the 1980s, especially in the wet zones (MAB, 2005). The economy in these areas has steered towards smallholder tea cultivation. This has led to increased deforestation and a lacking interest in conserving forests among local smallholders.

Deforestation has now seriously diminished timber supplies, made soils less productive, water supply more erratic and floods more frequent and severe. Management of what is left, and re-establishment of new forests is essential. Some evidence indicated that due to the rate of vegetation destruction in terms of improper land use systems, continuous practice of shifting cultivation and no, or very poor, soil conservation, 11% of Sri Lanka's cultivable lands are already degraded. The Forest Department provides a number of voluntary tools of direct economic, indirect economic and non-economic nature for creating incentives for tree growing, through funding by the Asian Development Bank (ADB).

The Swedish development cooperation in Sri Lanka is to be phased out as part of the process of focusing Swedish undertakings on fewer countries, mainly in Africa (Sida, 2009). Sri Lanka has had a cautious approach to REDD, showing moderate interest in the initiative. The country is currently not involved in any international REDD-schemes, and has not applied to be included.

3.4.2 Baseline data and readiness for REDD - What is available?

Major forest inventories of Sri Lanka have been carried out by Koelmayer (1957), Andrew (1961) and the Forest Department of Sri Lanka (FAO/GOSL, 1986). A district-wise forest area assessment using Landsat data concluded that four districts in the north experienced a forest decrease from 1992 to 2001, while two districts experienced an increase in close canopy forest area during the same period (Ratnayake et al., 2002). FAO have also assessed the national forest resources prior to their previous assessment reports. Information on extent of forest and other wooded land is accessible but no data on tree cover is currently available (FAO, 2005). According to the Sri Lankan National Communication the rate and extent of change in the forest cover and conversion of land use systems are not properly documented (Sri Lanka, 2000). Therefore, all estimations of biomass and changes in biomass are merely approximations.

The FAO Forest Country Profile database confirms the great lack of accurate information (FAO, 2008). Apart from a map of forest cover there is no data regarding forests area, growing stocks, planted forests and disturbances in the database. Products and trade statistics are available, covering wood and non-wood products production, value and trade as well as employment in the forest sector. There is information on forest management such as history, practices and trends. However, a lot of information is missing or unavailable, especially in the non-wood product production sector. No information is available in the database on institutions, governmental and public or non-governmental actors, working in the forestry sector.

3.4.3 What is currently being done?

According to the Forest Department a new forest inventory is to be initiated by 2010 using a combined approach with ground based inventory data and remote sensing data.

3.4.4 Challenges – What is needed?

Sri Lanka's forest sector faces a large amount of challenges, not least in monitoring and law enforcement:

- **Data and information challenges**
    - National circumstances such as many different forest categories and complex topography in the landscape;

- Given the high diversity of the forest ecosystems in Sri Lanka, the biomass range is very wide. As an integral part of a national forest inventory, a comprehensive biomass inventory is needed, covering all the Sri Lankan forests, to assess the forest carbon stock;
- A profound understanding of the primary and underlying drivers of deforestation on a sub-national scale is needed, since some districts have shown a decrease in forest cover whereas other districts have experienced an increase in net forest cover;
- Macroeconomic and micro-economic data is needed (commodity and input prices, agricultural operating costs, etc) at national and international scales to account for drivers of deforestation.

- **Technical challenges**
  - Inconsistent methodologies in national forest inventories;
  - There is a need for technical advice, training and capacity-building to develop and use high-technological instruments such as satellite remote sensing.
- **Institutional challenges**
  - Lack of capacity to monitor national forest resources;
  - Lack of financial resources, caused by little support by international aid and forestry programs and restricted allocation of resources because of violent conflict in the country;
  - Ambitious forest laws but weak enforcement and institutional capacity;

3.4.5 Readiness for establishing a REDD baseline

Based on the information available, defining a baseline scenario for Sri Lanka will be a challenge. Given that deforestation drivers in Sri Lanka are numerous and irregular in time and space it is imperative to have access to comprehensive and consistent recent and older data of forest cover, forest cover change and natural resources. Data from past inventories are available but due to a lack of new data it will be a challenge to establish reasonable time-series mapping for baseline establishment even if new national schemes for measuring forest resources are put in place. Local expertise could be used to account for national circumstances and validate outcomes of methodological assessments. Measuring

forest degradation is secondary and will require more resources and more technical expertise and could be implemented using existing and evolving methodologies.

3.4.6 Sustainable development and readiness for REDD

Sri Lanka hosts one of the world's 34 biodiversity 'hot spots'. The country works actively with the Convention on Biodiversity and has set up several national targets for biodiversity with regards to forests (Sri Lanka, 2007). There is a Biodiversity Conservation Action Plan and a Committee on Environment Policy and Management with the task of facilitating implementation of the action plan. But while the laws on conservation are ambitious, law enforcement and institutional capacity is weak. The third Sri Lankan National Report to the CBD identifies this as the greatest obstacle to implementation of the convention, followed by a lack of resources, financial, human and technical, and a lack of mainstreaming and integration of biodiversity in other sectors.

The Forestry Sector Master Plan (Sri Lanka, 1995), aimed at increased participation of local communities in conservation activities, has had the benefit of improving conservation activities and increasing employment opportunities for local villagers near conservation areas (Bogahawatte, 1999). On the other hand, it has been criticised for not providing local villagers with sufficient alternatives to compensate for loss of income generating activities. The Government owns all forest land in Sri Lanka. However some degraded forest lands can be leased for 30 years by individuals (Mattsson et al., 2009). Also, in plantation forests, local communities have the right to collect fallen material and use for private purposes once a week, at a small cost. Wickramasinghe (1997) suggests that indigenous forest management in some areas of the country, regulated by strong social institutions, could provide part of a solution to sustainable resource management. Instead, these traditional management practices are not recognised by the government. Yet, they are still strong enough to prevent law enforcement.

Studies have shown that Non-Timber Forest Products (NTFP) play an important role in poor families' household economies. According to some research they represent around 16% of total family income for families living close to the Knuckles Conservation forest, and as much as 31% of total family income for some poor families (Bogahawatte, 1999; Gunatilake, 1998). An inverse relationship between total family income and share of NTFP has been found; i.e. for poorer families NTFPs play a more important role. Wickramasinghe (1997) argues that the importance NTFPs for indigenous peoples has in fact increased, because of an increased market demand for this type of products leading to opportunities

for commercialisation. Other studies have shown that the contribution of NTFPs to household economy is less significant, although not negligible (Bogahawatte, 1999). Fuelwood is the main source of energy for cooking in rural Sri Lanka and it is cheaper than substitutes such as kerosene. This must be taken into account in any conservation scheme. NTFP can provide an important source of income and thereby constitute an incentive for the participation of local communities in conservation activities. Sri Lanka has expressed concerns that REDD schemes should include methodologies for compensating the opportunity costs of forest conservation as opposed to using them for "*developmental activities*" (Sri Lanka, 2008).

4. CASE STUDY OF INVESTOR COUNTRY – THE CASE OF NORWAY

Norway has been chosen to exemplify a REDD investor country for several reasons, the most important one being the country's large scale Climate and Forest Initiative that invests 500 million USD annually in REDD activities. The structure of Norway's investments and the different channels used for distributing the funds provide a good overview of the various options currently available to channel international funding for REDD. Another reason is Norway's similarities to Sweden, having taken on a positive Kyoto target, i.e. being allowed to increase their emissions from 2008 to 2012, and spending similar amounts of their GDP on development cooperation (around 1%).

4.1 INTRODUCTION: NORWAY AND CLIMATE CHANGE

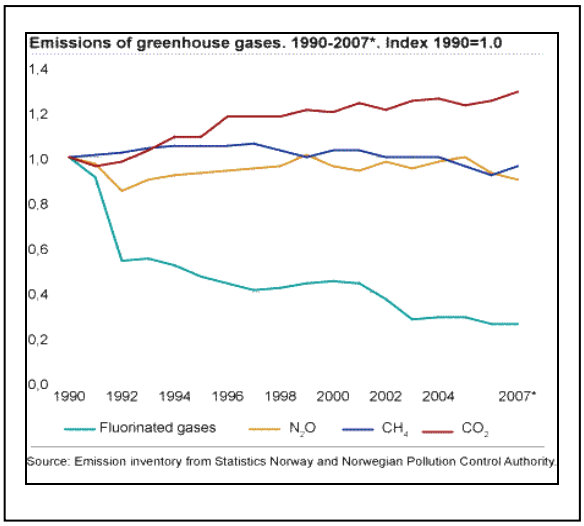
Norway's Kyoto target is similar to Sweden's: to restrict emission increases to 1% (Sweden: 4%) above 1990 levels during 2008-2012. The country has announced a voluntary tightening of its Kyoto commitment by 10 percentage points, thus changing the target to a 9% decrease compared to 1990 (Norwegian Pollution Control Authority, 2009). The government has gone even further announcing a unilateral cut in emissions by 30% compared to 1990 levels by 2020, with two thirds of these cuts being carried out domestically. Moreover, Norway has committed to becoming carbon neutral by 2030, if an ambitious global climate agreement is achieved in which other developed countries also take on extensive obligations (UNFCCC, 2008).

After the UN Climate Change Conference in Bali (COP13) in 2007, Norway's Prime Minister Stoltenberg announced an even more ambitious objective: for Norway to become carbon-neutral by 2030, 20 years earlier than the previous target. The government stated that carbon neutrality would be reached by reducing emissions at home and investing in emission reduction projects abroad. The main focus of activities would be carbon capture and storage (CCS) domestically, and reducing emissions from deforestation and degradation internationally (Office of the Prime Minister, 2007).

This is the world's most ambitious climate goal to date. Norway, with a population of just 4.7 million, is the world's fifth-biggest exporter of oil and Western Europe's biggest exporter of natural gas. Complying with their voluntary targets would establish the country as a leader in emission cutting and it could serve as an international benchmark for restricting emissions. Prime Minister Stoltenberg has compared the challenge of mitigating climate change *"to a 'moon landing' for the 21st century*" (Reuters, 2008). This comparison is

especially suitable considering that Norway is not yet on track to comply with their original Kyoto target of limiting emission increases to 1% compared to 1990. In 2007, the country's GHG emissions had increased by 11% compared to 1990, and rigorous measures are needed to reverse the current trend in order to achieve carbon neutrality (see figures below).

1 a)



1 b)

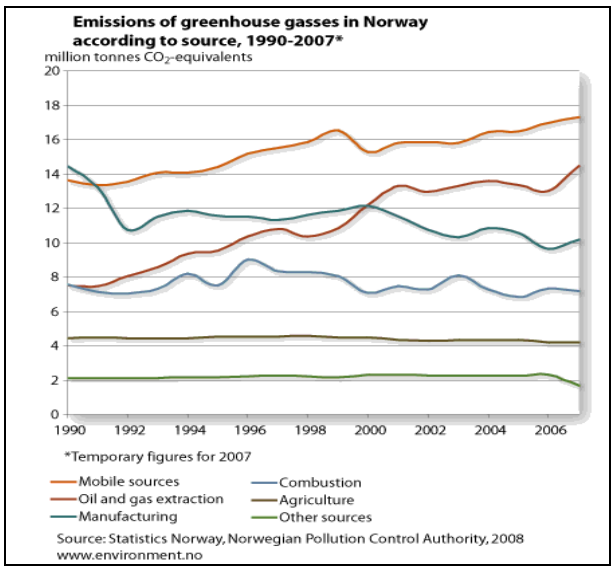


Figure 1 a) Norway's emissions of N2O, CH4, CO2.1. Figure 1 b) Norway's emissions by sector sources, 1990-2007 and Fluonnated Gas from 1990-2007. Source: Statistics Norway and Norwegian Pollution Control Authority, 2008

Figures 1 a and b clearly show that Norway has a long way to go to achieve the announced emission reductions, not to mention the carbon neutrality goal. The plan to cut emissions includes large spending on the development of renewable energy and carbon capture and storage (CCS) technologies (Reuters, 2008). The other target sector is forestry. The Norwegian government believes it to be a realistic assumption that the announced reductions in Norwegian GHG emissions[5] can be achieved by 2020 if forests are included. Three million metric tons of this reduction is expected to come from Norway's domestic forest carbon sinks (UNFCCC, 2008). In this context, Norway will encourage reforestation and afforestation, as well as forest management techniques to increase forest production (UNFCCC, 2008). The other 12-14 million tons will be generated through forest conservation or REDD projects in developing countries.

BOX 3

Norway's emission targets

- Kyoto targets allow emission increase of 1% in 2008-2012 compared to 1990 emissions baseline
- Voluntarily committed to reduce emissions by 10% instead; i.e., reduction of emissions by 9% until 2012
- Beyond 2012: committed to 30% emission cut by 2020 compared to 1990 levels
- Announced to strive for carbon neutrality by 2030.
- Latest emissions report shows an 11% increase in emissions between 1990 and 2007.

[5] of 15-17 million metric tons of CO_2 equivalents

4.2 THE INTERNATIONAL CLIMATE AND FOREST INITIATIVE

Against this background, Prime Minister Jens Stoltenberg launched Norway's International Climate and Forest Initiative during the climate change negotiations at Bali in December 2007, which grants approximately 500 million USD (3 billion Norwegian Crowns) annually to the preparation and development of an international REDD regime.

The initiative seeks to promote sustainable development and reduce poverty, objectives that are closely linked to those of the Norwegian foreign policy and development cooperation. The purpose of the initiative is to provide support to Norwegian as well as international non-governmental actors to contribute to:

- the inclusion of emissions from deforestation and forest degradation (REDD) in a new international climate regime;
- take early action to achieve cost-effective and verifiable reductions in greenhouse gas emissions;
- promote the conservation of natural forests to maintain their carbon storage capacity.

The initiative will support the establishment of a credible system for monitoring, assessment, reporting and verification of REDD activities. The first step will focus on the international and national capacity building needs of Norway's REDD partner countries. Norway has identified the most urgent capacity building needs in areas such as monitoring trends in forest cover and biomass, data collection on forest carbon volumes and data analysis to provide reports on emission levels. Internationally, the initiative will provide selected international institutions within the UN system with adequate resources to build their capacity.

4.2.1 Strategic investment criteria

The Norwegian initiative works only with REDD partner countries that agree to develop a national REDD strategy and to implement it within an internationally acceptable framework. The host country government must be willing to politically endorse and pursue the goal of reducing deforestation sustainably and with a long term perspective. The development and implementation of national REDD strategies will be done in a broad-

based, inclusive process in order to protect the rights of indigenous and local people. The strategy shall include plans for preventing leakage and an analysis of the drivers of deforestation. In the implementation of these strategies and other activities, the Norwegian government intends to draw on the expertise of Norwegian and international NGOs with long experience from climate- and forest-related work. Therefore, the initiative will emphasize on systematic cooperation with selected NGOs, both at strategic level and in individual REDD countries (Norway, 2009).

One decisive point of Norway's REDD contributions is that any support for efforts to reduce deforestation will be based on performance. Although ODA money is used, payments should not respond to the funding needs of the host countries but be strictly aimed at the climate needs of the investor country (Brattskar, 2009). Therefore, it is imperative to establish credible reference emission levels as soon as possible, and to calculate payments on the basis of the reductions achieved relative to these reference levels. In the preliminary phase of capacity building, recipient countries will be judged based on their progress in relation to interim milestones. Support will gradually be withdrawn from partner countries that do not reach these milestones.

Finally, the initiative seeks to participate in establishing a robust, effective and flexible international architecture for a REDD regime, acknowledging that for this purpose the formation of partnerships and collaborations between nations as well as international organisations is essential.

4.2.2 Structure of investment and partnerships

Norway has pledged large amounts of money to the preparation and establishment of an international REDD regime. At the same time the government expects the initiative to serve as a catalyst for contributions from other countries (Brattskar, 2009). The challenges involved in effectively reducing deforestation rates on a global level are large, and realistic results will only be achieved if substantial resources are provided and if actors join forces and work in close collaboration. In order to stimulate international participation and investment, Norway is trying to coordinate its efforts with other REDD actors, and to establish partnerships that will ensure effective cooperation and coordination. In this context, Norway has set up a range of different investment agreements. The government participates in concerted action of international agencies, such as the UN-REDD initiative and the World Bank's FCPF. It collaborates with regional financial institutions such as the

African Development Bank and works through several bilateral programmes. Table 2 shows the commitments made (as of May 2009):

Table 2: Norway's commitments for different REDD initiatives as of May 2009.

Initiative / Country	Value (USD)
UN-REDD	50 million
WB FCPF	40 million
World Bank FIP	50 million (depending on framework and criteria)
Congo Basin Forest Fund	72 million
Brazil- Amazon Fund	130 million (2008-09)
Tanzania	73 million over 5 years (500 million NKR)
Guyana	*Not specified*
ITTO	3.5 million
SUM	**418.5** ***including FIP***

UN-REDD

To ensure a quick start to the UN-REDD, Norway has decided to provide full funding, about 50 million USD, for the first phase of the work. More donors will be needed at a later stage, and Norway aims to act as a catalyst in this respect. If the results of the first phase are satisfactory Norway will channel substantially more funds through UN-REDD, and use this as one of the main channels for its REDD efforts. However, Norway's contributions in later phases will have to be channelled to fewer countries, and other donors must therefore be actively encouraged to provide funding.

World Bank initiatives

Norway has contributed 40 million USD to the work of the World Bank FCPF. The World Bank is also developing the new Forest Investment Program (FIP) to mobilize funds for large-scale REDD efforts. Norway has not yet decided whether to participate in this programme as well. This decision will be taken when the fund's framework and mechanisms for coordination with other international initiatives have been established. It

will be particularly important to evaluate the degree to which the fund will complement efforts of UN-REDD so that outcomes are mutually reinforcing, and whether relevant recipient countries will be interested in the fund. The same issues will be of decisive importance in deciding whether Norway will allocate further funding for the FCPF. If the FIP is found to comply with the requisites, Norway has indicated a possible support of up to 50 million USD.

The Congo Basin Forest Fund

One of Norway's commitments involving a regional development bank is the Congo Basin Forest Fund (CBFF). Norway has committed 80 million USD to the fund for the period 2008–2010. The UK, which took the initiative to establish the fund, has made an equal commitment. The CBFF will coordinate its work with that of the UN and the World Bank, and with national REDD strategies.

Brazil – Amazon Fund

In addition to its involvement in international funds, Norway has set up bilateral programmes with a number of countries. In 2008, Brazil established ambitious targets to reduce its deforestation by 2017 in its national climate change plan, and for the financing of this undertaking the Brazilian Government launched the Amazon Fund.

Norway has agreed to allocate funds of up to 130 million USD to the Amazon Fund, as part of its broad-based climate policy cooperation with Brazil. In accordance with the criteria of the initiative, and with Brazilian specifications, the annual allocations after 2009 will be performance-based. If performance is satisfactory, Norway may potentially invest 1 billion USD until 2015. In addition to supporting to the Amazon Fund, the cooperation between Norway and Brazil includes a systematic dialogue on climate and forest policy as well as cooperation on technical aspects of monitoring, reporting and verification.

Tanzania

In cooperation with the UN-REDD, Norway has pledged 73 million USD over a five-year period for the development and implementation of a national REDD strategy in Tanzania. In selected fields such as design of the national strategy, and capacity building, Norway intends to cooperate closely with other international actors. Other target areas are the establishment of monitoring systems for forest cover and biomass as well as reporting systems for emissions from deforestation and degradation.

Guyana

In addition to the specific bilateral agreements above, Norway will provide financial support for Guyana's efforts to conserve its rainforest. The two countries agreed to establish a partnership on REDD, which will actively lobby for the incorporation of a REDD mechanism that includes low deforestation countries like Guyana in a post-2012 climate change agreement. Norway's financial commitment has not been specified, although the Norwegian government announced that it "*is prepared to provide performance-based, substantial and sustained compensation for the progress Guyana makes in limiting emissions from deforestation at low levels and further decreasing forest degrada*tion" (Guyana, 2009).

Other initiatives

Norway will channel its funding primarily through the above described mechanisms of multilateral and bilateral agreements. In addition, the country also supports the International Tropical Timber Organization (ITTO) with a limited amount of 3.5 million USD for a recently launched REDD initiative, and is considering allocations to the Global Environment Facility (GEF) if it sets up relevant programmes.

4.2.3 Norway's motivation and choice of funding channels

Norway has a number of reasons for investing in REDD. Firstly, the very ambitious climate policy target of becoming carbon neutral by 2030 will not be met without the inclusion of emission reductions from forests (Angelsen et al., 2009). Secondly, emission reductions from forestry and land use are among the most cost-efficient measures available in climate change mitigation, and therefore they are an important option for countries with ambitious targets (UNFCCC, 2008). The Norwegian government states that it aims to generate "*possible emission reductions relative to the resources used*" and it sees REDD as a cost-efficient measure that will be actively pursued (UNFCCC, 2008).

Norway has chosen to spread their investments to various institutions and use a range of funding channels rather than just one. This is partly because when Norway decided to become active in the REDD sector, developments had already been initiated and things were moving quickly (Brattskar, 2009). When Norway allocated its REDD funds the WB FCPF had already been announced and was regarded as an important actor in the field of REDD. Therefore the Norwegian government decided to support this initiative. However, in principle Norway is a UN advocate and strongly believes in the importance of creating a UN based system, which they believe has comparative advantages in terms of monitoring,

representation and credibility (Brattskar, 2009). Through its investment in the UN-REDD Norway seeks to build capacity within the UN system. However the ambition is not for the UN-REDD to remain a purely Norwegian mechanism. Other countries are encouraged to see Norway's investment as an example and get involved as soon as possible with further funds.

Norway has only limited or no experience from development cooperation with several of the countries they want to involve in REDD, which is why they prefer using multilateral channels, and cooperate with other donors. The Congo Basin Forest Fund was chosen because Norway regarded investment in the Congo Basin as a priority, due to the region's importance from a climate perspective. However they had very limited contacts and experience from development cooperation in the region, and therefore chose to use the Fund as financing vehicle (Brattskar, 2009).

Two criteria have been set up for establishing bilateral agreements. Countries should:

- show significant progress at national level, so that Norway can immediately provide performance-based support for the implementation of an established strategy (e.g. Brazil); and/or
- have a long, broad-based experience of cooperation on natural resource management with Norway, and already have started internationally supported REDD programmes (e.g. Tanzania) (Ministry of Environment, 2009).

In line with this reasoning, a country like Tanzania receives large direct support through the Norwegian embassy, that implements a number projects in the country. In Congo the Norwegian government has established a new representation, employing one person solely for the purpose of working with REDD. Norway has also decided to support activities in Guyana and Liberia although they do not comply with the criteria described above. Therefore support will be initiated through multilateral channels.

4.2.4 Funding sources

The money allocated for REDD by Norway is channelled through the budget for development cooperation and effectively qualifies as part of the countries official ODA. According to Brattskar (2009), this is meant as a way to ensure that it is used in ways that fulfil development cooperation objectives, although climate change mitigation is the main objective. This has been criticized, especially on the ground of the CDM rule that carbon

credit projects cannot be funded by ODA resources. This is meant to prevent a diversion of ODA from development objectives in order to meet the donor country's climate targets. However, Norway argues that the Norwegian ODA budget has actually been increased by NOK 3.9 billion (660 000 USD), of which NOK 3 billion (500 000 USD) are allocated for the initiative, while no other posts have been decreased (Brattskar, 2009). Moreover, the initiative aims at building capacity and readiness for REDD. All projects that are supported will comply with Norway's formal requirements for development aid (the ODA requirements). The generation of carbon credits is not part of current investments.

De Saram Larssen (2008) points out that this is a historically high allocation for environmental development cooperation. It constitutes a significant increase from the 2008 budget, and in fact, the increase means that achieving the goal of allocating 1% of the GDP to ODA, a share that is achieved worldwide only by Sweden and Norway.

5. ANALYSIS OF BASELINE AND SUSTAINABILITY

5.1 REDD DEMONSTRATION INITIATIVES

This analysis focuses mainly on two of the several initiatives described in previous sections (see Chapter 2) - the UN-REDD and the WB FCPF, because they are currently the most advanced schemes. They represent institutions interested in taking an active part in the REDD process and an active role in the negotiations. They are also interesting in the sense that they take a national approach to their REDD activities; i.e. they work with governments and national REDD strategies rather than with isolated project activities. Both the Congo Basin Forest Fund and the Australian IFCI have launched activities on project level but they do not cover the national level, which will be necessary in order to achieve substantial, sustainable reductions in deforestation with minimal leakage.

The UN-REDD and the World Bank FCPF are both meant to be pilot initiatives that gain experiences which can feed into the UNFCCC negotiations. Yet they are, at the same time, a sort of pre-projects, aimed at preparing countries for whatever outcome the negotiations may have. While both the UN-REDD and the WB FCPF state as one of their goals to feed into the negotiation process, they are both waiting for the coming post-Kyoto agreement to provide them with detailed guidance on how to proceed. This gives them a dual role, as avant-garde pilot initiatives on the one hand and as instruments of the UNFCCC on the other hand.

Despite the limited general advancement of the initiatives at present, some characteristics can be identified. The UN-REDD appears to be the most elaborated scheme. It is more focused, comprising nine countries in the first phase, whereas the WB FCPF currently targets 37 countries. Targeting a large amount of countries can be positive in the sense that many countries get a share of the 'REDD cookie', but it also risks becoming more than a mouthful for the WB FCPF to handle. If the 'readiness for REDD' process is to include data collection and definition of a reference scenario, the establishment of a monitoring system and the development of a REDD strategy (and possibly more), coordination of 37 country processes will be demanding. Although the WB FCPF counts with more funds than the UN-REDD, the ambitions are very large indeed. The UN-REDD on the other hand, focuses on nine countries with an even geographical spread. In this way they can hopefully gain valuable experiences for continued and expanded activities on readiness. The WB FCPF on

the contrary, will have to narrow down its efforts and select only a few countries once it reaches the second phase. Another distinction is that the WB FCPF aims more explicitly than the UN-REDD at a carbon market and compensation for emission reductions.

Ultimately, the task of getting countries ready for REDD is difficult, whether aiming to prepare nine or 37 countries. Reducing deforestation will require extensive institutional reform and capacity building in most tropical countries. Poor institutions and the lack of governance in areas such as property rights and law enforcement are important contributors to deforestation. The lack of institutional and human capacity, as well as corruption are other factors in many countries. These are not problems that are easily solved. Rather they require long-term commitment and political will. In addition to this, deforestation is driven by a large number of external factors that cannot be dealt with only through institutional reform and capacity building. These include, among others, political as well as economic factors that affect opportunity costs for land such as prices for timber or agricultural products. In the long run, any ambitious REDD-scheme will have to take these factors into account, finding methods for calculation and monitoring, and build systems for compensation, not only based on carbon stocks and changes in them, but also on opportunity costs for land use.

5.2 TECHNICAL READINESS FOR BASELINE ESTABLISHMENT

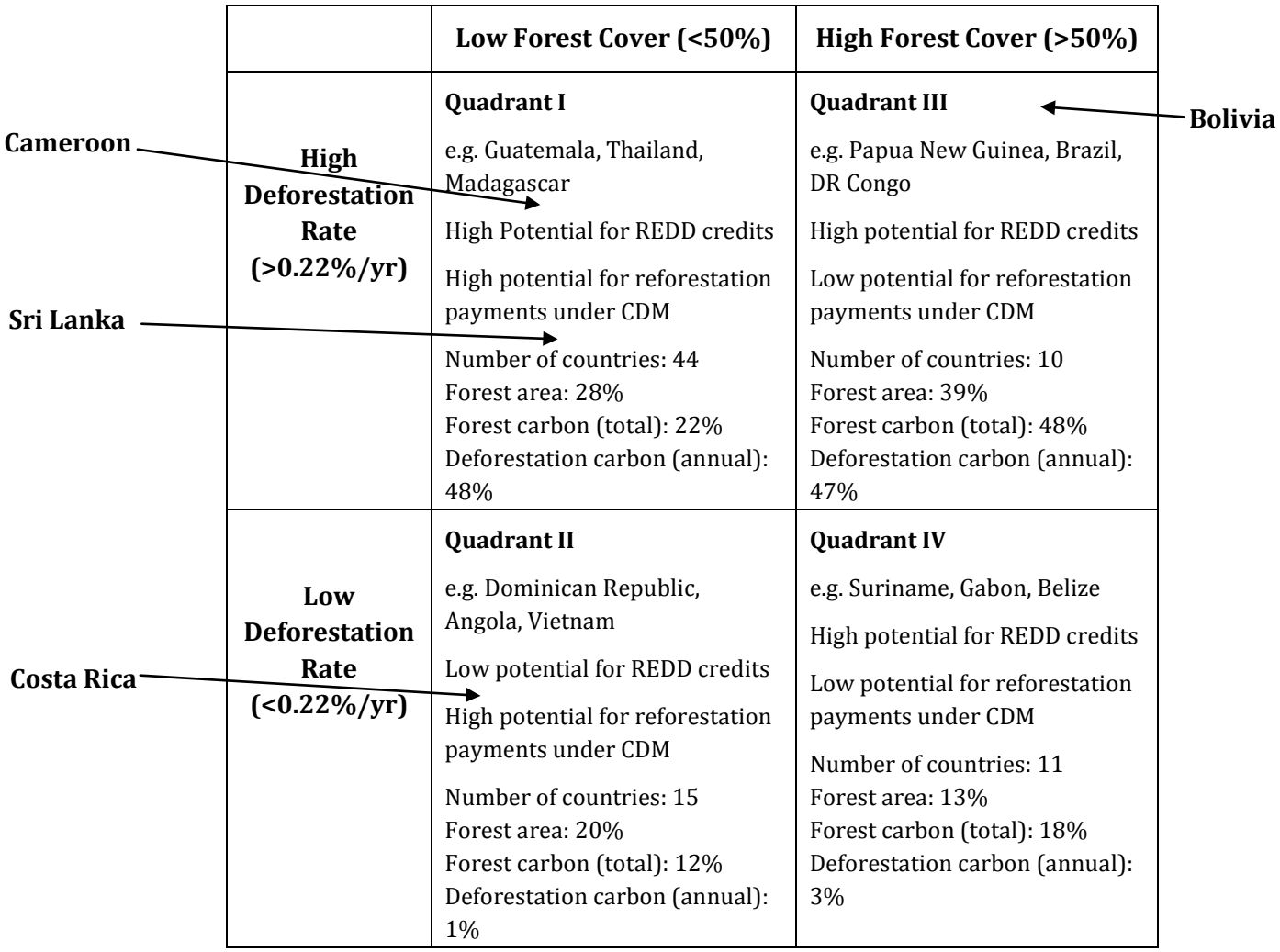
The practical implementation of most REDD pilot initiatives is yet to come, as are the rulers of how national reference scenarios are to be determined. It would be presumptuous to try and anticipate the outcome of the negotiation processes. It can be concluded, however, that if a large REDD scheme is to be launched as part of a post-Kyoto agreement, a significant amount of work will have to be done in preparing participating tropical countries for this. The implementation, monitoring and verification of efforts to reduce deforestation and forest degradation will demand a lot from national forest institutions, policy makers and law enforcers, and strongly depend on their efficiency, and the type and quality of information that is so far available. Data and information will be needed for the formulation of national baselines, the identification of drivers for deforestation, as well as for ensuring that the basic quality requirements of additionality, leakage and permanence are addressed adequately. The ongoing baseline and monitoring initiatives described in section 2.2 can be useful in this process.

5.2.1 Baseline approaches of the initiatives

Although the initiatives have not carved their rules in stone, there are some essential differences in the way the two main initiatives approach baseline formulation. While the UN REDD focuses on historical emissions in the determination of reference scenarios, the WB FCPF also allows for credible estimates of future emissions. This opens up for considering countries that are not typical "*deforesters*", but which might increase their deforestation rates in the future as a response to increasing pressure on land, because of for example international leakage. In line with this, the WB FCPF also supports countries with historically low deforestation rates, such as Guyana and Costa Rica, whereas the UN-REDD concentrates on countries with high deforestation such as Indonesia. It remains to be seen how these baseline approaches will be adjusted to the UNFCCC decisions. It is likely that all initiatives will eventually use the baseline methodologies agreed upon in the international negotiations.

5.2.2 Forest cover and deforestation in case countries

Figure 2 below provides a framework for categorising countries in terms of forest cover and deforestation rate.



	Low Forest Cover (<50%)	High Forest Cover (>50%)
High Deforestation Rate (>0.22%/yr)	**Quadrant I** e.g. Guatemala, Thailand, Madagascar High Potential for REDD credits High potential for reforestation payments under CDM Number of countries: 44 Forest area: 28% Forest carbon (total): 22% Deforestation carbon (annual): 48%	**Quadrant III** e.g. Papua New Guinea, Brazil, DR Congo High potential for REDD credits Low potential for reforestation payments under CDM Number of countries: 10 Forest area: 39% Forest carbon (total): 48% Deforestation carbon (annual): 47%
Low Deforestation Rate (<0.22%/yr)	**Quadrant II** e.g. Dominican Republic, Angola, Vietnam Low potential for REDD credits High potential for reforestation payments under CDM Number of countries: 15 Forest area: 20% Forest carbon (total): 12% Deforestation carbon (annual): 1%	**Quadrant IV** e.g. Suriname, Gabon, Belize High potential for REDD credits Low potential for reforestation payments under CDM Number of countries: 11 Forest area: 13% Forest carbon (total): 18% Deforestation carbon (annual): 3%

Figure 2: Categorization of forest nations according to forest cover and forest rate. (Modified from da Fonseca et al. 2007)

Low forest cover and high deforestation rates, found e.g. in Sri Lanka or Cameroon, imply a high threat to existing forest resources but also a high potential for avoiding large amounts of emissions. It would therefore be reasonable to target these countries in REDD facilitation and preparation activities. In addition, these countries also have high potential for reforestation activities, which makes them interesting for A/R CDM projects. Worldwide, 44

countries can be sorted in this category, which hosts 28% of global forest area but causes almost half (48%) of carbon emissions from deforestation (da Fonseca et al 2007).

Low forest cover and low deforestation rates, on the other hand, as found in Vietnam, Angola or Costa Rica, mean that countries do not have a large potential for REDD. However, they might be better suited for reforestation activities. Globally there are 15 countries in this category, hosting 20% of global forest area and causing only 1% of carbon emissions from deforestation (da Fonseca et al 2007).

Countries with high forest cover and high deforestation rates, such as Bolivia, Papua New Guinea, Indonesia and Brazil, have a very high potential for reducing emissions from deforestation, but almost no opportunities for reforestation. They are typical REDD countries that are subject of interest for all activities in the sector. Although only 10 countries worldwide fall into this category, they are hosts of 39% of global forest area and the source of 47% of global carbon emissions from deforestation (da Fonseca et al 2007).

Finally, countries with high forest cover and low deforestation rates, such as Suriname, Guyana or Gabon, do not actually have the need for climate mitigation activities in their land use sector. They have low potential to contribute to REDD, and equally low chances to profit from reforestation activities. This category is comprised by 11 countries worldwide, hosting a 13% share of global forest area, and causing 3% of carbon emissions from deforestation (da Fonseca et al 2007). Of course it must be kept in mind that these countries could be potential areas for international leakage when countries of Category II or III begin to implement REDD activities. This could increase pressure on their forests and cause deforestation rates to increase.

5.2.3 Technical readiness of REDD host countries

Regarding the preparedness of countries to establish national baselines, it can be concluded that some states are quite advanced in their forest inventory systems, although in most cases the remote sensing facilities are further developed than the field inventories (see Bolivia, Cameroon, or Costa Rica). This is due to the often remote and inaccessible location of forest areas in combination with limited financial and technical resources to conduct field missions. Even in countries where national forest inventories are available, these are often limited to forest area and area loss (e.g. Costa Rica). In most cases biomass stocks or growth data are not part of the inventory. This means that this kind of data, which is needed to determine carbon stocks in different forest types, is largely unavailable. In addition,

discrepancies between data sources, and sometimes even discrepancies within one document are common when it comes to forest area cover or deforestation rates (e.g. Cameroon). Data that is available is often inaccurate and cannot be compared, because different methodologies have been used to conduct inventories (e.g. Cameroon, Costa Rica and Sri Lanka). Moreover, data is oftentimes not kept centrally. Rather, information is dispersed between different institutions or government departments that communicate only to a limited extent. This is the situation in the four case study countries assessed in this report, and it can be expected to be true for many other developing countries.

This means that under current requirements for data accuracy and quality, none of the developing countries would be able to establish a credible and verifiable reference scenario without further input. On the contrary, they all need assistance for updating and complementing information. In section 5.2.2 countries where investments have the highest impact potential in terms of avoiding emissions are identified. The availability of baseline data (or rather, gaps in data availability) can be assessed by answering the following questions:

- *Has a national forest inventory been conducted?* YES, as for countries such as Costa Rica, and Cameroon, NO as for Sri Lanka and Bolivia – surprisingly, because Bolivia is very advanced in many other REDD-related aspects.

- *Is field data available?* In most countries only to a very limited extent, mainly regarding forest area and deforestation. This is one of the bottlenecks of baseline formulation, as ground truthing of satellite observations is indispensable.

- *Is remote sensing data available?* In most countries relevant satellite imagery is available, partly due to free availability of NASA images. Technical problems with the Landsat ETM satellite have caused problems in obtaining data. Another problem is cloud cover over tropical forests, inhibiting sensible imagery. The future use of radar data could solve this problem. The lack of real time data is still a problem.

- *Are there any ongoing activities to close data gaps?* Many countries do not have historical data readily available but to some extent it may be made available in the near future. There is currently a lot of donor support for processing satellite imagery, elaborating biomass inventories, formulating GHG inventory strategies, designing REDD strategies, formulating historical baselines, conducting pilot REDD projects etc.

Some countries, such as Costa Rica, may already have historical and current data on forest cover that can serve for determining a reference scenario, whereas others, such as Bolivia, Cameroon and Sri Lanka will need more assistance in data collection. The extent to which the drivers of deforestation have been studied also varies. Once again, countries such as Costa Rica, where forest conservation has played a prominent role in forest policy in the recent past, may have been subject to a large amount of studies, whereas in Sri Lanka, a country marked by long conflict, the drivers of deforestation have not been subject to much interest. Countries such as Bolivia and Cameroon have not been marked by conflict to a significant extent, but forest data collection and drivers of deforestation have not been a main priority in the distribution of limited resources. This is most likely true for a majority of developing countries.

It can be concluded that already the very first step towards an international REDD scheme, the formulation of reference scenarios, will require extensive data collection, development of methodologies and capacity building on a national as well as an international level. This is where the REDD pilot schemes can play an important role. A first step to prepare countries for participation in REDD is already being taken with the ongoing pilot schemes. Their "*quick start*" and "*readiness*" phases aim to build the capacity of future REDD host countries and to update and upgrade existing information, thus enabling them to formulate a reference scenario as a starting point for measuring and verifying emission reductions.

Because of the vast array of activities currently undertaken, coordination will be crucial for the UN, the World Bank and other actors in order to successfully prepare tropical countries for REDD. The vast range of initiatives could, in a best case scenario, complement and draw benefit from each other, but they also risk overlapping and duplicating the efforts. Coordination is essential for ensuring an efficient use of resources. As can be observed in the figure in Appendix 1 many countries receive REDD funding from more than one donor. In these cases, coordination is particularly important in order to avoid duplication of work.

Countries can be selected for receiving support based on different criteria. Support can be channelled to countries that have access to substantial amounts of data, are active in REDD preparations, and maybe even host other REDD pilot initiatives. In that case, additional funds could bring the country a step closer to becoming a successful REDD host country. An important aspect of this is that only small investments are needed to establish a credible baseline scenario if ample data is already available.

On the other hand, support could be directed at countries that lack data, have not conducted national inventories and have not yet been targeted by other REDD donors. In these countries, funding could constitute a first step towards becoming a REDD host nation. This

is a strategic decision that will depend on whether the international community agrees to focus efforts on the countries that are most likely to make quick progress in REDD terms, or whether a more general approach is chosen, where all interested host countries are to receive support for establishing databases and reference scenarios. Ultimately, the most important factor will be a country's own motivation to participate.

5.3 SUSTAINABLE DEVELOPMENT AND CO-BENEFITS

5.3.1 Initiatives' approach

The UN-REDD and the WB FCPF, as well as most other REDD initiatives, aim at achieving benefits in addition to those of carbon sequestration and sinks. These benefits, often referred to as co-benefits, comprise impacts as diverse as poverty reduction and biodiversity preservation. They are closely linked with forests and land use but the links are intricate. Achieving benefits additional to those of carbon and emission reductions requires purposeful project design and extensive insight in the way the links work. It is essential that project proposals and actions take into account the role forests play for local communities, socially and economically. This requires knowledge of local conditions, such as local economies and social organisation. These conditions, of course, vary between but also within countries. The type of information required may be of a quantitative nature, but many times qualitative information and understanding is necessary. It is an area of expertise that needs to be further explored, in order to ensure that carbon benefits are not achieved at the expense of other development goals such as poverty reduction.

Participation and consultation with indigenous peoples, forest dwellers and other stakeholders is generally seen as a way of ensuring a locally anchored, sustainable REDD process, adapted to local conditions. The actual impact indigenous peoples and local communities will have on the process still remains to be seen, but most initiatives aim at including them in some way or another; through including them in steering groups and committees, and/or by demanding from host countries that participation be part of the national REDD strategy. However, participation does not necessarily guarantee influence over the decisions made, and there is strong argument for the REDD initiatives taking on a rights-based approach, with reference to the UN Declaration on Human Rights and the Declaration on Indigenous Peoples Rights. This issue will be further developed in the Focali Theme II, "Making REDD work for the poor".

Integrating REDD strategies in national planning processes may be one way to ensure coherence with local conditions, assuming that the national strategies are locally anchored. However, the availability of information regarding conditions on a local level differs. For all of our case countries, and probably a majority of non-Annex 1 countries, it is available only to a limited extent. In our four case countries, the monitoring of socio-economic factors is done to varying degrees, but for none of them is disaggregated data available to any significant extent.

5.3.2 Host country readiness for sustainable development in a REDD context

It is worth repeating how difficult it is to assess a country's preparedness for achieving REDD co-benefits in terms of sustainable development. A large number of factors influence this and it is beyond the scope of this study to make a comprehensive assessment of them all. We have therefore chosen a few indicators in order to get some picture of what relevant institutions are already in place that could facilitate the promotion of sustainable development linked to REDD. These indicators are:

- Land tenure and property rights;
- Institutions for participation and stakeholder dialogue regarding forest policy or other;
- Existing data and monitoring of indigenous peoples and forest dwellers' dependence on forests and forestry and land use;
- Institutions for (and previous experiences from) conserving/promoting and monitoring biodiversity and other ecosystem services provided by forests.

The impact of indigenous and local community involvement in REDD processes is still unclear, but it is generally seen as a prerequisite for a democratic and inclusive implementation that could potentially safeguard benefits for the poor. In Bolivia, the indigenous peoples' organisations have a relatively strong position and they are encouraged by the government to take part in planning processes. There are already consultation mechanisms in place, which facilitates the involvement of relevant stakeholders in the readiness and REDD processes. Yet, the position of indigenous peoples in Bolivia is exceptionally strong compared to most countries. In addition, while the indigenous peoples are well organised and their position is relatively strong, the position of forest dweller associations (ASLs) and other communities not organised by any indigenous organisation, is less strong. The government will need to make sure that these communities are not neglected in the REDD process.

In Cameroon, the position of the indigenous peoples is weaker and criticism has been brought forward for the lack of recognition of their rights. They do not have the strong governmental support that the Bolivian indigenous peoples have and they do not have strong organisations. Rather, they depend on NGOs to promote their participation. Forest dwellers and indigenous peoples have not been included in the national REDD process so far. Similarly, in Costa Rica voices have been raised criticising the exclusion of local communities and poor people from PES schemes and action must be taken if their role is to be strengthened in REDD.

These are realities that can be observed in many countries and it is likely to affect the outcome of REDD for indigenous peoples and local communities. Ultimately, the participation of indigenous peoples and local communities will be a delicate matter, also where communities are well organised. As stated above, participation does not guarantee that interests are taken into account, especially if they conflict with other interests. This is why many indigenous representatives argue that consent, not consultations, should be included in the agreements. Participation also requires human and financial capacity. Those that lack capacity and resources risk not getting their voice heard, even where there are mechanisms for participation in place.

Biodiversity and other aspects of sustainable development have been less prominent in the discussions on co-benefits. If environmental benefits, apart from the conservation of forests, are to be achieved through REDD, deliberate action is necessary. For most developing countries this type of action is not a primary priority. A large number of countries have ratified the Convention on Biological Diversity and the Convention on Combating Desertification, but many countries lag behind in implementation. A country that already has made progress on these areas is more likely to be successful in integrating them, or adhering to them, in REDD actions. Our case countries are all parties of the two conventions, but they all lack resources for implementation and monitoring. Bolivia and Costa Rica are hoping for external support from REDD initiatives and the GEF respectively in order to improve their work on biodiversity conservation, monitoring and integration with other activities. Cameroon, on the other hand, states reliance on independent and non-governmental initiatives such as the Forest Stewardship Council to manage monitoring activities. Sri Lanka aims at working actively with biodiversity conservation but the lack of resources in general, combined with the conflict in the country, has obstructed this work.

Sri Lanka is not targeted by any REDD initiative. The recent conflict in the country has contributed in diverting attention and resources from other areas. This is a situation that does not apply only to Sri Lanka and it is important to keep in mind when building up a global REDD scheme. Countries that are torn by conflict may find it difficult to build up stable institutions for monitoring and forest law enforcement and they may not consider it a priority. This makes them risk zones for leakage and displacement of deforestation activities from countries with stricter law enforcement.

5.4 THE INVESTOR'S PERSPECTIVE

Norway has been chosen as investor country case study because, through the Climate and Forest Initiative, the country provides unprecedented funding for REDD activities at international level. Large amounts of money are being invested in a range of countries, using several different investment vehicles that pretty much cover the available options for REDD funding at the moment. With Norway as an example, other donor countries about to formulate their investment strategies can get an overview of different options.

5.4.1 Investment channels

Most investors do not have access to a budget as large as Norway's, and the possibility to fund such a vast range of initiatives. Depending on donor priorities, funds can be channelled either indirectly through multilateral initiatives such as the FCPF, the UN-REDD, or the Congo Basin Forest Fund, or directly through bilateral agreements. Both options have advantages and disadvantages. Bilateral agreements require commitment, extensive preparation and insight in national circumstances of the host country from the donor, as well as established contacts between the two countries. On the other hand, bilateral funding can be more precisely targeted according to donor as well as recipient country preferences and requirements.

Going through a multilateral initiative, on the other hand, means that risks and responsibilities are shared by donors and organisations. Funds are pooled together and distributed according to the initiatives' specifications. In this way, transaction costs are shared by the donors and resources, expertise and knowledge can be used in a more efficient way. Consequently, each donor is not required to establish their own administrative structures and contacts with receiving countries. This saves resources and time in terms of preparation and negotiation of agreements for both donors and host countries.

The choice of investment channel is above all a question of donor preferences. The different characteristics of the initiatives may appeal to different donors depending on what is to be achieved with the investments. This analysis considers the UN-REDD and the WB FCPF, as the most advanced schemes at present, but also takes into account the Congo Basin Forest Fund and the Amazon Fund. While the UN-REDD and the WB FCPF have an international

outreach and are closely linked to the UNFCCC climate negotiations, the CBFF and the Amazon Fund operate in strategic regions.

The UN-REDD focuses on preparing nine countries for a future REDD scheme and will support these countries throughout two dedicated phases of preparation for REDD. It will oversee the development of a national REDD strategy for each recipient country. It currently restricts its baseline approach to historical emissions and does not consider future emission scenarios of low deforestation countries, but this may change depending on the outcome of the REDD negotiations. The initiative is strictly bound to UN principles. Norway is currently the only investor in the scheme and a strong supporter, hoping for other donors to join in for the second phase. The UN-REDD is not explicitly oriented towards the creation of a market based REDD scheme, but this will also depend on the negotiations of the new climate change mitigation agreement.

The WB FCPF has a broader approach, targeting 37 countries for the first readiness phase, of which a few will be selected for later development of pilot projects. This means that funds are more widely spread but slightly less targeted compared to the UN-REDD. The WB traditionally supports market-based solutions and aims more explicitly than the UN-REDD at establishing a market-based mechanism. Although both initiatives have chosen countries and are starting to implement their activities many things are still unclear in terms of how the processes will evolve, partly because of the unknown outcome of the negotiations in Copenhagen in December 2009. This means that many decisions remain to be made and a new donor could contribute to shaping the processes.

The Congo Basin Forest Fund invests strategically and regionally targeted in activities in the Congo Basin. It is not so much geared towards contributing to international REDD negotiations, but rather to project-based activities on the ground and capacity building. There are many overlaps between the initiatives, and coordination will be crucial.

The Amazon Fund, does not have much of an international outreach, but is managed and controlled by the Brazilian government which also specifies the rules and investment conditions. It is strictly non-market based and aims at strengthening the implementation of existing plans to control deforestation in the Amazon. Eventually, the Brazilian government aims at expanding its reach to other tropical forest countries as well.

5.4.2 Choice of activities

The size of the investments also affects the choice of activities to support. A donor can focus on one or a few selected countries and their whole readiness process, or on a type of activity. As this study shows, there is an urgent need for the establishing and upgrading inventory systems both on the ground and remotely, and for complementing existing databases in order to establish national reference scenarios. Countries that want to take part in REDD would be highly served by this type of support, as well as the kind of support the UN-REDD provides for defining national REDD strategies. Another strategy would be to invest in individual pilot projects testing the practical viability of REDD and contributing to methodological development and identify gaps.

Another important aspect of the allocation of funding is that of sustainable development and equity. There is a significant risk for trade-offs between carbon benefits and other development aspects. In this context it is crucial to establish monitoring and assessment of non-carbon impacts on environmental aspects, e.g. biodiversity and on poor people, local communities, indigenous peoples and other forest dwellers. This will be further elaborated by Theme II of the FOCALI project; Making REDD work for the poor.

5.4.3 Structure of investment

Coordination between donors in the REDD field is crucial in order to minimise transaction costs and workload for recipient countries, as well as to avoid doubling the work. Unlike typical ODA payments, funding should be performance based, in order to ensure efficient use of the money. This is an investment criteria used by most of the major initiatives as well as by Norway.

In principle, if REDD is envisaged to become a marked-based mechanism at a later stage, using ODA funds for the preparation phase is not recommendable. This could be criticised as double counting and it is difficult to guarantee that REDD investments are not merely a deviation of funds from other areas of development cooperation even if the entire ODA budget is increased as exemplified by Norway. However, in the current state of developments, their use of ODA money can be considered for targeted activities such as technical and institutional capacity building and investment in so-called “soft skills” rather than for the preparation of activities on the ground which later on might be able to generate carbon credits.

6. KEY MESSAGES FOR POTENTIAL INVESTORS

The results from our assessment of Norway as an investor highlights an exceptionally large budget for REDD investment, including a wide range of initiatives and bilateral options. For investors such as aid agencies, with lower budgets, other strategies with greater focus would likely apply, which concludes that:

- investment volume is crucial.

For an investor, choices regarding what channel the money should go through must be made. Norway chose to go through the ODA channel to secure other development goals in the investment. The potential of REDD becoming a market-based mechanism is real which makes the investment less solid as a pure aid action. For the integrity of the foreign aid system, the international climate negotiations system and the REDD system itself we propose:

- a very transparent description of money flows and intentions in the investments on REDD;

- an assessment of using other channels than ODA.

As the REDD concept has developed, the linkages between pure deforestation and other land use issues such as forest degradation (the second D in REDD), conservation, SFM, enhancement of forest carbon stocks (the + in REDD+[6]), drivers of deforestation and indirect land use change, have been brought to attention. Judging from our analysis, the assessed potential REDD host countries have difficulties getting ready for REDD or might not benefit that much from REDD from a strict deforestation perspective since it will be costly to get ready. However, the focus on REDD in relation to a system-oriented approach on land use calls for:

- a greater attention to general SFM, which is of relevance also for countries not targeted as REDD host countries at present;

- the necessity of building countries' forest inventory and monitoring abilities, which is an area where aid and support can contribute.

[6] For more information of the inclusion of the + in REDD and its development and reasons, see Angelsen et al., 2009.

ACRONYMS

ADB – Asian Development Bank

AfDB – African Development Bank

ASL – Agrupaciones Sociales del Lugar (Bolivian forest dweller associations)

A/R - Afforestation and Reforestation

BNDES - Banco Nacional de Desenvolvimento Econômico e Social (Brazilian Development Bank)

CBD – Convention on Biodiversity

CBFF – Congo Basin Forest Fund

CCBS – Climate, Community and Biodiversity Standards

CCD – Convention to Combat Desertification

CDM – Clean Development Mechanism

CD REDD – Capacity Development for REDD

CIDOB – Confederación de Pueblos Indígenas de Bolivia (Organisation for the indigenous peoples of the Bolivian lowlands)

COMIFAC – Commission of Central Africa Forests (Cameroon, the Central African Republic, the Republic of Congo, DR Congo, Equatorial Guinea, Chad, Gabon, Sao-Tomé & Principe, Rwanda, Burundi)

COP – Conference of the Parties of the UNFCCC

DRC / DR Congo – Democratic Republic of Congo

FAO – Food and Agriculture Organization of the United Nations

FCPF – Forest Carbon Partnership Facility (WB)

FIP – Forest Investment Program (WB)

FLEGT – Forest Law Enforcement, Governance and Trade (EU)

FRA – Forest Resources Assessment (FAO)

GEF – Global Environment Facility

GEO – Group on Earth Observations

GHG – Greenhouse gases

GIS – Geographical Information Systems

GLS – Global Land Survey

GOFC-GOLD – Global Observations for Forest and Land Cover Dynamics

GTZ – German Technical Cooperation Agency

IFCI – Australia's International Forest Carbon Initiative

IPCC – Intergovernmental Panel on Climate Change

ITTO – International Tropical Timber Organization

LCLUC – Land Cover and Land-Use Change (NASA)

MINFOF - Ministry of Forests and Fauna (Cameroon)

MRV – Measuring, Reporting and Verifying

NGO – Non-Governmental Organisation

NTFP – Non-Timber Forest Products

ODA – Overseas Development Assistance

OFAC – Observatory for Central African Forests

PES – Payment for Environmental Services

REDD – Reduced Emissions from Deforestation and Forest Degradation

R-PIN – Readiness Plan Idea Note (WB-FCPF)

R-Plan – Readiness Plan (WB-FCPF)

SBSTA – Subsidiary Body for Scientific and Technological Advice (UNFCCC)

SFM – Sustainable Forest Management

SINAC - Sistema Nacional de Areas de Conservación (Costa Rican conservation system)

TFA – Tropical Forest Account

UNDP – United Nations Development Program

UNDRIP – United Nations Declaration on the Rights of Indigenous Peoples

UNEP – United Nations Environmental Program

UNFCCC – United Nations Framework Convention on Climate Change

UNFF – United Nations Forum on Forests

UN-REDD – United Nations Collaborative Programme on Reduced Emissions from Deforestation and Forest Degradation

USD – United States Dollar

USGS – US Geological Survey

VCS - Voluntary Carbon Standards

VER – Voluntary Emission Reductions

WB – World Bank

GLOSSARY

Additionality is the requirement by which, under the Kyoto Protocol and sound voluntary market standards, carbon credits will be awarded only to project activities where emissions reductions are "*additional to those that otherwise would occur*". In order to qualify as offsets, activities to reduce greenhouse gases have to demonstrate that the reduction would not have happened under a business-as-usual scenario, without the offset funding and that they do in fact constitute an additional benefit for the climate.

Afforestation and Reforestation (A/R) Projects under the CDM include the planting or assisted regeneration of forest on land that has not been forested for a period of at least 50 years (afforestation) or since 1990 (reforestation) through planting, seeding and/or the promotion of natural seed sources.

Baseline/Baseline Scenario (also Reference Scenario) is a business-as-usual scenario, representing the forecasted emissions assuming no measures are taken. Baseline establishment means determining this hypothetical emission scenario against which actual emissions are measured. This is often referred to as the "*baseline scenario*", i.e. expected emissions if the emission reduction activities were not implemented. In the case of REDD, the main options are historical baselines (average emissions during a past period), modelled baselines (spatially explicit - e.g. land use models – or not spatially explicit – e.g. econometric models), and negotiated baselines. The difference between the baseline and project scenario constitutes the climate benefit, and thus the amount of carbon credits that can be claimed.

Clean Development Mechanism (CDM) is a project-based mechanism established in Article 12 of the Kyoto Protocol and designed to assist Annex I Parties in complying with their quantified emission targets through emission reduction projects in Non-Annex I (i.e. developing) countries. At the same time the projects shall contribute to sustainable development in the CDM host countries. CDM projects generate Certified Emission Reductions that are traded as offset credits.

Deforestation is defined in the Marrakech Accords as the direct human-induced conversion of forested land to non-forested land**.**

Degradation refers to changes within the forest that negatively affect the structure or function of the forest stand or site, and thereby lower the capacity of the forest to supply products and/or services. With respect to REDD, degradation refers specifically to a reduction in carbon density.

Host Country is the country where an emission reduction project, e.g. CDM or REDD, is physically located.

Leakage is the displacement of emissions to outside a project area, due to project activities, e.g. the displacement of logging due to forest conservation activities. If carbon emissions are simply displaced rather than avoided, there is no net benefit of the offset activity. For REDD, leakage means that interventions to reduce deforestation in one geographical area, cause an increase in deforestation elsewhere, through the relocation of activities. Leakage can occur at a regional, national or international scale. Addressing leakage is therefore an important element in the design of carbon projects and needs to be prevented and monitored as far as possible.

Market-based approach: Refers to the option discussed for a future REDD scheme to be funded through the carbon market. This would entail the generation of carbon credits for each avoided ton of carbon emissions from deforestation, which could then be traded on global carbon markets.

Fund-based approach: refers to the option of financing REDD activities through donor funding, or multilateral initiatives such as the WB FCPF or UN-REDD, independently from carbon markets. A concern often raised is that a purely fund-based approach might not be capable of raising the funds necessary to reduce global deforestation rates and control emissions from the land use sector. A combination of the market-based and the fund-based approaches is also discussed.

National Crediting / Accounting is one of the approaches currently discussed for REDD, and involves the issuing of credits (emission allowances) by the UNFCCC to the national governments of REDD host countries up to a cap of permissible emissions. This would mean that governments receive the carbon credits for reducing the national deforestation rate. Forest conservation activities on the ground might be compensated by the government, either through a share of carbon credits or through direct compensation payments.

Project Crediting/ Accounting is the second approach currently discussed. It involves issuing credits to an emissions reduction project, e.g. a CDM project. In this approach, carbon credits would not be issued to the government but to the actual forest conservation activities on the ground; similar to the CDM system.

Permanence A fundamental question for land use based projects is how to ensure that the carbon is stored *permanently* and will not eventually be released back to the atmosphere. There are several approaches available to ensure ***permanence*** under the different carbon standards, such as issuing temporary carbon credits that need to be regularly re-verified and replaced (CDM), or setting aside a "*buffer*" reserve of carbon credits that cannot be sold and are used to compensate for a potential loss in biomass (VCS).

Reference scenario: see baseline

Voluntary Markets occur outside carbon markets regulated by international agreements such as the Kyoto protocol. Projects are implemented by NGOs and companies and credits sold to companies, NGOs, local governments, individuals etc.

REFERENCES

Andrew, J.R.T. (1961) *A forest inventory of Ceylon.* Forest Department, Colombo.

AfDB (African Development Bank) (2008). *Framework document for the establishment of the Congo Basin Forest Fund (CBF).* African Development Bank, Agriculture and Agro-Industry Department.

Angelsen A (2008). *REDD models and baselines.* International Forest Review 10: 465-475.

Angelsen A., Streck C. Peskett L., Brown J., and Luttrell C. (2008). *What is the right scale for REDD? The implications of national, subnational and nested approaches.* CIFOR InfoBrief No 15. November 2008.

Angelsen A., Brown S., Loisel C., Peskett P., Streck C., and Zarin D. (2009). *Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report.* Prepared for the Government of Norway, by Meridian Institute Retrieved 2009-04-08, from: http://www.REDD-OAR.org.

Anke H., Cunha G., Dietz J., Freibauer A., Hüttner M., Jung M., Mollicone D and M. Scheffler (2008) *Emissions and removals from land-use, land use change and forestry activities in a post-Kyoto regime quantitative analysis of a framework for reducing deforestation.* Öko-Institut e.V. Report No.FKZ 20642100. Retrived 2009-05-06, from: http://unfccc.int/files/methods_science/redd/methodologies/other/application/pdf/redd_uba_final_report_final_040908_cor.pdf

Australia (2008a). *International Forest Carbon Initiative - Fact Sheet.* Retrieved 2009-03-02, from http://www.climatechange.gov.au/international/publications/fs-ifci.html

Australia (2008b). *Reducing emissions from deforestation and forest degradation in developing countries (REDD). Submission to the AWG-LCA, AWG-KP and SBSTA.*: UNFCCC.

Bandaratillake, H. M., & Sarath Fernando, M. P. (2003). *National Forest Policy Review. Sri Lanka.* In T. Enters, Ma, Qiang, Leslie, Robin N. (Ed.), *An overview of forest policies in Asia.* Bangkok: FAO.

Bellassen, V., & Gitz, V. (2008). *Reducing Emissions from Deforestation and Degradation in Cameroon -- Assessing costs and benefits*. Ecological Economics, 68(1-2), 336-344.

BNDES (2008). *Comitê Orientador do Fundo Amazônia é instalado na sede do BNDES. 24.10.08. BNDES Notícias*. Retrieved 2009-05-11 from http://www.bndes.gov.br/noticias/2008/not191_08.asp

Bogahawatte, C. (1999). *Forestry Policy, Non-Timber Forest Products and the Rural Economy in the Wet Zone Forests in Sri Lanka.*: EEPSEA.

Bolivia (2000). *First national communication to the UNFCCC.*: Ministry of Sustainable Development and Planning, Vice-Ministry of Environment, Natural Resources and Forestry Development.

Bolivia (2008a). *Readiness Plan Idea Note (R-PIN).* World Bank FCPF.

Bolivia (2008b). *PAPER NO. 8: BOLIVIA Contribution to the AWG-LCA and to the Chair's Note entitled "Ideas and proposals on paragraph 1 of the Bali Action Plan"*. Paper presented at the Ad Hoc Working Group on Long-Term Cooperative Action under the Concention. Fourth session.,

Brattskar H. (2009) Presentation and discussion at Swedish Department of Environment focusing on the Norwegian International Climate and Forest Initiative 30 April, Stockholm.

Brazil (2008) *Decreto No 6.527/2008. Dispõe sobre o estabelecimento do Fundo Amazônia pelo Banco Nacional de Desenvolvimento Econômico e Social BNDES.*

Cameroon (2005). *Communication nationale.*: Ministère de l'Environnement et des Forête.

Cameroon (2008). *Readiness Plan Idea Note (R-PIN).* World Bank FCPF, Ministry of the Environment and Nature Protection, Cameroon.

Cameroon (2009). *Cameroon Fourth National Report to the Convention on Biological Diversity.*: Republic of Cameroon, UNEP, GEF, CBD.

CBFF (2008). *The Congo Basin Forest Fund. A global response to a global issue.* Informational Brochure. London.

CBFF (2009). *Congo Basin Forest Fund - A global response to a global issue*. Retrieved 2009-04-02, from http://www.cbf-fund.org/

CIA (2009). *The World Factbook.* Retrieved 2009-04-27, from https://www.cia.gov/library/publications/the-world-factbook/index.html

CD REDD (2008) *Capacity Development for Reducing Emissions from Deforestation and Forest Degradation.* Concept note. Retrieved 2009-05-04, from: http://unfccc.int/files/methods_science/redd/technical_assistance/training_activities/application/pdf/cd_redd_concept_note.pdf

CIDOB (2007). *CIDOB - Confederación de Pueblos Indígenas de Bolivia.* Retrieved 2009-03-31, from www.cidob-bo.org

CBFF (2009). *The Congo Basin Forest Fund. A global response to a global issue.* Retrieved 2009-02-18, from www.cbf-fund.org

Climate Funds Update (2009): www.climatefundsupdate.org. Retrieved in April 2009.

Commission on Environment and Development (1987). *Our Common Future: Report of the World Commission on Environment and Development. Annex to General Assembly document A/42/427.* New York: United Nations.

Congo Basin Forest Fund (2009). Successfull projects. Projects to receive funding from the CBFF. Retrieved 2009-04-16 from

http://www.cbf-fund.org/site_assets/downloads/pdf/projects_receiving_funding.pdf

Costa Rica (2000). *Primera Comunicación Nacional Ante la Convención Marco de las Naciones Unidas sobre Cambios Climáticos.*: Ministerio del Ambiente y Energía, Instituto Meteorológico Nacional.

Costa Rica (2006). *III Informe de país. Implementación del Convenio sobre la Diversidad Biológica (CBD).* MINAE, SINAC.

Costa Rica (2008). *Readiness Plan Idea Note (R-PIN)*: World Bank FCPF, FONAFIFO, Ministry of Environment and Energy.

da Fonseca GAB, Rodriguez CM, Midgley G, Busch J, Hannah L, and RA Mittermeier (2007) *No Forest Left Behind.* PLoS Biology Vol. 5, No. 8, e216

de Jong, W., Ruiz, S., & Becker, M. (2006). Conflicts and communal forest management in northern Bolivia. *Forest Policy and Economics, 8*(4), 447-457.

de Saram Larssen, A. (2008) Norway reaches target of allocating 1% of GNI towards international development cooperation. Retrieved in May from. http://bistandsaktuelt.typepad.com/blade/2008/10/norway-reaches-target-of-allocating-1-of-gni-towards-international-development-cooperation.html

Ebeling J., Neeff T., Henders S., Moore C. & Acui F. (2008). *REDD policy scenarios and carbon markets.* A report for the Indonesia Forest Carbon Alliance (IFCA) commissioned by the Government of Indonesia and the World Bank. Oxford, Jakarta, EcoSecurities.

EU (2008a). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions. *Addressing the challenges of deforestation and forest degradation to tackle climate change and biodiversity loss*. COM(2008) 645 final.

EU (2008b). *EUROPA - Environment - FLEGT/FLEG*. Retrieved 2009-03-03, from http://ec.europa.eu/environment/forests/flegt.htm

Ezzine de Blas, D., Ruiz Pérez, M., Sayer, J. A., Lescuyer, G., Nasi, R., & Karsenty, A. (2009). *External Influences on and Conditions for Community Logging Management in Cameroon.* World Development, 37(2), 445-456.

FAO/GOSL (1986) *A national forest inventory of Sri Lanka,* 1982-1985. Unpublished report

FAO (1997). *Asia-Pacific Forestry Sector Outlook Study: Country Report - Sri Lanka*. Colombo: FAO.

FAO (2001) *Global Forest Resources Assessment 2001*. FAO Forestry paper 140. Food and Agriculture Organization of the UN, Rome.

FAO (2005) *Évaluation des Ressources Forestières Mondiales 2005 Progrès vers la gestion forestière durable.* FAO, Rome, Italie.

FAO (2007). *Evaluation des ressources forestière nationale du Cameroun. 2003-2004*. Yaoundé: FAO, République du Cameroun, Ministère des Forête et de la Faune.

FAO (2008). *FAO Forestry Country Profiles*. Retrieved 2009-03-25, from http://www.fao.org/forestry/country/en/

FAO (2009a). *Spotlight on forest monitoring: remote sensing and field inventories to monitor forests worldwide.* Retrieved 2009-05-04, from http://www.fao.org/newsroom/en/news/2008/1000884/index.html

FAO (2009b). *National Forest Monitoring and Assessment - NFMA*. Retrieved 2009-03-26, from http://www.fao.org/forestry/47655/en/

FAO, UNDP, & UNEP (2008). UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degredation in Developing Countries (UN-REDD). FAO, UNDP, UNEP.

FONAFIFO (Fondo Nacional de Financiamiento Forestal) (2008) *Servicios Ambientales, estadísticas PSA 1997–2005*. Retrieved 2009-05-07, from http://www.fonafifo.com/paginas_espanol/servicios_ambientales/sa_estadisticas.htm.

GEF (2009). Global Environment Facility - *Investing In Our Planet* Retrieved 2009-02-06, from www.gefweb.org

GEO (2009a). Group of Earth Observation. Available at: http://www.earthobservations.org/about_geo.shtml

GEO (2009b). *Group of Earth Observation 2009-2011 Work Plan, Sub-task Title: Forest Carbon Tracking.* Retrieved 2009-05-05, from http://www.earthobservations.org/documents/tasksheets/200901/cl-09-03b.pdf

Gibbs, H.K. Brown, S. Niles J.O. and J.A. Foley (2007) *Monitoring and estimating tropical forest carbon stocks: making REDD a reality,* Environmental Research Letters 2 10.1088/1748–9326/2/4/045023.

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

Gomez S. (2009). *REDD Activities in GSE FM within the process of the COP13 and COP14.* GSE-FM Newsletter February 2009. GAF-AG, Germany. Retreived 2009-03-25, from http://www.gmesforest.info/downloads/GSE%20FM%20Newsletter%205.pdf

Gunatilake, H. M. (1998). *The role of rural development in protecting tropical rainforests: evidence from Sri Lanka.* Journal of Environmental Management, 53(3), 273-292.

Guyana (2009). *Guyana gets Norway's support on avoided deforestation.* Press release 3rd February 2009. Georgetown, Guyana**.** Retrieved 2009-03-25, from

http://www.agriculture.gov.gy/Bulletins/Febuary%202009/Guyana%20gets%20Norways%20support%20on%20avoided%20deforestation.html

Holmgren, P., Marklund, L.-G., Saket, M. & Wilkie, M.L (2007). *Forest monitoring and assessment for climate change reporting: partnerships, capacity building and delivery.* Forest Resources Assessment Working Paper 142. FAO, Rome.

Holmgren, P. (2008). *UN-REDD ready for action*. ITTO Tropical Forest Update, 18(3), 17-18.

Holmgren, P. (2009) Personal Communication per e-mail on the UN-REDD programme.

Ibarra, E., & Hirakuri, S. R. (2007*). Institutional conflict and forest policy effectiveness: The case of the Costa Rican institutional reform.* Forest Policy and Economics, 9(6), 591-601.

IPCC (2003). *Good Practice Guidance for Land Use, Land-Use Change and Forestry.* In J. Penman, et al. (Eds.) Available from http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm

IPCC-AFOLU (2006) *IPCC Guidelines for National Greenhouse Gas Inventories*. Prepared by the National Greenhouse Gas Inventories Programme ed H S Eggleston, L Buendia, K Miwa, T Ngara and K Tanabe (Japan: Institute For Global Environmental Strategies)

ITTO (2007). *Annual review and assessment of the world timber situation.* Yokohama: International Tropical Timber Organization.

ITTO (2008a). *Statement by the International Expert Meeting on Addressing Climate Change through Sustainable Management of Tropical Forests.* ITTO.

ITTO (2008b). *US$8.6 million in new funds for tropical forests*. *ITTO News Release, 8 November 2008*. Retrieved 2009-04-26 from http://www.itto.or.jp/live/PageDisplayHandler?pageId=217&id=4335

JRC (Joint Research Centre) (2006) *Monitoring Central African Forest Resources.* Factsheet of the European Commission.

Kaimowitz D. (2008) *The Prospects for Reduced Emissions from Deforestation and Degradation (REDD) in Mesoamerica.* The International Forestry Review 10. No.3.

Killeen, T., Calderon V., Soria L., Quesada B., Steininger, MK, Harper G., Solórzano LA and CJ Tucker (2007) *Thirty years of Land-Cover Change in Bolivia*. Ambio Vol 36. No7.

Kleinn, C., Ramírez, C., Chaves, G., & Lobo, S. (2001). *Pilot forest inventory in Costa Rica for the Global Forest Survey (GFS). Initiative of FAO FRA.*: FAO, CATIE, Ministerio de Amibiente y Energía.

Kleinn, C., Ramírez, C., Holmgren, P., Valverde, S. L., & Chavez, G. (2005). *A national forest resources assessment for Costa Rica based on low intensity sampling.* Forest Ecology and Management, 210(1-3), 9-23.

Koelmeyer, K.O. (1957). *Climatic classification and distribution of vegetation in Ceylon.* Ceylon Forester III, 144.

Kollmuss, A., Zink, H. and Polycarp, C. (2008). *Making sense of the voluntary carbon market – A comparison of carbon offset standards*. SEI and Tricorona.

Legg, C. and Jewell, N. (1995). *A 1.50,000 forest map of Sri Lanka: the basis for a National Forest Geographic Information System.* Special Issue, The Forester, Forestry Information Service (eds.). The Sri Lanka Forest Department, Battaramulla, Sri Lanka.

Liyanaarachchi, A. (2004). *Forestry policy, non-timber forest products and rural economy-the case for Sri Lanka.* In H. C. Sim, Appanah, S., Lu, W.M. (Ed.), Proceedings of the workshop Forests for Poverty Reduction: Can Community Forestry Make Money? Bangkok: FAO.

MAB (2005). *The Sri Lanka MAB Programme*. Retrieved 2009-03-31, from www.mablanka.lk

Mattsson, E., Ostwald, M., & Nissanka, S. P. (2008). *Estimating Deforestation and Forest Degradation in Sri Lanka – A Pilot Project Of a Potential REDD Mechanism.* Paper presented at the Forest Adaptation 2008.

Mattsson, E., Ostwald, M., & Nissanka, S. P. (2009). *Implementing REDD in Sri Lanka – opportunities and implications.* Manuscript in preparation.

Mertens, B., Sunderlin, W. D., Ndoye, O., & Lambin, E. F. (2000). *Impact of Macroeconomic Change on Deforestation in South Cameroon: Integration of Household Survey and Remotely-Sensed Data.* World Development, 28(6), 983-999.

Minang, P. A., Bressers, H. T. A., Skutsch, M. M., & McCall, M. K. (2007). *National forest policy as a platform for biosphere carbon management: the case of community forestry in Cameroon*. Environmental Science & Policy, 10(3), 204-218.

Norway (2009). Ministry of the Environment. *The Government of Norway's International Climate and Forest Initiative.* Retrieved 2009-04-05 from http://www.regjeringen.no/en/dep/md/Selected-topics/klima/why-a-climate-and-forest-initiative.html?id=526489

Norwegian Pollution Control Authority (2009), State of Environment Norway. *Growing greenhouse gas emissions.* Retrieved 2009-03-23, from http://www.environment.no/tema/klima/,

NPPD (National Physical Planning Department) (2002) *National Physical Planning Policy. Final Document,* March 2002, National Physical Planning Department, Ministry of Western Region, Government of Sri Lanka.

OFAC (Observatoire des Forets d'Afrique) 2009: *Structure of the Observatiory.* Available under: http://www.observatoire-comifac.net/page.php?p=1&l=en

Office of the Prime Minister (2007). Speech at UN Climate change Conference in Bali- Prime Minister Jens Stoltenberg. Retrieved in 2009-04-07 from: http://www.regjeringen.no/en/dep/smk/primeminister/prime-minister-jens-

stoltenberg/Speeches-and-Articles/Speech-at-Trafalgar-Square-London/Speech-at-UN-Climate-Conference-in-Bali.html?id=493899

Pacheco, P. (2006). *Agricultural expansion and deforestation in lowland Bolivia: the import substitution versus the structural adjustment model*. Land Use Policy, 23(3), 205-225.

Pedroni L. (2007). The nested approach. A flexible mechanism to reduce emissions from deforestation. Presentation at International Roundtable on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries. Brussels (Belgium), 24-25 October, 2007

Pedroni, L., Streck, C., Estrada, M. and Dutschke, M. (2007). The 'nested approach'. A flexible mechanism to reduce emissions from deforestation. CATIE, Turrialba, Costa Rica

Perera, G. A. D. (2001). *The secondary forest situation in Sri Lanka: A review.* Journal of Tropical Forest Science, 13(4), 768-785.

Persson, U.M. and Azar, C. (2007). *Tropical deforestation in the future international climate policy regime – Lesson from the Brazilian Amazon.* Mitigation and Adaptation Strategies for Global Change. 12:1277-1304.

Ratnayake, J., Abeykoon, M. and Chemin, Y. (2002) *District-wise forest area variation in Sri Lanka from 1992 to 2001 for supporting the National Physical Planning Policy.*

Reuters (2008). *Norway says aims to go carbon neutral by 2030*. Retrieved 2009-03-25, from: http://www.reuters.com/article/environmentNews/idUSL17660153200801 17?feedType=RSS&feedName=environmentNews&sp=true,

Ravindranath, N.H. and Ostwald, M. (2008). *Carbon Inventory methods – Handbook for greenhouse gas inventory, carbon mitigation and roundwood production projects*. Advances in global change research Volume 29. Springer Verlag.

Seifert Grantzin J. (2009). Personal comminication on REDD readiness in Bolivia.

Sida (2009). *Sida. Styrelsen för internationellt utvecklingssamarbete*. Retrieved 2009-03-20, from www.sida.se

Souza Jr., C. M., Roberts, D. and Cochrane, M. A. (2005) *Combining Spectral and Spatial Information to Map Canopy Damages from Selective Logging and Forest Fires.* Remote Sensing of Environment. 98. 329-343.

Sri Lanka (1995). *Forestry Sector Master Plan.* Forestry Planning Unit. Battaramulla, Sri Lanka: Forest Department, Ministry of Environment.

Sri Lanka (2000). *Initial National Communication under the United Nations Framework Convention on Climate Change.*: Government of Sri Lanka.

Sri Lanka (2007). *Third National Report to the Convention of Biodiversity.* Colombo: UNCBD.

Sri Lanka (2008). *PAPER NO. 11: SRI LANKA Item 14. Reducing Emission from Deforestation in Developing Countries: Approaches to stimulate Action. Referred to in document*

FCCC/SBSTA/2007/L.23/Add.1/Rev.1, paragraph 7a. Subsidiary Body for Scientific and Technological Advice. Twenty-eighth session.

Statistics Norway (2009). *Emissions of greenhouse gases 1990-2007. High emissions of greenhouse gases.* Retrieved 2009-03-20 from http://www.ssb.no/klimagassn_en/,

UN (2008). UN system response to support REDD. Side event at the COP-14 United Nations Climate Change Conference in Poznan, Poland. Retrieved 2009-04-27, from http://copportal1.man.poznan.pl/Archive.aspx?EventID=62&Lang=floor

UNDP (2009). *UN-REDD Programme Fund* Retrieved 2009-02-05, from http://www.undp.org/mdtf/UN-REDD/overview.shtml

UN-REDD (2008). *Global indigenous peoples consultation on reducing emissions from reduced deforestation and forest degradation (REDD). Baguio City, Phillippines 12-14 November 2008. Summary report.* Baguio City: UNU-IAS, Tebtebba, CBD, UN-REDD Programme.

UN-REDD (2009a). UN-REDD Programme Retrieved 2009-02-12, from www.un-redd.net

UN-REDD (2009b). Measurement, Assessment, Reporting and Verification (MARV). Issues and options for REDD. Discussion Draft Paper. UN-REDD Policy Board.

UN-REDD (2009c). REDD Roadmap. Retrieved 2009-03-30, from http://redd.wetpaint.com

UNFCCC (2007). *Decision 1/CP.13: Bali Action Plan*. FCCC/CP/2007/6/Add.1

UNFCCC (2008). Norway's country submissions to the AD HOC WORKING GROUP ON FURTHER COMMITMENTS FOR ANNEX I PARTIES UNDER THE KYOTO PROTOCOL. *Information and data related to paragraph 17 (a) (i) and (ii) of document FCCC/KP/AWG/2006/4 and to the scale of emission reductions by Annex I Parties, and views on the organization of an in-session workshop on these issues*. http://unfccc.int/resource/docs/2008/awg6/eng/misc04.pdf

UNFCCC (2009a) REDD Web Platform. Retrieved 2009-05-15 from http://unfccc.int/methods_science/redd/methodologies/remote_sensing/items/4540.php

UNFCCC (2009b). Clean Development Mechanism. Retrieved 2009-03-25, from http://cdm.unfccc.int/index.html

Watson, R., Noble, I., Bolin, B., Ravindranath, N. H., Verardo, D., Dokken, D. (2000). *Land use, land-use change and forestry.* IPCC Special Report. Cambridge University Press, UK.

Wickramasinghe, A. (1997). *Anthropogenic factors and forest management in Sri Lanka*. Applied Geography, *17*(2), 87-110.

World Bank (2008a). Forest Carbon Partnership Facility. *Information Memorandum*. Retrieved from http://wbcarbonfinance.org/Router.cfm?Page=FCPF&FID=34267&ItemID=34267&ft=DocLib&ht=42500&dl=1

World Bank (2008b). H*igh Demand Prompts Forest Carbon Partnership Facility to Expand Beyond Original 20 Developing Countries.* News Release No:2008/124/SDN. Retrieved from http://go.worldbank.org/F37LVLT780.

World Bank (2008c). *Dialogue between the World Bank and indigenous peoples in Central and East Africa on the Forest Carbon Partnership Facility (FCPF): Consultations on activities aiming at reducing emissions due to deforestation and land degradation. Workshop Report.* Bujumbura, Burundi - March 13 and 14, 2008: World Bank, UNIPROBA/IPACC.

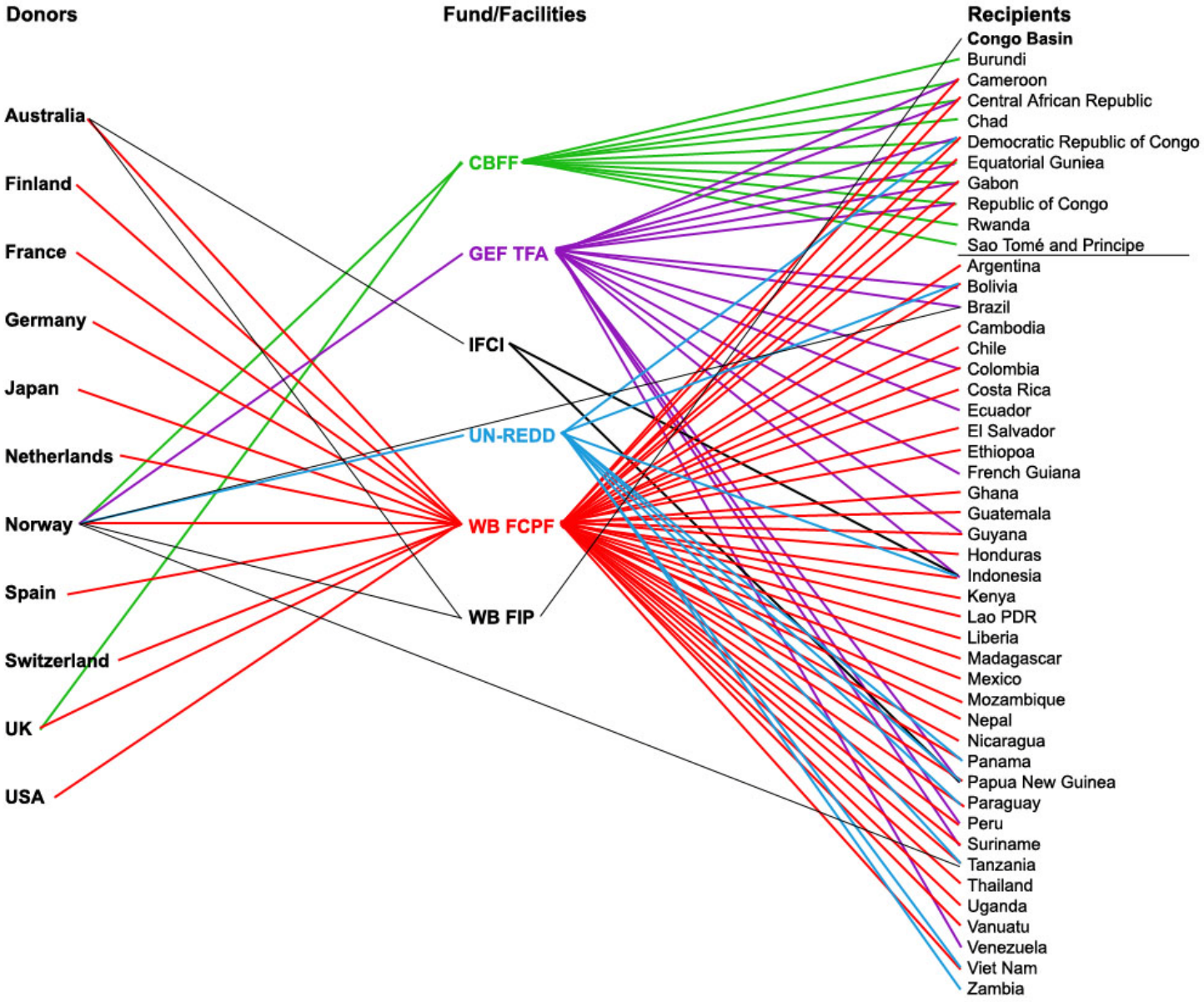
World Bank (2009a). *Forest Carbon Partnership Facility* Retrieved 2009-02-04, from http://wbcarbonfinance.org/Router.cfm?Page=FCPF&ItemID=34267&FID=34267

World Bank (2009b). *Forest Investment Program Design Document.* (Prepared by the Forest Investment Program Working Group). World Bank Climate Investment Funds.

World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank (2005). *World Resources 2005: The Wealth of the Poor—Managing Ecosystems to Fight Poverty.* Washington, DC: WRI.

Zueras, D. (2008). *Costa Rica: Indigenous People Still Largely Invisible. IPS News*. Retrieved 2009-03-27, from http://ipsnews.net/news.asp?idnews=44495

APPENDIX 1


Donors
Fund/Facilities
Recipients
Australia
Finland
France
Germany
Japan
Netherlands
Norway
Spain
Switzerland
UK
USA
CBFF
GEF TFA
IFCI
UN-REDD
WB FCPF
WB FIP
Congo Basin
Burundi
Cameroon
Central African Republic
Chad
Democratic Republic of Congo
Equatorial Guniea
Gabon
Republic of Congo
Rwanda
Sao Tomé and Principe
Argentina
Bolivia
Brazil
Cambodia
Chile
Colombia
Costa Rica
Ecuador
El Salvador
Ethiopoa
French Guiana
Ghana
Guatemala
Guyana
Honduras
Indonesia
Kenya
Lao PDR
Liberia
Madagascar
Mexico
Mozambique
Nepal
Nicaragua
Panama
Papua New Guinea
Paraguay
Peru
Suriname
Tanzania
Thailand
Uganda
Vanuatu
Venezuela
Viet Nam
Zambia

APPENDIX 2

Initiative	Type	Baseline approach	Sustainable development	Market approach	Eligible countries	Funds
UN-REDD	Global	Historic emissions and national circumstances. Will ultimately depend on UNFCCC negotiations.	Stakeholder dialogues, REDD-strategies integrated into national planning processes, development of systems for fair distribution of payments.	Emission reduction credits depending on UNFCCC negotiations.	9 pilot countries (3, from LA, 3 from Asia, 3 from Africa)	52 million USD
WB FCPF	Global	Historical emissions and a credible assessment of future emissions.	Consultations and involvement of stakeholders. Payments should provide incentives to promote sustainability of projects.	Performance based compensations according to UNFCCC negotiations.	37 countries participating in the Readiness Mechanism.	169 million USD
WB FIP	Global	Building on readiness work performed by UN-REDD and FCPF.	Multi-stakeholder REDD planning processes.	Results based payments.	Countries eligible for ODA according to OECD/DAC and active MDB countries.	57 million USD
GEF TFA	Global	N/A	Preventing land degradation for sustained provision of environmental services to forest dependant peoples.	N/A	Countries in the target regions; the Amazonia, the Congo Basin and New Guinea	60-70 million USD
CBFF	Regional	N/A	Poverty reduction as project selection criterion. Preference given to projects that improve livelihoods of forest dwellers.	Preference given to project proposals presenting new funding mechanisms	The 10 COMIFAC members	140 million USD
Amazon Fund	Bilateral	Reference scenario based on current deforestation rates.	Wide range of stakeholders included in the Orienting Committee.	Non-transferable certificates	Brazil	1 billion USD in 8 years

Initiative	Type	Baseline approach	Sustainable development	Market approach	Eligible countries	Funds
IFCI	Bilateral	Recent historic emissions or business as usual.	Improved livelihoods and sustainable resource management part of initiative objectives.	Supports development of market based approach under UNFCCC	Indonesia, Papua New Guinea	130 million USD (200 million Australian dollars)
Norway – Tanzania	Bilateral	Collaboration with UN-REDD.	Following ODA objectives	Results based payments in the long run.	Tanzania	70 million USD over 5 years

The Forest Initiative Partnership