VCS PROJECT REVIEW REPORT

Project ID	1094
Project Name	Ecomapuá Amazon REDD Project
Project Proponent	Ecomapuá Conservação Ltda.; Agência Verde; Sustainable Carbon
Methodology	*VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*
Sectoral Scope(s)	14. Agriculture, Forestry, Land Use
Validation/Verification Body (VVB)	RINA Services S.p.A. (RINA)
Registry	Markit

Assessment Criteria	*VCS Standard v3.4, VCS Program Guide v3.5, VCS AFOLU Requirements v3.4, VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*
Date of First Issue	25 November 2014
Date of Final Issue	27 January 2015

Summary:

An accuracy review of the Ecomapuá Amazon REDD Project issuance request has been conducted by VCS in accordance with Section 4.3 of the *Registration and Issuance Process*.

The accuracy review has raised three assessment findings and one minor finding, detailed below. The VVB, in coordination with the project proponent, is hereby required to provide a response to the assessment findings presented in section 1. The three assessment findings must be addressed to the satisfaction of VCS. The VVB need not to address the minor finding(s) during this review. Please note though that where VCS finds consistent minor findings by the VVB in future reviews, minor findings shall be escalated to assessment findings.

This findings report may be made publically available, confidential information may be provided as separate attachments.

1 ASSESSMENT FINDINGS

Finding 1

As per section 3.5.1 of the VCS Standard v3.4, "*Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (ie, deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan)*."

Part 2, section 4.2.2 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*, states the following: "*Several Risk Maps should be produced using different combinations of Factor Maps and modeling assumptions in order to allow comparison and select the most accurate map*. *A list of Factor Maps, including the maps used to produce them and the corresponding sources shall be presented in the PD (table 10) together with a flow-chart diagram illustrating how the Risk Map is generated.*"

Section 2.4 of the project description states that "*the key variable used is presence of "non-forest". Non-forest itself, in turn, is related to the location of cities…The distance to areas currently deforested was analysed as a predictor of the probability of future deforestation."*

Section 3.2 of the verification report states that "*the creation of Table 10 (VM0015 v1.1) in the VCS PD was judged not to be necessary as the data utilized to formulate the deforestation scenarios included the area history. This is because the procedure did not employ detailed information to develop the scenarios."*

The project therefore does not utilize factor maps in accordance with the methodology. As such, it would appear as though the deviation to the methodology extends beyond the exclusion of table 10, which is deemed necessary by the VVB because of a condition in the project's procedure which itself appears to be a deviation from the methodology. Further, it is unclear how the exclusion of table 10 is an appropriate deviation as it does not appear to relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan.

The VVB is requested to please assess the project's approach to avoid the use of factor maps as per Part 2, section 4.2.2 as it may relate to a potential methodology deviation. The VVB is also requested to please explain how the exclusion of table 10 is consistent with the VCS requirements that only allow methodology deviations pertaining to data and parameters available at validation, data and parameters monitored, or the monitoring plan.

VVB Response:

According to the VCS methodology VM0015, section 4.2.1 – *Preparation of factor maps, "If the model/software allows working with dynamic Distance Maps (i.e. the software can calculate a new Distance Map at each time step), these should be used. For simplicity, these maps are called "Factor Maps". Other models do not require Factor Maps for each variable, and instead analyze all the variables and deforestation patterns together to produce a risk map*."

The deforestation Risk Map illustrates the probability of a forest area becoming a non forest area. The map of the project was generated through the analysis of all the variables and deforestation patterns

measured over the years during the baseline period, which were obtained through the satellite image classification. All these parameters together present the historical series of forest and non forest in the reference region. For this purpose, the IDRISI software and the Land-Use Change Modeler software – LCM were utilized by the proponent. According to the methodology, "*several model/software are available and can be used to perform these tasks in slightly different ways, such as Geomod, Idrisi Taiga, Dinamica Ego, Clue, and Land-Use Change Modeler*."

In the PD, the transition probability matrix was generated using the LCM software, using logistic regression to calculate the potential transition, which is an algorithm capable of estimating the environmental implications according to the chosen variable and its distance. This algorithm evaluates the probability of a given pixel belonging to a most likely category based on the proximity to other pixels from the listed category. Therefore, this algorithm determines the probability of a pixel from the forest class becoming non-forest within the reference region.

The LCM software generated Distance Maps based on the deforestation likelihood, which was estimated through the percentage of pixels that were deforested during the historical reference period (based on the presence of forest and non-forest). Thus, the deforestation likelihood is the probability of a forest area becoming a non-forest area based on the distance from non-forest areas.

In addition, according to the VCS methodology VM0015, section 4.2.2 – Preparation of deforestation risk maps, "*Models use different techniques to produce Risk Maps and algorithms may vary among the different modeling tools*."

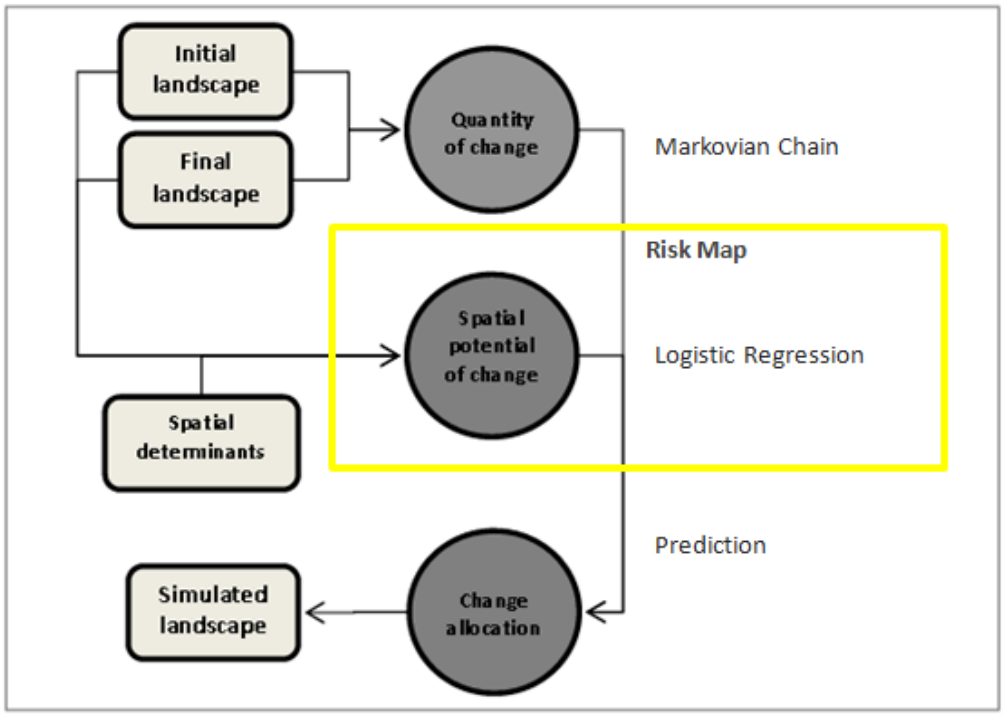
Figure 25 of the VCS PD illustrates the probability of forest becoming non-forest within the reference region, based on the distance to currently deforested areas, generated by the algorithm described above. The green areas represent the most distant areas from non-forest areas, which are therefore the ones with less probability of being deforested.

In addition, the flowchart below, included in the revised MR version 3, illustrates the LCM modeling steps, showing how the Risk Map was generated.

Furthermore, it is important to note that according to the VCS PD, "the deforestation in the project region involves three spatially overlapping activities: firstly, extraction of commercially valuable tree species by resident families for sale to timber. This is accompanied by palm-heart extraction, which is both for commercial ends and for consumption or trade in kind by the harvesters themselves. The final step is the slash-and-burn deforestation of the area above for subsistence agriculture". Thus, these overlapping deforestation agents cannot be separated in terms of deforestation location, precluding the creation of factor maps for each variable.

Therefore, it can be concluded that the Factor Map (or distance map) was generated in accordance with the methodology. Table 10 of VM0015 describing the list of variables, maps and factor maps was not included in the MR, because project proponent analyzed all the variables and deforestation patterns together to produce the risk map instead of creating factor maps for each variable. The main reason was the absence of data relating to certain variables, such as the location of communities, roads and other factors.

This information was better detailed in the revised Monitoring Report and Verification Report, section Methodology Deviations. Moreover, the flowchart was included in order to illustrate the steps taken to create the deforestation risk map.



VCS Response:

The VVB has clarified that the purpose of the project's approach was to avoid the use of distance maps as per Part 2, section 4.2.1 of the methodology and instead analyse all the variables and deforestation patterns together to produce a risk map. As the VVB has identified, factor maps are not always required for each variable, depending on the model, however the project proponent appears to have misinterpreted the alternative option provided in the methodology.

The project proponent appears to have interpreted part 2, section 4.2.1 "Other models do not require Factor Maps for each variable, and instead analyse all the variables and deforestation patterns together to produce a risk map" as an exemption to the requirement in the same section which requires the project proponent to "obtain spatial data for each variable and create digital maps representing the Spatial Features of each variable (i.e. the shape files representing the point, lines or polygon features or the raster files representing surface features)." As such, the project proponent appears to instead avoid the use of factor maps for each variable by combining all of the potential spatial variables into a single category of "non-forest" to be analysed "together" in the model. This approach, however, is not consistent with the methodology and would likely misrepresent the actual deforestation risks associated with the individual spatial features incorporated into that category.

Therefore, although the VVB has stated in the above response that there is an *"absence of data relating to certain variables, such as the location of communities, roads and other factors*", the methodology requires that the data from spatial variables is obtained in order to "*analyse all the variables and deforestation patterns together to produce a risk map."* By "*together*", the methodology does not suggest combining all variables into a single "non-forest" category, but rather that the individual variables are ran through the model at the same time.

It does not appear as though the approach of the project proponent is consistent with the requirements of the methodology. As such, please provide more input to either support the project proponent's approach, or to reassess the approach utilized by the project proponent.

VVB Response:

At the time of the VCS PD development, the spatial variables that most likely represent the patterns of baseline deforestation in the reference region were identified, and digital maps representing the spatial features of each variable were created. Thus, the Table 10 of VM0015 v1.1 describing the list of variables, maps and factor maps was included in the MR (version 4). In addition, the maps representing the spatial features of each variable were also included in the MR. All the variables and deforestation patterns identified in Table 10 were analyzed together to produce the risk map. This information was described in MR v4, section 2.2.2 - Project Description Deviations.

VCS Response:

The VVB has clarified that, as per the requirements in Part 2, section 4.2.1 of the methodology, data from spatial variables was indeed obtained in order to produce a risk map. In compliance with the methodology, section 2.2.2 the updated monitoring report now includes digital maps representing the spatial features of each variable, as well as the inclusion of Table 10 to describe the maps and variables used to create the Risk Map. These additions to the monitoring report are appropriately verified as project description deviations in section 3.3 of the updated verification report.

Considering the above, this finding is closed and no further action is required.

Finding 2

The non-permanence risk report dated 15 February 2013 made available at validation assigns a risk rating of 8 for opportunity cost risk factor "a" because the NPV of the most profitable alternative (timber production) is over 100% of the project activity.

The non-permanence risk report dated 30 April 2014 for the first monitoring period reassigns the opportunity cost risk rating to 2, under risk factor "d", which requires that baseline activities are subsistence-driven and net positive community impacts are demonstrated. The report describes this choice by stating that "*baseline activities in the project area are subsistence driven*" and continues to describe the positive community impacts of the project.

Section 1.1 of the monitoring report states that "*Revenue from the sale of VCUs is essential for the project activity to compete with the profitable alternative land-use scenarios, namely timber production, and palm-heart extraction*." Section 2.1 of the monitoring report states that "*An analysis of agents and drivers of deforestation revealed that during the first baseline period (01-January-2003 to 31-December-2012), the primary economic activities in Furos de Breves, which is the micro-region within the Marajó archipelago where the project areas are located, continued to be extraction of timber and non-timber forest products (NTFPs), specifically palm heart."* Both of these sections seem to confirm the conclusions of the non-permanence risk report made available at validation, whereas timber production, and not subsistence-driven activities, are the most profitable alternative land use activity and the driver of baseline deforestation.

The verification report makes no specific assessment of this risk rating reassignment, but rather

states that the “the quality of the documents and all foundations, assumptions and justifications used to support the risk score” were assessed and considered acceptable.

The VVB is therefore requested to please justify the opportunity cost risk rating given that the primary economic activities in the project area are the extraction of timber and palm heart, as represented in the monitoring report, and not subsistence activities.

VVB Response:

According to the VCS PD, “the deforestation in the project region involves three spatially overlapping activities: firstly, extraction of commercially valuable tree species by resident families for sale to timber. This is accompanied by palm-heart extraction, which is both for commercial ends and for consumption or trade in kind by the harvesters themselves. The final step is the slash-and-burn deforestation of the area above for subsistence agriculture”.

Furthermore, the VCS PD states that “subsistence agriculture is the foundation of the livelihood of project area and reference region residents. Studies of the project area and surroundings show that subsistence agriculture is the most important component of the deforestation dynamic, although it does not appear in the economic figures as the products – being primarily manioc and corn – are practically exclusively for subsistence purposes, with little potential for insertion into the market, because of low productivity and lack of access to credit, as well as an absence of political support” .

This situation was also observed during the site visit performed on February/2014. During the verification, RINA raised a clarification request to the project proponent about the manioc flour production, as it is one of the main economic products to the community in the region and has a direct relation with subsistence agriculture (important deforestation factor).

Therefore, although the extractions of timber and palm heart are important economic activities in the region, during the monitored period (2003 – 2012), there was a significant reduction in wood and palm-heart production in the project’s reference region, as shown in Figures 4 and 5 of the Monitoring Report. Furthermore, as detailed in the VCS PD and MR, “the dynamic of deforestation within the project’s reference region involved overlapping agents (timber extraction, palm heart and subsistence agriculture), which cannot be separated in terms of deforestation location”.

It is important to note that there are no economic literatures (figures) about the subsistence agriculture in this region at the moment.

Thus, the site visit, interviews and the analysis of documentation about the region helped to confirm that subsistence agriculture is one of the most important deforestation agents in the project region.

VCS Response:

As per the *AFOLU Non-Permanence Risk Tool, v3.2*, only “*where the majority of baseline activities over the length of the project crediting period are subsistence-driven*” is an NPV analysis not required.

The VVB, in its representations above, incorrectly quotes the project description by stating that “*subsistence agriculture is the most important component of the deforestation dynamic*”. The project description states that subsistence agriculture is “*an important component of the deforestation dynamic*”, not the *most*. This distinction is important considering that the risk tool requires that the

majority of baseline activities over the crediting period must be subsistence-driven if the NPV analysis is not to be required.

Furthermore, as per section 3.1.10 of the *VCS AFOLU Requirements v3.4,* reassessment of the baseline is not to take place at a frequency of less than ten years. As per section 2.5 of the project description, the project proponent identifies the most plausible baseline scenario as "commercial logging beyond the limits of Brazilian law, followed by slash-and-burn subsistence agriculture." As such, the VVB's representations that there was a significant reduction in wood and palm-heart production in the project's reference region during the monitoring period would appear to be an invalid reassessment of the baseline.

Given the above information, the VVB is requested to please reassess the opportunity cost risk rating provided in the non-permanence risk report dated 30 April 2014.

VVB Response:

The opportunity cost rating was reassessed in the non-permanence risk report v3, dated 13 January 2015. The NPV from the most profitable alternative land use activity, in this case the timber production, was calculated and compared to the REDD project activity. Several data sources were utilized to estimate the NPV of timber production in the region. The results were that the NPV from timber production would be around US$ 6.7 million over the crediting period, while the NPV of the Ecomapuá Amazon REDD Project (carbon credits revenues) would be around US$ 3.7 million. This analysis suggests that the NPV from the timber production is expected to be around 78% higher than from project activities. Therefore, 6 was applied at risk rating due to opportunity cost. Thus, the MR v4 was also updated with the correct values regarding the non-permanence risk and ex-post buffer credits.

VCS Response:

The non-permanence risk report has been reassessed to indicate that the NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities, rather than previous representations that the majority of baseline activities over the length of the project crediting period had been subsistence-driven. The non-permanence risk report adequately describes the details behind this new opportunity cost risk rating and the conclusions of this report have been verified appropriately in section 4.4 of the updated version of the verification report.

Considering the above, this finding is closed and no further action is required.

Finding 3

As per Appendix 5 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*, the parameter EBBPSPA$_t$, sum of (or total) actual non-CO_2 emissions from forest fire at year *t* in the project area, must be monitored annually.

Section 3.2 of the monitoring report states that EBBPSPA$_t$ has a frequency of monitoring of every 5

years or prior to any verification event.

Section 4.2 of the verification report states that "*the verification team conducted a detailed review of all data such as parameters, formulas, conversions and uncertainties, and results to ensure consistency with the validated PD and the methodology used*." The section continues to describe the monitoring frequency of EBBPSPAt as every 5 years or prior to any verification event.

The monitoring frequency of the parameter does not appear to be consistent with the requirements of the methodology. Please clarify how the monitoring frequency as explained in the monitoring report and the verification report complies with *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*.

VVB Response:

The parameter EBBPSPAt, sum of (or total) actual non-CO_2 emissions from forest fire at year *t* in the project area, was annually monitored by the project proponent, as can be seen at Table 28 (*Total ex-post estimated actual net changes in carbon stocks and emissions of GHG gases in the project area*) of the Monitoring Report (MR). The information stated in the section 3.2 of the MR and section 4.2 of the Verification Report were revised accordingly.

VCS Response:

Based on the information provided by the VVB and included in the revised version of the monitoring report and the verification report, this finding is closed and no further action is required.

2 MINOR FINDINGS

Finding 1

As per Appendix 6 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*, table 5 is required ex post at verification.

The verification report excludes the representation of table 5. In the future, please include all tables as mandated in the methodology.

3 ASSESSMENT CONCLUSION

On 25 November 2014, VCS issued the first round of findings to RINA Services S.p.A. (RINA).

On 4 December 2014, VCS received RINA's first response to the findings with an updated verification report and monitoring report, which included a more detailed description of the LCM modelling process.

On 19 December 2014, VCS closed Finding 3 based on the RINA's response and the updated documentation provided. VCS issued a second round of findings to RINA regarding Finding 1 and Finding 2.

On 21 January 2015, VCS received RINA's final response and an updated monitoring report, verification report and non-permanence risk report addressing Finding 1 and Finding 2.

On 27 January 2015, VCS closed all findings and no further action was required from the VVB.