Verified Carbon Standard 2007

Validation and Verification Report:

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Validation and Verification Report – Infapro Improved Forest Management Project	Todd Frank
Client:	Project Title:
Face the Future	INFAPRO Rehabilitation of logged-over dipterocarp forest in Sabah, Malaysia

Summary:

This report documents the validation and verification of the Infapro Improved Forest Management project against the Verified Carbon standard 2007.1 and its supporting documents, including the approved methodology VM0005 Version 1.0 Methodology for Improved Forest Management: Conversion of Low Productive to High Productive Forest. The validation activities included desk review of project design documentation and supporting documents, a field visit to the project area, interviews with relevant personnel, re-measurement of forest carbon plots, and review of calculations of the project's net carbon benefits. The project seeks to rehabilitate approximately 25,000 ha of severely logged-over mixed dipterocarp rainforest in Sabah, Malaysia and prevent the relogging of the forest in this area. The review of Project documentation, the site visit, and subsequent follow-up interviews have provided SCS with sufficient evidence to determine the fulfilment of the stated criteria. The Project correctly applies the selected methodology element and is in conformance with all applicable requirements of the Verified Carbon Standard (VCS). The Project is designed to lead to reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. In summary, it is the opinion of SCS that the Project, as described in the project description (PD) document version 1.7 dated August 19, 2011, meets all relevant Verified Carbon Standard 2007.1 requirements and correctly applies the selected methodology. SCS has verified that the project has generated 509,540 t CO_2 equivalents of emissions reductions, after subtraction of leakage and buffer pool deductions.

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1 Introduction

1.1 Objective

The purposes of this validation/verification assessment were to review and confirm the project's conformance with all relevant requirements of the Verified Carbon Standard, supporting AFOLU guidance documents, and the selected methodology, Approved VCS Methodology VM0005 Version 1.0 Methodology for Improved Forest Management: Conversion of Low Productive to High Productive Forest.

Validation/Verification activities included the following:

- Evaluate the validation/verification scope, including the GHG project and baseline scenario; GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project.
- Evaluate the monitoring plan and develop conclusions regarding the monitoring methodology and the collection and archiving of data relevant to GHG emissions estimation and baseline emissions.
- Evaluate the calculation of GHG emissions, including appropriateness of source, sink, and reservoirs; the correctness and transparency of formulae and factors used; assumptions related to estimating GHG emission reductions; and uncertainties.
- Develop conclusions based on validation/verification standards, submitting any corrective action requests, as applicable.

1.2 Scope and Criteria

SCS assessed the completeness of the Project Description (PD) to ensure that all requirements of the VCS standards have been addressed. SCS assessed whether or not the PD respects the principles of the VCS standards.

Assessment included but was not limited to evaluation of additionality, project design, baseline, monitoring plan, and calculation of GHG emissions.

SCS assessed whether the project itself meets all of the requirements laid out in the VCS standards and is consistent with the PD.

The scope of this report encompasses desk and site assessment activities for the Infapro Project against the following requirements of the Verified Carbon Standard:

- VCS 2007.1
- VCS Program Guidelines 2007.1
- VCS Guidance for Agriculture, Forestry and Other Land Use Projects (AFOLU)
- VCS Program Normative Document: Double Approval Process, Version 1.1
- AFOLU Non-Permanence Risk Tool Version 3.0
- VCS Tool for AFOLU Methodological Issues
- VCS Program Updates: Updates to the Tool for AFOLU Methodological Issues and Guidance for AFOLU Project: Insignificant Emissions Sources and Pools,

Carbon Pools, Avoided Planned Deforestation, Definition of Mosaic and Frontier Deforestation, Market Leakage
- Approved VCS Methodology VM0005 Version 1.0 Methodology for Improved Forest Management: Conversion of Low Productive to High Productive Forest.

The assessment was performed using the client-supplied Project Description and other supporting documentation.

The validation and verification process involved:

- Assessment of the management systems, data handling and estimation methods used in calculating and reporting emissions data;
- Assessment of baseline methodology and determination;
- Assessment of and issuance of an opinion on issues of leakage and additionality;
- Assessment of data accuracy and any assumptions made in the manipulation of that data;
- Validation that the organization is operating according to the methodology approved by VCS; and
- A determination as to whether the Project could reasonably be expected to achieve the claimed GHG reduction/removals.

1.3 VCS Project Description

The project rehabilitates 25,000 ha of severely logged-over mixed dipterocarp rainforest in Sabah, Malaysia and prevents relogging of the forest in this area. In the absence of the project activity, the forest would be re-logged and would only slowly recuperate due to the high quantities of vines and climbing bamboos suppressing the remnant trees and the natural regeneration process.

The project is called INFAPRO which is an acronym for Innoprise-Face Foundation Rainforest Rehabilitation Project. INFAPRO is the collaborative project between Rakyat Berjaya and Face the Future. Rakyat Berjaya is responsible for the field project, which contains implementation and management of the forest rehabilitation activities. Face the Future holds the carbon sequestration rights and is responsible for the carbon development aspect of the project.

In 1992 Rakyat Berjaya and the Face Foundation (the predecessor of Face the Future) signed a contract with the objective of carbon sequestration through the joint implementation of an enrichment planting forestry project on Yayasan Sabah's now largely logged-over concession, in direct vicinity of the Danum Valley Conservation Area. The resulting INFAPRO project is a large-scale rainforest rehabilitation project aimed at the rehabilitation of 25,000 ha of heavily degraded logged-over rainforest. In doing so, the project enables the sequestration of large volumes of carbon dioxide from the atmosphere, thus combating climate change.

INFAPRO is supported by the Government of Sabah in a Memorandum of Understanding between the State of Sabah and Face.

The INFAPRO project is divided into two phases. The first is the implementation phase which covers the first three years of each contract and is under the shared financial responsibility of Face the Future and Rakyat Berjaya. Activities within this phase are implemented by Rakyat Berjaya. The second phase is the subsequent management phase, which covers the following 96 years, which is under responsibility of Rakyat Berjaya. As a whole, the project results in the prevention of short-term re-logging and rehabilitation of a severely degraded logged-over rainforest.

[Text Taken from section 1.4 of the project document.]

1.4 Level of assurance

Per section 7.3.1 of the VCS standard ("VCS 2007.1") the level of assurance is reasonable for validation and verification.

2 Methodology

2.1 Review of Documents

SCS received and reviewed the PD, Monitoring Report, Leakage Assessment, Risk Assessment and supporting documentation to assess initial conformance with the requirements of the VCS standard. Key factors that impact the reported emission reductions and removals were identified, and a Verification Plan was created to focus on the critical elements presenting potential risk for errors. These elements included inventory data collection and handling, assumptions underlying the baseline characterization, and assessing relevant applicability and eligibility criteria.

The verification team conducted a desk review of the documentation provided by the project proponent. These documents included the project design document, which includes a monitoring plan, a monitoring report, a risk assessment, and a leakage assessment. The project proponent provided extensive supporting documentation in addition to these primary documents. Supporting documentation included spatial data of the project boundaries, and monitoring plot locations; a number of contracts, annual reports, records of correspondence, and standard operating procedures related to project implementation; records of project land area land ownership and logging concessions; management plans developed for the project area; scientific literature presented by the Project Proponent in support of assumptions made in project documentation; financial and operational records; and spreadsheets used to make project calculations. During the review, findings were issued as discussed in Section 2.6 and the Project Proponent updated the PD and monitoring report to address the findings by the audit team. The most recent versions of the critical project documents are as follows:

Project Description: Version 1.7, dated 19 August 2011
Monitoring Report: Version 1.4, dated 19 August 2011

2.2 Site Visit

Following the desk review, the auditors conducted an on-site audit of the project area on June 7-9, 2011. The site visit was used to assess the application of the PD, visit random portions of the ownership for reconnaissance and ground-truthing, and to conduct a field review of the Project Proponent's sampling methodology. During the site visit, five inventory plots were re-measured by the audit team. The collected data was used to confirm whether proper field measurement techniques were used in project monitoring. Stand typing and general descriptions of the forested area, both within and adjacent to the project, were also confirmed as part of the general reconnaissance of the project area.

2.3 Quantitative Analysis

The third step of the verification process focused on the quantitative analyses undertaken by the Project Proponent to perform the calculations required by the methodology and estimate the net carbon benefits of the project. This included a comparison of inventory data measured during the site visit portion of the audit to that presented by the project proponent. Additionally, calculations made by the Project Proponent were reviewed by the audit team.

2.4 Final Review and Report Drafting

The last step in the verification process included a final review of the submitted data, and drafting of the Verification and Validation Opinion and supporting Validation/Verification Report. These documents were based on the results of the verification assessment. The draft Validation/Verification Report was presented to an internal SCS Technical Reviewer who determined the Verification Opinion to be justified given the evidence presented. The report and opinions were then presented to the Project Proponent for review and comment.

2.5 Follow-up Interviews

The following personnel were interviewed during the audit process:

- Martijn Snoep, Face the Future
- Justin Whalen, Face the Future
- Jaludin Abun, INFAPRO
- Yap Sau Wai, INFAPRO
- Jenifer Chua, INFAPRO
- Martin Cerny, IFER

Many of the staff members listed in Table 5.2.1 of the Monitoring Report were present during the on-site audit as well, but were not directly interviewed.

2.6 Resolution of any material discrepancy

Throughout the validation/verification process, there was an iterative exchange between SCS and the Project Proponent to gather additional information for review and examination. This exchange includes Findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that are

issued by SCS to the Project Proponent. The Project Proponent must respond to NIRs and NCRs in order for SCS to render a verification opinion. At this time, all findings have been appropriately addressed by the project proponent and subsequently closed by SCS.

The Findings from the validation/verification of Infapro Improved Forest Management Project are compiled in Appendix I.

3 Validation Findings

3.1 Project Design

Technology Used

The project sequesters carbon by rehabilitating logged over forests and preventing a second round of logging in those forests. The project makes use of Approved VCS Methodology VM0005 Version 1.0 Methodology for Improved Forest Management: Conversion of Low Productive to High Productive Forest. Section 1.8 of the PD describes the Project and its major activities. The validation team observed that the project team had been successfully executing these activities for many years; the impact of planting, thinning, and climber cutting on carbon stocks in the project area was obvious upon observation of treated and untreated areas within the project. The project team clearly demonstrated strong competence in carrying out the forest treatment and monitoring tasks required for implementing the project activities.

Project Duration, Crediting Time, and Project Start Date

The project was initiated on June 29, 1992. The execution of contracts for the rehabilitation of logged over forest areas constitute the initiation of the project. These contracts were made available to the audit team for verification of the project start date. According to these contracts, the project end date is June 18, 2091.

The project was initially registered, validated, and verified, under the Carbon Offset Verification Standard of SGS. Under this standard, the project was issued credits until 2006. Although the VCS 2007.1 standard states that "In cases where the project proponent has applied for emission credits from another GHG Program, the VCS PD shall include proof of registration of the project through the GHG Program. The GHG Program operator shall provide a written guarantee to be included with the project proponent's VCS PD that any GHG emission reductions or removals shall not have been previously retired within the operator's GHG Program and that the reductions shall be cancelled so that they can no longer be used within the operator's GHG Program. Hence they shall only be accounted for under a VCS Registry," the VCSA later clarified that this rule applies only when the *same* emissions reductions are credited under multiple programs. In the case of this project, the emissions reductions are temporally distinct in each program; there is not a risk of double counting. Hence, it was determined that the project met the requirements of the standard. Additional details can be found under withdrawn findings 9 and 14 in the list of findings and in the double counting section below.

The contracts reviewed as well as reports from initial project verification by SGS documented that the project was designed and implemented as a climate change mitigation project, and that prior to January 1, 2002, the project applied an externally reviewed methodology and engaged independent carbon monitoring experts to assess and quantify the project's baseline scenario and net emissions reductions and removals. Additionally, this report documents that the project has completed validation and verification by October 1, 2011, as required by the section 5.2.1 of the VCS 2007.1 standard as amended by the VCS program update dated 1/21/2010. The project start date and crediting period are consistent with the requirements of the VCS.

Ownership - Proof of Title

The project proponent is Face the Future. The details of ownership and proof of title for the project are discussed in section 8.1 of the PD. This discussion references several License agreements and memorandums of understanding which document land ownership, concession holders, and carbon rights. Each of these documents was made available to the audit team and was confirmed to be consistent with the descriptions provided in section 8.1 of the PD. Based on this documentation, the project area is within a forest concession allocated to Yayasan Sabah, and Face the Future holds ownership of carbon sequestration within the project area.

Double Counting and project participation in another emission trading program

The project has participated in another emission trading program. In 2008, the project was issued credits under the SGS Climate Change Program. The audit team initially expressed concern that, as a result, the project may not meet the requirements of sections 5.2.2 VCS and 5.7 of the VCS standard. NCRs 2011.9 and 2011.14 were issued as a result. Carolyn Ching of the VCSA later clarified to the audit team that the intent of the standard is to restrict any single emission reduction or removal from being counted in two different GHG programs, and that the standard does not restrict a project from being registered in one GHG program, then registering in another. The complete text of this email can be found in the list of findings. As a result of this clarification, NCRs 2011.9 and 2011.14 were withdrawn.

SCS can verify that no double counting of emissions reductions has occurred because all emissions reductions reported in the monitoring report associated with this validation and verification report occurred after the project start date in 2007. The previously issued credits were associated with emissions reductions that occurred in 2006, as documented by a Greenhouse Gas Credits Registration Document issued by SGS on 29 December 2008. Additionally, the SGS verification report associated with the previously issued credits, reviewed by the audit team, makes no mention of the avoidance of re-logging that is prevented by the present project and which contributes to the generation of the credits verified in this report.

Project applicability to the VCS for projects rejected under other GHG programme

The project has not been rejected from any other GHG programs.

Project eligibility under the VCS

The project's design is consistent with the definition of improved forest management (IFM) as defined by the VCS Tool for AFOLU Methodological Issues because the project design seeks to protect the forest from further logging and to convert low-productive forest to high productive forest through liberation thinning, climber cutting, and enrichment planting. The project proponent demonstrated that the project area meets all the applicability requirements of the selected methodology (discussed in detail in section 3.2).

Methodology Deviation

Several deviations have been made to the methodology as it was initially published on the VCS website. Each of these constitute corrections to errors that were discovered in the methodology as originally published, rather than deviations to the monitoring or quantification methods intended by the methodology. These included:

- Equation (7) of the methodology was updated to correct for an error in which units of carbon stocks were given in an equation intended to have fractional units. The correction made equations (8) and (9) redundant, so they were removed.
- Equation (51) of the methodology initially applied the buffer withholding to GHG emissions, rather than strictly to carbon stock changes as specified by the VCS standard. This equation was corrected.
- The method given in the methodology to combine uncertainty estimates across strata was shown to give unreasonable results. A method from approved VCS module VMD0017 was adapted to fit the methodology instead. See NCR2011.21.
- Several minor typographical errors were corrected.

The VCSA was informed of these errors in the methodology, and Face the Future, the methodology's developer, is working with the VCSA to update the methodology document to a new version. The validation team reviewed each of these corrections and agrees with the project proponent that the revisions are appropriate, conservative, consistent with the requirements of the VCS, and that the methodology as initially written cannot be used logically without these revisions.

In addition, the project makes use of nitrogen fertilizer, despite the prohibition from use of nitrogen fertilizer in the applicability conditions of the methodology (See NIR2011.1). Nitrogen fertilizer is used only in the nursery component of the project, and only in small quantities. Computations made by the project proponent and reviewed by the audit team established that the emissions from fertilizer are far below the *de minimus* threshold of 5% prescribed by the VCS standard. Consequently, the project was validated, allowing the use of nitrogen fertilizer as a methodology deviation.

3.2 Baseline

Approval of the Baseline Methodology

The project employs the Approved VCS Methodology VM0005 Version 1.0 Methodology for Improved Forest Management: Conversion of Low Productive to

High Productive Forest. The methodology was developed by Face the Future, specifically for use with this project.

Correct Application and Justification of the Selected Baseline Methodology

The project has met all of the applicability conditions of the methodology. These include the following:

- The project aims at the avoidance of relogging of logged-over, degraded natural Evergreen Tropical Rainforest, or the rehabilitation of logged-over natural Evergreen Tropical Rainforest through direct human intervention such as cutting of climbers and vines, liberation thinning and/or enrichment planting. This was directly evident to the audit team upon visitation of the project area.
- Land within the Project Area must qualify as forest. The Malaysian definition of forest uses a minimum canopy crown cover of 30%, a minimum height of 5 m of vegetation at maturity and a minimum forested land area of 0.5 ha. These were directly evident to the audit team upon site visitation.
- Monitoring of the baseline for ex-post confirmation of regrowth rates is conducted. The project has identified suitable untreated forest areas to monitor in order to assess baseline regrowth as required by the methodology.
- The soil carbon pool is expected to increase more or decrease less in the with-project scenario in comparison to the baseline. The without project scenario includes additional logging, which would be expected to lead to soil compaction and subsequent soil carbon losses. Soil carbon is thus conservatively excluded from project accounting.
- Site preparation is carried out so as to avoid levels of soil disturbance or soil erosion sufficient to significantly reduce the soil carbon pool over the project lifetime. The audit team reviewed site preparation procedures and agrees with the Proponent that such procedures are sufficient to avoid material reductions in the soil carbon pool.
- Though the project uses some nitrogen fertilizer, the emissions from this fertilizer use were demonstrated to be insignificant. See finding NIR2011.1 in the list of findings.
- There is no harvest planned in the project crediting period, as documented in the PD.
- Biomass burning, fuel gathering, removal of litter, or removal of dead wood do not occur in the baseline scenario and in the with-project scenario within the project boundary. The audit team confirmed during the site visit that population densities in the area surrounding the project are very low, and thus these activities are very unlikely in both the project and baseline cases.
- A suitable reference area is available for deriving without-project scenario parameter values immediately adjacent to the project area. As documented in section 4.2.4.1 of the PD, this area meets each of the requirements of the methodology for selecting reference areas.

- Observations made during the site visit confirmed that the project is not implemented on peat soils or in an area in which flood irrigation or drainage of saturated soils occurs.
- The project is not a grouped project.

Assessment of additionality

The project used the approved VCS Tool VT0002 version 1.0 'Tool for the Demonstration and Assessment of Additionality in IFM Project Activities' to demonstrate the additionality of the project. The details of the application of this tool are discussed in section 2.5 of the project document. The validation team reviewed this analysis and cross checked the assumptions of the analysis against third party references provided by the project proponent. The validation team concluded that the additionality assessment was well documented, and that, when compared against potential alternative land uses the project activity faces both investment barriers and technological barriers that makes its implementation in the absence of carbon finance unlikely. Analysis of similar activities within Sabah shows that the project activity is not a common practice. The validation team agrees with the Project Proponent's assessment that the project is additional.

Quantification of baseline carbon stocks

The baseline scenario is identified in section 2.4 of the PD. The most likely baseline scenario, as identified by the Project Proponent, is that the the area would be maintained as part of the Ulu Segama Forest Reserve, without investing in the rehabilitation of the forest and that a second round of logging would be likely to occur using Reduced Impact Logging Techniques, leading to further losses of carbon stocks from the already degraded forest. Section 4.1.1 of the methodology provides specific requirements for establishing the baseline management practice with regard to operator history, legal requirements, and environmental practice. The Project Proponent provided supporting documentation, much of which was prepared independently from the project, which met these requirements, including a management plan and government reports of extracted timber volumes. The validation team's cross check of these documents confirmed that the described baseline scenario is consistent with common forest management practices in the surrounding area.

The actual quantification of baseline carbon stocks is described in detail in section 4.2 of the PD. This includes carbon stock changes that result from baseline relogging, changes in existing tree vegetation as a result of baseline regrowth, and greenhouse gas emissions that would have occurred as a result of baseline relogging.

To quantify the carbon stock change due to relogging in the baseline, the methodology allows for the use of harvest volumes from a reference area that is demonstrated to be similar to the project area. The Project Proponent has selected the Malua Forest Reserve as a reference area. The Methodology requires that several conditions be satisfied in selecting a reference area:

- The reference area must support comparable quantities of pre-relogging carbon stocks in above-ground woody biomass before relogging and

comparable predicted yields of commercial timber (within 20%). This was demonstrated by a comparison of forest inventories between the reference area and untreated parts of the project area. These inventory data were made available to the audit team, and calculations used to establish that the mean carbon stocks were similar were confirmed by the verifiers.

- The reference area must have been subjected to the same management regime in the initial round of logging. Both areas were conventionally harvested under the same management plan, which was reviewed by the audit team.
- The legal and harvesting rights must be comparable in the project area and the reference area. Both areas are located within the same concession area.
- The methodology requires that the reference area be of similar size to the project area (i.e. 75% of the Project area or more). The selected reference area, the Malua Forest Reserve, is 33,969 hectares in area, larger than the project's 29,842 hectare area. Maps provided by the project proponent confirm the appropriateness of the size of the selected reference area.
- It must be demonstrated that management of the reference area is not affected by its selection as such. The project proponent has stated that planning for relogging in the reference area occurred in 2006. The inventory of the reference area was collected in 2007, and the Yayasan Sabah Forest Management Plan 1984-2032, which applies to the reference area, was put into place well before the project selected a reference area. The project was assessed against a different GHG standard in 1998 by SGS, with no reference area required. The project proponent provided minutes from a 2008 meeting that established that the reference area was first selected in 2008, indicating that management planning in the reference area occurred prior to the project's selection of the area.

Carbon stock changes due to relogging in the baseline were estimated from reports of volume harvested in the reference area compiled by the Sabah forestry department. The audit team reviewed all calculations used to estimate changes in carbon stocks from these reported volumes and confirmed that they were implemented as required by the methodology.

In addition to direct changes in carbon stocks from relogging, the methodology accounts for carbon stocks in harvested wood products and emissions due to burning of fossil fuels during relogging. The calculations for these components are derived from the harvest volumes in the reference area and default factors provided by the methodology. All calculations used to estimate net baseline emissions and changes in carbon stocks were checked by the audit team and confirmed to be correct.

The final component of the net change in baseline carbon stocks accounts for the net carbon stock change in existing vegetation due to regrowth that occurs in the baseline scenario. The project makes the conservative assumption that regrowth in the baseline scenario is estimated as the regrowth of the pre-relogged residual forest applied to the entire area of each stratum, despite any relogging in the stratum. It is estimated using the difference in carbon stocks at two points in time in

plots established in the untreated areas within the Project Area. To estimate this rate, the project proponent re-measured forest inventory plots that were established in 2007 during the 2010 monitoring campaign. Though it was not possible for the audit team to assess the accuracy of the 2007 inventory data, some of the plots located in untreated areas of the project were included in the field visit described in section 3.3, below. The inventory data were found to be of high quality. All calculations used to convert forest inventory data to estimates of carbon stocks were reviewed by the audit team and found to have been implemented as required by the methodology.

3.3 Monitoring Plan

Approval of the monitoring methodology

The monitoring plan is described in section 3.4 of the PD and supplemental standard operating procedures, which were provided to the audit team. The monitoring plan for biomass change uses a stratified sample of nested fixed area permanent plots arranged as a cluster of four circles located at random locations on a 200mx200m grid superimposed over the project area. The area of each stratum within the project area was estimated based on a sample of points within the project area as described by section 5.3.4.1 of the 2008 IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry. SOPs reviewed by the audit team were of sufficient detail to accurately repeat measurements on each plot with consistent results.

Initially, the monitoring plan only included plot locations located between 30 and 250 meters of a road. The audit team expressed concern that this introduced a potential source of bias into the sample (see NIR2011.2, NCR2011.20, and NCR 2011.24). In response, the Project Proponent amended the monitoring plan to include plots located in the interior portion of the project area as well. Local technical expert Elbson Marajan Pengeran re-visited the project site on July 27-29, 2011 to confirm that the additional sampling had been carried out and that the measurements taken were accurate. After the plan was amended, the audit team determined that it met the requirements of the VCS and methodology and is suitable for long term monitoring of the project area.

Measurements taken from the permanent sample plots are converted to carbon stocks using the biomass expansion factor approach described in section 5.2.2 of the methodology. This approach estimates the carbon stock of each sampled tree using volume equations taken from the literature. The volume equations used in the project area were derived from a destructive sample of trees in the sample Forest Reserve as the project area. Literature documenting these equations was provided to the audit team, to verify that locally appropriate equations were chosen. The estimated volume is then used in conjunction with wood density, biomass expansion factors, and an estimated carbon fraction, and a root to shoot ratio to estimate whole tree biomass. Each of these parameters was obtained from scientific literature, which was reviewed during the audit and found to be appropriate to the project area.

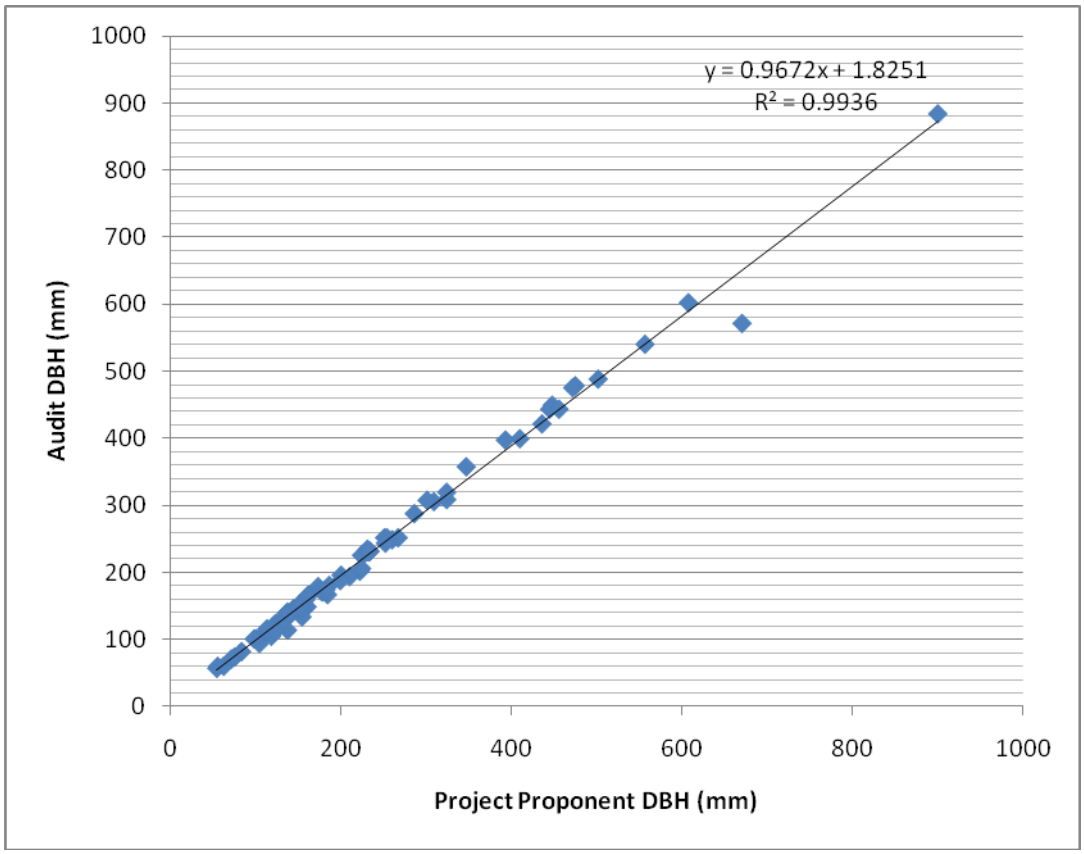
In addition to monitoring of biomass change, the monitoring plan requires record keeping regarding electricity generation, fuel consumption, flights, area cleared for infrastructure establishment, road establishment and maintenance, and forest management activities. The record keeping specified in the monitoring plan included in the PD is sufficient to provide the data required for the calculations described in the methodology.

Overall, the audit team found the monitoring plan adequate for providing high quality data that meets the requirements of the selected methodology.

Correct application and justification of selected monitoring methodology

To assess correct application of the selected monitoring methodology, SCS visited and re-measured a total of 5 monitoring plots. These plots were selected with a random element, but were not selected completely at random. During each day of the audit, the validator chose random plots that were located in portions of the project in which visits were planned. This allowed the audit team to cover a large portion of the total area of the project in a time-efficient manner.

The fundamental pieces of data collected in field measurements were tree diameter and species. While in the field, the technical expert expressed no concerns about adequate identification of tree species. We note, however, that biodiversity is very high in the area and species identification in the region is very specialized. Project staff exhibited a high level of skill and training in such species identification. SCS compared the data collected in the field to data provided by the project proponent. In all plots measured, the total number of trees in the plot, as determined by the audit team, exactly matched the total number of trees reported by the project proponent. Re-location of individual trees was possible based on the stem map data collected during the initial inventory, and showed high correspondence with field observations. In total, 142 trees were re-measured by the audit team. On average, the diameter measured by the audit team was 0.49 cm greater than the diameter measured in the initial inventory, while the median difference was 0.2 cm. One tree had a difference in diameter greater than 10 cm, while all other differences were less than 4 cm. The check cruise was performed several months after collection of the initial data, so the diameters would be expected to be slightly greater as a result of tree growth. The collected data is shown in the figure below:



The audit team also observed the protocol by which inventory teams performed the plot measurements and found execution of the plot measurement methodology to be systematic and meticulous, resulting in high quality data.

The accuracy of spatial data, including the project boundary, was assessed by collecting GPS coordinates while in the field and overlaying those coordinates with spatial data files provided by the project proponent (see NCR 2011.23). At this time, the spatial data presented by the Project Proponent is consistent with that collected during the site visit.

Section 5.6 of the methodology requires the project to account for greenhouse gas emissions in the with-project scenario using similar methods to those applied in the baseline scenario, which includes emissions from any timber removal or infrastructure development that occurs in the project scenario, using the methods described in section 4 of the methodology. While on site, the audit team additionally reviewed hard copy records of fertilizer and fuel use, planting and management activities, finances, and road maintenance. With the exception of road maintenance records, which are used to establish the area designated for infrastructure in emissions accounting equations, these were found to be adequate for providing the data required by the methodology. In the case of road maintenance records, conservative assumptions (described in section 4) were made in the absence of historical record keeping. The project proponent has committed to keeping records of road maintenance going forward.

Based on these observations, the audit team came to the conclusion that the monitoring methodology was correctly applied and that the data upon which the project's carbon stock benefits are based is sound.

Monitoring and reporting is to take place on three year intervals. Specific roles and responsibilities for monitoring are detailed in section 3.4.2.4 of the PD. Quality Assurance protocols are included in section 3.4.2.6 of the PD and associated SOPs.

3.4 Calculation of GHG Emissions

Appropriateness of sources, sinks and reservoirs

The project account for carbon in the above-ground tree biomass, below ground tree biomass, and wood products pools. Dead wood is conservatively considered to be zero in the project case, and indirectly accounted for in the baseline case as part of the C_{damage} parameter (see methodology page 19). Non-tree biomass, litter, and soil organic carbon are conservatively excluded from the project, in accordance with the methodology.

Though the project includes the removal of non tree biomass in the project scenario, emissions from this removal are not accounted for based on VCS guidance, and as specified in table 2 of the methodology. Emissions of CO2, CH4, and N20 from combustion of fossil fuels are included in both the project and baseline scenarios.

The sources, sinks and reservoirs selected are consistent with VCS guidelines and the requirements of the selected methodology.

The correctness and transparency of formulas and factors used

The formulas used to estimate project greenhouse gas emissions are taken directly from the approved VCS methodology. Formulas for estimating volume of sampled trees come from scientific literature relevant to the project area, which was provided to the audit team and reviewed during the validation process. SCS reviewed the computer code used to process inventory data, as well as all calculations presented in project documents and accompanying spreadsheets to verify that the calculations are free of errors and that they have been implemented as described in the approved methodology.

Factors and parameters used in calculations come from various peer reviewed publications or published third party reports. The source of each factor is documented in the PD and all sources were made available to the audit team. These sources were cross-checked during the validation audit.

3.5 Environmental Impact

Though an environmental impact assessment is not required for forest rehabilitation projects in Malaysia, an in-house EIA was conducted by INFAPRO in 2000. Section 5 of the PD summarizes the results of this assessment. After visiting the project site,

the audit team did not express any concerns about negative environmental impacts of the project.

3.6 Comments by stakeholders

SCS received no specific feedback from stakeholders regarding the validation of the project. However, section 6 of the PD documents feedback received from stakeholders and the way in which it has impacted the project.

3.7 Risk Assessment

The project applied the risk tool from the VCS version 3 standard to determine the required non-permanence buffer contribution. The project proponent presented extensive documentation in support of the claimed risk level, including management plans; contracts and agreements establishing License for Timber, carbon rights, project implementation details, and access to funds; financial records; evidence of World Bank governance indicators; results of previous audits; reports on fire risks; and state level forest department reports. The assessment resulted in a total project management risk score of -2, a total financial viability risk score of 0, a total opportunity cost risk score of 6, a project longevity score of 0, an internal risk score of 4, a total land tenure risk score of 0, a total community engagement risk score of 0, a total political risk score of zero, a total natural risk score of 5.25, and an overall risk score of 9.25. Based on this score, the project is assigned the minimum risk rating of 10, as described in the VCS version 3 AFOLU Non-Permanence Risk Tool. The audit team found the claimed level of risk to be well supported by the documentation provided and determined that conservative assumptions were in determining the risk level appropriate to the project. The individual risk components and justification for the risk score assigned are summarized in the table below:

Risk Category		Score Applied	Evidence reviewed
Project Management	(a)	0	All species used are native. The project proponent provided a checklist of native species created by the Sabah Forestry Department against which planted species were compared. Additionally, the technical expert contracted by the audit team verified that the species listed are native to the area.
	(b)	0	The project proponent has stated that ongoing enforcement is not required to protect more than 50% of stocks because it is part of a well defined concession area (which is patrolled by the Sabah Forestry Department), and that there are few communities residing in the area. The audit team's site visit confirmed that few people reside near the project area, and that the Sabah forestry department controls access

			to the surrounding forest.
	(c)	0	The project proponent provided biographies of Infapro staff members that demonstrate that the management team has more than 5 years experience in each of the skills necessary to undertake project activities.
	(d)	0	The project is managed from an on-site office, which was visited by the audit team.
	(e)	0	The project team's experience does not qualify for this mitigation score.
	(f)	-2	The project proponent provided a copy of the management plan for the project area. Review of this plan indicated that it meets the requirements of an adaptive management plan as defined by the VCS.
Financial Viability	(a-d)	0	The project Proponent provided audited financial records that show that the project has already broken even in terms of cash flow by previously selling GHG credits verified under another standard.
	(e-h)	0	As the project has already reached the break-even point as described above, the project has secured 100% of funding required to cover the total cash out up to the break even point.
	(i)	-2	The project proponent supplied evidence, in the form of a letter from the provider of a line of credit that the project has access to additionally callable financial resources.
Opportunity Cost	(a-f)	8	The project has conservatively assigned the highest risk rating associated with opportunity cost to the project.
	(g)	0	The project does not qualify for this mitigation score because the project proponents are not non profit organizations.
	(h-i)	-2	The project proponent provided a series of contracts and agreements that demonstrate that the project is protected by a legally binding commitment to secure long term management and conservation of carbon sequestered by the project for a period of 99 years. These documents were reviewed by the audit team. This qualifies the project for a mitigation score of -2, but does not reach the 100 year duration required for a mitigation score of -8.

Project Longevity	(a-b)	-19	As discussed above, a legal agreement is in place to continue management practices for a duration of 99 years. Using the formula given in Table 4 of the VCS Non-Permanence Risk Tool, this results in a project longevity score of 30-(99/2) = -19.5, which the project proponents have rounded to -19. A total project longevity risk score of 0 is applied, as the VCS standard does not allow scores in the category to be less than zero.
Land Ownership and Resource Access/Use Rights	(a-d)	2	The project proponent provided copies of clear timber license agreements for the project area. No additional evidence of any disputes over land ownership or resource and access rights was found by the audit team. No concerns about access or resource rights were voiced by the local expert hired by the audit team.
	(e)	-2	As discussed above, a legal a legal agreement is in place to continue management practices for a duration of 99 years.
	(f)	0	NA
Community Engagement	(a-c)	0	No communities are located within 20kms of the project area that are reliant on the area. This was confirmed by the audit team during a site visit.
Political Risk	(a-e)	1	The governance score was calculated from the World Bank Indicators as 0.36. The audit team independently calculated the score from the indicators as published by the World Bank and arrived at the same conclusion as the Project Proponent.
	(f)	-2	Malaysia qualifies for the mitigation discount because it is part of the REDD+ partnership launched on May 27 2010 in Oslo, and has established a national PEFC standards body. Review of the respective websites for these organizations by the audit team confirms

			that these requirements have been met.
Natural Risks	(F)	2 (LS) * 0.5 (Mitigation) = 1	The assessment of the likelihood and significance of potential natural disturbance events is subjective in nature. The audit team reviewed the project proponent's rationale for each of these elements, which is documented in a risk assessment document that accompanies the PD, and determined that the risk assessments made were reasonable and conservative. Sabah Forestry Department Documents were provided that show that fire risk is low in the project area, and the audit team observed evidence that fire prevention measures are in place in the project area. The very high species richness in the project area limits the risk of pest and disease attacks. The site visit confirmed that the topography of the project area limits its susceptibility to flood damage. Landslides are a risk in the project area, but it appears very unlikely, based on an on-site visit of the area, that landslides would affect a significant percentage of the rehabilitated forest.
	(PD)	2(LS)* 0.25 (Mitigation) = 0.5	
	(W - Floods)	5(LS) * 0.5 (Mitigation) = 2.5	
	(W - Landslides)	2(LS) * 0.25 (Mitigation) = 0.5	
	(G)	0	The local technical expert hired by the audit team confirmed that no known substantial geological risks are present in the project area.
	ON	0	The local technical expert hired by the audit team confirmed that there are no other substantial natural risks that the project's risk analysis must consider.

3.8 Leakage

Leakage was assessed during the validation audit as the first assessment under the VCS double approval process. The results of that assessment are available under separate cover in a report dated July 1, 2011.

4 Verification Findings

4.1 Remaining issues, including any material discrepancy, from previous validation

This is the first verification of the project, and is performed concurrently with validation. No additional issues remain from a previous validation or verification.

4.2 Project Implementation

No discrepancies were found between the PD and the actual project implementation. As this is the initial verification of the project and was conducted concurrently with validation, the Project Proponent had the opportunity to modify the PD throughout the audit process to ensure that it was consistent with the findings of the auditors regarding the actual project implementation. The final version of the document is, to the best of the knowledge of the audit team, free of material misstatements. Materiality is defined as 5%, as described by VCS 2007.1, section 7.3.1.

4.3 Completeness of Monitoring

See section 3.3 for a discussion of the correct application of the monitoring methodology. The audit team found that the methodology had been applied correctly, and that all required pools were monitored. For calculation of emissions due to road maintenance during project activities, the methodology requires information on the area of roads for which maintenance activities were performed. This data has not been monitored since the initiation of the project, though financial records provide a basis for estimating the amount of maintenance work performed. In lieu of records of the actual amount of road work performed, the Project Proponent has made conservative assumptions regarding the area of road work conducted. After reviewing work orders maintained at the project site, the validator is confident that these assumptions result in conservative estimates of the emissions from road work. All other emissions sources were monitored as described in the methodology.

4.4 Accuracy of Emission Reduction Calculations

The audit team reviewed all calculations used to estimate the change in carbon stocks resulting from project implementation, as well as calculations used in estimating the baseline and leakage. Additionally, project sampling was compared to a sample by the audit team as described in section 3.3. The calculations presented in the current monitoring report are, to the best of the audit team's knowledge, free of errors, omissions, or material misstatements.

4.5 Quality of Evidence to Determine Emission Reductions

SCS assessed the quality of evidence collected by the Project Proponent used to determine emissions as described in section 3.3.

All other factors used in estimating emissions reductions come from approved methodologies, VCS sources, peer-reviewed scientific literature, or third party reports such as those produced by the Sabah Forestry Department and the UNFAO. Each of the sources that form the basis for the emission reductions was made available to the audit team, and it was confirmed that these sources were used appropriately.

4.6 Management and Operational System

The structure of the management and operational system in place at INFAPRO is described in sections 1.9, 1.15, and 3.4.2.3 of the PD. Thorough standard operating procedures were presented to the audit team in parallel with other project documentation. Quality control procedures for monitoring are described in section 3.4.2.6 of the PD and are consistent with best practices in forest carbon project development. The project has been in place since 1992 and has well trained, dedicated, and competent staff available for all aspects of project implementation. Based on observations on the project site and the thorough nature of documentation presented during the validation process, the validation team has a high level of confidence in the team's ability to continue project implementation and monitoring as described in the PD.

5 Validation and Verification Conclusion

SCS was able to arrive at an opinion regarding the accuracy of the calculated emission reductions and removals from the INFAPRO Improved Forest Management Project through a review of the Project Description and provided supporting information, additional requested information, a site visit, and interviews with the project development team. SCS confirmed the soundness of the data regarding project eligibility, inventory procedures, baseline and project characterization, and methodologies related to the calculation of carbon stocks and GHG reductions and removals. Through the risk based validation assessment, SCS has determined that the INFAPRO Improved Forest Management Project, developed by Face the Future, is in conformance with the Verified Carbon Standard and meets the minimum quality standard. Thus, it is SCS's opinion that the project is eligible for validation under the Verified Carbon Standard.

Furthermore, all issues identified during the verification were resolved and found to be in conformance with VCS standards. The monitoring report and data are considered accurate, complete, transparent, and free of material misstatements.

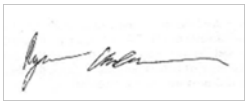
Therefore, SCS is able to issue a positive Verification Opinion for the emission reductions and removals by the project for the monitoring period from 2007 –2010. While the project has generated 611,580 tonnes of emissions reductions, 10%(102,043 metric tonnes CO2e) of the project's Net CO2e which are derived from changes in carbon stocks (as opposed to avoided emissions from other sources) will be set aside in the VCS's buffer pool. Additionally, as described in the Infapro Leakage Assessment Report, 64,475 tonnes are deducted from carbon sequestration to account for leakage. As such, the project will be issued a total of 509,540 VCUs. The VCUs in this Verification Report are consistent with those claimed in the 2011 monitoring report.

Reporting period: From 2007 to 2010

Verified emission reductions in the above reporting period:

Project emissions	2,522	t CO_2 equivalents
Project Change in Carbon Stock	327,912	t CO_2 equivalents
Baseline emissions	714,580	t CO_2 equivalents
Baseline Change in Carbon Stock	333,964	t CO_2 equivalents
Emission reductions	641,529	t CO_2 equivalents
Estimated Leakage	64,475	t CO_2 equivalents
Buffer Pool Contribution	102,040	t CO_2 equivalents

Net Emission reductions, after subtraction of buffer pool contribution and leakage ***509,540 t CO_2 equivalents***



Ryan Anderson
Lead Verifier
Contractor to Scientific Certification Systems
24 August 2011

Todd Frank
Program Manager, Greenhouse Gas Verification
Scientific Certification Systems
August 24, 2011

Appendix I: List of Findings

SCIENTIFIC CERTIFICATION SYSTEMS

Certification for a Sustainable World ™

Forest Project Validation & Verification List of Findings

Validation & Verification under the Verified Carbon Standard

Reporter/Member: Face the Future

Project: Infapro Improved Forest Management Project

NIR 2011.1 dated 05/25/2011
Standard Reference: VM0005 page 7
Document Reference: PD version 1.0 page 15
Finding: Applicability conditions for the methodology require that no nitrogen fertilizer be used in project activities. The project activities involve the use of nitrogen fertilizer in the nursery. Please provide evidence that the use of this fertilizer results in negligible emissions as claimed on page 28 of the PD.
Proponent Response: Nitrogen based fertilizer use in INFAPRO's nursery is around 90 kg per year. The fertilizer type is Agroblend NPK (12:12:17). The associated N2O emissions are 0.05 tCO2-e per year, which is considered to be negligible. The calculation is based on the CDM A/R Methodological tool "Estimation of direct nitrous oxide emission from nitrogen fertilization", version 01. See the separate calculation in spreadsheet ''Nitrous oxide emissions in INFAPRO".
Auditor Response: The validator reviewed calculations of N20 Emissions provided by the project proponent that support the claim that emissions from fertilizer use are insignificant. Additionally, during the site visit, fertilizer use records kept by project staff were reviewed. These records are consistent with the fertilizer quantities given by the project proponent. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.2 dated 05/25/2011
Standard Reference: NA
Document Reference: PD version 1.0 section 4.2.2
Finding: Section 4.2.2 of the PD indicates that biomass sampling in the project area was limited to areas between 30 meters and 250 meters from roads. As discussed in the PD, this potentially introduces bias to the sample because a difference between the average carbon stocks in the sampling zone and the average carbon stocks in the area beyond the sampling zone may exist. The PD discusses a method of correcting for this potential bias when upscaling carbon stocks to the total project area, but it is not clear if the method described effectively accounts for bias. To enable the validation team to assess whether the sampling design is appropriate, please provide a more detailed description of and rationale for any procedures used to address bias that may result from limiting plot locations to this sampling zone.
Proponent Response: The potential difference in carbon density between the 'measurement sampling zone' and the total area is addressed by introducing stratified sampling. The first phase of sampling is stratifying the virtual plots on the aerial photo of the Project Area with a grid spacing of 200 by 200 meters. The second phase of sampling is to select plots in the 'measurement sampling zone' 30 - 250 meters from the road. A plot of a specific forest type is the same in the 'measurement sampling zone' as in the rest of the Project Area. The aerial photo interprestation is done across the whole Project Area, so the same interpretation applies to the 'measurement sampling zone' as well as the area beyond this zone. Therefore, an Open Canopy plot in the measurement sampling zone is the same as an Open Canopy plot outside the sampling zone, and similarly so for the Pioneer dominated and Remnant / Pioneer forest type plots. This justifies for measuring plots in the 'measurement sampling zone', which is better accessible. Walking to remote plots with measurement equipment is physically demanding and time consuming, and would considerably lengthen the period of the monitoring campaign (which is currently around 2-3 months of full time work by 3 teams). The 'measurement sampling zone' along roads is introduced to achieve an acceptable number of plot measurements per team per day, while maintaining the quality of the carbon stock assessment within the Project Area.
The carbon stock in the plots per forest type stratum are multiplied with the area per stratum (equation 37 in the methodology VM0005), as determined by the aerial photo interpretation of the Project Area. This way the total carbon stock per stratum in the Project Area is calculated.

The assumption that carbon stocks per forest type in the sampling zone are similar to the carbon stocks beyond the sampling zone, is strengthened by the fact that logging intensity has been similar for both areas. The current network of maintained roads is a fraction of the roads that were established during logging in the 1980s. In addition, there was a dense pattern of skid trails in between the roads. Several studies indicate that large parts of logged forests in eastern Sabah were cleared for road establishment. Nussbaum (1995) states the following: "(…) skid trails and log landings can represent a significant proportion of the total area of logged forest and therefore result in a substantial loss of potentially productive forest. In Malaysia it has been estimated that these areas cover up to 40% of the logged area (e.g. Nicholson, 1979; Kamaruzaman Jusoff, 1991). Two surveys in eastern Sabah estimate the extent of skid trails at somewhere between 15% (M. Pinard, personal communication, 1994) and 30% (Nussbaum, 1995). "

Pinard (1995) collected data on the distribution of skid trails over logged areas. Maps of several plots show the road and skid trail network (figure 2-1 on page 22). The maps for conventionally logged areas show a dense network of skid trails. The area of each logging unit is 50 ha, and the size is approximately 1000 by 500 meters. The skid trails are not more intense closer to the road, indicating that proximity to the road is not a good indicator for intensity of logging. In some cases areas close to logging road are less disturbed than areas at a further distance from the road. The total area disturbed (i.e. by roads, landings and skid trails) in conventionally logged areas in the research by Pinard is 16.6% of the total area.

Auditor Response: It was determined that the use of stratification does not adequately mitigate the bias introduced by excluding areas of the project from sampling. NCR 2011.24 was issued in response.

NCR 2011.3 dated 05/25/2011
Standard Reference: NA
Document Reference: PD version 1.0 section 4.2.4
Finding: The parameter Vex, as calculated in section 4.2.4.4 of the PD, is inconsistent with the average per hectare harvesting volume calculated in section 4.2.4.3. In section 4.2.4.3, the volume harvested in the pioneer dominated and the remnant/pioneer dominated strata are 7.8 m3/ha and 19.9m3/ha, respectively. In section 4.2.4.4 the values 7.94m3/ha and 17.84 m3/ha are given.
Proponent Response: The values for harvested volumes in section 4.2.4.3 are the right values - i.e. 7.8 m3/ha for the Pioneer dominated stratum and 19.9 m3/ha in the Remnant / Pioneer stratum. These values are calculated in the separate spreadsheet 'Calculation of C_harvest from reference area', which was submitted together with the PD to the auditor. In this spreadsheet the average harvested volume is calculated by dividing the total harvested volume per stratum by the total area per stratum, based on the original harvesting records.
The values in section 4.2.4.4 in the PD are corrected. Relevant corrections are also made in the Monitoring Report and the Leakage Assessment Report.

Auditor Response: The PD has been corrected to use consistent values across all equations. The values were shown to be correct based on harvest records from the reference area, as demonstrated to the validator during the site visit. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.4 dated 05/25/2011
Standard Reference: Methodology section 4.3.2
Document Reference: PD version 1.0 section 4.2.4.3
Finding: Please provide a copy of the source of the harvested volumes for the reference area reported in section 4.2.4.3 of the PD.
Proponent Response: A copy of the source is provided in the spreadsheet 'Calculation of C_harvest from reference area', on the page 'final status (30jun2008)'. The table in this sheet has been complied by the Sabah Forestry Department.
Auditor Response: The source of the data was reviewed during the site visit and shown to be appropriate for the project area. Copies of relevant tables have been provided to the auditor. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.5 dated 05/25/2011
Standard Reference: VCS Program Update 21 Jan 2010
Document Reference: NA
Finding: The VCS requires that project boundaries be provided to registries in the form of a kml file, and that those boundaries be verified. Please provide such a file.
Proponent Response: The kml file has now been made available and is seperately provided to the certifier.
Auditor Response: An error was located in the kml file initially provided. A portion of the project area was excluded from the initial file. NCR 2011.23 was issued in response. After NCR 2011.23 was resolved, the proponent's response adequately addressed the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

OFI 2011.6 dated 05/25/2011
Standard Reference: NA
Document Reference: Throughout
Finding: Notation of numbering was inconsistent throughout the document. For example, Table 4.2.4.4.4 page 67 includes decimals notated as both (1-0.24) and (1-0,1). Consistent notation throughout the document would improve clarity and readability.
Proponent Response: Consistent notation throughout the PD has been checked and corrected.
Auditor Response: No response is required for opportunities for improvement.

OFI 2011.7 dated 05/25/2011
Standard Reference: Methodology Equations 8 and 9
Document Reference: PD section 4.2.4
Finding: An error in the methodology has been identified by the project proponent in equations 8 and 9. The validator agrees that these equations are listed incorrectly in the methodology, and that the correction provided in the project document is quantitatively correct. However, in equation 8, the inclusion of an unnecessary Charvest parameter in which the units have been changed to percent is confusing, as the units listed in the table below the equation are tonnes of carbon and the revised parameter is the equivalent of multiplying by one and thus has no effect. A clearer correction would simply eliminate equation 8 from the methodology and replace the SLF parameter in equation 7 with slp. A similar correction is applied to equation 9, and is equally confusing as stated in the PD.

All corrections to the methodology should be submitted to the VCSA so that the methodology document can be revised and corrected.
Proponent Response: In Section 4.2.4.4, equation (7) from the original methodology is changed from

$$C_{WP,i,t} = \sum_{s,w,oir,p,o}^{ty} C_{XB,ty,i,t} \times (1 - WW_{ty}) \times (1 - SLF_{ty}) \times (1 - OF_{ty})$$

To

$$C_{WP,i,t} = \sum_{s,w,oir,p,o}^{ty} C_{XB,ty,i,t} \times (1 - WW_{ty}) \times (1 - slp_{ty}) \times (1 - fo_{ty})$$

In this way, equation (7) is made more clear and equation (8) and (9) (which represent calculations for parameters SLF and OF) are made redundant since the results of these equations are the same as the parameters slp and of. Therefore, equations (8) and (9) are eliminated. Parameters SLP and OF are eliminated and replaced in equation (7) with slp and fo.

A next step to this action is to update the methodology itself to reflect these changes.

Auditor Response: No response is required for opportunities for improvement. The revised equation is more clear than, but quantitatively equal to, the original equation listed in the PD.

NIR 2011.8 dated 05/25/2011
Standard Reference: Methodology section 4.3.7
Document Reference: PD section 4.3.5.2
Finding: Please explain why the parameter Vharvested,t, calculated in section 4.2.5.2 is based on the average volume per unit area in the reference area, while the volume of trees felled for infrastructure is calculated from carbon stocks measured in the project area. While the methodology is not explicit about how these baseline volumes should be estimated, they should, at the least, be calculated in a consistent manner with each other, or justification provided for using different methods for each.
Proponent Response: The difference in data sources used for calculating the harvested volume and the removal of biomass for clearing, is justified as follows. The reason for using carbon stock data from the Project Area for determining biomass removed as a result of clearing, is that data from the Project Area represent the most accurate data of carbon stocks that would have been removed from the Project Area in the baseline scenario. However, data on harvested volume are not available from the Project Area, because relogging in the Project Area is counterfactual, and therefore data from the Reference Area have been used. If possible, data from the Project Area is used (i.c. carbon stocks for clearing), otherwise data from the Reference Area is used (i.c. harvested volume).
Auditor Response: The project proponent has justified that the best available data was used to estimate the parameters in question. Based on the written justifications provided and conversations during the site visit, the auditor is satisfied that the values provided are appropriate for the project. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.9 dated 05/25/2011
Standard Reference: VCS 2007.1 Section 5.2.2
Document Reference: SGS Greenhouse Gas Credits Registration Document
Finding: The VCS standard requires that project proponents may not claim GHG credits from one project under more than one GHG program. The project was previously issued credits by the SGS climate change program, and is consequently does not meet the requirements of section 5.2.2 of the VCS 2007.1 standard.
Proponent Response: Finding withdrawn – no response required.
Auditor Response: On August 17, 2011, Carolyn Ching, Senior Program Officer at the VCSA sent the following email regarding this issue:

> Dear Todd and Ryan,
>
> I have recently been in communication with Face the Future with about the validation of the Kibale ARR project and the Infapro REDD project. Both projects currently have open NCRs about how a project cannot register emission reductions in two GHG programs. For the Infapro project, the NCR Finding Numbers are 2011.9, 05/25/2011 and 2011.14, 05/25/2011. Similar NCRs exist for the Kibale project, though I do not have the associated Finding Numbers.
>
> For both projects, SCS has issued NCRs with regard to the Section 5.2.2 and 5.7 of the VCS 2007.1 Standard. For the NCR related to claiming credits from one project under more than one GHG Program (Section 5.2.2), the VCS issued a Policy Announcement on this issue in March 2008 (see attached). The intent of the statement, "The VCS standard requires that project proponents may not claim GHG credits from one project under more than one GHG program", is to restrict any single emission reduction or removal from being counted in two different GHG programs. It does not restrict a project from being registered in one GHG program, then registering under another. We do in fact allow projects that have been registered in another GHG program to also register under the VCS (e.g., pre-CDM projects).
>
> For the other NCR, as you can see from the above clarification and the attached document, the intent of that section in the VCS 2007.1 is to prevent a single emission reduction from being credited in two GHG programs. Since the intent of both Kibale and Infapro projects is to register and issue credits on different emission reductions than those issued under the SGS program, there should be no issue.
>
> Please let me know if you need further clarification on this issue or if you would like to further discuss.
>
> Kind regards,
> Carolyn

Based on the clarifications provided in this email, NCR 2011.9 was withdrawn.

NCR 2011.10 dated 05/25/2011
Standard Reference: Non Permanence Risk report Template
Document Reference: Non Permanence Risk Report
Finding: Section 4.2 of the non-permanence risk report, in which a calculation of the number of credits to be deposited in the AFOLU pooled buffer is to be reported, was left blank.
Proponent Response: The Risk Assessment was submitted to the certifier before the Monitoring Report was finalized. The Monitoring Report contains the calculation of the number VCU's. Section 4.2 of the Risk Assessment is now updated with the number of VCU's claimed.
Auditor Response: The report has been updated to include a calculation of the total number of VCUs and the contribution to the VCS non-permanence buffer account. The reported quantities are consistent with those in the updated monitoring report. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.11 dated 05/25/2011
Standard Reference: Methodology section 4.3.2
Document Reference: PD Sections 1.7, 4.2.4.2
Finding: Section 1.7 of the PD indicates that initial logging of the project area occurred over a period between 1981-1992. Given this, please provide a justification for the baseline assumption that relogging would have taken place in a single year in the absence of the project.
Proponent Response: The first logging round in INFAPRO was in primary forest. The harvesting volumes were therefore very high and it takes relatively a lot of time to harvest an area. In the second round of logging that is assumed to have occurred in the baseline scenario, the available timber levels are much lower. In addition, it is assumed that RIL techniques are applied, which would even futher lower the harvestable stock - though this is probably balanced by the fact that RIL requires more time for planning, implementation and closing of the harvesting activities.
The increase of annual harvesting areas for relogging is demonstrated by the logging practices that took place in the Ulu Segama - Malua Forest Management Unit in the period 1999 - 2006. In 2006 relogging took place in Malua in an area of 26.998 ha, which is slightly bigger than the area to be relogged in INFAPRO in the baseline.

Relogging year	Area (ha)
1999	15.711
2000	20.487
2001	20.381
2002	19.557
2003	21.240
2004	25.126
2006	26.998

Auditor Response: Based on data provided from the Ulu-Segama - Malua Forest Management Unit, the assumption of relogging of the project area within a single year appears to be reasonable and consistent with recent practices near the project area. This justification was deemed sufficient by the validator. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.12 dated 05/25/2011
Standard Reference: AFOLU Non Permanence Risk Tool section 2.2.1
Document Reference: Risk Report Internal Risk Item (e)
Finding: Risk Mitigation due to experience in AFOLU project design and implementation was claimed in item (e) of the internal risk section of the risk report based on experience with the SGS carbon offset program. The standard requires that relevant experience be from the VCS program or other approved GHG programs. Approved GHG programs under the VCS are limited to the CDM and Climate Action Reserve. The SGS carbon offset program is not an approved program under the VCS. The risk assessment must be revised, or evidence provided that the management team has significant experience in AFOLU project design under the VCS or another approved program.
Proponent Response: The Risk Assessment report has been updated in order to reflect that the required experience on approved GHG Programs is not available.
Auditor Response: The risk rating has been appropriately updated. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.13 dated 05/25/2011
Standard Reference: Non Permanence Risk Tool Section 2.2.2
Document Reference: Risk Report Internal Risk Item (i)
Finding: Please provide evidence of callable financial resources that meet the requirements of item (5) of section 2.2.2 of the risk assessment report.
Proponent Response: A confirmation of the credit line provided by Greenchoice is provided in the separate document 'GC_LOC_Confirmation.jpg'.
Auditor Response: Adequate evidence of callable financial resources was provided to support the risk level claimed in the risk assessment prepared by the project proponent. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.14 dated 05/25/2011
Standard Reference: VCS 2007.1 Section 5.7
Document Reference: SGS Greenhouse Gas Credits Registration Document
Finding: The VCS 2007.1 standard requires that, "In cases where the project proponent has applied for emission credits from another GHG Program, the VCS PD shall include proof of registration of the project through the GHG Program. The GHG Program operator shall provide a written guarantee to be included with the project proponent's VCS PD that any GHG emission reductions or removals shall not have been previously retired within the operator's GHG Program and that the reductions shall be cancelled so that they can no longer be used within the operator's GHG Program. Hence they shall only be accounted for under a VCS Registry."

Although supporting documentation provided by the project proponents provides proof of registration with the SGS GHG program, the PD itself does not include such proof. Additionally, no written guarantee of cancellation has been provided by that program's operator.
Proponent Response: Finding withdrawn – no response required.
Auditor Response:
On August 17, 2011, Carolyn Ching, Senior Program Officer at the VCSA sent the following email regarding this issue:

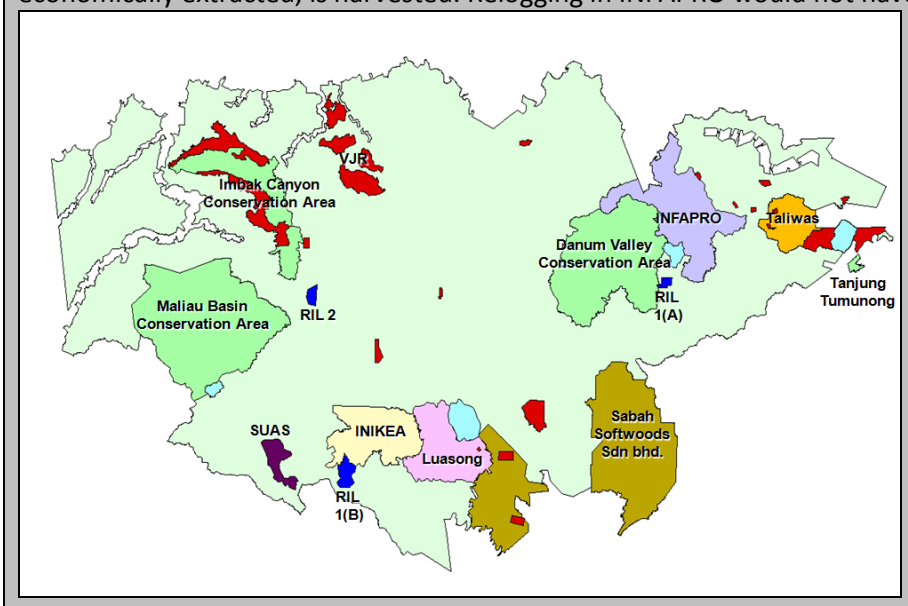
> Dear Todd and Ryan,
>
> I have recently been in communication with Face the Future with about the validation of the Kibale ARR project and the Infapro REDD project. Both projects currently have open NCRs about how a project cannot register emission reductions in two GHG programs. For the Infapro project, the NCR Finding Numbers are 2011.9, 05/25/2011 and 2011.14, 05/25/2011. Similar NCRs exist for the Kibale project, though I do not have the associated Finding Numbers.
>
> For both projects, SCS has issued NCRs with regard to the Section 5.2.2 and 5.7 of the VCS 2007.1 Standard. For the NCR related to claiming credits from one project under more than one GHG Program (Section 5.2.2), the VCS issued a Policy Announcement on this issue in March 2008 (see attached). The intent of the statement, "The VCS standard requires that project proponents may not claim GHG credits from one project under more than one GHG program", is to restrict any single emission reduction or removal from being counted in two different GHG programs. It does not restrict a project from being registered in one GHG program, then registering under another. We do in fact allow projects that have been registered in another GHG program to also register under the VCS (e.g., pre-CDM projects).
>
> For the other NCR, as you can see from the above clarification and the attached document, the intent of that section in the VCS 2007.1 is to prevent a single emission reduction from being credited in two GHG programs. Since the intent of both Kibale and Infapro projects is to register and issue credits on different emission reductions than those issued under the SGS program, there should be no issue.
>
> Please let me know if you need further clarification on this issue or if you would like to further discuss.
>
> Kind regards,
> Carolyn

Based on the clarifications provided in this email, NCR 2011.14 was withdrawn.

OFI 2011.15 dated 06/16/2011
Standard Reference: Methodology Section 5.2.2
Document Reference: Field Observations
Finding: The methodology requires that changes in carbon stocks in above-ground tree biomass within the project boundary be estimated using field measurements in permanent sample plots. While in the field, the validation team noted that only one circle of each plot was marked, and that the plot center marks were sometimes difficult to locate in the field. Though the project team demonstrated an ability to locate the center of additional circles using specialized equipment, the audit team identified a risk that such location may be very difficult or impossible in the event that this equipment fails in the future, or if the forest changes substantially, perhaps as a result of a natural disturbance such as a major wind event. If this occurs, making consistent measurements in support of future verification events may be difficult. As an opportunity for improvement, premanent and conspicuous marking of all circular measurements areas within a plot is recommended. However, as the ability to relocate measured trees and rmake consistent repeated measurements was demonstrated in the field, no corrective action is required at present.
Proponent Response: The project proponent acknowledges that plot monumentation can be improved by labelling the satellite plot circles, in addition to the current markings in the first plot circle. Following this OFI, our plan is to mark the other circles with a pipe in the soil at each circle centre and to label 1 or 2 trees per circle with a aluminium tag. This is to be finalized by the end of 2011.
Auditor Response: No response is required for opportunities for improvement.

NIR 2011.16 dated 06/16/2011
Standard Reference: AFOLU Requirements Section 4.6.13
Document Reference: NA
Finding: The VCS AFOLU Requirements Section 4.6.13 requires that "It shall be demonstrated that the management plans and/or land-use designations of all other lands operated by the project proponent (which shall be identified by location) have not materially changed as a result of the project activity (eg, harvest rates have not been increased or land has not been cleared that would otherwise have been set aside)." Please provide such a demonstration with respect to Yayasan Sabah.
Proponent Response: The following text is added to the PD in order to answer the New Information Request:

Apart from market leakage, the project activity does not result in activity shifting within the project proponent's operations. The map 4.3.3.1 below shows Yayasan Sabah's concession area, including areas where special projects are carried out and areas that have a conservation status. The conservation areas within the concession, like Danum Valley Conservation Area, Maliau Basin Conservation Area and Imbak Canyon Conservation Area consist of unlogged primary forest that will not be logged in the future. The fact that INFAPRO prevented a second round of logging in the Project Area, did not lead to a shifting of logging activities to these areas. The management of areas for special projects, like INIKEA and Taliwas, are not affected by the prevention of relogging in INFAPRO: no relogging took place in these area or the area is not suitable for relogging. In general, all the other areas that are classified as Commercial Forest Reserves have been relogged or are going to be relogged on the short term, and this would have taken place in the absence of INFAPRO as well. The concession area, with the exception of the Conservation Areas and special project areas, has been subject to logging mainly since the 1960s. The timber stocks have declined over time and there is not much timber available – bearing in mind that this is natural forest, where minimum diameter cuts apply. The timber revenues are a main source of income for the concession holder, so all available timber within the permitted diameter classes that can be economically extracted, is harvested. Relogging in INFAPRO would not have changed that.



Auditor Response: The justification provided by the Project Proponent is appropriate. Section 7.1 of the Yayasan Sabah Management Plan for 1984-2032, provided by the project proponent indicates that an objective of the plan is "to optimise net financial returns, to the extent possible, under the above objectives." This suggests that the maximum sustainable amount of timber extraction from the concession would have occurred in the absence of the project. Implementation of the project has reduced the amount of land available for timber extraction from the concession as a whole, indicating that activity shifting has not occurred. The Proponent's response adequately addresses the finding in

accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.17 dated 06/16/2011
Standard Reference: Methodology Section 4.3
Document Reference: Monitoring Report section 3.3.4
Finding: The selected methodology requires data for the A_infrastructure parameter in the project scenario, which is calculated for road maintence in the project from the annual length of roads maintained. Insufficient records were kept of road maintenance activities in the project area for the period from 2007-2010 to accurately calculate this parameter. The assumptions used to estimate the length of roads maintained listed in the monitoring report were demonstrated to be conservative, and will be accepted for the current monitoring period. However, a corrective action plan must be developed to record the annual length of road maintenence going forward.
Proponent Response: No records were in place for recording the length of roads that were maintained in the period 1993 - 2010. The need to record this, stems from the VCS Methodology VM0005 that was approved in November 2010. Since 2011 the project is recording the length of roads maintained. The length of the road that is maintained each year within the Project Area will be recorded in a record sheet at the INFAPRO office. A summary of road maintenance will be provided in the INFAPRO Quarterly and Annual Reports. The template for recording road maintenance is seperately provided to the auditor (file 'Infapro template road maintenance'). The template is in use since 2011.
Auditor Response: The corrective action plan is sufficient to keep adequate records for the project going forward. The assumptions made about road maintenance for years prior to record keeping were demonstrated to be conservative during the site visit. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NIR 2011.18 dated 06/16/2011
Standard Reference: Non Permanence Risk Tool Section 2.2.2
Document Reference: Non Permanence Risk Assessment
Finding: The VCS Non Permanence Risk tool requires that demonstration of funding secured be provided through "for example, financial statements, bank records, executed commodity purchase agreements, executed emission reduction purchase agreements, or other signed contractual agreements. Evidence shall be provided that agreement counterparties are in good financial standing, to demonstrate the ability to meet the financial obligations," and that "the assumptions on revenue from both carbon and other commercial sources (eg, timber) must be conservative and clearly document the source, pricing assumptions, frequency of verification and other relevant variables." Please provide evidence consistent with sources given above in support of the claim that Face the Future is able to cover the costs of the current rehabilitation area. Note that signed contractual agreements were reviewed during the site visit, so only the evidence that agreement counterparties are in good financial standing, as required by the standard, remains to be documented.
Proponent Response: The good financial standing of the counterparts is demonstrated based on the two following documents, which are separately provided to the auditor:
a. Face the Future, Annual Report 2009 - 2010 (translated from Dutch into English)
b. Rakyat Berjaya, Director's report and audited financial statements, 31 dec 2009

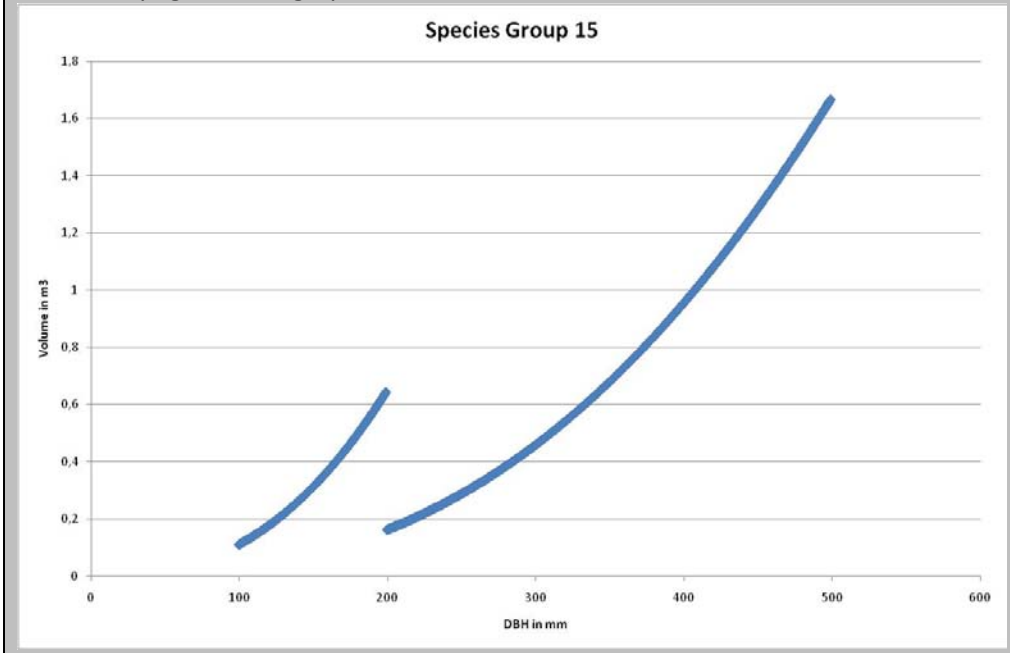
Auditor Response: The documents provided indicate that the implementing organizations have the financial means to meet their obligations of the project. This review should be interpreted with the knowledge that the audit team is not trained in accounting and that the conclusions listed here do not constitute the results of a rigorous financial audit. Based on the annual reports provided, however, the validator is satisfied that reasonable assurance of the ability to meet the financial obligations of the project has been demonstrated. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.19 dated 06/16/2011
Standard Reference: NA
Document Reference: PD Section 3.4.2.3
Finding: Because equations given in Table 4.3.2.1 of the ~~methodology~~ PD* are not applicable for small trees, the project applies a different equation for trees in the DBH category of 5 to 10 centimeters. However, this range is not sufficient to limit the use of the equations reported in table 4.3.2.1 to the range of diameters for which they are applicable, as illustrated by the included figure(see file Allometry_bias_example.jpg). The range for which each allometric equation is applied must be re-evaluated to ensure the resulting biomass estimates are unbiased.

*revision made during report preparation – this table appears in the PD, not the methodology.
Proponent Response: The project proponents did not realize at the time that the issue was raised during the audit, that the deviation in carbon stock for the trees in the dbh class 10-20 cm was caused by the plot expansion factor. After a closer analysis of the data in the spreadsheet, the true cause of the 'bias' was noticed. The equations used for calculating the volumes and the carbon stocks for trees larger than 10 cm were reassessed. The reason for the bias for trees in the dbh range of 10 to 20 cm appears to be related to the application of an expansion factor, rather than the inapplicability of the equations for this dbh class. The trees in the dbh class 10 - 20 cm are measured in the first circle of the plot - i.e. in 500 m2 of the total plots size of 2,000 m2. In order to upscale the value of these trees to the whole plot, an expansion factor of 4 has been applied. In the spreadsheets with the tree data, the volume and carbon per tree is already multiplied with the expansion or scaling factor.

The graph below illustrates this for species group 15, which includes the species Ampas tebu (AMPT) that was used as an illustration for showing the bias. The diameters 10 to 50 cm are included in the graph. If the volumes for the trees in dbh class 10 - 20 cm are divided by 4, the graph will smoothly continue from this dbh class to the larger diameters in a continuous line.

<see next page for the graph>



Auditor Response: The auditor conducted an independent analysis of the equations applied and confirmed that the issue addressed in the finding resulted from a misunderstanding by the auditor of the way the expansion factor had been incorporated into analysis. Each of the allometric equations were graphed to ensure that the cutoff point for applying the small tree equation was not on the wrong

side of the equations inflection point. The finding is withdrawn. No incorrect calculations resulted from the analysis.

NCR 2011.20 dated 06/16/2011
Standard Reference: NA
Document Reference: PD section 3.4.2.2
Finding: The sampling framework described in section 3.4.2.2 of the PD excludes areas within 30m of a road from sampling, yet the project area to which the results of the sample are expanded includes the areas within 30m of roads. Conversations with project staff and observations during the site visit reveal that areas near roads tend to have biomass stocks that are different from areas not adjacent to roads, introducing bias to the sample. The method used to quantify project area carbon stocks must be adjusted to eliminate this bias.
Proponent Response: The method has been changed by excluding the area of the 30 meter wide strip along the roads from the strata of the areas rehabilitated in the period 1993 - 2000. No carbon sequestration is now claimed anymore for these areas. The size of the area to be excluded has been determined by calculating the length of roads within the relevant strata with ArcView. For all road segments it was determined whether one side or two sides is bordering the strata. Depending on this, the area was obtained by multiplying the road length with respectively 30 or 60 meters. The total area to be excluded is 735.5 hectares, which is equal to 7.5% of the area in rehabilitation stratum 1993 - 2000.

All relevant documents have been updated to reflect the area change:
- section 4.2 of the Risk Assessment report
- large parts of the Monitoring Report
- the spreadsheets Infapro inventory data 2007/2010 and the spreadsheet with a summary of these data
- section 3.4.2.2 of the Project Document
Auditor Response: The elimination of the area along roads limits the area currently claimed for carbon benefits to the area for which sampling is representative. Should the project proponent elect to monitor this area in the future, these areas may be included in the project area, subject to review by a third party verifier. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.21 dated 06/16/2011
Standard Reference: VCS Tool VT0003
Document Reference: Monitoring Report section 4.2.1
Finding: Though the uncertainty equation (2) from VT0003 was applied as listed in the tool, the results do not appear to be consistent with proper uncertainty propogation principles. For example, the percent uncertainty in the three strata in treated areas in the with project scenario is 7%, 8%, and 20%(column I of the Unc sheet in Infapro inventory data 2010 for Montoring report 2010.xls, but the combined uncertainty is less than any individual stratum uncertainty. The equation provided by the methodology for combining uncertainty across strata is different from the equation provided by most forest biometrics texts for estimating the variance of a total from a stratified sample. Please conduct an analysis of the equation provided by the methodology to ensure that uncertainty has been correctly calculated and provide either a justification for using the listed equation or calculate combined uncertainty across strata using a more appropriate method.
Proponent Response: The purpose of equation (2) from the tool VT0003 is to give a weighted average of the uncertainty across strata. The current version of the equation in the tool results into a lower uncertainty than what can reasonably expected. We have therefore decided to simplify equation (4) in VCS tool VT0003 for calculating the weighted average of the uncertainty across strata:

$$Uncertainty_{WPS} = \frac{(U_{WPS,1} \times E_{WPS,1}) + (U_{WPS,2} \times E_{WPS,2}) \ldots + \ldots (U_{WPS,M_{WPS}} \times E_{WPS,M_{WPS}})}{E_{WPS,1} + E_{WPS,2} \ldots + \ldots E_{M_{WPS}}} \quad (4)$$

Where:

$Uncertainty_{WPS}$	Total uncertainty in project scenario; %
$U_{WPS,i}$	Uncertainty in project scenario in stratum *i*; %
$E_{WPS,i}$	Sum of combined carbon stocks, GHG sources and leakage emission types (e.g. trees, down dead wood, etc.) in stratum *i* (1,2…n represent different carbon pools and/or GHG sources) multiplied by the area of stratum *i* (A_i) in the with-project case; t CO_2-e
i	1, 2, 3 …M_{WPS} strata in the project scenario

The original equation in tool VT0003 has been adjusted in two respects:
- Enabling the correct calculation of the weighted average;
- Replacing the parameter Ai with parameter EWPS,i, in line with equation (6) of the VCS Module VMD0017, in order to attribute a more appropriate weight per stratum.

The adjusted equation does not lower the uncertainty percentage across strata relative to the uncertainty percentages per stratum. The equation (5) for calculating CIFM_ERROR stays the same:

$$C_{IFM_ERROR} = \sqrt{Uncertainty_{BSL}^{2} + Uncertainty_{WPS}^{2}}$$

The structure of this equation results into an overall uncertainty value that exceeds the highest uncertainty values of either the baseline or the with-project case.

The uncertainty has now been recalculated for the data collected in 2007 and 2010. See the speadsheets '110624 Infapro inventory data 2007 for Monitoring report 2010' and '110624 Infapro inventory data 2010 for Monitoring report 2010'.

Auditor Response: The revised calculations result in more reasonable estimates of uncertainty, and combine uncertainties from individual strata based on a weighted average of total carbon stocks. This is consistent with common practice for estimating uncertainty in stratified sampling and also consistent with the methods applied in VCS approved module VMD0017. The revised calculations were checked by the audit team and no errors were discovered. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

OFI 2011.22 dated 06/16/2011
Standard Reference: IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry
Document Reference: PD section 4.2.2
Finding: The area of each stratum within the project area was estimated based on a sample of points within the project area, and thus is subject to sampling error. Section 5.3.4.1 of the 2008 IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry provides a method for estimating the standard error of area estimates obtained in this way. Though not required by the methodology, in the spirit of conservativeness and accounting for uncertainty as emphasized in IPCC guidelines and the VCS version 3 standard, please consider incorporating this source of uncertainty into estimates of net project carbon benefits.
Proponent Response: Calculation of the uncertainty for the area estimation, based on section 5.3.4.1 of the IPCC Good Practice Guidance for LULUCF, i sincluded in the spreadsheet 'Uncertainty of area estimation'. Depending on a 90% or a 95% Confidence Interval, the weigthed average uncertainty across strata varies from 4% to 5%. As these values are within an acceptable range, there is no need correct the number of VCU's. Therefore, the Monitoring Report is not updated to include the uncertainty associated with area estimation.
Auditor Response: This uncertainty source is not required by the methodology. No response is required for opportunities for improvement. The project proponent has, however, calculated the resulting uncertainty and shown it to be less than required for accounting under the methodology.

NCR 2011.23 dated 06/20/2011
Standard Reference: VCS Program Update 21 Jan 2010
Document Reference: Response to NIR 2011.5
Finding: The provided kml file was found to inaccurately represent the project boundary on the east side of the property. Please correct the kml file and provide an updated version.
Proponent Response: The kml file that was previously provided to the auditor did not include the compartments 78-A, 78-B and 78-C, which belong to the Infapro project area. These compartments are part of Contract Area 1. The kml file has been updated in order to include these areas.
Auditor Response: The updated kml file matches GPS data collected during the site visit. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.

NCR 2011.24 dated 06/20/2011
Standard Reference: NA
Document Reference: Response to NIR 2011.2
Finding: This finding is in response to the response given to NIR 2011.2. The introduction of stratified sampling does not eliminate the risk of bias introduced by excluding areas of the project more than 300 meters from a road from sampling eligibility. Though the Project Proponents have provided some justification for their assumption that the more remote areas of the project are similar in nature to the accessible ones, this justification does not does not constitute a statistically valid sampling scheme and is not sufficient to provide the audit team with 'reasonable assurance' that the project area carbon stocks have been estimated accurately. The project must use a sampling design that is representative of the entire area for which credits are to be generated.
Proponent Response:

The project proponent first provided the following corrective action plan:

Proposed methodology for additional sampling requested by the auditors
Infapro Carbon Inventory 2011
1 Introduction
The original design of carbon stock monitoring in Infapro project is based on aerial photos classified by major forest types, stratification by those forest types and ground truthing. Ground truthing was based on 264 inventory plots in contract area and 71 plots in baseline area. Size of each sample plot is 0.2 ha. Inventory plots were randomly distributed in a buffer zone stretching to 250 m on both sides of the roads excluding 30 m buffer along the road. The buffer area represents over 40% of the total Infapro project area. The road system at Infapro is mostly represented by infrequently used roads, before the inventory campaign substantial part of the roads had to be repaired because they were damaged and inaccessible. There are good reasons to assume that there is no specific impact to the forest in the buffer area. Whole concession is closed for public and the closest villages are tens of kilometers away. Such assumption is also supported by additional analysis of data in which we tested possible gradient in carbon stock towards the forest interior. We did not find any significant tendency. Another analysis based on semi-variograms of spatially identified data of carbon stock shows high level of independence of neighbor plots.
Based on the above mentioned we still believe that the current sampling provides representative data for the entire area. The auditors expressed concerns on representativeness of the ground truthing data which are used for calibration of the strata across the entire project area. The auditors demand additional sampling in the interior zone of forest compartments.
2 Suggested solution
The suggested solution accepts the requirement of the auditors. Additional 30 plots for ground truthing will be randomly established in the interior zone of the forest compartments. As a background for plot distribution is the grid 100x100 m, from which the intersect points are selected using random number generator.
In the selected points the ground survey will be conducted using the identical methodology and procedures as used so far within the project. The newly collected data will be processed together with the existing dataset using standard statistical procedures for stratified sampling including statistical weighing of each plot based on the representative area of inventory plot. The representative area of inventory plot is calculated by dividing area of strata by number of inventory plots in it. Such calculation is done separately in the buffer and interior zone thus reflecting various sampling intensity in these parts of respective stratum.
3 Specific sampling scheme
The proposed randomly generated plots are show in the figure 1. The shaded areas represent interior zone of Infapro project area. <figure not included in report, but available in separate documentation provided by project proponent>
Martin Černý

Emil Cienciala
Radek Russ
13/7/2011

After implementation of the corrective action plan, the following response was provided by the project proponent:

Outcome of the additional inventory

We have collected data in Infapro's treated area in order to demonstrate that our buffer sampling approach does not result into an overestimation or underestimation of tree carbon stocks, as a response to NCR.24. Based on the proposed methodology by IFER to this NCR, 30 plots have been measured in the area beyond the sampling zone in the treated area. The data are included in the attached spreadsheet.

Based on the plot data, a comparison is made between average above-ground carbon stocks based on:

- all sample plots that have been measured in the buffer zone
- all sample plots in the buffer zone and the plots in the area beyond the buffer

The calculation of average carbon stocks per stratum and for the total area, is based on plot weights. The plot weights are based on the representative area of the inventory plots. The plots in the area beyond the buffer, have a higher weight than the plots in the buffer zone.

The exact procedures for the calculations are given on the first page ('Intro') of the spreadsheet.

<*see next page*>

The final results show that:

- for each stratum there is an overlap in confidence intervals of the mean carbon stock in the buffer zone and total area;
- the average carbon stock in tC/plot across all strata is 27.2 tC in the buffer area and 26.7 tC in the total treated area. This is an absolute difference of 0.5 tC and a relative difference of 1.8%, which justifies the buffer sampling approach.

Update of the PD

The sections 3.4.2.2 and 4.2.2 of the PD have been updated to reflect that extra plots are measured in the area beyond the buffer zone. These 30 plots will be measured in future monitoring events.

Auditor Response: The additional data collection was performed in as described in the corrective action plan. However, the auditor reviewed the calculation resulting from the additional data collection and noted some errors in the data analysis. NCR 25 was issued in response.

NCR 2011.25 dated 08/17/2011
Standard Reference: Finding NCR 2011.24
Document Reference: Response to NCR 2011.24
Finding:
This finding is in response to NCR 2011.24

Cells E9 and E17 of the "Plot Area and Strata" sheets of the excel workbook provided with the response to NCR 24 contain an error in which the mean carbon stock within a forest type is multiplied by the code for that forest type.

~~Additionally, the written corrective action plan provided by the project proponent stated that "The representative area of [each] inventory plot is calculated by dividing area of strata by number of inventory plots in it. Such calculation is done separately in the buffer and interior zone thus reflecting various sampling intensity in these parts of respective stratum." The supplied worksheet presents total project area and by stratum statistics using combined core and buffer areas in rows 3:9 of the Project Area and Strata tab. Though weights are calculated for the core and buffer zones, the weights used in the calculations presented (column H) are simply the sum of the weights calculated for the core and buffer areas; The mean and variance within core and buffer strata are not computed separately for each zone as described in the corrective action plan. While summing the weights in this way has no impact on the resulting estimate of the mean and total carbon stock across the project area, separating the calculations for areas of varying sampling intensity is important for accurately estimating the sampling error around these estimates. Using the sum of the weights does not provide the same uncertainty estimate as performing the calculations separately for each unit(as was described in the corrective action plan) and combining the resulting uncertainties, and underestimates the width of the confidence interval that results from the sample.~~*

Finally, the uncertainty calculations presented in the monitoring report have not been updated to reflect the revised sampling design and additional data collected. These calculations should account for the variation in sampling intensity across the project area.

Please correct the spreadsheet error described above, ~~present an analysis of the data conducted as described in the approved corrective action plan(in which the sampling error is derived from calculations that properly account for differences in sampling intensity between the buffer and interior zones),~~ and update the monitoring report's uncertainty statistics to reflect the revised sampling design.

**NOTE: The strikethrough portion of this finding was initially issued by the auditor. After the issuance of the finding, the project proponent provided additional explanation of the analysis methods applied. After this explanation, the auditor determined that the initially applied methods were indeed appropriate and that this portion of the finding was no longer relevant. The finding is reproduced here as initially issued for the sake of transparency.*
Proponent Response: The correction to the formula in cells E9 and E17 of the spreadsheet have been made. See the updated version '110818 Comparison of Infapro carbon stocks in buffer and total treated area'.

In the original spreadsheet, the way the mean carbon stocks per stratum and the standard deviation per stratum is calculated in the spreadsheet, takes into account the difference in weight of plots in the buffer and the core area. Cells H290:H319 of the sheet 'Project Area & Strata' show the higher weight of core plots than buffer plots. This higher weight has an effect on the mean carbon stocks per stratum via cells I290:I319 and it has an effect on the standard deviation per stratum via cells M290:M319. The mean carbon stocks per stratum as calculated in cells D6:D8 and E6:E8 take these different weights into account (it includes amongst other the higher weights in I290:I319). The same applies for the calculation

of the standard deviation in cells G6:G8 (which include the higher weights in M290:M319. See the 'Intro' page of the spreadsheet for the equations that have been used.

The Corrective Action Plan did not intend to say that a separate carbon stock and standard deviation calculation would be made for buffer plots and core plots. When it says that 'Such calculation is done seperately in the buffer and interior zone…', it refers to the previous sentence about the calculation of the representative area per inventory plot. Thus, only the calculation of the plot weight is done separately for the buffer zone and the core zone.
Nevertheless, as for illustration, I have made also a calculation for the core and buffer zones seperately, see spreadsheet '110818 Comparison of Infapro carbon stocks in buffer and core area'.

With regard to the Monitoring Report: It was our understanding that the measurement of additional plots in the interior zones was required to justify our sampling approach at this time only, and not to amend the Monitoring Report. In all future inventories the plots in the interior zone are to be used for the Monitoring Report.

NOTE: After this response was received, a follow phone call took place to discuss the issue. Subsequent to this call, the project proponent provided an updated monitoring report that reflected the data from the new inventory plots.

Auditor Response: The project proponent corrected the spreadsheet errors pointed out by the auditor. Additionally, the project proponent clarified the statistical methods applied in analyzing the additionally collected and showed that they indeed did correctly account for the variations in sampling intensity across the project area. Though not described in the text of the proponent's response, the project proponent did update the monitoring report to reflect the newly collected data. These updates and revised calculations were reviewed by the audit team and found to have been conducted correctly. The Proponent's response adequately addresses the finding in accordance with the Verified Carbon Standard and applicable approved methodology elements.