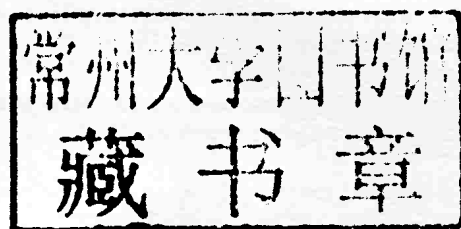




## National Forest Monitoring Systems: Monitoring and Measurement, Reporting and Verification (M & MRV) in the context of REDD+ Activities



National Forest Monitoring Systems: Monitoring and  
Measurement, Reporting and Verification (M & MRV)  
in the context of REDD+ Activities



2013



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# UN-REDD

PROGRAMME



Empowered lives.  
Resilient nations.

The UN-REDD Programme is the United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD+) in developing countries. The Programme was launched in 2008 and builds on the convening role and technical expertise of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The UN-REDD Programme supports nationally-led REDD+ processes and promotes the informed and meaningful involvement of all stakeholders, including Indigenous Peoples and other forest-dependent communities, in national and international REDD+ implementation.

# Acronyms

<b>AD</b>	Activity Data
<b>AFOLU</b>	Agriculture, Forestry and Other Land Use
<b>CDM</b>	Clean Development Mechanism
<b>CO<sub>2</sub>e</b>	Carbon Dioxide equivalent
<b>COP</b>	Conference of the Parties of the UNFCCC
<b>C&amp;I</b>	Criteria and Indicators
<b>EF</b>	Emission Factors
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FCPF</b>	Forest Carbon Partnership Facility
<b>FRA</b>	Global Forest Resources Assessment
<b>GHG</b>	Greenhouse Gas
<b>INPE</b>	Brazilian Space Agency
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IUCN</b>	International Union for Conservation of Nature
<b>ITTO</b>	International Tropical Timber Organization
<b>JI</b>	Joint Implementation
<b>LULUCF</b>	Land Use, Land-Use Change and Forestry
<b>MECNT</b>	Ministry of Environment, Conservation of Nature and Tourism of the Democratic Republic of Congo
<b>M &amp; MRV</b>	Monitoring and Measurement, Reporting and Verification
<b>NFI</b>	National Forest Inventory
<b>NFMS</b>	National Forest Monitoring System
<b>PAMs</b>	Policies and Measures
<b>QA</b>	Quality Assurance
<b>QC</b>	Quality Control
<b>REDD+</b>	reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
<b>REL</b>	Reference Emission Levels
<b>RL</b>	Reference Levels
<b>SLMS</b>	Satellite Land Monitoring System
<b>SMF</b>	Sustainable Management of Forests
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>UN-REDD</b>	The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
<b>WCS</b>	Wildlife Conservation Society





# Executive Summary

This document builds on the brief paper presented at the 7<sup>th</sup> Meeting of the UN-REDD Programme Policy Board, held in Berlin, October 2011 (UNREDD/PB7/2011/13), which lays out ways to consider the REDD+ monitoring and information provision needs in the broader context of national development and environmental strategies, at the implementation level.

The purpose of this document is to describe the elements in National Forest Monitoring Systems (NFMSs) as they relate to REDD+ under the United Nations Framework Convention on Climate Change (UNFCCC), and to describe the UN-REDD Programme approach to Monitoring and Measurement, Reporting and Verification (M & MRV) requirements. This paper is presented in a series of sections discussing the various elements of relevant texts of the UNFCCC and the methodological recommendations of the Intergovernmental Panel on Climate Change (IPCC). This approach aims to allow the end-user to consider the implications of the implementation of REDD+ activities in distinct national contexts, and the various steps involved.

The future vitality of the world's forests and the globally significant environmental services they provide are increasingly under threat from human activities. Not only do these activities have negative impacts on biodiversity and hydrological services but they also contribute to global climate change. It is estimated that deforestation of tropical forests released around 1-2,000 Mt C/yr to the atmosphere during the 1990s, which corresponds to approximately 17 percent of annual anthropogenic greenhouse gas (GHG) emissions during the same period. This significant source of emissions is being addressed under the UNFCCC, through reduced emissions from deforestation and forest degradation (REDD), with the aim of lowering the contribution from the forestry sector. REDD became 'REDD+' with the addition of activities aiming to conserve, sustainably manage and increase forest carbon stocks.

REDD+ covers five activities, operationalised during the 16<sup>th</sup> Conference of the Parties (COP) to the UNFCCC in Cancun, Mexico, in Decision 1/CP.16, paragraph 70:

- Reducing emissions from deforestation;
- Reducing emissions from forest degradation;
- Conservation of forest carbon stocks;
- Sustainable management of forests;
- Enhancement of forest carbon stocks.

Decision 1/CP.16 is the outcome of international negotiations under the UNFCCC, which began in 1992 and have gradually been implemented since then through several steps, notably through the adoption of the Kyoto Protocol. The Kyoto Protocol sets legally-binding GHG Quantified Emission Limitation and Reduction Commitment (QELRO) for developed (Annex I) countries in recognition of their historical contribution to the current concentrations of GHGs in the atmosphere. The REDD+ activities constitute an important step to enhance mitigation of climate change through actions by developing countries.

The REDD+ activities aim to reduce GHG emissions from the forest sector in developing countries, supported by a fair positive incentives system for participating developing countries while applying the principles encouraged by the UNFCCC. As an established practice, the UNFCCC usually requests the Intergovernmental Panel on Climate Change (IPCC) to develop methodologies for estimating GHG emissions and removals based on sound science. These methodologies are then used by countries to compile data for their GHG inventories, which are then, following further guidance by the UNFCCC, reported to the UNFCCC Secretariat.

The gradual and cumulative nature of the negotiation process led to a series of Decisions relating to REDD+ activities over time that are a combination of principles, rules and modalities, including methodological guidance (e.g. Decisions 1/CP.13, 2/CP.13, 4/CP.15, 1/CP.16). The result of this fine-tuning process is a series of provisions including recommendations and requirements, both institutional and technical. According to Decision 1/CP.16, countries should implement REDD+ activities in three phases. Only in the third phase, when the NFMS must be fully operational, may a country receive positive incentives (performance-based) in accordance with future decisions of the UNFCCC.



This document also outlines the methodological proposals of the UN-REDD Programme to implement a NFMS that will allow country Parties to comply with the REDD+ requirements through a sustainable stepwise approach. The process should allow for incremental efforts to improve performance in recognition of countries' varied capabilities and national circumstances. Under the UN-REDD Programme approach, an NFMS can serve simultaneous functions: a 'monitoring' function and a 'Measurement, Reporting and Verification (MRV)' function. The key technical elements under each of these functions are explained.

The "monitoring" function of the NFMS is primarily a domestic tool to allow countries to assess a broad range of forest information, including in the context of REDD+ activities. The monitoring function can be implemented through a variety of methods and serve a number of different purposes, depending on national circumstances, but in the UN-REDD Programme context it focuses on the impacts and outcomes of 1) demonstration activities carried out during the second phase of REDD+ and 2) national policies and measures for REDD+ in the third phase of REDD+.

The MRV function for REDD+, on the other hand, refers to the estimation and international reporting of national-scale forest emissions and removals. It is based on three main components, or 'pillars': 1) the satellite land monitoring system (SLMS); 2) the national forest inventory (NFI); and 3) the national GHG inventory. The SLMS and the NFI pillars are used to provide inputs into the third pillar – the forest sector component of the GHG inventory. Countries must progressively develop and operationalize these three pillars over the three phases of REDD+, and align them with the monitoring function, so that by the third phase of REDD+ they have a fully functional NFMS.



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# 1. Introduction

## 1.1 Climate change and forests

Anthropogenic climate change has become a scientific and political phenomenon without precedent. The United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol constitute two of the responses of the international community to address the challenges presented by climate change. To support these responses through sound scientific approaches, the Intergovernmental Panel on Climate Change (IPCC) was formed as the international scientific body responsible for assessing climate change science and providing methodological guidance on how to estimate greenhouse gas (GHG) emissions and removals through GHG inventories.

About 30% of the global land area is covered by forests, which provide a wide range of important products such as timber, fuel wood, paper, food and fodder as well as environmental and social services including the protection of soil and water resources, the conservation of biological diversity and the provision of livelihoods for an estimated 1.6 billion people (World Bank, 2004). Forests, like other ecosystems, are affected by climate change, but also influence climate and the climate change process. They absorb carbon in wood, leaves and soil, and release it into the atmosphere, for example when burned or when forest land is cleared. At the global level it is estimated that deforestation and forest degradation released around 1-2,000 Mt C/year during the 1990s, (Houghton, 2005), which represents around 17% of total annual anthropogenic GHG emissions (IPCC, 2007). It is estimated that the majority of deforestation and forest degradation takes place in developing countries (Gullison et al., 2007).

## 1.2 Objectives

As part of international climate change mitigation efforts and in the context of the implementation of the UNFCCC, developing countries are encouraged to undertake activities in the forestry sector to reduce GHG emissions, and conserve, enhance and sustainably manage forest carbon stocks. These are referred to as the REDD+ activities<sup>1</sup>. The UNFCCC advises countries aiming to undertake REDD+ activities to follow methodologies for estimating GHG emissions and removals developed by the IPCC to be able to provide transparent and consistent information. However, the technical language used, and the range of issues addressed in UNFCCC decision texts, are sometimes difficult to understand.

**This report aims to collate the UNFCCC decisions and international requirements which are relevant to national forest monitoring systems (NFMS) in the context of REDD+, and to provide a basis for the practical implementation of their dual functions of (i) monitoring and (ii) measurement, reporting and verification (from now on M & MRV).**

This document is specifically targeted at developing countries aiming to undertake REDD+ activities following the decisions of the UNFCCC, drawing on experiences from UN-REDD Programme pilot countries. Each section of this report addresses a specific aspect related to the implementation of the NFMS, sets out the relevant international guidance and outlines actions which countries can take to begin implementation.

Figure 1 illustrates how this document sits in relation to the national arrangements and documents tested by the UN-REDD Programme as essential elements of the M & MRV approach.

This document begins by presenting REDD+ in the context of the UNFCCC and ongoing multilateral climate change processes, followed by an outline of the concepts of the NFMS's functions and their application within the UNFCCC framework. An overview of methodological requirements and guidelines is then set out. Finally, the document proposes concrete actions/recommendations which countries can take towards implementation following the proposed UN-REDD strategy.

<sup>1</sup> Reducing emissions from deforestation, reducing emissions from forest degradation, conservation of forest carbon stocks, sustainable management of forests, enhancement of forest carbon stocks.

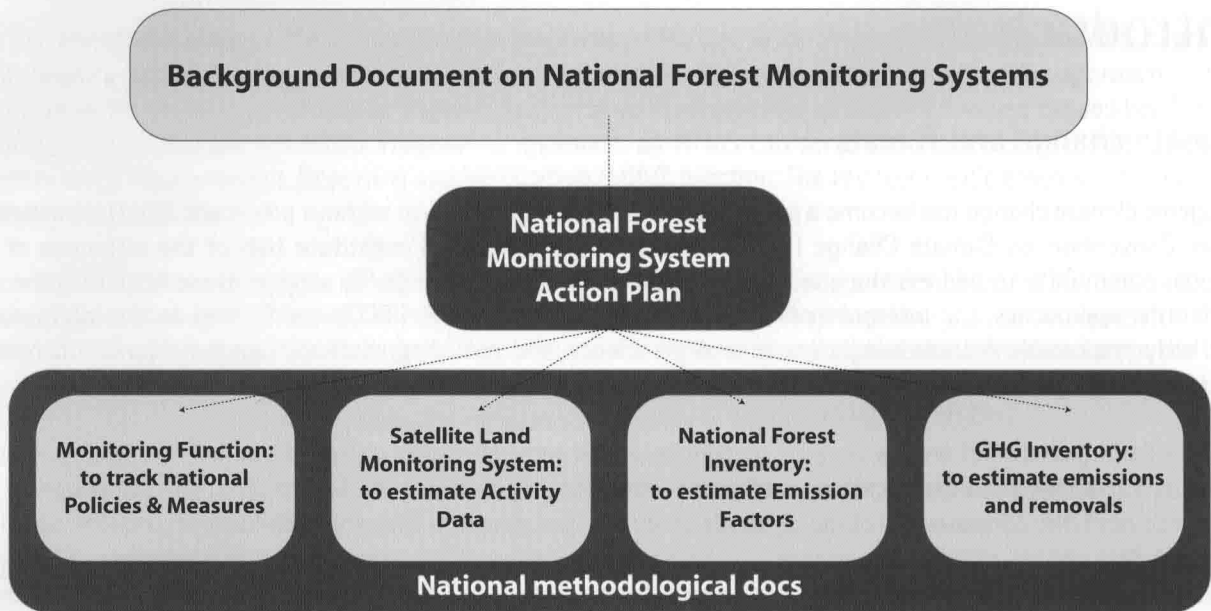


Figure 1. Relationship of this Background Document on National Forest Monitoring Systems with the national methodological arrangements for M & MRV



## 2. Concepts under the United Nations Framework Convention on Climate Change (UNFCCC)

### 2.1 The UNFCCC

The UNFCCC is one of the three international multilateral agreements on the environment that emerged from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992. The ultimate objective of the UNFCCC is to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (UNFCCC, Article 2). The UNFCCC entered into force on 21 March 1994, and as of May 2001, there are 195 Parties (194 countries plus the European Union). Parties to the Convention have been meeting every year since 1995 at Conferences of the Parties (COP) to assess progress and enhance the implementation of the Convention to better respond to the climate change challenges identified by the IPCC.

The Convention text sets out how Parties can respond and adapt to climate change, and sets out commitments in Article 4 that Parties agree to follow in order to reach the Convention's ultimate objective. The first of the Article 4 commitments is the need to share national GHG data using comparable methodologies:

*"All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:*

*1(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties"*

The Convention makes reference to a group of 37 industrialized country Parties listed in Annex I of the Convention (1992). Together: *"the developed country Parties and other Parties included in Annex I commit[ting] themselves specifically as provided for in the following (Art. 4, paragraphs 2 and 3, 1992):*

*... shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs;*

*shall communicate ... detailed information on its policies and measures ... as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol ... with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol"*

The Convention also makes reference to Annex II Parties, which are committed as follows (Article 4, paragraphs 4 and 5, 1995):

*"The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1;*

#### Box 1: Categories of Parties to the UNFCCC

The Convention divides countries into three main groups according to differing commitments:

**Annex I** Parties include the industrialized countries that were members of the OECD (Organization for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

**Annex II** Parties consist of the OECD members of Annex I, but not the EIT Parties. They are required to "take all practicable steps" to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries.

**Non-Annex I** Parties are mostly developing countries. Only countries in this category can participate in REDD+ activities.

*... shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects;*

*... shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention"*

Parties not listed in Annex I are developing countries and referred to as 'non-Annex I' Parties. The Convention explicitly recognises developed countries' greater contribution to anthropogenic GHG emissions, and therefore to atmospheric GHG concentrations, by introducing the principle of "common but differentiated responsibilities", with Principle 1 of the Convention stating that: "... developed country Parties should take the lead in combating climate change and the adverse effects thereof".

Moreover, the Convention text recognises the development challenges faced by non-Annex I countries and calls upon developed country Parties to support non-Annex I Parties to meet their commitments under the Convention. In this context, paragraph 7 of Article 4 sets out:

*"The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties"*

When it was established, the UNFCCC did not set legally binding targets or limits on GHG emissions for the Parties. However, it was soon obvious that, without targets, its effectiveness was limited. The Kyoto Protocol was therefore set up as the tool for enhancing the implementation of the UNFCCC, setting binding emissions reductions targets for Annex I Parties (see Box 2). The Kyoto Protocol entered into force in 2005, and its first five-year commitment period was established for 2008–2012.

Though the emphasis of emissions reductions efforts has to date been on Annex I Parties – notably through the implementation of the Kyoto Protocol – recent decisions of the UNFCCC, in particular Decision 1/CP.16 adopted in Cancun in 2010, indicate that non-Annex I Parties could also play a role in mitigation activities in any future global climate agreement. The REDD+ activities are an example of how developing countries could contribute to climate change mitigation, through activities in the forest sector.

## Box 2: The Kyoto Protocol

The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997, and entered into force on 16 February 2005. The rules for the implementation of the Protocol were adopted at COP7 in Marrakesh in 2001, referred to as the 'Marrakesh Accords'.

The main feature of the Kyoto Protocol is that it sets a legally binding target for 37 industrialized countries, as well as for the European Community, to reduce GHG emissions by an average of 5 percent against 1990 levels over the five-year period 2008–2012.

While the Convention **encourages** industrialized countries to stabilize or reduce GHG emissions, the Kyoto Protocol **commits** Annex I country Parties to do so (through a legally binding instrument). Recognising that developed countries are primarily responsible for the current atmospheric GHG levels as a result of over 150 years of industrial activity, the Kyoto Protocol places a heavier burden for action on developed countries under the principle of 'common but differentiated responsibilities'. In addition to targeting national measures for reducing GHG emissions, the Kyoto Protocol provides countries with an additional tool for achieving their objectives through three flexibility mechanisms:

- Trading of Assigned Amount Units (AAUs), allowing Annex I country Parties to exchange emission allowances among themselves;
- Clean Development Mechanism (CDM) through which developed countries can fund emissions reductions projects in developing countries, while contributing to technology transfer;
- Joint Implementation (JI) which is similar to CDM but the emission reduction projects are implemented in Annex B countries. (Annex B countries are Parties to the UNFCCC that have committed to limitation or reductions of emissions under the Kyoto Protocol).

The Kyoto Protocol is considered an important first step towards a global GHG emissions reduction effort and provides some good elements for inclusion in any future international agreement(s) on climate change. Nevertheless, the first commitment period of the Kyoto Protocol has expired in 2012, and a second commitment period has been agreed by Parties at COP 17 in Durban. The length of this second commitment period of the Kyoto Protocol, and the Parties who will take part to it, remain to be decided. In addition, a new climate framework, including specific mechanisms for mitigating further climate change, is under consideration and is scheduled to begin in 2020. The UNFCCC REDD+ decisions are the result of considerations under the Ad-Hoc Working Group on Long Term Cooperative Action (AWG-LCA) on how developing countries can contribute to global mitigation efforts in the forest sector. REDD+, therefore, does not fall under the Kyoto Protocol second commitment period, but rather under the broader discussions on the overall enhancement of the implementation of the Convention.

## 2.2 Concepts of forest Monitoring and Measurement, Reporting and Verification under the UNFCCC

There are no specific definitions of the monitoring and MRV concepts under the UNFCCC. This section provides a practical approach for implementing a national forest monitoring system based on the Convention text.

### 2.2.1 Monitoring

The working definition for "monitoring" applied in this document is: the need for periodic information on the results obtained through national policies and measures, as per Article 4.2, paragraphs a) and b) of the Convention:

*"In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases"*

### 2.2.2 Measurement – Reporting – Verification (MRV)

MRV can be interpreted as the means to address countries' commitments to collect and share information on the progress of the implementation of provisions and/or commitments of Parties, according to Article 4.1 (a) of the Convention, to:

*"Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties."*

Annex I Parties can meet their MRV commitments by compiling and submitting information to the UNFCCC Secretariat, including:

- National Inventory Report (NIR),
- GHG data in Common Reporting Format (CRF) tables, which standardize the way in which this information is compiled, and
- National System for the National GHG Inventory under the Kyoto Protocol, which contains details of their national institutional arrangements.

This allows the UNFCCC Secretariat to assess their overall performance in terms of mitigating climate change. Nevertheless, prior to the adoption of the Bali Action Plan at COP 13 (Bali, 2007), non-Annex I Parties did not have any specific mitigation commitments. In terms of MRV, all Parties under the Convention must report on their current and envisaged strategies to implement the Convention (Articles 4.1 and 12) through National Communications (NCs). In accordance with the principle of "common but differentiated responsibilities" under the Convention, the requirements of these NCs, in terms of their contents and submission periods, are different for non-Annex I Parties and Annex I Parties.

Under the Bali Action Plan (Decision 1/CP.13), developed and developing country Parties alike agreed to enhance their action on mitigation of climate change, notably by implementing "*measurable, reportable and verifiable nationally appropriate mitigation actions*" (NAMAs). This agreement triggered negotiations on MRV for NAMAs undertaken by non-Annex I Parties, resulting in guidance under decisions 1/CP.16 (Cancun, 2010) and 1/CP.17 (Durban, 2011). Although much remains to be decided on MRV for REDD+, it is clear that current and future MRV guidance for NAMAs is relevant for REDD+ activities, as underlined in Decision 1/CP.16: [MRV for REDD+ activities must be] "*consistent with any guidance on measuring, reporting and verifying NAMAs by developing country Parties agreed by the COP, taking into account methodological guidance in accordance with decision 4/CP.15*".





# 3. REDD+ Activities and their Implementation

## 3.1 REDD+ in UNFCCC decisions

As part of international efforts to mitigate climate change, REDD+ aims to provide positive incentives to developing countries for activities that reduce GHG emissions and that enhance forest carbon sinks in the forest sector. In addition to reducing emissions from deforestation and degradation, the REDD+ negotiations have evolved to include the conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks. This wide scope was agreed upon to allow broad non-Annex I Party participation, based on differing national circumstances.

Negotiations on REDD+ can be traced back to the 11<sup>th</sup> session of the UNFCCC COP, Montreal (2005), where it was raised as an agenda item that later initiated a two-year process under the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA), including several technical workshops on the issue. This led to the introduction of REDD+ as part of the Bali Action Plan at COP 13 in 2007, as follows: "*reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*" (Decision 1/CP.13). Decision 2/CP.13 also provided some early methodological guidance. Figure 2 illustrates the timeline of UNFCCC discussions on REDD+.

This process was strengthened and consolidated during the COP 15 meeting of the UNFCCC in Copenhagen in 2009, during which several principles and methodological guidelines were defined through the adoption of Decision 4/CP.15 entitled "*Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*".

Parties at COP 16 in Cancun, December 2010, adopted Decision 1/CP.16, section C of which covers "*Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*". The five activities under REDD+ are defined for the first time in Decision 1/CP.16, paragraph 70, which reads as follows:

*"Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances:*

- a. Reducing emissions from deforestation;*
- b. Reducing emissions from forest degradation;*
- c. Conservation of forest carbon stocks;*
- d. Sustainable management of forests;*
- e. Enhancement of forest carbon stocks."*

Initial methodological guidance in relation to MRV for REDD+ was provided at COP 15, Copenhagen (2009). Decision 4/CP.15, paragraph 1(d) "**Requests**" Parties to:

*"...establish, according to national circumstances and capabilities, robust and transparent national forest<sup>2</sup> monitoring systems and, if appropriate, sub-national systems as part of national forest monitoring systems that:*

- i. Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes [Monitoring and Measurement];*
- ii. Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities; [Reporting]*
- iii. Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties; [Verification].*

<sup>2</sup> "Taking note of, if appropriate, the guidance on consistent representation of land in the Intergovernmental Panel on Climate Change Good Practice Guidance for Land Use, Land-Use Change and Forestry."

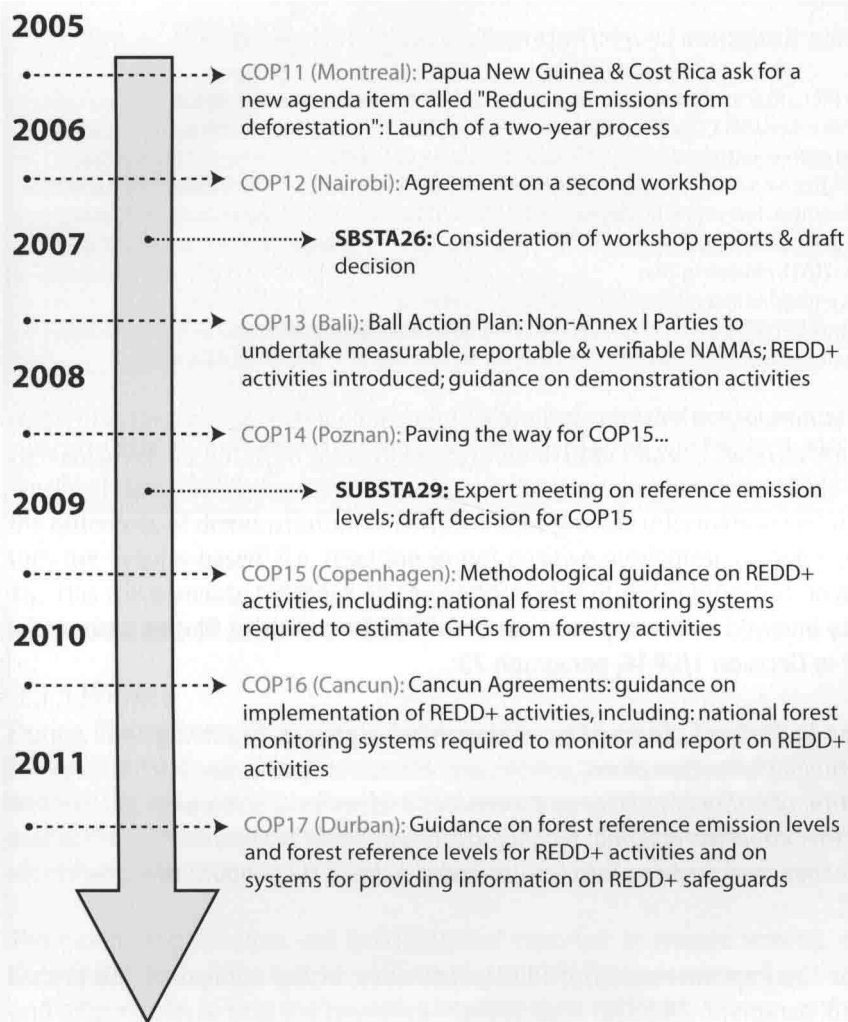


Figure 2. Progress of REDD+ discussions from COP 11 to COP 17

This decision establishes that country Parties must develop a national forest monitoring system (NFMS), which is the specific focus of this document. To achieve this, Decision 4/CP.15, paragraph 1(c) specifies that countries must follow the most recent methodological recommendations issued by the IPCC, as adopted or encouraged by the COP, as a basis for estimating the sources of anthropogenic GHG emissions, their removal by sinks, and for measuring carbon stocks and changes in forest area. In this way, emissions estimates will be based on comparable, methodological approaches. A country's NFMS should also be used for data and information collection, such as information on historical forest cover changes, to inform the assessment of national or sub-national forest reference emission levels and/or forest reference levels (RELS/RLs) (see Box 3). In this way, the NFMS will form the link between historical assessments and current/future assessments, enabling consistency in the data and information to support the implementation of REDD+ activities in countries.

### 3.2 REDD+ activities: An overview

The five REDD+ activities set out by Decision 1/CP.16 are: reduction of emissions from deforestation; reduction of emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks. REDD+ activities can also be separated into two broad categories, as follows:

- **Change in land use**, for example:
  - a. *Reducing* change from forest land > cropland (deforestation);
  - b. *Promoting* change from cropland > forest land (enhancement of forest carbon stocks);
- **Change within the same category of land use**, for example:
  - a. *Reducing* change in forests from no timber extraction > sustainable timber extraction (degradation);
  - a. *Promoting* change in forests from unsustainable timber extraction > sustainable timber extraction (SMF and enhancement of forest carbon stocks);
  - a. *Promoting* change in forests from sustainable timber extraction > no timber extraction (conservation and enhancement of forest carbon stocks).

### Box 3: Forest Reference Emission Levels/Reference Levels (RELS/RLs)

Forest Reference Emission Levels and Reference Levels (RELS/RLs) are benchmarks for assessing countries' performance in implementing REDD+ activities. Countries implementing REDD+ activities under the UNFCCC will need to develop their RELS/RLs and submit them to the UNFCCC. These will then be used to measure the effectiveness of each country's policies and measures related to REDD+.

The first UNFCCC guidance on RELS/RLs was provided in Decision 4/CP.15, which recognised that RELS/RLs should be transparent, take historical data into account, and be adjusted for national circumstances. Subsequently, decision 1/CP.16 identified national RELS/RLs as an essential prerequisite for Parties aiming to undertake REDD+ activities, with subnational RELS/RLs as a possible interim measure. The most recent guidance on RELS/RLs emerged from COP17 in Durban (2011), indicating that:

- 1) RELS/RLs should be consistent with records of forest emissions and removals as contained in countries' national GHG inventories;
- 2) Parties should submit information explaining how their RELS/RLs were developed, including how national circumstances were considered;
- 3) Parties should consider a step-wise approach to the development of RELS/RLs to enable the incorporation of improved data and methodologies; and
- 4) RELS/RLs should be updated periodically in order to account for new knowledge and trends.

The cumulative guidance indicates that RELS/RLs should be developed with strong links to the NFMS, ensuring consistency in the approaches to the collection and use of data.

## 3.3 REDD+ in three phases

Given the technical and procedural complexity involved in the implementation of REDD+ activities, Parties agreed that this should be done in three phases, as set out in Decision 1/CP.16, paragraph 73:

*"Decides that the activities undertaken by Parties [...] should be implemented in phases, beginning with the development of national strategies or action plans, policies and measures, and capacity-building, followed by the implementation of national policies and measures and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and evolving into results-based actions that should be fully measured, reported and verified".*

The importance of national circumstances for the implementation of REDD+ activities, in the context of the phased approach, is also recognised in Decision 1/CP.16, paragraph 74:

*"Recognizes that the implementation of the [REDD+] activities ... including the choice of a starting phase as referred to in paragraph 73 above, depends on the specific national circumstances, capacities and capabilities of each developing country Party and the level of support received".*

### 3.3.1 Phase 1

Phase 1 includes all of the efforts required to define a national REDD+ strategy, including the policies and measures (PAMs) that a country will need to implement in the context of REDD+ activities, and the consequent capacity building needs. This phase also includes the definition and selection of the 'pillars' underpinning the NFMS (see section 5) and the testing and selection of methodologies for reliable, robust and transparent national M & MRV functions. Phase 1 is often referred to as 'REDD+ Readiness'.

An important part of this phase is national capacity building, to give Parties the knowledge and technical abilities necessary to enter Phase 2. This includes practical training on the pillars of the NFMS and development of the necessary systems and infrastructure to implement them.

### 3.3.2 Phase 2

Phase 2 entails implementing demonstration activities to test and refine the methodologies, action plans and PAMs defined during Phase 1. Demonstration activities should focus on establishing whether the PAMs can produce positive and measurable results in terms of GHG emissions. They can focus on monitoring and reporting at the sub-national level as an interim measure, as specified in Decision 1/CP.16, paragraph 71(c), and be used to trial potential NFMS methodologies, such as the collection of forest inventory data. Phase 2 can also be considered a part of 'REDD+ Readiness', as it is still part of a country's efforts to prepare for full implementation of REDD+ activities.



#### Box 4: What are the practical implications of monitoring and MRV for REDD+ activities in a developing country?

Parties aiming to undertake REDD+ activities are encouraged to:

- Set up a robust and transparent NFMS comprised of both a monitoring function and an MRV function;
- Ensure that REDD+ activities, policies and measures are results-based, by using an NFMS;
- Measure the anthropogenic sources and removals (by sinks) of GHG emissions in the forest sector, including changes in forest carbon stocks, and changes in forest area;
- Minimize uncertainty by providing transparent, coherent, comparable, consistent and accurate estimates of GHG emissions and removals associated with REDD+ activities;
- Maximize transparency, by making the results of these measurements available for international appraisal, as agreed by the COP;
- Follow the most recent methodological recommendations provided by the IPCC, as adopted or encouraged by the COP.

Awareness raising, capacity building and technology transfer may continue throughout Phase 2, particularly for technical elements that do not need to be fully operational until Phase 3, such as the national forest inventory and satellite remote sensing. It is desirable, however, that the monitoring function of the NFMS be operational in Phase 2, in order to evaluate the outcomes of demonstration activities and to provide information on land use and land use changes to assess whether they are 'results-based' (i.e. resulting in net positive outcomes), as required by Decision 1/CP.16, Appendix 1, paragraph 1(j). This will generate feedback on the performance of the demonstration activities, allowing methodologies to be refined where necessary to improve performance.

#### 3.3.3 Phase 3

During Phase 3 ('national implementation'), the monitoring function should ultimately be extended to cover the entire national territory so that the country can assess the impacts of PAMs at the national level (see section 5.4.1), and to address the issue of displacement of emissions (leakage). Monitoring, in the context of REDD+, will allow countries to assess the performance of particular PAMs. Monitoring for REDD+ could support the distribution of positive incentives by identifying where particular PAMs have resulted in net positive outcomes.

The monitoring function will build national expertise in remote sensing, which is an essential tool to generate Activity Data (AD) for the MRV function (see section 4.1.1). The monitoring function could also provide additional geospatial data and information to help the countries improve their national communications and biennial update reports to the UNFCCC.

#### Box 5: Development of an NFMS over the three phases of REDD+

Phase 1:

- Define the national REDD+ strategy;
- Identify national circumstances that will have implications for the readiness phase, including for the development of RLs/REs;
- Identify national PAMs and action plans that are available and those that need to be adapted or created for REDD+, and develop legal frameworks to support them;
- Strengthen the necessary national capacities for developing and implementing demonstration activities, PAMs and action plans;
- Define the 'pillars' (see section 5.4) of work of the NFMS;
- Design REDD+ demonstration activities;
- Design the NFMS and begin institutional and technical capacity building on relevant elements, including the national forest inventory and GHG inventory, to allow for measurable, reportable and verifiable emissions and removals estimates (MRV elements) due to REDD+ activities.
- Comprehensive assessment of existing capacities and capacity building needs, in the context of REDD+, including human, financial and technical aspects.

Phase 2:

- Implement the national strategy, and associated legal and policy frameworks;
- Implement demonstration activities with a national or sub-national scope, with the aim of assessing the impacts of REDD+ PAMs;
- Build up the necessary technology and capacities to effectively carry out the demonstration activities;
- Implement a monitoring system to assess the outcomes of demonstration activities;
- Test and refine methodologies for MRV in parallel with demonstration activities at specific sites;
- Initiate operation of the NFMS and refine methodologies as necessary.

Phase 3:

- Scale up demonstration activities to the national level, based on tested methodologies;
- Scale up the monitoring system to assess the outcomes of particular national PAMs;
- Identify measurable, reportable and verifiable emissions and removals resulting from REDD+ activities, for inclusion in the reporting to the UNFCCC.