Guidelines for Implementing REDD-plus

Ver 1.2

Forestry and Forest Products Research Institute
REDD Research and Development Center

Preface

REDD-plus has become one of the major topics of discussion in the United Nations Framework Convention on Climate Change (UNFCCC). This is because REDD-plus has a huge potential for reducing greenhouse gas (GHG) emissions in developing countries, and is also expected to contribute to sustainable forest management respecting safeguards in developing countries.

While international discussions and negotiations have been continuously taking place, deforestation and forest degradation is increasing worldwide. Thus, early REDD-plus actions such as readiness activities should be placed on the highest priority. Practices and experiences gained from such early actions are sure to contribute to developing a framework for REDD-plus.

Being funded by the Japanese Forestry Agency, the REDD Research and Development Center, which was established in the Forestry and Forest Products Research Institute of Japan in 2010, has been conducting research and development to build a framework for REDD-plus, taking ongoing international discussions into account.

Japan proposed a Joint Crediting Mechanism (JCM) as a way to leverage Japan's contribution to reduction of GHG emissions around the world. However, as to how to implement REDD-plus activities under the JCM remains under discussion. The Center has been developing these guidelines as one of our research activities aiming at facilitating the discussion about REDD-plus projects to be implemented under the JCM.

We hope that REDD-plus activities will be implemented under the JCM and contribute to facilitating REDD-plus activities on the ground, developing a new framework for REDD-plus and mitigating climate change.

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The sections in brackets [ ] represent areas where final decision has not yet been made. The brackets represent numerical values or descriptions that may be selected for the finalization.

1 Introduction

1.1 THE INTERNATIONAL ENVIRONMENT SURROUNDING REDD-PLUS

Climate change mitigation through reducing emissions from deforestation and forest degradation in developing countries (REDD[1]) was adopted as an agenda item at the eleventh session of the Conference of the Parties (COP11) to the United Nations Framework Convention on Climate Change (UNFCCC), held in Montreal in 2005. Since then, REDD has continued to be discussed as a key part of issues in the future framework for international climate change. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4), released in 2007, quantitatively stated that deforestation and forest degradation account for around 20% of global anthropogenic greenhouse gas (GHG) emissions. It also contained a strongly worded message from the scientific community about the need to rapidly reduce these emissions in order to mitigate climate change.

The Bali Action Plan was adopted at the COP13, held in Bali, Indonesia in 2007, in which the importance of forest conservation, sustainable forest management, and enhancement of forest carbon stocks, as well as halting deforestation and forest degradation were stated. It was agreed that these policies, now known as REDD-plus, would be a part of deliberations aimed at establishing a framework to tackle climate change from 2013 onwards. Discussions on two agenda items; technique/methodology and policy/financing, continued concurrently thereafter. At the end of 2010, COP16 was held in Cancun, Mexico. In the Cancun Agreements[2], the Parties agreed on a basic framework for REDD-plus. The Agreements specified that REDD-plus includes five activities: (a) reducing emissions from deforestation; (b) reducing emissions from forest degradation; (c) conservation of forest carbon stocks; (d) sustainable management of forests; and, (e) enhancement of forest carbon stocks. Discussions on REDD-plus have progressed steadily since then. Discussions on the development of a framework for 2013 came to an end at COP18, leaving many issues still standing in the way of the construction of a detailed framework. Deliberations are subsequently continued by subsidiary bodies.

Meanwhile, developing countries have carried out their own readiness activities aiming at implementating REDD-plus, such as the establishment of national systems to implement REDD-plus and pilot activities through bilateral and multilateral support schemes. In addition, initiatives such as voluntary certification have started by the private sector. Through these initiatives, developing countries are working steadily to improve forest monitoring systems. Examples of good practice through the joint initiatives between the public and private sectors have also started to emerge.

[1] Reducing emissions from deforestation and forest degradation in developing countries
[2] UNFCCC (2010) III-C, Decision 1/ CP.16, FCCC/CP/20010/7/Add.1, 12- 14, UNFCCC

1.2 REDD-PLUS IN JAPAN

Numerous research and conservation projects aimed at conserving forests in developing countries have been carried out by the Japanese institutes including the Forestry and Forest Products Research Institute (FFPRI) and Japan International Cooperation Agency (JICA) to date.

At COP17, held in Durban, South Africa in 2011, Japan announced that it would not be participating in the second commitment period of the Kyoto Protocol. Instead, Japan proposed a Joint Crediting Mechanism (JCM) as a way to leverage Japan's contribution by diffusing Japan's leading low carbon technologies and products and develop mechanisms for promoting policies to reduce GHG emissions in developing countries. In order to launch JCM projects at the beginning of 2013, relevant ministries including the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry (METI), and the Ministry of the Environment (MOE), are working together to design structures of the JCM. The METI and the MOE are also conducting feasibility studies (FS) and planning studies (PS) in a number of relevant sectors including REDD-plus. Also, in 2014, development of JCM guidelines for REDD-plus has been started.

1.3 THE ROLE OF FFPRI IN REDD-PLUS IMPLEMENTATION AND THE OBJECTIVES OF GUIDELINES DEVELOPMENT

While the UNFCCC has not developed a detailed framework for REDD-plus, in order to improve the efficiency of REDD-plus projects which is supported by the Japanese government, it is important to develop and share common guidelines for estimating GHG emission reductions and removals, caused by implementing REDD-plus activities. The FFPRI has conducted considerable amount of research in forests in developing countries especialy South-East Asia. Within Japan, FFPRI has also supported to develop the J-Credit Scheme as well as systems for estimating GHG removals by domestic forest. As a result of these activities, the FFPRI has built up a considerable knowledge and developed networks with other related institutions. By effectively utilizing these accumulated assets, it is thought the FFPRI can help solve the major technical issues related to REDD-plus activities. Furthermore, by compiling new knowledge gained through this technical support and reflecting it in shared guidelines, the FFPRI can contribute to the promotion of REDD-plus through the JCM.

In November 2012, the FFPRI released an easy-to-understand technical manual, REDD-plus Cookbook,[3] which provides basic knowledge and techniques required for REDD-plus with the main focus on the forest carbon monitoring methods. By using REDD-plus Cookbook and these guidelines to carry out or support REDD-plus activities, REDD-plus under the JCM is expected to be implemented in a smooth and efficient manner.

Based on these national and international trends, the FFPRI's REDD Research and Development Center has developed these guidelines to help promote REDD-plus activities.

"Joint Crediting Mechanism Guidelines for Developing Proposed Methodology for Reducing Emissions from Deforestation and Forest Degradation in developing countries; and the role of conservation, sustainable management of forest and enhancement of forest carbon stock in developing countries (REDD-plus) (draft)", which is now being developed, includes main contents of these guidelines.

[3] See website for details <http://www.ffpri.affrc.go.jp/redd-rdc/ja/reference/cookbook.html>

2 Project Requirements

Project requirements are developed in accordance with all UNFCCC decisions for REDD-plus, especially for Cancun Agreements (UNFCCC, Decision 1/CP.16) and Warsaw Framework for REDD-plus (UNFCCC, Decision 9/CP.19, 10/CP.19, 11/CP.19, 12/CP.19, 13/CP.19, 14/CP.19, 15/CP.19). Additionally, project requirements are considered by the progress of some crediting mechanism.

We note that all or some contents of project requirements are based on current situation of REDD-plus, and should be renewed and revised according to future institutional arrangement of the REDD-plus, and also be reflected by future decisions of the UNFCCC and other mechanisms.

2.1 GENERAL REQUIREMENTS

- Based on the agreements reached at the COP16 (Cancun Agreements), REDD-plus activities will contribute to: (a) reducing emissions from deforestation; (b) reducing emissions from forest degradation; (c) conservation of forest carbon stocks; (d) sustainable management of forests; and, (e) enhancement of forest carbon stocks.
- REDD-plus projects should abide by the international law and the laws of the host country.
- When implementing REDD-plus, any data used for estimating GHG emissions should be based on highly-reliable data obtained from (a) publicly available and credible literatures (for example, the 2006 IPCC Guidelines for National GHG Inventories[4] or the national statistics of each country) or (b) peer-reviewed scientific literatures. The selection of data for calculations should be done in accordance with [Guidelines for monitoring developed in the future].
- Any partners working with the project proponents should be identified at the project design phase. The roles and responsibilities of these partners in the project should be clarified before any REDD-plus project commences.
- When implementing REDD-plus, the project proponent is required to analyze negative environmental, social, and economic impacts that might be caused by implementing the project to mitigate them. In addition, each project is recommended to acquire an internationally accepted certification such as the Climate, Community & Biodiversity Standards (CCBS[5]) and the Forest Stewardship Council (FSC[6]) .
- Conversion of native ecosystems (conversion from natural forest to uniform planted forest of fast growing tree species) delivred from REDD-plus projects is not permitted.

[4] See website for details <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>
[5] See website for details <http://www.climate-standards.org/standards/index.html>
[6] See website for details <http://www.fsc.org/>

2.2 REQUIREMENTS FOR EACH COMPONENT OF PROJECT IMPLEMENTATION

2.2.1 PROJECT DURATION

(1) PROJECT PERIOD

- The starting date of the project should be the day of starting the activities for GHG emission reductions/removals. Furthermore, the end date of the project should be the day of ending the activities for GHG emission reductions/removals. The end date also is applied for the stage when the activity is not considered to be additional although the activity is ongoing.
- The starting date of the project will be [after December 2007, when domestic and international discussions about REDD-plus started (when the Bali Action Plan was agreed)] [after January 2011, when discussions about the JCM started] [after January 1st 2013]. Any REDD-plus projects initiated before these dates fall outside the scope of these guidelines.

(2) CREDITING PERIOD

- The crediting period for REDD-plus projects should be at least 20 years but no more than 100 years. The crediting period may be renewed up to [XX times] [4 times] [5 times] provided that the total timeframe does not exceed 100 years.
- When renewing the crediting period, the reference level should be reassessed. There may be cases where the reference level remains unchanged as a result of the reassessment.

2.2.2 PROJECT LOCATION

- The following details of the REDD-plus project location should be clearly specified before the submission of the Project Design Document.
  1. Name of the project area (parcel number, regional name)
  2. Maps of the project area
  3. Geographical boundaries of the project area
  4. Total size of the target project area
  5. Any information of land tenure or rights of land use in the project area
- When the project area is divided into multiple parcels, the aforementioned information of each parcel should be provided. The project proponent should demonstrate that it controls over every parcel in the project area.
- At least 80 percent of the project area is under the control, with documentary evidence establishing conclusively one or more rights of use accorded to the project proponent, at the time of validation, and the entire project area comes to be under the control by the time of first verification event.

2.2.3 DEALING WITH NON-PERMANENCE

- If logging or frequent forest fires occur in the project area, the project should demonstrate that these activities have no impact on sustainable forest management in the project area. In other words, it should be demonstrated that these activities do not affect the permanence of the project. Furthermore, in case other activities that could have an impact on carbon stock changes occur, it should be demonstrated that these activities do not affect the permanence of the project either.

[【Option 1: Approach of discounting the emission reductions】

- Potential sources of reversal of net emission reductions are identified. As approaches for effectively dealing with reversals, the emission reductions to be credited reference levels are estimated using discount factor considering internal risks, external risks and natural risks. Discount factor, as default value, should be accounted as 30 percent.
- When different approach is used to deal with risk of reversals, its accounting method and reasonable explanation are provided.

[【Option 2: Buffer approach】

- When assessing the non-permanence risk of a REDD-plus project, the non-permanence risk report should be prepared at the time of validation or verification. The report should be prepared using [separately established risk analysis tools] [separately prepared XXXXX guidelines].
- The amount of buffer credits to be deposited in [the buffer account] [XXXXX account] should be calculated based on a non-permanence risk report that has been reviewed by a validation or verification body. Regarding buffer credits in the [buffer account] [XXXXX account], [these cannot, as a general rule, be traded] [the uses of these credits should be stipulated at later date].
- It is desirable that non-permanence risks are reduced with the project implementation and these actions should be supported. Therefore, a non-permanence risk analysis should be performed at each verification carried out at least once every [3 years] [5 years] [7years] [10 years]. If the analysis shows that the non-permanence risk has reduced, it will be possible to apply for the release of a corresponding number of buffer credits from the [buffer account] [XXXXX account]. [The release of buffer credits from the [buffer account] [XXXXX account] should be carried out in accordance with [separately prepared XXXXX guideline] [XXXXX].]
- The non-permanence risk analysis may be carried out at the same time as the validation or verification. The analysis should be verified by a thied party entity.
- If unexpected deforestation or forest degradation[7] occurs in the project area where credits have already been issued or canceled, the following procedures are required.

[7] Unexpected deforestation or forest degradation: this occurs when carbon stocks unexpectedly decrease by 5% or more at the project planning stage (when submitting the Project Design Document). This decrease may be due to such as human activities (war, poor management, agriculture, over-logging, incursions from outside, etc.) or natural disasters (earthquakes, floods, droughts, storms, etc.). However, xxxxx will be used to assess as to whether such a natural disaster is caused by human activity.

- Preparation of report on the unexpected deforestation/forest degradation -

- A report should be prepared using the [XXXXX format]. It is required to report the amount of lost carbon stock, which is conservatively calculated based on monitoring of the area afflicted by the unexpected deforestation/forest degradation.
- In the report, the project proponent should demonstrate that (a) it is unexpected deforestation/forest degradation and (b) the amount of lost carbon stock is conservatively calculated.
- The report should be submitted to the [XXXXX] Secretariat [within XX years] of the unexpected deforestation/forest degradation. If the report is not submitted within this timeframe, the project will no longer be eligible for receiving credits.
- At the next verification after the unexpected deforestation/forest degradation occured, the monitoring report submitted by the project proponent should restate the lost carbon stock due to an unexpected event. In such case, the project proponent should take the following steps.
  - If net emissions/removals during the monitoring period (including any emissions, removals or displacement of emissions that occurred as a result of the project) are debit compared to the reference level (this is known as a "reversal"), the shortfall should be offset by buffer credits, if appricable. When the shortfall cannot be covered by buffer credits, an [XXXXX penalty] should be applied.
  - Buffer credits should not be used when there is no "reversal" of carbon stocks; in other words, where carbon stocks have decreased due to unexpected deforestation/forest degradation, but the loss was small compared to the reference level, thus enabling the issuance of credits.

- When a "reversal" has occurred as a result of unexpected deforestation/forest degradation, the following steps should be taken at the time of verification.

- In the event of catastrophic reversal -

- The reference level should be revised and subsequently validated again at the time of the next verification.
- Even in the event of a catastrophic reversal, the designated geographical boundary of the project should not be changed. Furthermore, the area where the catastrophic reversal occured will remain subject to monitoring.
- Until the loss from the catastrophic reversal has been recovered, any natural increase in carbon stocks in the concerned area should not be convertible into credits. Furthermore, if the amount of buffer credits cancelled due to the catastrophic reversal exceeds the amount of buffer credits previously deposited, the project should repay this excess amount at the time of the next verification, in addition to the amount of buffer credits the project should deposit according to the non-permanence risk analysis.

- In the event of non-catastrophic reversal -

- No further credits should be issued until the reversal that occurred due to the unexpected deforestation/forest degradation is made up.
- Designated geographical boundary should not be changed. Furthermore, any natural increase in carbon stocks in the concerned area should not be convertible into credits.
- If the next verification takes place 5 or 10 years after the previous verification, a conservatively-estimated percentage of buffer credits should be conservatively put on hold. If the project fails to submit a verification report within 15 years from the previous verification, buffer credits will be cancelled. Refer to the [separately prepared XXXXX guidelines] for the full rules regarding buffer credit cancellation.

- Buffer credits should be cancelled at the end of the crediting period. As buffer credits are used to offset the total carbon stock losse that occur as the result of unexpected deforestation/forest degradation in all REDD-plus project under the [XXXXX] system, credits issued for each project do not have to be offset by credits of other projects. In order to ensure the permanence of all REDD-plus projects implemented under the [XXXXX] system, it is necessary to hold buffer credits permanently in the [buffer account] [XXXXX account] in case of any unexpected deforestation/forest degradation.]

2.2.4 PROJECT BUNDLING METHOD

- When a similar activity of the REDD-plus project is implemented outside the project area and the project area encompasses multiple parcels, the project may expand by bundling[8] these different parcels together.

[8] A bundled project which is geographically contiguous, but forms the aggregate of parcels is recognized as one project.

- If appropriate, non-permanence risk analyses should be carried out for each parcel subject to bundling. When non-permanence risk exists only in a portion (or a part) of each parcel, it may be divided into the smaller parcel and carried out another non-permanence risk analysis.
- The results of these non-permanence risk analyses should be reported in a monitoring report prepared in accordance with [Guidelines for monitoring developed in the future].
- When bundling, the reference level development should be applied to the entire bundled area and the reference level should be reestablished if appropriate. Furthermore, activity for preventing displacement of emissions should be carried out in the entire bundled area and the project area should be reconfigured if appropriate.
- The designated parcels of the project area may be expanded after the commencement of the project. Expanded project area (expansion of geographical boundaries) is defined as a part of parcel, which adjacent to the originally designated parcel of the project area (or added parcels after the commencement of the project), in the project area. When expanding the project area, the procedures for non-permanence risk analysis and the reference level should be the same as that of project bundling.

3 Methodology Requirements

Methodology requirements are developed in accordance with all UNFCCC decisions for REDD-plus, especially for Cancun Agreements (UNFCCC, Decision 1/CP.16) and Warsaw Framework for REDD-plus (UNFCCC, Decision 9/CP.19, 10/CP.19, 11/CP.19, 12/CP.19, 13/CP.19, 14/CP.19, 15/CP.19). Additionally, methodology requirements are considered by the progress of some crediting mechanism.

We note that all or some contents of methodology requirements are based on current situation of REDD-plus, and should be renewed and revised according to future institutional arrangement of the REDD-plus, and also be reflected by future decisions of the UNFCCC and other mechanisms.

3.1 GENERAL REQUIREMENTS

- Proposed methodologies should be prepared in accordance with these guidelines [,the ISO14064 series] [,the UNFCCC's reporting principle of transparency, consistency, comparability, completeness and accuracy (TCCCA)] [,and other separately developed private sector rules and regulations].
- In case a REDD-plus project implemented based on a proposed methodology might have significant uncertainty when estimating GHG emissions/removals, the methodology should show how to address this uncertainty. Any GHG emissions/removals estimations derived from the methodology should be in accord with [Guidelines for monitoring developed in the future]. The estimations should also have: (a) a 90% confidence interval with a margin of error of plus or minus 20% of the estimated value or (b) a 95% confidence interval with a margin of error of plus or minus 30% of the estimated value. [When the value is exceeded, the credits should be calculated conservatively based on [Guidelines for monitoring developed in the future].
- Uncertainty assessments of GHG emissions/removals should be carried out based on [IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories[9]] [auditing standards].
- When a methodology includes the application of default values to estimate emission factors, these values should be based on highly-reliable data obtained from (a) publicly available and credible literatures (such as, 2006 IPCC Guidelines for National GHG Inventories or the national statistics of each country) or (b) peer-reviewed scientific literatures. The data should be collected in accordance with [Guidelines for monitoring developed in the future].
- A conservative approach should always be adopted when estimating GHG emissions/removals based on proposed methodologies.

[9] IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories <http://www.grida.no/climate/gpg/index.htm>

3.2 REQUIREMENTS FOR EACH METHODOLOGY COMPONENT

3.2.1 PROJECT ACTIVITIES

- Based on the agreements reached at the COP16 (Cancun Agreements), eligible REDD-plus activities should contribute to: (a) reducing emissions from deforestation; (b) reducing emissions from forest degradation; (c) conservation of forest carbon stocks; (d) sustainable management of forests; and (e) enhancement of forest carbon stocks.
- REDD-plus activities should comply with the forestry policies of the host country.
- When estimating GHG emissions/removals, the consistency with the host country's national GHG inventory and forest inventory should be ensured.

3.2.2 LAND ELIGIBILITY

(1) DEFINITION OF FOREST

- The project area fulfills the internationally accepted national definitions of forest especially reported to the UNFCCC by the country. If chosen definitions differ from above, the reason is explained.

(2) FOREST TYPE/FOREST LAND USE

- Forests in the project area should be consistent with each country's designated forest types (as defined in national forest inventories).
- Forests in the project area should fulfill each country's definition of forest. In addition to this, forest in the project area should have been fulfilled these definitions at least 10 years or more. In other words, the project should demonstrate that a forest existed in the project area at least 10 or more years prior to the project start date.
- The fact that forest has existed for at least 10 years or more should be proved by:
  - Satellite images or aerial photographs
  - Materials provided by international agencies such as FAO or official materials issued by the host country
  - The results of interviews with people living in or around the project area

3.2.3 ELIGIBILITY CRITERIA

- The proposed methodology should be in accordance with the land eligibility criteria above, and the REDD-plus activity in the area where the methodology is applied should also be eligible.
- The eligibility criteria should be based on the characteristics (such as, forest management systems, ecological characteristics) of the target area. The criteria should also ensure that the project is effective and additional as a REDD-plus activity.
- The eligibility criteria should be based on the UNFCCC decisions on REDD-plus.

3.2.4 PROJECT BOUNDARIES

- The proposed methodology will examine five areas when considering the project's boundaries: project area, reference area, displacement belts, carbon pools, and GHG types. Each of these areas should be determined as follows.

(1) PROJECT AREA

- When applying for the project, at least 80 percent of the project area is under the control, with documentary evidence establishing conclusively one or more rights of use accorded to the project proponent, at the time of validation, and the entire project area comes to be under the control by the time of first verification event, taking into forest management units and other administrative divisions in the target land as well as local land management customs into account. The consent from a wide range of stakeholders should also be obtained.
- If a project area bestrides a national border, the project area should be divided at the border.
- It is recommended that the project area is determined based on administrative divisions. This will ensure consistency with GHG emission estimations at a sub-national or national level, thus making it easier to shift the project area to the sub-national or national level at some point in future.

(2) REFERENCE AREA

- A reference area is defined as the area that will be used for reference when establishing the reference level for the project area.
- It is important that the reference area is similar to the project area regarding the drivers of deforestation/forest degradation, landscape arrangement, socio-economic conditions, and cultural conditions. These similarities should be demonstrated using satellite images, information from stakeholders, or other relevant information.

(3) DISPLACEMENT BELTS

- Displacement belts are used to manage displacement of emissions that may occur as the result of the project. The leakage belts may be located outside of the project area. In general, the leakage belts may also overlap the reference area and even extend to the outside of the reference area.
- When establishing the displacement belts, it is important to take the land use status in the project area as well as the connection to economic activities, such as the distribution of agricultural products into consideration. It is recommended that information be collected from a wide range of stakeholders.

(4) CARBON POOLS

- In the proposed methodology, the estimation of carbon stocks should basically include estimations of each of the following five carbon pools; aboveground biomass, belowground biomass, dead wood [dead wood = diameters of 10 cm or more], litter [litter = diameters of less than 10 cm] and soil organic carbon.

- Even in the case where a pool is expected to produce GHG emission reductions/removals as part of the REDD-plus project, it can be excluded from the estimation process if (a) the conservative option would be to exclude the pool from the estimation process or (b) it would not make much difference even if the pool was excluded from the estimation process. In the case of (b), in order to show that the excluded carbon pool is insignificant, it should be demonstrated that the pool's emissions/removals account for less than 5% of the project's total emission reductions. This determination can be demonstrated using the "Tool for testing significance of GHG emissions in A/R CDM project activities[10]," "Procedures to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities[11]," peer-reviewed literature, or [TL0002 version1.0 Tool for testing significance of Carbon Pools and GHG sources] provided by the FFPRI.
- With regard to the above, as GHG emissions caused by the following activities are considered to be insignificant in REDD-plus projects, estimation is not required.
  - N_2O emitted from the decomposition of soil or vegetation
  - GHG emissions from the collection or burning of herbaceous vegetation or the collection of woody plants to be used for project fences
  - GHG emissions from the combustion of fossil fuels by transportation and the use of machinery (except for cases when activities such as logging that lead to substantial emissions)
- Soil carbon pools should be estimated for activities taken place in peatlands.
- When estimation can be done, emissions from harvested wood products (HWP) produced within the project boundaries may be accounted when the emissions are actually occurred. In these cases, estimation methods should be based on 2006 IPCC Guidelines[12].
- In order to ensure the accuracy of estimation, it is recommended that priority be given to ensuring accurate estimates for those carbon pools whose contribution to total emissions varies widely.
- Emissions for carbon pools that account for a small percentage of total emissions should be estimated efficiently, using default values indicated in IPCC's Emission Factor Database (EFDB).

- (5) GREENHOUSE GAS SOURCES

  - The proposed methodology should target six greenhouse gasess stipulated in the IPCC Fourth Assessment Report[13]. As a general rule, REDD-plus projects target carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).
  - If the activities such as livestock grazing, paddy cultivation, slash and burn, or the use of nitrogenous fertilizer are carried out in the project area, CH_4 and N_2O should be included for estimation. Several target gases can be excluded from the estimation, but in order to show that the emissions/removals are insignificant, it should be demonstrated that the concerned emissions/removals account for less than 5% of the project's total emission reductions. This determination can be demonstrated using the "Tool for testing significance of GHG emissions in A/R CDM project activities," peer-reviewed literatures, or [TL0002 version1.0 Tool for testing significance of Carbon Pools and GHG sources] provided by the FFPRI.

[10] See the following website for details of CDM methodology tools
<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf>
[11] See the following website for details of CDM methodology tools
<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-06-v1.pdf>
[12] Consult the following website when estimating HWP
<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>
[13] See the following website for the IPCC Fourth Assessment Report
<http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html>

3.2.5 REFERENCE LEVEL

- The reference level is to estimate the amount of potential GHG emissions/removals in the project area when the REDD-plus project does not take place. The amount of the credit is determined by the difference between this reference level and actual GHG emissions/removals after the project has been implemented.

(1) DATA USED FOR ESTABLISHING A REFERENCE LEVEL

- The reference level should be established in a conservative manner, using carbon stock data from at least 5 points of time (which means 4 net emissions data) in the reference area, during reference period which dates back at least about 10 years from the start of the project. As mentioned in the section regarding monitoring (Chapter 3, 3.2.8), data used for establishing a reference level should include remote sensing and ground survey data.
- Internationally recognized statistical data (such as, FAO statistics) and estimation methods (such as, 2006 IPCC Guidelines) should be used when establishing a reference level.
- The followings are methods for establishing reference levels using past data based on historical trends.
  - Establishing a reference level based on average GHG emissions in the past
  - Establishing a reference level using a regression formula based on historical trends
  - Establishing a reference level that takes the results of an analysis of the drivers of deforestation/forest degradation and national circumstances (the circumstances of each country or region) such as forestry and forest policies into account.
- 4. If a national or sub-national reference levels has already been established for an area that includes the project area, the relationship between the project's reference level and the national or sub-national reference level is explained.
- National circumstances should be taken into account when making future reference level projections. Any information sources used to explain these circumstances should be clearly addressed. There also needs to be clear explanation of how this information was used when establishing the reference level.
  - Land use plan and other pre-existing data can be used when considering national circumstances
  - When correlation between population growth/economic growth and deforestation in the project area is clear, it is recommended to reflect this in the reference level.

(2) REASSESSING REFERENCE LEVEL

- The project's reference level should be reassessed every 5 years or shorter timeframe. This is because the reference level that exceeds 5 years might no longer reflect the actual deforestation rate or land use change in the project area. The reassessment should adequately reflect deforestation drivers, activities that will cause land use changes, and changes to forest management methods.
- The information sources used for the reassessment of the reference level should be clearly specified and a clear explanation should be given as to how this information was taken into account.

3.2.6 DISPLACEMENT OF EMISSIONS

(1) TARGETS FOR DISPLACEMENT OF EMISSIONS

- Displacement of emissions considered in the proposed methodology should be the increase in GHG emissions/decrease in removals that (a) occur outside the project area, (b) are measurable, and (c) the result from project activities. These guidelines take following three kinds of displacement of emissions into consideration.

  1. Displacement of emissions by market: This is due to changes in supply and demand equilibrium that occur when wood production sites move outside the project area.
  2. Displacement of emissions by activity-shifting: This occurs when actual drivers of deforestation/forest degradation are shifted from one project area to another area and cause deforestation/forest degradation there.
  3. Ecological displacement of emissions: This leakage is unique to wetlands and peatlands. It occurs when changes in the hydrological ecosystems in the project area affect GHG emissions in other areas.
- Displacement of emissions should not be included in the estimation when displacement of emissions is found to be insignificant based on an assessment using the "Tool for testing significance of GHG Emissions in A/R CDM Project Activities[14]".
- Displacement of emissions by market leakage should be estimated when the project has a significant impact on timber production. For conservative estimation, positive cases where net GHG emissions decrease outside the project area due to project activities are excluded.

(2) ESTIMATION OF DISPLACED EMISSIONS

- Direct monitoring or indirect monitoring based on scientific knowledge should be used when estimating displaced emissions. When estimation of displaced emissions needs high cost and effort, this may be excluded from the estimation (excluded from monitoring) by explaining the reason. In this case, [1.1] [1.2] [1.5] times the amount of GHG emissions assumed at the time of estimation should be accounted as displaced emissions.

3.2.7 ESTIMATION OF GHG EMISSIONS AND REMOVALS

(1) ESTIMATION DATA

- Most recent IPCC Guidelines should be used when estimating the amount of GHG emission reductions/removals caused by the implementation of REDD-plus project. Quality Assurance/Quality Control (QA/QC) activities and uncertainty assessments should also be done based on [most recent IPCC Guidelines] [ISO14064 Series].
- The proposed methodology should address all data or parameters to be reported, including data sources and measurement units. The criteria or factors for acquiring data of GHG emissions are outlined below.
  - The data should be publicly-available and reliable (such as, data released by the IPCC or governments)

[14] See the following website for details of CDM methodology tools <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf>

- The data should be reviewed in publications by organizations that have the capability (such as, peer-reviewed papers)
- The data should be appropriate for the estimation of GHG emissions/removals (its relevance can be demonstrated), and
- The data should be the most recent data at the time of the GHG emission/removal estimations

- When using data or information that has high uncertainty, conservative values should be used and care should be taken not to over-estimate the amount of GHG emission reductions/removals.
- In order to ensure consistency with the UNFCCC, units such as kg or Mg (t) should be converted to their CO_2 equivalent when estimating GHG emissions/removals. This conversion should use the Global Warming Potential (GWP) stipulated in the IPCC Fourth Assessment Report.

- (2) STRATIFICATION

- In order to improve the accuracy of GHG emission reductions/removal estimations, the project area should be divided into multiple strata and a separate estimation carried out for each stratum. This stratification should be based on climate zone, geographical features, forest type and tree species, and so on.

3.2.8 MONITORING

- The proposed methodology should address the monitoring policy, criteria, and procedures. The methodology should include the followings.
  - Objectives of monitoring
  - Monitoring system
  - Monitoring implementation details such as assessment method, model usage, measurement methods, and estimation approach
  - Procedures of data quality management, and
  - Monitoring frequency and implementation procedures

- (1) MONITORING POLICIES

- Monitoring should be based on the [Guidelines for monitoring developed in the future].
- The project proponent should carry out monitoring based on methods that are consistent with most recent IPCC Guidelines. Yet monitoring should be combined with remote sensing and field surveys.
- [It is recommended that technical issues related to monitoring be dealt with using the "REDD-plus Cookbook" developed by the FFPRI.[15]]

- (2) REMOTE SENSING

- Remote sensing with a resolution equal to/higher than Landsat TM (resolution 30 m) should be used when monitoring land use (land cover) and land use changes.
- The image analysis should have a forest/non-forest classification accuracy of 80% or above. Analyses for each forest classification should have a classification accuracy of 80% or above.

[15] These guidelines are established for the project-level REDD-plus activities, whereas the REDD-plus Cookbook are established for the national- or sub-national-level activities under the UNFCCC.

- It is recommended that aerial photographs be used when specifying small-scale forest dynamics or when monitoring slash and burn areas where land cover changes every several years.
- Methods involving radar satellite image are recommended when correcting the image analysis results of Landsat TM.
- The use of Japanese satellite technology (e.g. ALOS) is also recommended when considered as cost effective.
- As it is also important that the remote sensing correlates with the forest inventory of the host country, the circumstances in the host country should be considered when selecting satellite images.

- (3) FIELD SURVEY

  - Measurements used for estimating carbon stocks per area should be based on data obtained from field surveys. As a general rule, these field surveys should use the stratified random sampling method.
    - Unreachable areas can be excluded in order to cut cost. This may reduce the accuracy but will save cost.
  - When conducting field surveys, the sample size, plot size, plot shape, and plot location should be clearly addressed in the Project Design Document.
  - The plot should be located in the project area or within the reference area. The plot may be either a temporary or permanent.
  - With regards to unreachable areas, it is recommended that field surveys are replaced in future by random sampling using LiDAR measurements. This sampling should be as accurate as a field survey.
  - If the IPCC's EFDB, national forest inventories, or land use projects can be used, labor needed for the field surveys will be reduced.
  - When using pre-existing data, it is important to consider carefully the size of the survey target from which the data is obtained. For example, it will only be possible to establish a few plots in the target area using national-level forest monitoring (plots arranged in a 10 km mesh). Furthermore, the particular vegetation in the project area might also be excluded by using pre-existing data.

3.2.9 SAFEGUARDS

- Any consideration of safeguards should be based on the Cancun Agreements (UNFCCC COP16). Furthermore, if national or local governments have already formulated strategies and principles concerning safeguards (they have applied to/adopted FCPF or UN-REDD programs and so on), it is required [to demonstrate] that the project is compatible with the initiatives.
- It is also effective to acquire project-level certifications such as CCBS.

- (1) SOCIO-ECONOMIC SAFEGUARDS
  - The project is required to [demonstrate that it has considered] consider how to respond to the safeguards in the Cancun Agreements (respect for the knowledge and rights of indigenous peoples and members of local communities; the full and effective participation of relevant stakeholders[16]).
  - If the host country already has mechanisms in place to conduct prior assessments and consider local communities in forest management/development projects (it has signed up to international agreements on indigenous rights, for example, or has formulated its own mechanisms when receiving aid projects from overseas), then it is recommended that the project's safeguards initiatives are compatible with these mechanisms.
- (2) ENVIRONMENTAL SAFEGUARDS
  - The project is required to [demonstrate that it has considered] consider how to respond to the safeguards list in the Cancun Agreements (conserve natural forests and biological diversity, incentivize the protection and conservation of natural forests and their ecosystem services, and enhance other environmental benefits[16]).
  - If the host country has ratified the Convention on Biological Diversity (CBD), the project should be compatible [demonstrate compatibility] with the National Biodiversity Strategies and Action Plans formulated in the CBD framework (basic principle).
  - If the host country has ratified the CBD, the project should observe the REDD-plus-related decisions contained in the Convention.
  - When developing safeguards approach on a national or sub-national level, combining internationally recognized standards for the safeguards with national circumstances is an effective way to respond to the Cancun Agreements.
  - When forming, implementing or assessing a project on a project level, it is recommended to understand the characteristics of safeguards initiatives adopted on a higher level (national or sub-national level) or other projects around the project with regards to the treatment of biodiversity and ecosystem services, and strengthen affinities with the safeguard standards referenced by these initiatives.
  - There are many different environmental benefits to consider and there is a complicated relationship between these benefits (for example, the enhancement of one benefit might be to the detriment of another benefit (a trade-off)). Therefore, it will be effective to consult with various stakeholders when determining which benefits should be prioritized.
- (3) SAFEGUARD REPORTING
  - Under UNFCCC, there are agreements on Safeguard Information System (SIS) regarding safeguard including: the safeguards will be undertaken in accordance with national development priorities, objectives, and circumstances and capabilities of each country; host countries will periodically provide summaries of information. However, the details have yet to be decided. It is recommended to pay attention to the future UNFCCC decisions and discussions about safeguards on the CBD, in case where the host country has ratified the Convention, and the safeguards initiatives of the host countries, so as to meet the host country's requirements for providing information of safeguards.

[16] UNFCCC (2010), Decision 1/CP, FCCC/CP/2010/7/Add.1, Appendix Ⅰ, 26, UNFCCC

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