

V CARBON NUKU MAIMAI PROJECT



Project title	V Carbon Nuku Maimai Project
Project ID	Verra Project ID 5232
Crediting period	01 st November 2021 to 31 st October 2046
Project lifetime	25-year lifetime
(CCB) GHG accounting period	25-year total period
Original date of issue	For pipeline listing, 04-09-2024 is the date of submission
Most recent date of issue	4 th September 2024 is the date on which the document was most recently submitted
Version	V1
VCS Standard version	4.3
CCB Standards version	3.0
Project location	Papua New Guinea, the Nuku District of West Sepik Province
Project proponent(s)	V Carbon ESG Resources Limited Contact Name: Caddie Chen Email Address: caddie@vcarbonpng.com Phone number: +852 9064 2511
Validation/verification body	China Classification Society Certification Co., Ltd.

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History of CCB status	N.A.
Gold Level criteria	The Climate, Community and Biodiversity Gold Level criteria are used. The Project is an avoided deforestation project and thus, mitigate the impacts of the climate change, supports the development of the local community, and protects important habitat for a wide-range of species.
Expected verification schedule	If known, will provide the expected schedule for initial verification
Prepared by	Deloitte Advisory (Hong Kong) Limited

CONTENTS

1	SUMMARY OF PROJECT BENEFITS	4
1.1	Unique Project Benefits	4
1.2	Standardized Benefit Metrics	5
2	PROJECT DETAILS	9
2.1	Project Goals, Design and Long-Term Viability.....	9
2.2	Without-project Land Use Scenario and Additionality	44
2.3	Safeguards and Stakeholder Engagement	49
2.4	Management Capacity	70
2.5	Legal Status and Property Rights.....	77
2.6	Additional Information Relevant to the Project	97
3	CLIMATE	98
3.1	Application of Methodology	98
3.2	Quantification of Estimated GHG Emission Reductions and Removals	113
3.3	Monitoring	121
3.4	Optional Criterion: Climate Change Adaptation Benefits	142
4	COMMUNITY	143
4.1	Without-Project Community Scenario	143
4.2	Net Positive Community Impacts	149
4.3	Other Stakeholder Impacts.....	153
4.4	Community Impact Monitoring	155
4.5	Optional Criterion: Exceptional Community Benefits	158
5	BIODIVERSITY	163
5.1	Without-Project Biodiversity Scenario	163
5.2	Net Positive Biodiversity Impacts	167
5.3	Offsite Biodiversity Impacts.....	170
5.4	Biodiversity Impact Monitoring	170
5.5	Optional Criterion: Exceptional Biodiversity Benefits	172

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or impact estimated by the end of project lifetime	Section reference
1) Reduction in greenhouse gas emissions The projected amount of 47,380,857 tCO₂e emissions reductions that will be achieved by the end of the project's lifetime, considering the avoided deforestation and forest degradation resulting from the interventions.	2,3
2) Biodiversity and ecosystem conservation Highlight the expected positive impact on biodiversity conservation, such as the preservation of key habitats, protection of endangered species, or increase in species richness and diversity within the project area. Additionally, identify the ecosystem services that are expected to experience significant improvements through the project, such as enhanced water quality, soil conservation, regulation of microclimates, and the provision of non-timber forest products.	5
3) Community livelihood improvement and resilience Discuss the anticipated improvements in local community livelihoods, including income generation opportunities, enhanced access to sustainable resources, and reduced dependency on activities that contribute to deforestation. Describe how the project aims to enhance the resilience of local communities to climate change impacts by supporting adaptive practices, provide capacity-building initiatives, and promote sustainable natural resource management.	4
4) Climate change adaptation and natural disaster resilience Highlight the project's contribution to reducing the vulnerability of local communities to climate change impacts and enhancing their resilience to natural disasters. Specifically, emphasize how the project aims to reduce the risk of wildfires through improved forest management practices, early warning systems, and community-based fire prevention and response mechanisms.	3
5) Sustainable land use practices Demonstrate how the project aims to promote sustainable land use practices, such as agroforestry, sustainable agriculture, and responsible forest management, to prevent further deforestation and promote long-term land productivity.	4

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the end of project lifetime	Section reference
GHG emission reductions or carbon dioxide removals	<i>Net estimated removals in the project area, measured against the without-project scenario</i>	Not applicable	N/A
	<i>Net estimated reductions in the project area, measured against the without-project scenario</i>	47,380,857 tCO ₂ e	3
Forest ¹ cover	<i>For REDD² projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario</i>	87,362 ha (planned)	3
	<i>For ARR³ projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario</i>	Not applicable	N/A
Improved land management	<i>Number of hectares of existing production forest land in which IFM⁴ practices are expected to occur as a result of project activities, measured against the without-project scenario</i>	Not applicable	N/A
	<i>Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario</i>	Not applicable	N/A

¹ Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO, or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (VCS Program Definitions)

² Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (VCS Program Definitions)

³ Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (VCS Program Definitions)

⁴ Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood, and fuelwood (VCS Program Definitions)

Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	2000-3000	2.1.17, 4.2.1
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	1000-2000	2.1.17, 4.2.1
Employment	Total number of people expected to be employed in project activities ⁵ , expressed as number of full-time employees ⁶	30-50	2.1.17, 4.2.1
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	10-20	2.1.17, 4.2.1
Livelihoods	Total number of people expected to have improved livelihoods ⁷ or income generated as a result of project activities	12000-14000	2.1.17, 4.2.1
	Number of women expected to have improved livelihoods or income generated as a result of project activities	6000-7000	2.1.17, 4.2.1
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	7000-8000	2.1.17, 4.2.1
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	3000-4000	2.1.17, 4.2.1

⁵ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

⁶ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from the UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁷ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. The Sustainable Livelihood Approach to Poverty Reduction. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	2000-3000	2.1.17, 4.2.1
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	1000-2000	2.1.17, 4.2.1
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	7000-8000	2.1.17, 4.2.1
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	3000-4000	2.1.17, 4.2.1
Well-being	Total number of community members whose well-being ⁸ is expected to improve as a result of project activities	12000-14000	2.1.17, 4.2.1
	Number of women whose well-being is expected to improve as a result of project activities	6000-7000	2.1.17, 4.2.1
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation ⁹ , measured against the without-project scenario	70,000-80,000 ha	5

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

⁹ Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g. enhancing the status of endangered species

	<i>Expected number of globally Critically Endangered or Endangered species¹⁰ benefiting from reduced threats as a result of project activities¹¹, measured against the without-project scenario</i>	24	5
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¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit.

2 PROJECT DETAILS

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (VCS, 3.2, 3.6, 3.10, 3.11, 3.13, 3.14; CCB, G1.2)

The V Carbon Nuku Maimai Project, situated partly (from the East bank of Wakasu River at Maimai Wanwan together with Wulbowe and Tukinaro of Nuku Central Area) (“the Project Area”) in Portion 26C in Nuku District of West Sepik (Sandaun) Province, Papua New Guinea (“PNG”) (“the 26C Land”), aims to conserve forest resources.

The Project Area was previously a planned logging area. Nuku Resources Limited (“NRL”), the landowners’ company is the registered owner of the Special Agricultural and Business Lease (“SABL”) granted by the Independent State of Papua New Guinea, under the ‘Lease-Lease Back Arrangement’ with the customary landowners pursuant to Section 11 of the Land Act 1996, for a term of 99 years from 6th March 2009 to 5th March 2108 over the 26C Land which was sub-leased to Skywalker Global Resources Company (PNG) Limited (“SWGR”) for a period of 50 years from 3rd April 2009 for the Maimai Integrated Agro-forestry Development Plan. Pursuant to the MOU and Project Agreement between NRL and SWGR dated 14th January 2012 and 12th October 2015 respectively, the forest within the 26C Land was planned to be clear-felled by Skywalker Construction (PNG) Limited, the designated logging contractor, and converted as part of the Maimai Integrated Agro-forestry Development Plan.

NRL invites V Carbon ESG Group to enter into and undergo the GHG Reduction Program and Sustainable Development (including the Carbon Credit Trade) at the Project Area in line with the PNG National Government Forestry Development Plan of 2050s Vision. V Carbon ESG Group is delighted to accept NRL’s invitation and agrees to protect the forest at the Project Area from any kind of deforestation. Skywalker Construction (PNG) Limited pursuantly became a wholly owned subsidiary of V Carbon ESG (PNG) Limited, a member company of the V Carbon ESG Group and renamed to V Carbon Maimai (PNG) Limited (collectively “V Carbon ESG”).

Formerly designated for logging, the area now stands under protection agreements between V Carbon ESG and NRL. With a focus on forest preservation, the project's primary land use remains unchanged, barring the reserved area (upto 15% of the total project area) earmarked for future expansion and development of the existing villages and provision of additional and better social services (including the respective facilities and access roads whereto) to the local communities. The project, categorized under Agriculture, Forestry, and Other Land Use (AFOLU) initiatives, targets a 25-year duration, impacting approximately 7,229 individuals (“the Maimai Project”). Efforts include assisting locals in National Identification registration; clan surveys to gauge demographic shifts; Land Group Incorporate (“ILG”) registration and discussions with local, district and provincial

level government agencies for incorporation of the Project's development plan into the Master Provincial Development Plans.

Climate Change and Development Authority (CCDA), the Designated National Authority (DNA) providing overall coordination and monitoring of all climate change related issues, activities and programs in all regulated sectors of PNG and focal on climate change to the United Nations Framework Convention on Climate Change (UNFCCC) has issued an acknowledgement and endorsement letter for the Nuku Maimai Carbon Offset and Credit Trading Project on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-national government agencies, its partner and joint project proponent "V Carbon ESG Group" to progress the said project. The letter also serves as an acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126 of which negotiations and registration process started years back since 2018 with the help of the project proponent V Carbon ESG Group. In light of the official moratorium issued in 2022, Nuku Maimai Project can continue its preparation under the Carbon Market Regulation 2023.

Mitigation measures to prevent planned deforestation will be implemented by stepping up local surveillance, mapping local deforestation patterns, forming collaborations with educational and research institutions, and offering advantages to neighbouring communities with the aim of minimizing deforestation by providing alternative income, better social services and facilities, education, and professional training.

The goal of the V Carbon Nuku Maimai Project is to help the project area conserve and protect the natural rainforest in the Project Area from being cleared and converted as part of the Maimai Integrated Agro Forest Development Plan. The Nuku Maimai Project performs the following operations in the Project Area to safeguard the forest from planned deforestation based on the mechanisms to finance and achieve the Sustainable Development Goals (UNSDGs) established by the United Nations.

Monitoring and monitoring efforts are critical to ensuring the standing forest. In addition to the project's ecological and carbon benefits, a portion of the carbon credits generated will be dedicated to improving the social and environmental conditions in the project region, specifically contributing to improved deforestation control, environmental awareness propagation, alternative income generation, and education.

Through the above-mentioned project activities, the forests under the V Carbon Nuku Maimai Project will be protected from clearance, and net GHG emission reductions or removals will be achieved. The lifetime of the project activities will be 25 years, starting from the Project Start Date of 01st November 2021. The estimated total GHG emission reductions or removals for the first project instances is estimated at 47,380,857 tCO₂e over the project crediting period of 25 years.

2.1.2 Audit History (VCS, 4.1)

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/verification	(DD-Month-YYYY–DD-Month-YYYY)	CCB Version 3.0, VCS Version 4.3	Validation/verification body name	One year

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Sectoral scope	14: Agriculture, forestry, and other land use
AFOLU project category ¹²	Reduced Emissions from Deforestation and Degradation (REDD)
Project activity type	Avoiding Planned Deforestation and/or Degradation (APDD)

2.1.4 Project Eligibility (VCS, 3.1, 3.6, 3.8, 3.18, 4.1; CCB Program Rules, 4.2.4, 4.6.4)

According to the VCS Methodology Requirements, for Reduced Emissions from Deforestation and Degradation (REDD) projects, eligible activities are those that reduce net GHG emissions by reducing deforestation. Thus, the project is eligible under the scopes of the VCS Program, following the VCS Standard:

Eligibility Conditions	Justification of Eligibility
Projects shall meet all applicable rules and requirements set out under the VCS Program, including this document.	The project meets all applicable rules and requirements set out under the VCS Program, as detailed in this section and in Applicability of Methodology.
Projects shall apply methodologies eligible under the VCS Program. Methodologies shall be applied in full, including the full application of any tools or modules referred to by a methodology.	The applied methodology is VM0048/VM0007 – REDD+ Methodology Framework, v1.7. under VM0048 – Reducing Emissions from Deforestation and Forest Degradation v1.0. Applicability conditions are detailed in section 3.1.
Projects and the implementation of project activities shall not lead to the violation of any applicable law, regardless of whether or not the law is enforced.	The project activity involves the conservation of native Tropical Rainforest, including sustainable forest management plan or not. These activities are eligible under the PNG law according to conditions set out in sections 2.5 and 3.1.5.
Where projects apply methodologies that permit the project proponent its own choice of	Not applicable. Project applies the VM0048 and VM0007 version 1.7 methodologies.

¹² See Appendix 1 of the VCS Standard

model (see the VCS Program document Program Definitions for definition of model), such model shall meet with the requirements set out in the VCS Program document VCS Methodology Requirements and it shall be demonstrated at validation that the model is appropriate to the project circumstances (i.e., use of the model will lead to an appropriate quantification of GHG emission reductions or removals).	
Where projects apply methodologies that permit the project proponent its own choice of third-party default factor or standard to ascertain GHG emission data and any supporting data for establishing baseline scenarios and demonstrating additionality, such default factor or standard shall meet with the requirements set out in the VCS Program document VCS Methodology Requirements.	Not applicable. Project applies the VM0048 Methodology, and VM0007 methodologies, in addition to the VT0001 for Additionality assessment.
Where the rules and requirements under an approved GHG program conflict with the rules and requirements of the VCS Program, the rules and requirements of the VCS Program shall take precedence.	The project applies approved VCS methodology and tools. The project shall take precedence to the rules and requirements of the VCS Program over other approved GHG Program.
Where projects apply methodologies from approved GHG programs, they shall comply with any specified capacity limits (see the VCS Program document Program Definitions for definition of capacity limit) and any other relevant requirements set out with respect to the application of the methodology and/or tools referenced by the methodology under those programs.	The project applies approved VCS methodology and tools. The project shall take precedence to the rules and requirements of the VCS Program over other approved GHG Program.
Where Verra issues new VCS Program rules, the effective dates of these requirements are set out in Appendix 3 Document History and Effective Dates or equivalent for other program documents and are listed in a companion Summary of Effective Dates document which corresponds with each update.	Project was designed under the VM0048 and VM0007 version 1.7. Any new requirements shall be adhered to at project crediting period renewal (i.e. six years from Project Start Date).
There are currently six AFOLU project categories eligible under the VCS Program, as defined in Appendix 1 Eligible AFOLU Project Categories below: afforestation, reforestation and revegetation (ARR), agricultural land	This is an eligible AFOLU project category under the VCS Program: Reduced Emissions from Deforestation and Degradation (REDD).

management (ALM), improved forest management (IFM), reduced emissions from deforestation and degradation (REDD), avoided conversion of grasslands and shrublands (ACoGS), and wetland restoration and conservation (WRC).	
Where projects are located within a jurisdiction covered by a jurisdictional REDD+ program, project proponents shall follow the requirements in this document and the requirements related to nested projects set out in the VCS Program document Jurisdictional and Nested REDD+ Requirements.	This project is not located within a jurisdiction covered by a jurisdictional REDD+ program.
Where an implementation partner is acting in partnership with the project proponent, the implementation partner shall be identified in the project description. The implementation partner shall identify its roles and responsibilities with respect to the project, including but not limited to, implementation, management and monitoring of the project, over the project crediting period.	Any implementation partners are described on the Project Description, in sections 2.1.7 and 2.1.8.
Activities that convert native ecosystems to generate GHG credits are not eligible under the VCS Program. Evidence shall be provided in the project description that any ARR, ALM, WRC or ACoGS project areas were not cleared of native ecosystems to create GHG credits (e.g., evidence indicating that clearing occurred due to natural disasters such as hurricanes or floods). Such proof is not required where such clearing or conversion took place at least 10 years prior to the proposed project start date.	This project does not convert native ecosystems to generate GHG. The project area only contains native forested land for a minimum of 10 years prior to the project start date.
Activities that drain native ecosystems or degrade hydrological functions to generate GHG credits are not eligible under the VCS Program. Evidence shall be provided in the project description that any AFOLU project area was not drained or converted to create GHG credits. Such proof is not required where such draining or conversion took place prior to 1 st January 2008.	This project does not occur on wetlands and does not drain native ecosystems or degrade hydrological functions.
The project proponent shall demonstrate that project activities that lead to the intended GHG benefit have been implemented during each verification period in accordance with the project design. Where no new project	Project proponent will demonstrate that project activities that lead to the intended GHG benefit have been implemented during each verification period in accordance with the project design.

activities have been implemented during a verification period, project proponents shall demonstrate that previously implemented project activities continued to be implemented during the verification period (e.g., forest patrols or improved agricultural practices of community members).	
For all IFM, APDD (except where the agent is unknown), RWE, APWD, APC, and ALM project types, the project proponent shall, for the duration of the project, reassess the baseline every ten years and have this validated at the same time as the subsequent verification. For all AUDD, APDD (where the agent is unknown), AUC and AUWD project types, the project proponent shall, for the duration of the project, reassess the baseline every six years and have this validated at the same time as the subsequent verification.	The baseline reassessment will be conducted every six years as this is an APDD project.
Where ARR, ALM, IFM or REDD project activities occur on wetlands, the project shall adhere to both the respective project category requirements and the WRC requirements, unless the expected emissions from the soil organic carbon pool or change in the soil organic carbon pool in the project scenario is deemed below de minimis or can be conservatively excluded as set out in the VCS Program document VCS Methodology Requirements, in which case the project shall not be subject to the WRC requirements.	Not applicable. The project activity does not occur on wetlands.
Projects shall prepare a non-permanence risk report in accordance with the VCS Program document AFOLU Non-Permanence Risk Tool at both validation and verification. In the case of projects that are not validated and verified simultaneously, having their initial risk assessments validated at the time of VCS project validation will assist VCU buyers and sellers by providing a more accurate early indication of the number of VCUs projects are expected to generate. The non-permanence risk report shall be prepared using the VCS Non-Permanence Risk Report Template, which may be included as an annex to the project description or monitoring report, as applicable, or provided as a stand-alone document.	The project has conducted a non-permanence risk analysis on validation, according to the most recent version of the VCS Program document AFOLU Non-Permanence Risk Tool and shall perform the same report during subsequent verifications.
Eligible REDD activities are those that reduce net GHG emissions by reducing deforestation	See the GIS picture for this project area 10 years before.

and/or degradation of forests. The project area shall meet an internationally accepted definition of forest, such as those based on UNFCCC host country thresholds or FAO definitions, and shall qualify as forest for a minimum of 10 years before the project start date. The definition of forest may include mature forests, secondary forests, and degraded forests. Under the VCS Program, secondary forests are considered to be forests that have been cleared and have recovered naturally and that are at least 10 years old and meet the lower bound of the forest threshold parameters at the start of the project. Forested wetlands, such as floodplain forests, peatland forests and mangrove forests, are also eligible. Provided they meet the forest definition requirements mentioned above.	
Activities covered under the REDD project category are those that are designed to stop planned (designated and sanctioned) deforestation or unplanned (unsanctioned) deforestation and/or degradation. Avoided planned degradation is classified as IFM.	The project activity is designed to stop planned (sanctioned) deforestation as described throughout the project description.
Activities that stop unsanctioned deforestation and/or illegal degradation (such as removal of fuelwood or timber extracted by non-concessionaires) on lands that are legally sanctioned for timber production are eligible as REDD activities. However, activities that reduce or stop logging only, followed by protection, on forest lands legally designated or sanctioned for forestry activities are included within IFM. Projects that include both avoided unplanned deforestation and/or degradation as well as stopping sanctioned logging activities, shall follow the REDD guidelines for the unplanned deforestation and/or degradation and the IFM guidelines for the sanctioned logging activities, and shall follow the requirements set out in the most recent version of the VCS Standard document.	In case future project activity instances have areas legally sanctioned for timber production, baseline and project activity shall comprehend unsanctioned deforestation and/or illegal degradation, not the reduction of logging.
Eligible REDD activities include: 1) Avoiding Planned Deforestation and/or Degradation (APDD): This category includes activities that reduce net GHG emissions by stopping or reducing deforestation or degradation on forest lands that are legally authorized and documented for conversion.	The present Project Activity is within category Avoiding Planned Deforestation and/or Degradation (APDD).

2) Avoiding Unplanned Deforestation and/or Degradation (AUDD): This category includes activities that reduce net GHG emissions by stopping deforestation and/or degradation of degraded to mature forests that would have occurred in any forest configuration.	
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2.1.5 Transfer Project Eligibility (VCS, 3.23, Appendix 2)

Not applicable.

2.1.6 Project Design (VCS, 3.6)

- ☒ Single location or installation
- ☐ Multiple locations or project activity instances (but not a grouped project)
- ☐ Grouped project

2.1.7 Project Proponent (VCS, 3.7; CCB, G1.1)

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2.1.8 Other Entities Involved in the Project

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Organization name	Climate Change and Development Authority
Role in the project	Climate Change and Development Authority
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Organization name	Sandaun Provincial Government
Role in the project	Provincial Government
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Organization name	Church of the Yabuo UPA
Role in the project	Church of Local Communities
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Organization name	UN FAO - Food and Agriculture Organisation of the United Nations
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Organization name	Individual Consultant
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Organization name	Kingbridge Capital Assets Management Limited
Role in the project	Advisory and fund management
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Organization name	Deloitte Advisory (Hong Kong) Limited
Role in the project	Advisory for project development
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Organization name	China Classification Society Certification Co., Ltd. (CCSC)
Role in the project	Validation and verification body
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2.1.9 Project Ownership (VCS, 3.2, 3.7, 3.10; CCB, G5.8)

The project boundary of V Carbon Nuku Maimai Project is the part of the Portion 26C in the lease agreements.

On the 2nd April 2009, the Independent State of Papua New Guinea granted Nuku Resources Ltd a 99-year Special Agricultural Business Lease (SABL) over the Portion 26C Milinch Yellow (SE), MaiMai (NE, NW, SE, SW), Masalaga (NW, SW) & Wongamush (NE, NW), Fourmil Aitape and Wewak in West Sepik Province in the Survey Plan Catalogue No.2/149 with a total area of approx. 239,810 ha (“the 26C Land”). The entire 239,810 ha of the 26C Land was sub-leased to Skywalker Global Resources Company (PNG) Limited for a period of 50 years, from 3rd April 2009 for the Maimai Integrated Agro-forestry Development Plan. In the signed MOU on 14th January 2012 and Project Agreement on 12th October 2015, Nuku Resources Ltd and Skywalker Global Resources Company (PNG) Limited agreed to work together to get the project off the ground, granting the rights and access to Skywalker Global Resources Company (PNG) Limited and Skywalker Construction (PNG) Limited, the designated logging contractor, to develop the Maimai forest resource.

“Memorandum of Agreement (MOA)” between Skywalker Construction (PNG) Limited (subsequently changed name to V Carbon Maimai (PNG) Limited) and Nuku Resources Limited on 12th December 2022 has designated V Carbon ESG the right to oversee, operate and administer the day-to-day functions and operation of the projects (including the Carbon Credit Trade) in relation to the GHG Reduction Programme at the Nuku Maimai forest area.

“Acknowledgement and Endorsement for Nuku Maimai Carbon Offset & Credit Trading Project” is issued by Climate Change and Development Authority (CCDA) on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-

national government agencies, its partner and joint project proponent “V Carbon ESG Group” to progress the said project. The letter also serves as an acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126.

2.1.10 Project Start Date (VCS, 3.8)

Project start date	01-11-2021
Justification	The VCS Standard states that “the project start date of an AFOLU project is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)”. Based on the applicability of methodology VM0048/VM0007 (section 4.3.3), where the conversion of forest land to a deforested condition must be legally permitted, the REDD project for planned deforestation activity is used. This project start date on which the LOC’s the Board made the decision by the Board of Directors at a meeting convened that start conversing the planned deforestation project into the forest conservation project on 1st November 2021.

2.1.11 Benefits Assessment and Project Crediting Period (VCS, 3.9; CCB, G1.9)

Crediting period	Start date 01 st November 2021 and end date 31 st October 2046.
Start date of first or fixed crediting period	01 st November 2021 to 31 st October 2046.
CCB benefits assessment period	Start date 01 st November 2021 and end date 31 st October 2046.

2.1.12 Differences in Assessment/Project Crediting Periods (CCB, G1.9)

No differences between the GHG emissions accounting, climate adaptive capacity and resilience, community, and/or biodiversity assessment and periods.

2.1.13 Project Scale and Estimated Reductions or Removals (VCS, 3.10)

☐ < 300,000 tCO₂e/year (project)

☒ ≥ 300,000 tCO₂e/year (large project)

Calendar year of crediting period	Estimated reductions or removals (tCO ₂ e)	
	From	To
01/11/2021	31/10/2022	8,967,195
01/11/2022	31/10/2023	8,992,644
01/11/2023	31/10/2024	9,018,093
01/11/2024	31/10/2025	9,043,542
01/11/2025	31/10/2026	9,068,991
01/11/2026	31/10/2027	127,244
01/11/2027	31/10/2028	127,244
01/11/2028	31/10/2029	127,244
01/11/2029	31/10/2030	127,244
01/11/2030	31/10/2031	127,244
01/11/2031	31/10/2032	127,244
01/11/2032	31/10/2033	127,244
01/11/2033	31/10/2034	127,244
01/11/2034	31/10/2035	127,244
01/11/2035	31/10/2036	127,244
01/11/2036	31/10/2037	127,244
01/11/2037	31/10/2038	127,244
01/11/2038	31/10/2039	127,244
01/11/2039	31/10/2040	127,244

01/11/2040	31/10/2041	127,244
01/11/2041	31/10/2042	127,244
01/11/2042	31/10/2043	101,795
01/11/2043	31/10/2044	76,346
01/11/2044	31/10/2045	50,898
01/11/2045	31/10/2046	25,449
<i>Total estimated ERRs during the first or fixed crediting period</i>	47,380,857	
<i>Total number of years</i>	25	
<i>Average annual ERRs</i>	1,895,234	

2.1.14 Physical Parameters (CCB, G1.3)

The forest resource within the 26C Land boundaries is subject to a range of classifications, some of which are distinct and very clear, while others are transitional and not so obvious. This latter issue occurs primarily in the lowland swamp sections located in the southern portion. This has made forest typing by land area more difficult and subject to possible error for this sector.

The overall concession can be split roughly into three areas:

- Moderate to steep slope land. This occurs in the northern third of the concession and has a largely consistent forest cover except where disturbed by villages and the agricultural practices of the local people.
- Flat to gently rolling land. This is a strip of land that occurs through the middle of the concession on an east to west line. Much of this area is grassland and is likely to be the best suited for agricultural development.
- Seasonally and permanently inundated swamp land. This makes up a significant proportion of the concession and is contained within the southern sector. Parts of this area may be suitable for development with good drainage but there will also be significant areas that would be unsuitable for any crops other than rice or sago palm due to the very high water tables.

For each area, several terrain-related variables including, elevation, slope and contour (at 100 m intervals) were generated using the SRTM 90 m dataset. This DEM (digital elevation model) is a 90 m resolution dataset. Slope was divided into three classes, namely 0-15°, 15-30° and over 30°. Typically, slopes less than 30° are suitable for ground-based operations and those

greater than 30° require cable-based systems. For this analysis any areas with slopes greater than 30° are excluded from the operable area. According to the regional harvesting regulations clearcut is allowed in all kinds of forests on slopes up to 25° and selective cutting in all kind of forests on slopes up to 30° on short slopes or 25° over the whole slope length.

The analysis revealed that only 1% of the land exhibited slopes exceeding 25°, rendering it unsuitable for agricultural development. However, it's important to note that the forest cover conceals additional steep slopes within the project site, leading to an underestimation of the total steep terrain. Additionally, the apparent presence of steep land in the southern area is attributed to cloud cover interfering with the digital spectrum analysis rather than representing actual steep terrain.

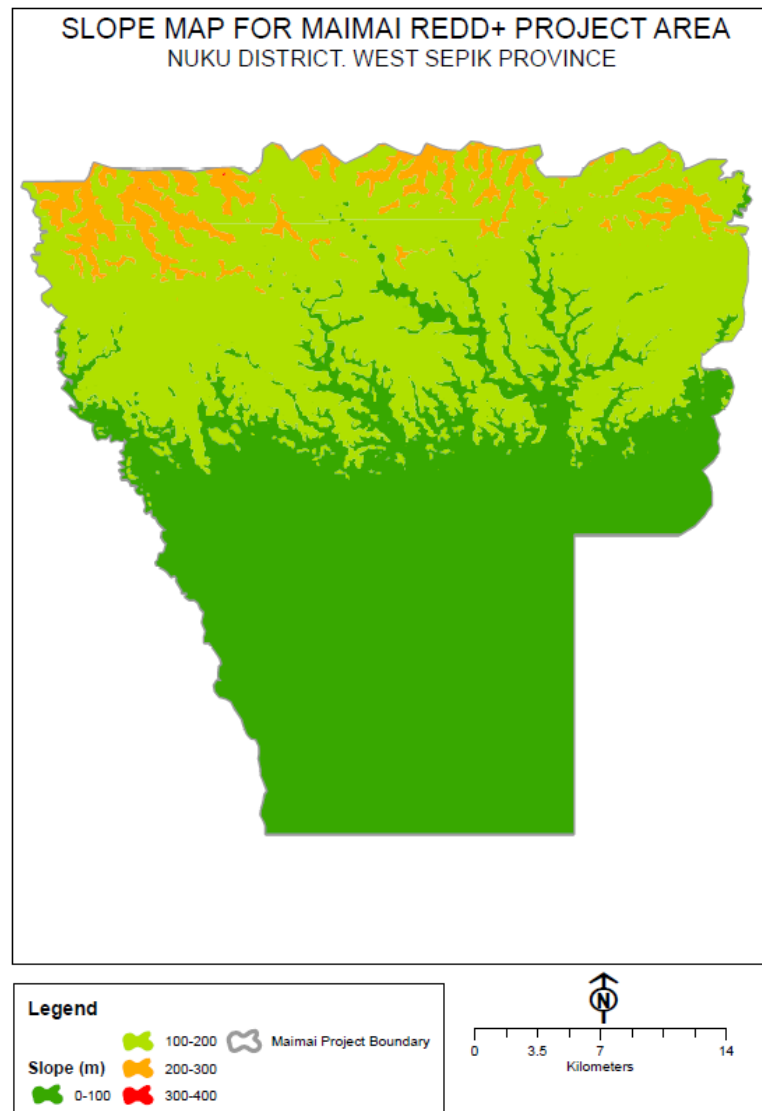


Figure 1: Slope Classes

Soil

The agro-physiological conditions of Sandaun Province are ideally suited for large scale forestry and agricultural production and the province is well endowed with land suitable for cocoa production. This is due to the abundance of flat to gently sloping terrain covered with rich tropical rainforest. The soils are rich in humus topsoil with easily weathered sub-soils.

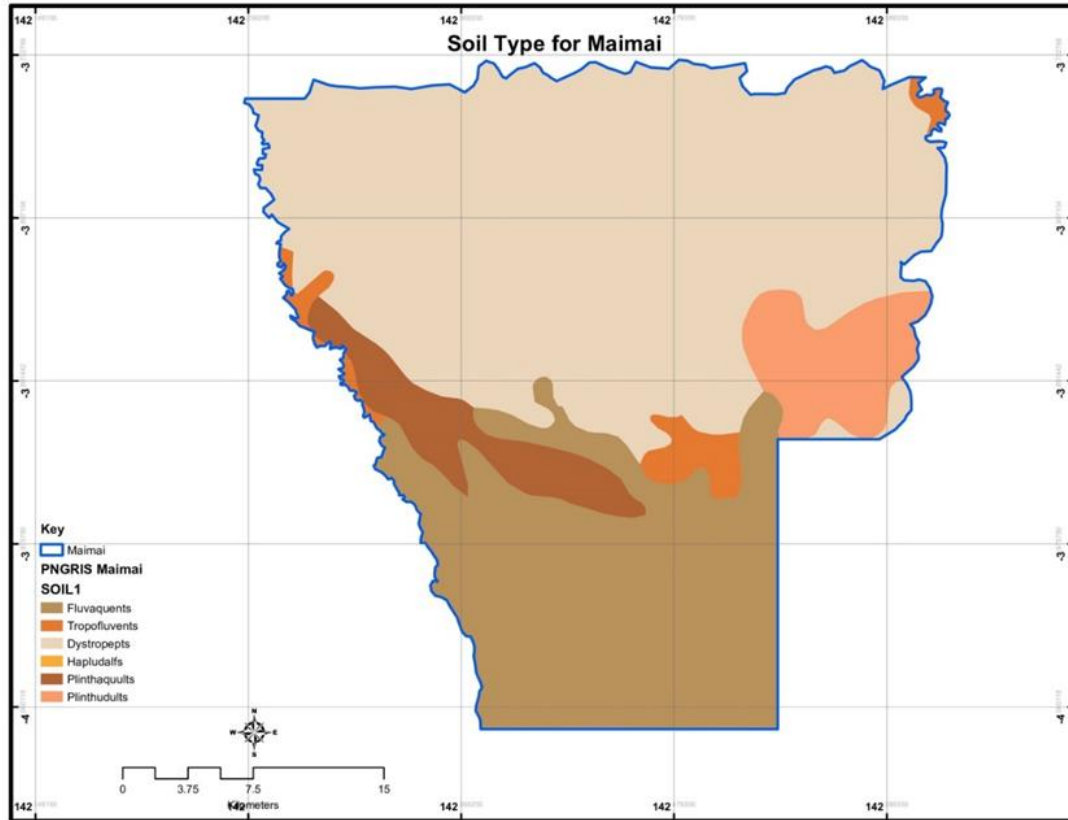


Figure 2: Soil Map of Nuku Maimai Project area

Climate and Hydrology

The Nuku Maimai project area in the West Sepik Province of Papua New Guinea is located in a region characterized by complex hydrological dynamics influenced by its tropical rainforest environment, varied topography, and heavy rainfall patterns. Here's a detailed description of the hydrology of the area (Betasolo & Smith, 2020)¹³:

1. Climate and Rainfall

Tropical Rainforest Climate: The Maimai area experiences a typical equatorial climate with high humidity, consistent temperatures, and abundant rainfall throughout the year. The West Sepik

¹³ Betasolo, M., & Smith, C. (2020, January 8). Rainwater Harvesting Infrastructure Management. IntechOpen. <https://doi.org/10.5772/intechopen.90342>

Province receives an average annual rainfall ranging from 2,500 mm to 4,500 mm, with higher altitudes receiving more precipitation.

Rainfall Distribution: Rainfall is distributed relatively evenly throughout the year, although there might be slightly wetter periods corresponding to monsoon influences. The area rarely experiences a distinct dry season, which maintains the perennial flow of rivers and streams.

2. Topography and Drainage Patterns

Varied Topography: The Project Area is characterized by mountainous and hilly terrain, interspersed with valleys. The rugged topography creates a network of rivers and streams with varying flow regimes.

Drainage Basins: The region is part of several small to medium-sized drainage basins, which are characterized by dendritic drainage patterns typical of areas with homogeneous substrates like the volcanic and sedimentary rocks found here.

River Systems: Numerous rivers and streams originate from the higher altitudes, flowing through the forested areas and valleys before joining larger river systems. These rivers are often characterized by steep gradients, resulting in fast-flowing streams with significant erosive power.

3. Surface Water Features

Rivers and Streams: The rivers in the Project Area are mostly perennial, fed by consistent rainfall and groundwater seepage. Streamflow can vary greatly in response to rainfall events, with flash floods being a common occurrence due to the steep terrain.

Wetlands and Swamps: In lower-lying areas and valleys, waterlogged conditions lead to the formation of small wetlands and swamps. These areas are crucial for maintaining regional biodiversity and play a role in water purification and flood mitigation.

Water Quality: The water quality in the streams and rivers is generally high, given the low levels of industrial activity in the region. However, sedimentation can be a concern, especially during heavy rainfall, as the steep slopes contribute to soil erosion.

4. Groundwater Resources

Aquifers: The region's geology supports shallow aquifers, primarily within fractured rock formations and alluvial deposits along riverbanks. These aquifers are replenished by rainfall and contribute to the base flow of rivers and streams, ensuring their perennial nature.

Groundwater Flow: Groundwater flow is influenced by the topography, with water moving from recharge areas in the highlands towards discharge zones in the valleys and lowlands.

Springs: Numerous springs are found throughout the Maimai area, emerging where groundwater intersects the surface, particularly along fault lines and in areas with significant changes in elevation.

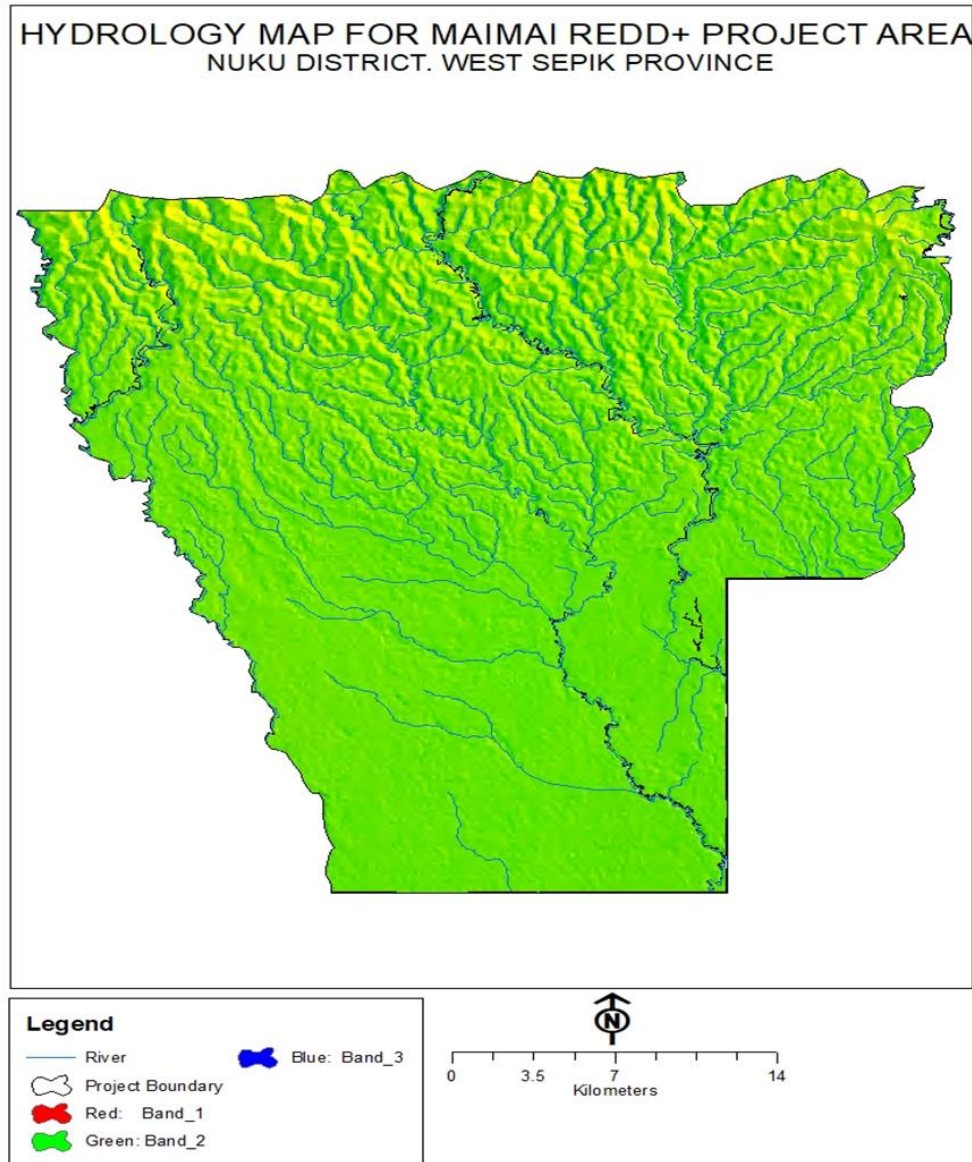


Figure 3: Hydrology Map Maimai REDD+ Project in the Nuku District. West Sepik Province

Types of vegetation

The land within the Project Area is classified into five distinct cover types:

Upland Forest: Characterized by undisturbed forest, this area occupies moderate to steep slopes along the northern boundary of the Project Area. Some parts may show signs of human activity, resulting in patches of open canopy forest.

Lowland Forest: This is the largest forested region within the concession, covering approximately 57% of the total area. It spans from flat, gently rolling dry lands to wet alluvial plains along the southern boundary.

Scrub: Found mainly in the north-eastern section of the concession, this land cover consists of low-canopy forests. Human activities, particularly in areas with dense village populations, have significantly disturbed the original forest cover. Similar scrub areas can also be observed along major rivers in the southern part of the concession, where inundation and poor site conditions prevent the growth of high forests.

Grassland: These areas are dominated by imperata grass and are typically located on alluvial fans in the central region. Frequent burning contributes to the absence of forest cover, making timber recovery unfeasible.

Open Swamp: This category includes both permanent and seasonal open water bodies, adding to the diverse landscape within the concession area.

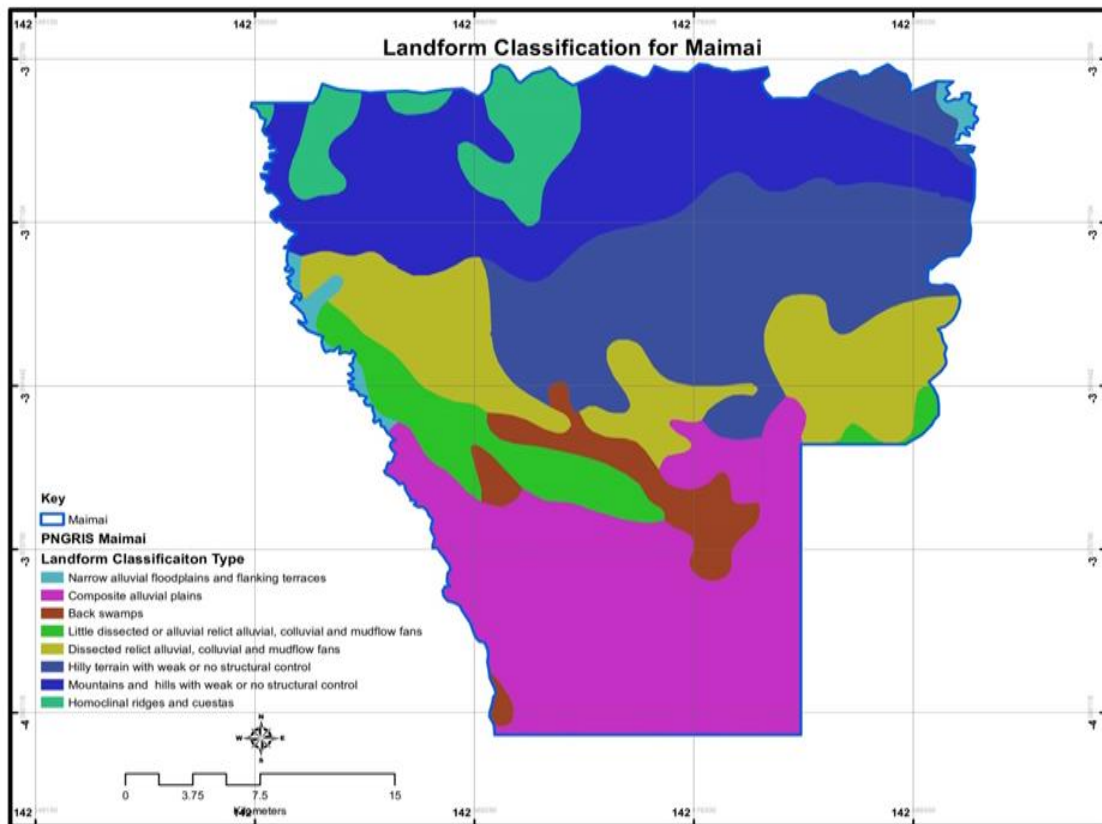


Figure 4: Landform Map of Maimai Project Area

2.1.15 Social Parameters (VCS, 3.18; CCB, G1.3)

Population

Within the project area, there is a total of 22 wards and a population of 7,229. Among the population, there are 3,723 males and 3,506 females, comprising 3,715 adults and 3,514 children under the age of 18.

#	WARD	LLG	POPULATION
1	Gamu/Ulap	Maimai Wanwan	274
2	Maimai	Maimai Wanwan	151
3	Mukili	Maimai Wanwan	357
4	Nau'alu	Maimai Wanwan	221
5	Wundu	Maimai Wanwan	156
6	Yauwo	Maimai Wanwan	199
7	Yemeraba	Maimai Wanwan	126
8	Yimauwi	Maimai Wanwan	173
9	Yimin	Maimai Wanwan	172
10	Yimut	Maimai Wanwan	146
11	Yulem	Maimai Wanwan	81
12	Aimukuli	Nuku Central	151
13	Arkosame 1	Nuku Central	495
14	Arkosame 2	Nuku Central	395
15	Arkosame 3	Nuku Central	823
16	Kaflei	Nuku Central	531
17	Kaflei 3	Nuku Central	674
18	Leiko	Nuku Central	269
19	Tukinaro	Nuku Central	584
20	Waniwomoko	Nuku Central	142
21	Wemil	Nuku Central	114
22	Wulbowe	Nuku Central	995

Socio-Economic Services

As the Maimai area located in a remote rural area, the socio-economic services and business opportunities are limited at present. It is hoped that development of the project will open up economic opportunities for the landowners. At present there are very few opportunities for locals to generate income from their natural resources. Most leave the area to find employment elsewhere, e.g., working for existing logging operations. Within the community, here are some key aspects:

1. **Subsistence Agriculture:** Traditional subsistence agriculture is a fundamental aspect of the local economy in Maimai. Local communities engage in farming activities to grow staple crops such as taro, sweet potato, yams, and fruits to meet their food needs.
2. **Cash Crop Cultivation:** In addition to subsistence agriculture, cash crop cultivation plays a role in the local economy. Crops such as cocoa, vanilla, coffee, and other agricultural products may be grown for sale in local or international markets.
3. **Livelihood Diversification:** Some locals or residents may engage in a variety of income-generating activities to supplement their livelihoods, including fishing from the rivers, small-scale trade, handicraft production, and wage labour.
4. **Limited Infrastructure:** Infrastructure development in the Nuku District may be limited, with challenges in road accessibility, electricity, clean water supply, and telecommunications. This can impact access to markets, education, healthcare, and other essential services.
5. **Traditional Sociocultural Practices:** Traditional customs, beliefs, and social structures continue to play a significant role in the daily lives of communities in Maimai and all across the Nuku District. Customary land tenure systems and community decision-making processes often influence land use and resource management.
6. **Development Projects:** Various development projects, including infrastructure initiatives, agricultural programs and conservation projects, may be implemented with the aim of improving livelihoods, promoting sustainable development, and conserving natural resources.

Understanding the socioeconomic context of the Nuku District is essential for designing effective development interventions, promoting sustainable livelihoods, and improving the well-being of local communities. It requires collaboration between government agencies, NGOs, local communities, and other stakeholders to address the diverse needs and challenges faced by residents in the district, especially along the project area.

Therefore, in the remote rural setting of Nuku Maimai, socio-economic services are notably scarce. Presently, economic prospects within the area are quite restricted. However, there is an optimistic outlook that the project's development will unveil new avenues for business among the landowners. Currently, locals face limited opportunities to capitalize on their natural resources for income generation. Consequently, many individuals seek employment outside the region, often resorting to roles within existing logging enterprises.

Health Services

There is no hospital, but there are two health care centres and eight sub health care centres.

The main health problems in the area are malnutrition, diarrhoea, sores, skin diseases and malaria.

Education Services

There are no schools in the area that take on grade 11 and 12 students. Few can afford outside schooling and women especially become disadvantaged. Agriculture is currently not taken seriously as a career path but neither are student aspirations in the area particularly clear.

It appears that the people in the project area have relatively low education standard (poor performance and output) and high illiteracy. Mainly due to:

1. Shortages and deteriorating conditions of education facilities
2. Poor condition and lack of teachers' housing
3. Non distribution and shortage of school supplies and curriculum related materials
4. Insufficient budgetary allocations
5. Failure to pay teachers' leave costs and other benefits
6. Teacher shortages in the district

Existing Infrastructures

The agriculture sector produces a range of export crops of which the most significant are cocoa, coffee and formerly copra. However, agricultural production in the Province has fallen over recent years and this is largely attributed to the lack of road infrastructure and poor market access.

The causes of the poor transport accessibility and unreliable transport service are due to insufficient funding for routine maintenance and upgrading of all existing roads, bridges, airstrips and other transport infrastructure and facilities in the district. For example, due to the lack of maintenance and modernization, a road has been abandoned in a deteriorating state.

2.1.16 Project Zone Map and Project Location (VCS, 3.11, 3.18; CCB, G1.4-7, G1.13, CM1.2, B1.2)

Below map is for the V Carbon Nuku Maimai Project, located partly (from the East bank of Wakasu River at Maimai Wanwan together with Wulbowe and Tukinaro of Nuku Central Area) in Portion 26C in Nuku District of West Sepik (Sandaun) Province ("the 26C Land").

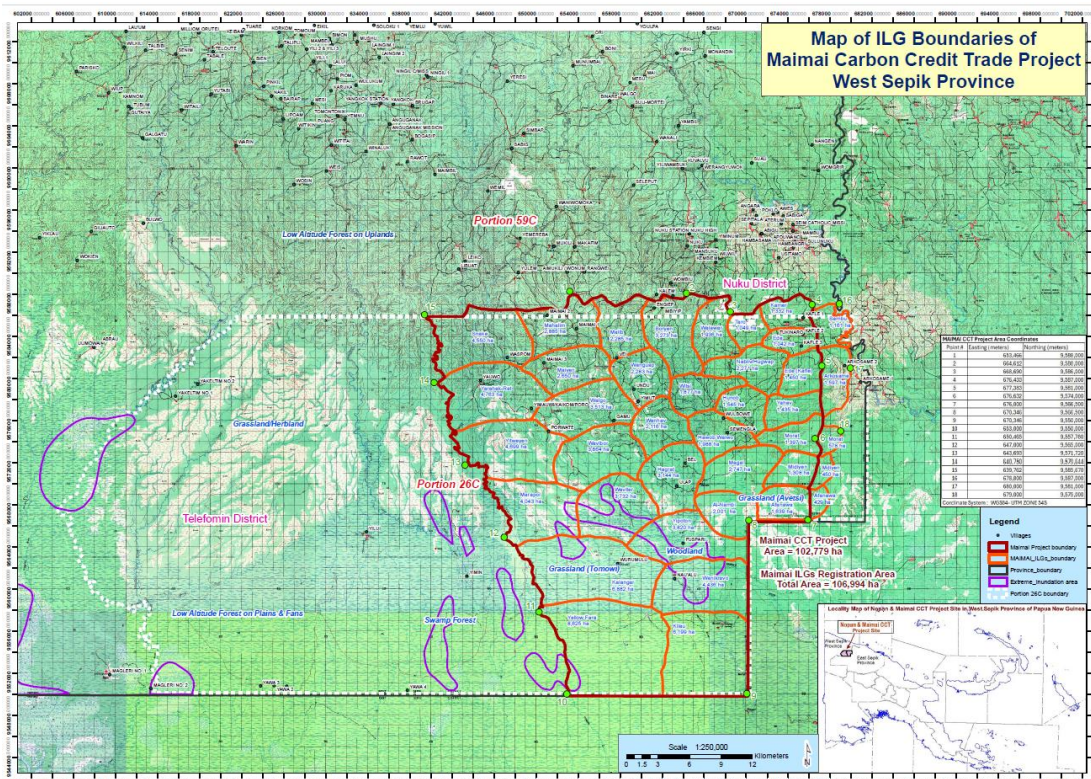


Figure 5: Project Zone Map, Coordinates, Topography and ILG Boundary of Maimai Project Area

2.1.17 Project Activities and Theory of Change (VCS, 3.6; CCB, G1.8)

The Maimai Project Area covers a total of 102,779 ha, out of which 87,362 ha (85%) was planned to conduct logging activities and converted into agriculture and other land uses under Maimai SABL and sublease arrangement before the V Carbon Nuku Maimai Project. However, the Project Area is currently planned to be conserved and protected.

The V Carbon Nuku Maimai Project consists of the implementation of conservation measures for avoiding planned deforestation (APD) within the Project Area. As there will be no tree suppression according to the authorizations issued for land change, it will have its forest conservation. The area will not be converted to agriculture land and will maintain a stable habitat for plants and animals.

Forest protection measures such as the recruitment and management of surveillance teams to monitor suspicious, as well as the control of intrusions inside the project area, are part of the project. Other mitigation actions proposed by the Project to avoid planned deforestation will be carried out by increasing surveillance in the area, mapping local deforestation patterns, establishing partnerships with educational and research institutions, and providing benefits to surrounding communities, with the goal of minimizing deforestation by offering alternative income, education, and professional training. By carrying out the project activities, The V Carbon ESG collaborates with the local community to stop the deforestation of their forest areas.

By using the United Nations Sustainable Development Goals (UNSDGs), the current initiative seeks to enhance and quantify its social and environmental actions that benefit the nearby

people in addition to forest conservation. By using UNSDGs, carbon initiatives' contributions to sustainable development are directional and targeted. 17 goals form the mechanisms: In order to improve the social and environmental circumstances in the project region, the project region's biodiversity, natural, financial, human, social, and carbon resources are all prioritized.



Figure 6: United Nations Sustainable Development Goals (UNSDGs)

Implementing the UNSDGs mechanisms encourages sustainable development by preserving forests, which results in the stability of carbon stocks while lowering demand for timber from other forest regions. The preservation of biodiversity and growth of the local economy can both be accomplished in this way. Details of the project activities and the desired outcomes can be found below:

Reducing emissions from deforestation and forest degradation

By halting planned deforestation and so maintaining and even repairing the carbon pools, all of the aforementioned actions are anticipated to lead to net reductions in GHG emissions.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Engage with landowner(s) to prevent forest clearing and promote conservation	Achievement of signed agreements with local landowners	Successful validation and verification of the REDD+ project, resulting in the generation of verified carbon units (VCUs). Additionally, the	Contributing to the mitigation of greenhouse gas (GHG) emissions, promoting forest conservation, and facilitating community	Mitigating global climate change and conserving forests. The attainment of signed agreements with landowners directly aligns

		project supports local community initiatives.	development.	with these objectives by actively working towards reducing emissions and preserving forested areas.
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Community health and well-being

By implementing health education programs, establishing local clinics, and ensuring clean water and energy supply, the project aims to improve community health outcomes, enhance well-being, and strengthen community resilience to health-related and climate-related challenges. These activities align with the project's objectives of sustainable development and the promotion of human well-being in the context of forest conservation.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Health Education Programs - Implementing health education programs focused on topics such as nutrition, sanitation, and disease prevention.	Increased awareness and knowledge of health issues and improved hygiene practices within the community through the delivery of educational materials and workshops.	Adoption of healthier behaviours and practices among community members, leading to improved overall health and well-being.	Enhanced community resilience to health-related challenges and improved quality of life.	Contribute to the overall objective of sustainable development and highlights the importance of human well-being in the context of forest conservation.
Establishment of local Clinics - Establishing a clinic in the community to provide primary healthcare services.	Increased access to primary healthcare services within the community through the establishment and operationalization of the clinic.	Improved health and timely treatment of diseases, leading to reduced morbidity rates.	Enhanced community health and well-being through regular healthcare services, resulting in an improved quality of life for community members.	Address the immediate healthcare needs of the community, contributing to sustainable development goals and promoting the well-being of local

				communities.
Clean Water Mechanism and Energy Supply - Implementing mechanisms for clean water supply and ensuring reliable energy sources within the community.	Increased access to clean water through the installation of water purification systems or improved infrastructure. Also, improved energy supply through the implementation of sustainable and reliable energy sources.	Enhanced hygiene practices and improved living conditions, resulting in reduced waterborne diseases.	Improved community health and increased resilience to climate-related challenges, leading to an improved overall quality of life.	Address critical aspects of community health and well-being, supporting sustainable development goals and promoting the importance of environmental sustainability.

Community Livelihood

The project aims to achieve several short-term outputs, including increased employment, tourist visits, and infrastructure improvements, by employing local community members, promoting eco-tourism, supporting micro- and small businesses, and developing infrastructure. These outputs contribute to medium-term outcomes such as enhanced economic well-being, cultural preservation, and improved living conditions. Ultimately, the long-term impacts of the project include improved livelihoods, sustainable economic growth, and increased community resilience.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Employment of Local Community - Providing job opportunities to members of the local community within the project.	Increased employment and income generation for local community members through project-related positions.	Enhanced economic well-being and reduced unemployment rates within the community.	Improved livelihoods, reduced poverty, and increased economic sustainability for the community.	Directly contribute to the objective of promoting inclusive and sustainable economic growth.
Eco-tourism Promotion - Developing and promoting eco-tourism	Increased tourist visits and engagement with local eco-tourism	Diversification of income sources, increased local entrepreneurship, and cultural	Sustainable economic growth, improved community resilience, and enhanced cultural	Align with sustainable development objectives by supporting

opportunities in the project area.	activities.	preservation through eco-tourism development.	preservation.	economic diversification and preserving the cultural heritage of the community.
Micro- and Small Business Support - Providing support and resources to develop micro- and small businesses in agricultural activities, livestock rearing, and fish farming.	Increased establishment and operation of micro- and small businesses in agriculture, livestock, and fish farming.	Improved income generation, employment opportunities, and food security within the community.	Enhanced economic stability, reduced poverty, and increased food self-sufficiency for the community.	Contribute to the objective of promoting sustainable and inclusive economic growth while addressing food security needs.
Infrastructure Development - Constructing infrastructure such as roads and houses in the project area.	Improved accessibility through the construction of roads and enhanced housing conditions through the provision of new houses or renovations.	Increased connectivity, improved transportation, and better living conditions within the community.	Boosted economic activities, increased social cohesion, and improved quality of life for community members.	Facilitate economic growth, improves living standards, and supports the overall development of the community.

Education and development

By building schools, establishing a library, providing scholarships, creating a church with a computer room and internet hub, and offering training workshops, the project aims to achieve short-term outputs such as infrastructure construction, scholarship awards, and training participation. These outputs contribute to medium-term outcomes such as increased access to education, improved digital literacy, and enhanced knowledge and skills. Ultimately, the long-term impacts include improved educational opportunities, increased human capital, and sustainable development within the community.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs	Outcomes	Impacts	

	(short term)	(medium term)	(long term)	
School and Library Construction and Scholarship Provision	Construction of a school and library infrastructure, awarding scholarships to eligible students to support their educational pursuits.	Increased access to quality education and improved literacy rates within the community.	Enhanced educational opportunities, increased human capital, and improved socio-economic development within the community.	Directly aligns with the objective of promoting inclusive and equitable quality education for all.
Church, Computer Room, and Internet Hub Establishment	Construction and operationalization of a church, computer room and internet hub.	Increased access to digital resources, improved computer literacy, and enhanced educational opportunities within the community.	Enhanced digital skills, improved educational outcomes, and increased connectivity for community members, fostering socio-economic development.	Support access to information and digital resources, promoting inclusive and equitable quality education.
Providing training and workshops on various topics such as sustainable development, fireproofing, firefighting, and Community-Based Conservation (CCB)	Participation in training sessions and workshops on sustainable development, fireproofing, firefighting, and CCB practices.	Increased knowledge and skills in sustainable practices, fire safety, and community-based conservation.	Improved environmental stewardship, enhanced disaster preparedness, and increased community engagement in conservation efforts.	Promote capacity building, knowledge transfer, and community empowerment, aligning with the objective of sustainable development and environmental conservation.

Monitor Biodiversity in the Project Area

The primary goal of the Project is to safeguard biodiversity, encompassing Mammals, Birds, Reptiles, Amphibians, Fishes, Mollusks, invertebrates, and Plants. In order to protect the biodiversity within the Project, efforts will be made to prevent deforestation by collaborating with local communities to preserve the forest. To effectively monitor the biodiversity in the Project area, motion-sensitive wildlife cameras will be utilized to capture images of medium-to-large animals, and the Integrated Biodiversity Assessment Tool (IBAT) will be employed. With regard to the existing biodiversity conditions, there are

24 IUCN Red List of Threatened Species that potentially occur within project area and its 50 km buffer area, including 11 critically endangered and 13 endangered species.

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Avoid deforestation and monitor biodiversity	Identify camera models; identify local biologist; design study using wildlife cameras	Photographs of medium-to-large mammals; Updated IBAT report	Increased awareness of project area's biodiversity	Avoid deforestation to protect biodiversity

2.1.18 Sustainable Development Contributions (VCS, 3.17)

The project discussed here encompasses various dimensions, including environmental, social, governance, and economic benefits. It aims to reduce deforestation and degradation, thereby conserving critical forest ecosystems and preserving biodiversity. By protecting these forests, endangered species such as the tree kangaroo and the bird of paradise can find a secure habitat. It also ensures essential ecosystem services like water regulation and carbon storage. Furthermore, it helps combat climate change by reducing greenhouse gas emissions and supporting global efforts to limit global warming.

Socially, the project has a significant impact on local communities, particularly in Papua New Guinea, where diverse languages and cultures are deeply connected to the forests. Preserving these forests helps safeguard cultural traditions intertwined with the forests and offers sustainable livelihoods through the promotion of sustainable forest management practices. Local communities can benefit from the sale of carbon credits, generating revenue to support community development projects like schools, health clinics, and infrastructure improvements. The project also creates employment opportunities in forest conservation and sustainable forest management, contributing to poverty reduction.

Moreover, the project encourages sustainable development by promoting practices like agroforestry and ecotourism. These practices provide alternative income sources for local communities while fostering forest conservation. By protecting endangered species' habitats and preserving the forests' ecological integrity, the project actively contributes to biodiversity conservation.

In terms of governance, the project addresses challenges faced by the forestry sector, such as illegal logging and corruption. It promotes sustainable forest management practices, monitors activities, and fosters transparency. Importantly, local communities are actively engaged in

decision-making processes related to forest management, ensuring their perspectives and knowledge are considered. This inclusive approach promotes social cohesion, reduces conflict over forest resources, and fosters effective governance structures and institutions in the forestry sector.

Economically, participating in the project enables the country to generate revenue that can be invested in sustainable development projects, infrastructure development, education, and health services. The project also creates jobs in areas like protecting forests and managing them sustainably. This helps reduce poverty and support economic growth. It also encourages new investments and shows that Papua New Guinea is committed to sustainable development. This makes the economy stronger and promotes long-term growth, in line with the country's goal of becoming a prosperous nation by 2050.

Furthermore, the project promotes sustainable forest management practices to ensure the long-term economic viability of the forestry sector. By optimizing economic potential while preserving the forests, it strikes a balance between economic growth and conservation.

Monitoring and reporting provisions for the project involve establishing a dedicated monitoring team or engaging external experts to ensure data collection, analysis, and reporting are conducted accurately and impartially. The reports can be shared with relevant stakeholders, including government agencies, local communities. Regular stakeholder engagement will be implemented to incorporate their perspectives into monitoring and reporting processes.

By integrating these provisions for monitoring and reporting, the project ensures transparency, accountability, and the effective tracking of its contributions to the nationally stated sustainable development priorities of Papua New Guinea.

2.1.19 Implementation Schedule (CCB, G1.9)

Date	Milestone(s) in the project's development and implementation
12 th April 2007	Skywalker Global Resources Company (PNG) Limited ("SWGR") (former name "Dali Company Ltd") was established on 12 th April 2007 to manage the Maimai Integrated Agro-forestry Development Plan at the Nuku forest area in the West Sepik (Sandaun) Province of Papua New Guinea.
2 nd April 2009	"Special Agricultural and Business Lease" ("SABL") is granted to Nuku Resources Limited ("NRL") on 2 nd April 2009 for a period of 99 years from 6 th March 2009 under the 'Lease-Lease Back Arrangement' with the customary landowners pursuant to Section 11 of the Land Act 1996. All that piece of land known as Portion 26C in West Sepik Province containing an area of 239,810 hectares ("the 26C Land").

3 rd April 2009	“Agricultural Sub-lease Agreement” has been established between NRL as the landlord and SWGR as the tenant on the 26C Land for 50 years lease term commencing 3rd April 2009. The sub-lease to SWGR was accepted by the Department of Land & Physical Planning, Papua New Guinea and registered in the Register of State Leases.
2008 - 2018	Logging Permit • “Registration of Forest Industry Participant Under the Forestry Act” approved by Papua New Guinea Forest Authority, National Forest Service on 16th April 2008. • “Provisional Approval on Integrated Agro-forestry Project proposal over Portion 26C in Nuku, Sandaun Province” from the Department of Agriculture and Livestock, Papua New Guinea on 1st June 2010. • “Timber Authority for Roadline Clearance TA10-63” to SWGR on 23rd August 2010. • “Memorandum of Understanding” between SWGR as the Developer and NRL as the Landowners on 14th January 2012. • “Project Agreement” between SWGR and NRL on 12th October 2015 was made for the purpose of securing the parties’ mutual interest in the development of the Maimai Integrated Agro-forestry Development Plan on the 26C Land including the forest area therein. • Approval for “Logging plan on Portion 26C” from Office of the Managing Director, National Forest Service, Papua New Guinea Forest Authority on 8th June 2017. • Grant of “Timber Authority for Roadline Clearance TA10-108” and “Timber Authority for Roadline Clearance TA10-109” to SWGR on 30th January 2018.
2016	• ILG re-registration under the Land Groups Incorporation (“ILG”) (Amendment) Act 2009: • Provide financial and technical support to the customary landowners for their ILG re-registration exercises. • Assisting NRL to liaise with the National Identity (“NID”) Office for the issuance of NID cards to the customary landowners (prerequisite for the ILG registration process).
2018 - 2021	V Carbon ESG Group has been appointed since 2018 to coordinate various activities related to investigating, discussing, conducting feasibility studies on, implementing, managing the REDD+ initiative and carbon credit projects.

1 st November 2021	Start date of GHG accounting period pursuant to the board resolution of NRL on 1 st November 2021.
2022	Provide financial and technical support for awareness trips by NRL directors and landowner leaders to villages within the Project Area to explain the concept of REDD+ initiative and carbon credit projects and collect updated demographic information for project planning. “Memorandum of Agreement (MOA)” between Skywalker Construction (PNG) Limited (subsequently changed name to V Carbon Maimai (PNG) Limited) and Nuku Resources Limited on 12th December 2022 has designated V Carbon ESG the right to oversee, operate and administer the day-to-day functions and operation of the projects (including the Carbon Credit Trade) in relation to the GHG Reduction Programme at the Nuku Maimai forest.
2023-2024	Liaise with the National Identity (“NID”) Office’s headquarter at Port Moresby, National Capital District and provincial representative office at Vanimo, the Provincial Capital of West Sepik Province for sending staff team to the Project Area for the issuance of NID cards to the customary landowners (prerequisite for the ILG registration process). Provide financial and technical support to the customary landowners for their ILG re-registration exercises including: • Training session by Mr. Freddie Alei, Senior Lecturer of University of Papua New Guinea on 7th July 2023 for the landowner leaders on the rights of the customary landowners and how to protect their rights through the ILG registration under the Land Groups Incorporation (Amendment) Act 2009. • Documenting the genealogy of landowners • Identify the on-ground structures of high conservation value to the people and prepare the ILG demarcation maps for submission and registration in the Land Registry at the Department of Land and Physical Planning. • Drafting constitution of individual ILGs “Memorandum of Agreement (Supplemental)” between V Carbon Maimai (PNG) Limited and Nuku Resources Limited on 25th August 2023 superseded the MOA on 12th December 2022 with major changes: • Project term: 25 years; • Project area: 102,779 hectares; • Benefit sharing of the beneficiary group increase to 60% of net

	revenue after costs pursuant to the National REDD+ Development Guidelines launched on 3rd August 2023. "Acknowledgement and Endorsement for Nuku Maimai Carbon Offset & Credit Trading Project" is issued by Climate Change and Development Authority (CCDA) on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-national government agencies, its partner and joint project proponent "V Carbon ESG Group" to progress the said project. The letter also serves as acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126. Site visit by V Carbon and consultants in August 2023 for sampling guidelines and stakeholders (including landowners, women representatives and local government agencies) interview. Onsite sampling training to local landowners by technical consultant and V Carbon team in September 2023. Detailed sampling exercises by landowners under the coaching of V Carbon in the last quarter of 2023. At the conference with landowner leaders; government officers of Nuku District and West Sepik Province and V Carbon in November 2023 at Port Moresby, the Nuku Maimai Project got full support from the government agencies and the landowner leaders and V Carbon was allowed to have the on-site FPIC Program with CCDA officers. On-site FPIC Program by NRL, V Carbon witnessed by CCDA officers during 11th -18th January 2024 Various meetings with landowners, the Provincial and National NID offices and ILG Registry regarding the issuance of birth certificates and NID cards and ILG registration.
15 th July 2024	Benefit Sharing Agreement with Nuku Resources Limited.
TBC	Validation audit VCS+CCB
TBC	Issuance first VCU
Ongoing	Monitoring assessment activities & verification
31 st October 2046	End date of the GHG accounting period

2.1.20 Risks to the Project (CCB, G1.10)

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Extreme droughts (Natural-induced)	Since mid-2015, Papua New Guinea (PNG) has been experiencing drought and frost due to the El Niño Southern Oscillation (ENSO) phenomenon, causing the forest to become drier and more flammable, which could threaten the project's climate and biodiversity goals.	V Carbon will enhance the intensity of forest fire prevention and wildfire suppression activities.
Wildfires. (Human-induced)	Traditional communities in the project area utilize fire as a landscape management tool. This fire can occur in the forest, particularly during periods of drought, and undermine the climate benefits of the endeavour.	V Carbon will assist with conflagration prevention and suppression. These actions include training and qualification, the training of volunteer fire brigades and the purchase of equipment to fight forest fires.
Hunting and overfishing. (Human-induced)	Hunting and fishing are culturally significant and fundamental to the way of life of the indigenous communities residing in the project area. These activities are presumed to be conventional and low impact. On the other hand, these activities are conducted in a disorganized manner, without any monitoring or control, which can be detrimental to the project's biodiversity goals.	If necessary, V Carbon will promote fauna monitoring with an emphasis on animal species, as well as environmental education initiatives.
Unavoidable unplanned deforestation. (Human-induced)	Traditional communities in the project area advocate for deforestation in order to expand pastures or plantations. Typically, these are small-scale and low-impact activities; however, over time, they can diminish the anticipated climate benefits.	The project will develop sustainable land use activities, training, and capacity building with the objective of enhancing agriculture landscape management to increase community productivity and reduce pressure on forests.
Political (Human-induced)	Certain groups of project stakeholders can mobilize against the implementation of project activities in accordance with their own agendas, jeopardizing the community benefits of the project.	V Carbon follows a particular protocol for social engagement, which includes a stage aimed at obtaining free, prior, and informed consent and the development of mechanisms for continuous communication, along with a

grievance and redress procedure.

2.1.21 Financial Sustainability (CCB, G1.12)

A Project Development Committee will be established to make financial decisions on operations and benefit sharing to ensure the sustainable financial and community development. The Board members of the Project Development Committee will consist of the ILG representatives, financial experts and project managers from V Carbon ESG (PNG) Limited and Kingbridge Capital Asset Management Limited. Strategic decision-making responsibility will remain with the community decision-makers, the ILGs representatives, to enable a bottom-up decision-making process. External board members will provide advice and guidance in specific areas of need and utilize expertise in international finance.

The beneficiary group including the Project Area Landowners, affected Local Level Government and Provincial Government will share 60% of the net revenues after costs from GHG emissions reductions according to the Benefit Sharing Agreement between Nuku Resources Limited and V Carbon Maimai (PNG) Limited dated 15th July 2024. Based on the understanding of the local socio-economic development, it is believed that the local economy of Maimai cannot currently absorb large flows of capital in the form of cash. To mitigate negative feedbacks from absorptive risk, financial capital will be partially converted to local community investment as described in the Community Development Plan, which include plans covering construction of roads and infrastructure, capability building, employment and alternative livelihoods etc. The investment planning under the Community Development Plan will not only fulfil current social and economic needs of the community, but also provide opportunities to families to generate income and enable long-term financial security and social benefits.

A budget plan has been established based on early discussion with ILGs on the planning and execution of resource allocation and the projected flows of funds for project implementation in the Community Development Plan and the Monitoring Plan. Regular board meetings and community engagement will be held to ensure the financial decisions have been well communicated and adjusted timely.

Based on the market research and analysis being conducted, it is foreseen that with the current trend of increasing interest in Nature-Based Solutions and long-term demands for carbon credits are strong indications that there will be sufficient guaranteed income throughout the project period, to secure disbursements of the benefit payments to the Maimai Community.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Conditions Prior to Project Initiation and Land Use Scenarios without the Project (VCS, 3.13; CCB, G2.1)

Large areas of land have been designated by the PNG government as "mini-estates" and, to a lesser extent (and on a smaller scale), as "forest concessions" (FC) or "special agricultural

business leases" (SABL), respectively, for the purpose of establishing forestry or agricultural plantations. The approval of working plan of logging activities to landowner firms or incorporated land groups that have contracts with businesses for the clear-cutting of their forest, ostensibly for agricultural or forest plantation development. With the aid of government representatives, businesses commonly ask for operating permits from those who speak for the neighbourhood or property owners.

Under SABL, businesses that were granted a sublease on forestland agreed to construct a large-scale agricultural development (such as oil palm plantation), as well as other benefits including a road system, medical facilities, and educational facilities.

Logging poses a threat to these woods, the biodiversity they contain, and the local population, according to historical evidence. As mentioned above, industrial logging is the primary land use, which is supported by the scientific literature and remote sensing observations. The most likely outcome in the absence of the project is ongoing logging near accessible areas, followed by the expansion of the road system deep into the interior and upwards of the mountains. As of 2000, 97% of Nuku land cover was >30% tree cover. From 2000 to 2020, Nuku experienced a net change of 160 ha (< 0.1%) in tree cover (Global Forest Watch)¹⁴.

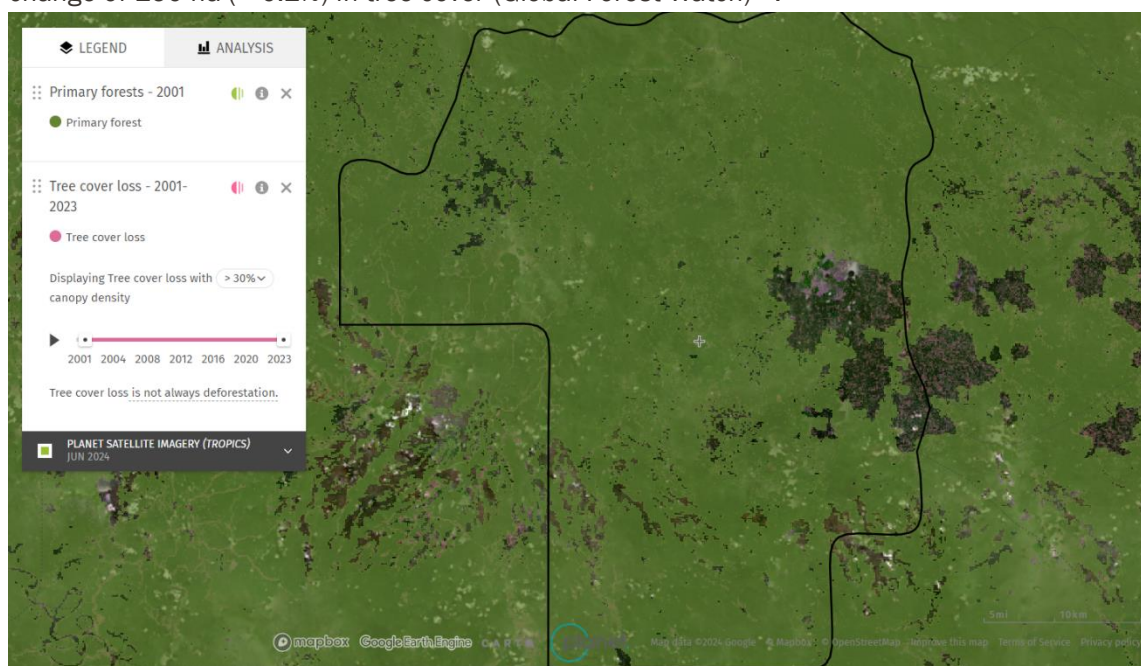


Figure 7: Plant Satellite Image

Source: The Global Forest Watch (GFW) Platform Online.

2.2.2 Most-Likely Scenario Justification (CCB, G2.1)

¹⁴ GLOBAL FOREST WATCH:

<https://www.globalforestwatch.org/dashboards/country/PNG/2/3/?map=eyJjYW5Cb3VuZCI6dHJ1ZX0%3D>

The additionality analysis demonstrates that the project is not the most economical option as identified in Step 2 and Step 3.

The most lucrative alternative land use is large-scale agricultural, therefore clearing the area and carrying out the authorization is the most likely initial scenario.

Either Step 2 (investment analysis) or Step 3 (barrier analysis), or both, must be completed in order to use the VCS Additionality Tool. The chosen barrier analysis is finished below.

Step 3: Barrier Analysis

Without the funds earned from the sale of the GHG credits, there are several obstacles that would prevent the project activity from being carried out, but these obstacles do not prevent at least one of the alternative project scenarios from being carried out. The following describes these obstacles.

Barrier 1: Access to funding

A project to conserve forests must have a considerable initial expenditure. The budget of the government of Papua New Guinea is already overstretched for a developing nation. As a result, the government is compelled to look to foreign NGOs or government donors for money for conservation programs unrelated to carbon. Since there is a certain amount of funding available and there are frequently onerous administrative requirements, groups of landowners are unable to apply.

In PNG, there are other humanitarian and NGO programs, but none of them is as effective or long-lasting in reaching the forest discussion results that this project will. Instead of providing cash for landholders to build and advance carbon projects through the VCS, these programs are largely focused on resolving governance and formulating policy. Additionally, despite the fact that monies are available, the majority of them are taking longer than expected to reach PNG due to the country's governance issues. The main aid organizations and non-governmental organization (NGO) initiatives operating in Papua New Guinea are listed below to show that the activities are not having the desired impact on forest conservation. All of the other initiatives are either afforestation efforts or have extra cash streams from logging. These are the AID/NGO programs:

World Wildlife Fund (WWF) - Forest Conversion Project - In nations (including Papua New Guinea) where the HCV idea is new or unproven, WWF takes the position that pilot programs should be started at both the landscape and concession levels. Even while WWF contributes some seed money, in-kind contributions (expertise, staff time) should be encouraged to prevent becoming too reliant on WWF. As of the writing of this article, WWF has no active projects or offices in PNG.

AUSAID - In 2012–2013, the Australian government gave PNG aid totalling more than AUD490 million. According to the PNG-Australia Partnership for Development, Australia's assistance to PNG is focused on four key areas: education (particularly higher education), health and

HIV/AIDS, law and justice, and transportation infrastructure. Forest conservation receives no funding. Through the Papua New Guinea-Australia Forest Carbon Partnership, the Australian government offers PNG assistance in matters pertaining to forests¹⁵. On 6th March, 2008, the Prime Ministers of Australia and Papua New Guinea formalized their REDD+ cooperation by creating the Partnership. Australia has agreed to provide up to AUD3 million in early funding, including technical, scientific, and analytical support for the creation of comprehensive government REDD+ policies. As of writing, this program is temporarily on hold.

Other baseline alternatives, including timber operations or agricultural production, don't have the same financial access problems. These operations result in commercially valuable goods that are in high demand, and the logging or agricultural enterprise can turn a profit. As a result, logging and agriculture would have been supported by private funding. It wouldn't be necessary to solicit financial support from an NGO or a government contributor. Therefore, logging is not affected by this obstacle.

Barrier 2: Poor enforcement of Government policies & laws on sustainable land management

The government of Papua New Guinea (PNG) has acknowledged the importance of the relationship between its people and nature. The country's constitution includes provisions for protecting various elements of biodiversity, such as birds, animals, fish, insects, plants, and trees. Legislation such as the Fauna Act/1982, Conservation Areas Act/1980, 1992, Crocodile Trade Act/1982, and International Trade Act/1982 explicitly safeguard biodiversity.

Despite these conservation measures in the legal framework and the efforts of international NGOs and donors, implementing successful conservation activities in PNG remains a significant challenge. The predominant land tenure system, where communities own 97% of the land, makes it difficult for the government or conservation organizations to acquire land for conservation purposes. Therefore, involving communities in establishing Wildlife Management Areas (WMAs) was seen as compatible with PNG's land tenure system. The constitution empowers landowners to participate in conservation efforts on their own land. However, a study assessing the effectiveness of some WMAs in PNG found it unclear whether on-the-ground management practices had actually changed as a result of official WMA recognition. The study pointed out that international NGOs tend to focus more on creating WMAs but neglect the implementation and enforcement of WMA management plans. For example, despite the declaration of the Tab Island WMA by Siar landowners, destructive fishing practices and deforestation continue unchecked. The study concludes that the PNG government lacks the financial resources to actively enforce management plans and relies on NGOs, many of which have left the country due to safety concerns.

¹⁵ PNG-Australia Forest Carbon Partnership signed agreement addresses the global challenges of climate change and reducing green house gas emissions from deforestation and forest degradation in PNG. (adopted from <https://www.dfat.gov.au/about-us/publications/Pages/png-australia-forest-carbon-partnership-signed-agreement>)

In contrast, weak policy enforcement actually benefits logging and agricultural conversion. Various publications provide evidence of illegal logging, unregulated agricultural expansion, and noncompliance with government forestry and agriculture policies. This lack of compliance suggests that implementing (unsustainable) logging or agriculture is actually easier in Papua New Guinea, as poor enforcement of government policies and legislation does not act as a barrier to these land uses.

Barrier 3: The need for sustainable revenue generation

In rural areas of Papua New Guinea (PNG), formal employment opportunities are typically scarce. While many rural individuals in PNG earn cash income from small-scale farming, the informal economy, or remittances from family members employed in urban areas, these amounts are usually modest and inconsistent. As previous conservation efforts, without the support of carbon finance, have failed to generate significant and consistent income for landowners, there is a reluctance to conserve vast forested areas in the absence of such financial support.

Consequently, direct financial payments from logging or commercial agriculture to local resource owners serve as a significant incentive to accept the commercial exploitation of forest resources. The nature and magnitude of these financial benefits provided to resource owners in the forestry sector vary between projects and can evolve over time as agreements are renegotiated to meet stakeholder expectations or changing circumstances. A common practice across all projects is the payment of timber royalties, which are calculated based on the volume of harvested timber¹⁶. Under the current system, irrespective of the free on board (FOB) price of round export logs (PGK250/m³), landowners only receive royalties ranging from PGK10 to PGK30/m³, the average royalty is about PGK14 (US\$4.2) per cubic meter in 2011¹⁷. Based on the estimated from FOA – State of the World’s Forest 1999, an average of 0.60 cubic meter timber produced from per ha of forestland¹⁸. With the information quoted above, and maintaining agnostic to inflation during the period, we can roughly estimate that the landowner could have gained about US\$220,152.62 from the logging project.

In 2006, whereas financial returns to landowner from logging concessions average PGK10-PGK25 (US\$3.00 – US\$7.50) per cubic meter. Sawn timber produced by resource owners could

¹⁶ The PNG Forestry Act (1991), under Section 120, describes conditions for levy payments to the PNG government and timber royalty payments to the FROs to be made by all entities conducting timber harvests. The current timber royalty rate system uses a minimum fixed-rate per m³ of timber harvested. This minimum fixed-rate per m³ varies between species. The timber royalties are collected by the PNG government from the logging companies and then redistributed to the FROs.

¹⁷ Bob Tate, Executive officer, Forest Industries Association of PNG. Post report left out key points. The National, Friday 11th November 2011. (adopted from: <https://www.thenationl.com.pg/post-report-left-out-key-points-2/>)

¹⁸ The data estimated through the information provided by Food and Agriculture Organization: 23. Papua New Guinea. (Adopted from: <https://www.fao.org/4/x6900e/x6900e0q.htm>)

fetch up to PGK500 (US\$150) per cubic meter at domestic market and up to PGK1500 (US\$450) per cubic meter at overseas market¹⁹.

Common practice analysis

In Papua New Guinea, it is uncommon for landholder companies, including the project proponent, to conserve forested areas solely for financial gain when carbon finance is not available. The V Carbon Nuku Maimai Project, initiated by the project proponent, is one of the few AFOLU (Agriculture, Forestry, and Other Land Use) projects of its kind that will undergo validation under the Verified Carbon Standard (VCS) in Papua New Guinea. The proposed AFOLU project activity under the VCS is not considered the baseline scenario and is therefore considered it as additional.

2.2.3 Community and Biodiversity Additionality (CCB, G2.2)

No active projects or activities to lessen deforestation in the area exist due to a lack of governmental and local resources. Even though the PNG government has put out proposals to stop the sale of roundwood that has been illegally harvested and minimize illegal logging, logging and timber exports within PNG remain at a high level (The Oakland Institute, 2016)²⁰. To the best of our knowledge, the area has no other active projects to stop deforestation and encourage sustainable land management. These elements make it evident that the proposed project activity satisfies the additionality requirement.

2.2.4 Benefits to be used as Offsets (CCB, G2.2)

None.

2.3 Safeguards and Stakeholder Engagement

2.3.1 Stakeholder Identification (VCS, 3.18, 3.19; CCB G1.5)

V Carbon's Stakeholder Engagement Plan outlines the strategies and approaches for engaging different stakeholders in the project. The plan aims to ensure inclusive and effective involvement of stakeholders throughout the project life cycle and establish clear communication channels to facilitate information sharing, collaboration, and feedback.

We identified and categorized different stakeholder groups relevant to the project, such as: Landowners, Government agencies and policymakers, Local communities and indigenous groups, non-governmental organizations (NGOs), Research institutions and academic

¹⁹ Yati A. Bun (Executive Director) and Bazakie Baput (Forestry Program Coordinator), Foundation for People and Community Development, Port Moresby, Papua New Guinea. Community Forestry benefits customary landowners: Case study on Madang Province Papua New Guinea, edited April 2006.

²⁰ The Great Timber Heist: The Logging Industry in Papua New Guinea. The OAKLAND INSTITUTE, 2016. (Adopted from: <https://www.oaklandinstitute.org/great-timber-heist-logging-industry-papua-new-guinea>).

organizations, etc. Then, we conducted a stakeholder analysis to understand their interests, influence, and potential impacts on the project and identified key individuals or organizations within each stakeholder group that should be specifically engaged.

After identified the stakeholders and impact areas, the project initiators engage in a process of consultation and engagement. This involves reaching out to the stakeholders to gather their input, concerns, and perspectives on the project. Consultation methods included meetings, workshops, interviews, surveys, and focus groups. The goal is to ensure that all relevant stakeholders have an opportunity to express their views and contribute to the project design and implementation.

Stakeholder engagement is an ongoing process that requires continuous monitoring and feedback. As the project progresses, new stakeholders may emerge, and the interests and priorities of existing stakeholders may change. Regular communication and feedback loops are established to ensure that stakeholders remain engaged and informed about the project's progress and to address any emerging concerns or issues.

2.3.2 Stakeholder Descriptions (VCS, 3.18, 3.19; CCB, G1.6, G1.13)

Stakeholder	Rights, interest, and overall relevance to the project
Maimai community	Right: - the right to a clean and healthy environment - the right to be informed and consulted about decisions that affect their community. - the right to participate in the project's benefits. Interest: - forest preservation - community well-being - sustainable livelihoods - capacity building - involvement in decision-making processes Overall Relevance: The Maimai community plays a crucial role in the success of the project. Their active participation, support, and engagement are essential for effective forest conservation and sustainable livelihood initiatives. Respecting their rights, addressing their concerns, and ensuring they benefit from the project are important for maintaining positive community relations.
Landowner	Right: - the right to fair compensation for the use of their land - the right to be involved in decision-making processes. - the right to have their concerns addressed. Interest: - fair compensation - land protection - land tenure security

	• sustainable land use • income generation opportunities Overall Relevance: Landowners hold the land where the project is implemented. Respecting their rights, providing fair compensation, and involving them in project planning and decision-making processes are crucial for securing their support and cooperation. Collaboration with landowners is essential for implementing sustainable land management practices and ensuring the project's long-term success.
V Carbon	Right: • the right to develop and implement the project in accordance with applicable laws and regulations. • the right to a fair return on investment Interest: • emission reductions • financial viability • stakeholder engagement • reputation management Overall Relevance: The project developing partner and joint proponent is responsible for the successful implementation of the project. They provide the necessary resources, coordination, and management expertise. Ensuring compliance with regulations, engaging stakeholders effectively, and achieving emission reduction targets are key priorities. The project developing partner and joint proponent's commitment and accountability are essential for the project's credibility and long-term sustainability.
District and local level Governments	Right: • the right to participate in decision-making processes related to the project. • the right to receive information about the project's activities and impacts. • the right to advocate for the interests of the local community. Interest: • sustainable development • community welfare • environmental conservation • economic opportunities • capacity building • infrastructure development. Overall Relevance: The local government, representing the interests of the local community, plays a critical role in the project. They contribute to policy development, land-use planning, and coordinating local development initiatives. Ensuring their rights are respected, involving them in project decision-making, and addressing their concerns are crucial for effective implementation and sustainable outcomes.

West Sepik Province Government	Right: - the right to participate in decision-making processes related to the project. - the right to receive information and updates on the project's progress. - the right to advocate for the interests of the province and its communities. Interest: - sustainable economic development - forest conservation - poverty reduction - capacity building - revenue generation - infrastructure improvement Overall Relevance: The PNG Western Province Government is a key stakeholder in the project as it represents the interests of the province and its communities. They provide support in terms of policy development, monitoring, and enforcement. Engaging with the government, addressing their interests, and ensuring their active involvement are important for successful project implementation and achieving sustainable development goals.
Papua New Guinea National Government	Right: - the right to participate in decision-making processes related to the project. - the right to receive project information and updates. - the right to advocate for national interests and policies. - the right to enforce environmental laws and regulations - the right to monitor biodiversity conservation, and protect PNG's natural resources - the right to manage and regulate forest resources - the right to issue logging permits, and oversee sustainable forest management practices Interest: - forest conservation - climate change mitigation - sustainable development - international commitments - revenue generation - capacity building Overall Relevance: The PNG National Government holds a significant role in the project as it is responsible for national policies, regulations, and international commitments related to forest conservation and climate change mitigation. Collaboration with the national government, addressing their interests, and aligning the project with national priorities are crucial for policy coherence, securing financial and technical support, and ensuring the project's long-term success.

	CEPA's involvement in the project is vital for assessing the environmental impact, biodiversity conservation, and adherence to environmental regulations. They provide expert advice, conduct environmental assessments, and monitor the project's compliance with environmental standards. PNGFA provides expertise in forest management, monitoring forest carbon stocks, and verifying emission reductions. They collaborate with other stakeholders to develop sustainable forest management plans and ensure the project aligns with national forest policies.
Climate Change and Development Authority (CCDA)	Right: - the right to coordinate and regulate climate change initiatives in PNG Interest: - mitigating climate change impacts - preserving PNG's forests - promoting sustainable development Overall Relevance: The CCDA plays a crucial role in formulating policies, providing technical expertise, and overseeing the implementation of the project in PNG. They ensure that the project aligns with national climate change strategies and promotes the country's sustainable development goals.
United Nations Food and Agriculture Organisation (UNFAO)– PNG	Right: - the right to support and facilitate sustainable development initiatives, in collaboration with the PNG government and other stakeholders. Interest: - promoting climate change mitigation - sustainable forest management - capacity building - poverty reduction Overall Relevance: UNFAO provides technical expertise and guidance on policy frameworks. They assist in project design, monitoring, and evaluation, ensuring that the project aligns with international standards and contributes to the achievement of sustainable development goals.
NGO	Right: - the right to advocate for environmental conservation, community engagement, and the protection of local rights and interests. Interest: - promoting environmental sustainability, social equity, local community empowerment, and participatory decision-making processes Overall Relevance: NGOs ensure that local communities' rights are respected, facilitate stakeholder consultations, and help in capacity building for effective project implementation.
Research & Educational Institutions	Right: the right to conduct scientific research, provide technical expertise, and educate stakeholders on sustainable forest management and climate change.

	Interest: • generating knowledge • conducting research • capacity building • promoting evidence-based decision-making Overall Relevance: Research and educational institutions contribute to the project by conducting studies on forest carbon stocks, biodiversity, and socio-economic impacts. They provide technical guidance, training programs, and knowledge sharing platforms, fostering innovation and helping stakeholders make informed decisions.
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2.3.3 Stakeholder Access to Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

Throughout the project development and implementation, V Carbon will make all project documentation, including project description documentation, monitoring reports and other relating supporting documents fully available to all affected and interested stakeholders. Booklets and flyers will be made available to provide a summary of the project for easy understanding and effective communication of key project information. The project has the following mechanisms to facilitate communications and ensure information availability:

Printed Documentation: Related project documentation will be made available physically in the offices of the Community Council and other facilities that the project defines. In sight of the poor internet connections and digital access of Maimai community, this mechanism facilitates delivering information to local community members and stakeholders. Printed booklets and flyers will be made available for distribution to local community members during community engagement activities, as well as deliver family-by-family across the settlements to ensure the coverage of the outreach.

Oral communication: This has been a main mechanism of communication with the local communities. Project design has been defined through stakeholder engagement workshops and general assemblies through oral communication. During monitoring periods, further meetings and stakeholder engagement activities will be arranged to update the local communities and present activities' progress.

Online publications: Documents related to the project are available on the VCS and CCB websites. A project website will be established to promote the project, where all related project documents will be published on the project website.

E-mail: All update of project documentation in digital copies will be sent to the project email list, including ILG representatives and other stakeholders whom we have previously had email contact of. Email contacts of the relevant stakeholders will be actively collected during stakeholder engagement activities. Email subscription will be made available on project website upon request.

2.3.4 Benefit Permanence (CCB, G1.11)

Nuku Resources Limited and V Carbon enable sustainable development throughout the project area. The intent is to provide other cash crops and opportunities that would engender economic growth. The other aspect that we are working towards is assisting the ILGs and clans in achieving their 6 main concerns which is aligned with the PNG National REDD+ Benefit Sharing and Distribution System guidelines, including Community projects; Infrastructure development grants; Future generation trust; Local savings and loans societies; Financial literacy training; and Micro- and small business support. The project will provide the means and the support to ensure meaningful progress around these 6 key topics.

2.3.5 Dissemination of Summary Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

All communication channels described in section 2.3.3 will be used to disseminate project summaries. The summaries of project documentation and monitoring report will be translated into PNG Pidgin to ensure readability of the local community members.

The summaries of project documentation and monitoring report will be delivered and presented to the relevant stakeholders via email and stakeholder engagement activities including workshops, meetings, and general assemblies once available.

The administration team will actively arrange the distribution of the physical copies of printed documentation at the Maimai community and upload of the project summaries on the project website.

The leaders and members of the ILGs will further support and ensure the dissemination of the summary project documents to the members of the communities. It has been agreed and well understood by the leaders and members of the ILGs on their roles to disseminate and transmit all the project information to the communities. Once the verification process is completed, reviewed and audited summary documents will also be posted in the VCS and CCB websites.

Further copies will be made available for other interested stakeholders upon request.

2.3.6 Informational Meetings with Stakeholders (VCS, 3.18, 3.19; CCB, G3.1)

Informational meetings with communities and local stakeholders are an essential part of engaging and consulting with the affected parties in project. These meetings serve as a platform for sharing project details, gathering feedback, addressing concerns, and fostering dialogue between project implementers and the community.

Prior to the meetings, the project team collaborates with local representatives, government agencies, and community leaders to determine the most suitable dates, times, and venues for the meetings. Consideration is given to factors such as accessibility, accommodating community schedules, and ensuring representation from various stakeholders.

Publicity efforts are undertaken to ensure that community members and relevant stakeholders are aware of the meetings and have an opportunity to attend. Meetings for information are always advertised at least one month before our trip. V Carbon sends regional representatives to every ward in Maimai to explain where, when, and why these meetings will be conducted. These gatherings are normally held every two years, and V Carbon keeps in touch with the local communities through its team of Community Relations Officers (CROs) as new information or milestones are reached via phone call and messaging application.

2.3.7 Risks from the Project and No Net Harm (VCS, 3.18, 3.19)

The project focuses on the conservation of pristine forests. The project does not engage in planned logging activities but rather maintain the current state, ensuring no additional risks are generated.

2.3.8 Community Costs, Risks, and Benefits (CCB, G3.2)

Since 2021, many meetings have been held with the local communities and ILGs to discuss the project. Discussion was conducted around the comparison between the potential benefits from logging under a 99-year SABL arrangement and the community conservation related benefits. The potential costs, risks and monetary and non-monetary value of the benefits were presented and discussed under the guidance of V Carbon. The community concluded from this comparison and their discussions that their community conservation efforts will bring them more benefits than logging due to the following main rationale:

- It is well understood and highly valued by the local communities the conservation value of the forest area and its positive impacts on climate change and biodiversity;
- It is observed by the local communities that the deforestation has caused the loss of the biodiversity of the forest area, and may lead to vulnerability to natural disasters;
- The national government is supportive on REDD+ projects, but not deforestation activities such as logging.

The Community Development Plan has been suggested bottom-up by the local communities, to define the social-economic development actions to further enhance the potential benefits of the project.

2.3.9 Information to Stakeholders on Validation and Verification Process (VCS, 3.18.6, 3.19; CCB, G3.3)

During the community meetings, information on the validation and verification process including its purpose, tasks involved and arrangement, etc. were being introduced to the Maimai community. It was explained that Project Documents for VCS and CCB standards had to be drafted and went through validation and verification process. The local communities have well understood that their support and coordination is needed for the VCS+CCB audit to be

successful so that the carbon credits will be issued. It is being reminded that the integrity and accuracy of information provided by local communities is therefore important for the validation and verification.

2.3.10 Site Visit Information and Opportunities to Communicate with Auditor (VCS, 3.18.6; CCB, G3.3)

Maimai community has also been kept informed of the likely date for the auditor's visit at least one month in advance. Once a date for the site visit has been confirmed, the community leader (chairman of the ILGs) would be informed in the first mobile phone communication possible, who would support to inform other local villagers. All local stakeholders would be informed in writing via email at the same time.

V Carbon would arrange the logistics for a site visit to the project area for the auditor team. On the day of the visit, the auditors would be introduced, and the purpose and the details on how the audit would take place would first be shared with the whole community at a public community meeting. Interview sessions would be arranged in forms of focus-group meetings. Representatives of the local ILGs, neighbouring communities, local level government and district development authority officials would be informed of the auditor's visit and be invited to also attend the focus-group meetings. During the visits and meetings of the audit, available representatives of the community would attend to directly answer the questions of the auditors in the spaces that the auditor requires.

2.3.11 Stakeholder Consultations (VCS, 3.18; CCB, G3.4)

We worked closely with communities to develop and define many of the project design. Through a series of stakeholder engagement workshops and meetings, we have built the REDD+ Project on a bottom-up participatory manner. This included identification of the project zone, participatory mapping of project zone, identification of risks to the communities, prioritization of project activities, discussion of the potential financing and implications for the project, brainstorm of the community development needs and plan. During the engagement sessions and our communication with the local communities throughout many years, V Carbon has fully explored and understood the social and economic needs of the local communities.

Questionnaires have been further conducted to understand the opinions of ILGs representatives on project design, including current status, areas of concerns, and suggestions of various topics including the environmental, social and economic impacts of the project, land uses, biodiversity, employment, education levels, gender issues of the community, expected outcomes of the projects, etc. Based on the findings and outcomes of the stakeholder consultations, V Carbon has detailed the project design accordingly.

Date of stakeholder
consultation

Since 1-11-2021

Stakeholder engagement process	The stakeholder engagement process for the REDD project aimed to ensure cultural appropriateness, inclusivity, and effective communication. The following steps were taken: Announcements and Meeting Dates: Prior to the stakeholder consultations, announcements were made in the village and surrounding areas to inform the community about the upcoming meetings. The dates and locations of the meetings were communicated well in advance, allowing stakeholders to plan their participation. Language and Gender Sensitivity: Recognizing the importance of language and gender sensitivity, efforts were made to ensure effective communication and meaningful engagement. Local languages were used during the consultations to facilitate clear communication and understanding. Translation services were provided if necessary. Additionally, gender balance was maintained in the consultation process, ensuring that women's voices were equally represented and heard. Documentation of Outcomes: The outcomes of the stakeholder consultations were documented through various methods, including photography and note-taking during interviews and discussions. These approaches aimed to capture the essence of the consultations, stakeholders' feedback, and their suggestions. Photographs were taken to visually document the participation of stakeholders and the activities conducted during the consultations. Interview notes were taken to record the specific comments, concerns, and suggestions expressed by stakeholders.
Consultation outcome	During the stakeholder consultations for the REDD project, stakeholders did not raise significant concerns about project risks. Instead, the discussions primarily focused on how stakeholders could contribute and assist in the project development. The consultation outcome can be summarized as follows: Consent to Project Design and Implementation: Stakeholders expressed their consent and support for the project design and its implementation. They were enthusiastic about participating in the project and recognized the potential benefits it could bring to their community and the province. Limited Concerns on Risks: While stakeholders did not raise many concerns about project risks, it is still important to acknowledge that risks need to be carefully assessed and addressed. The project proponents and the consultancy firm, in collaboration with relevant experts, conducted thorough risk assessments to identify and mitigate potential risks associated with the project. Stakeholder Assistance and Collaboration: Stakeholders actively

	expressed their willingness to contribute and assist in the project development. They showed a strong commitment to participating in project activities and working collaboratively with the project team. Their focus was on how they could support the project's success, rather than expressing concerns about potential risks.
Stakeholder input	Stakeholder Input: During the stakeholder consultations, due consideration was given to all input received. The project team carefully reviewed and analysed the feedback, suggestions, and concerns expressed by the stakeholders. This input was taken into account to inform decision-making processes and project design. Updates to Project Design: Based on the stakeholder input received during the consultations, updates were made to the project design where appropriate and necessary. The project team carefully assessed the feasibility and practicality of incorporating the suggestions and concerns raised by the stakeholders. Where updates were deemed necessary, they were implemented to ensure that the project design reflected the input and addressed the concerns of the stakeholders. Where updates were not made, the justification was based on technical, environmental, or social considerations. The project team ensured that stakeholders were provided with transparent explanations for the decisions made and engaged in continuous dialogue to maintain open lines of communication.

Summary of comment received	When comment was received	Actions taken
Stakeholder expressed interest in participating in project activities and offered assistance in project development.	1-11-2021	The stakeholder was included in the project working group and assigned specific tasks aligned with their skills and interests.
Stakeholder mentioned the need for capacity-building programs to enhance local community skills and knowledge related to the project.	1-11-2021	A capacity-building plan was developed, including training workshops and skill development programs tailored to meet the needs of the local community. The plan was integrated into the project design.

Stakeholder emphasized the importance of preserving traditional cultural practices and integrating them into project activities.	1-11-2021	The project design was updated to include provisions for the integration of traditional cultural practices, ensuring their preservation while aligning with project objectives. Collaboration with local cultural experts and community leaders was initiated to guide this process.
The villagers and the community expressing their desire for access to electricity	1-11-2021	Investment plan was developed to provide stable renewable energy support, improve quality of life, enhance economic opportunities, and enable access to communication networks for the community.

2.3.12 Continued Consultation and Adaptive Management (VCS, 3.18; CCB, G3.4)

All stakeholders are encouraged to provide any comments and inputs throughout the project period. The feedbacks gathered from stakeholders will be reviewed and considered by the relevant committees regularly. All feedbacks will be responded to in writing on how they will have been considered, and if any management adaptations they will have resulted in.

Annual Monitoring and Evaluation Meetings will be held to gather the comments and inputs of key stakeholders. Members of the Management Committee and the Project Development Committee, which consist of representatives of project proponents and ILGs, will be requested to attend the Annual Monitoring and Evaluation Meetings. Meeting agenda should include the project implementations and monitoring, budget and investment, prioritized actions, key updates, summary of stakeholders' feedbacks and proposed management adaptations, etc.. Meeting notes and outcomes will be shared with relevant stakeholders after the meeting for record and implementation.

2.3.13 Stakeholder Consultation Channels (CCB, G3.5)

At each stakeholder engagement meetings/workshops, all stakeholders are encouraged to express their comments and inputs directly. The stakeholders are also encouraged to use other format of communication channels after the meeting. Responsible contact person for any queries or comments are introduced in the meetings/workshops. The emails contact to the Committees are made available to all community members.

2.3.14 Stakeholder Participation in Decision-Making and Implementation (VCS, 3.18, 3.19; CCB, G3.6)

Within stakeholder consultation and participation processes for the project's design and implementation, participatory workshops, including women and youth engagement, have been carried out for the communities to express their perceptions, knowledge and expectations. Key project decision will be made by the Committees during Committee Meetings, in which implementation plan will be formulated. There will be representatives of different clans and women and youth representatives sit at the Board of the Committees to ensure the fair representation of cultural and gender variety.

2.3.15 Anti-Discrimination Assurance (VCS 3.19; CCB, G3.7)

The measures to ensure all entities are not involved in any form of discrimination or sexual harassment should promote inclusivity, diversity, and respect for all individuals involved.

We have developed some key steps that should be taken:

1. **Develop a Non-Discrimination and Anti-Harassment Policy:** Create a clear and comprehensive policy that explicitly prohibits discrimination and sexual harassment based on gender, race, religion, sexual orientation, or any other protected characteristic. This policy should be communicated to all entities involved in the project and made easily accessible to everyone.
2. **Training and Awareness Programs:** Conduct training sessions and awareness programs to educate all project participants, including project staff, consultants, contractors, and community members, about discrimination, harassment, and their detrimental impacts. The training should emphasize fostering a safe and inclusive environment and provide guidance on appropriate behaviour and reporting mechanisms.
3. **Equal Opportunity and Inclusion:** Ensure that equal opportunities are provided to all individuals involved in the project, regardless of their gender, race, religion, sexual orientation, or any other characteristic. Promote diversity and inclusion in project decision-making processes, employment practices, and community engagement activities.
4. **Grievance Mechanisms:** Establish a formal and confidential grievance mechanism that allows individuals to report instances of discrimination or sexual harassment without fear of retaliation. Provide clear information on reporting procedures, including multiple reporting channels such as hotline numbers, email addresses, or dedicated personnel responsible for addressing complaints.
5. **Investigation and Accountability:** Outline a clear process for investigating reported incidents. Ensure that investigations are conducted promptly, impartially, and transparently. Implement appropriate disciplinary measures, including sanctions, for individuals found responsible for discrimination or sexual harassment.
6. **Monitoring and Reporting:** Regularly monitor and evaluate the effectiveness of the measures implemented to prevent discrimination and sexual harassment. Include reporting on these efforts in project progress reports and ensure transparency regarding any reported incidents, investigations, and actions taken.
7. **Collaboration with Local Communities:** Actively engage with local communities to understand their needs, concerns, and perspectives. Include community representatives in project decision-making processes to ensure their voices are heard and their rights are respected throughout the project duration.

8. Partnerships and Due Diligence: Conduct due diligence on partner organizations, contractors, and consultants to ensure they have strong policies and practices in place to prevent discrimination and sexual harassment. Prioritize working with entities that share the commitment to promoting equal opportunities and inclusivity.

V Carbon believes that it is essential to integrate these measures into the overall project governance structure to create a culture of respect, fairness, and equality. Regularly review and update these measures ensure they remain relevant and effective throughout the project's lifespan.

2.3.16 Feedback and Grievance Redress Procedure (VCS, 3.18.4; CCB, G3.8)

Development process	The development process of the grievance redress procedure involved a comprehensive approach that considered culturally appropriate conflict resolution methods. It began with stakeholder consultation, actively engaging community members, local leaders, and relevant organizations to understand their perspectives and experiences. Existing processes were reviewed, encompassing both project-specific and broader cultural and legal frameworks. Based on this analysis, tailored grievance redress mechanisms were designed, ensuring inclusivity, accessibility, and fairness. The procedure included multiple channels for receiving grievances and clearly defined steps for handling and resolving them. A reasonable time period was established for timely response and resolution. Culturally appropriate conflict resolution methods, such as mediation and dialogue processes, were integrated to foster understanding and seek mutually acceptable resolutions. The procedure was treated as a dynamic process, allowing for continuous improvement through monitoring, evaluation, and feedback from grievants and stakeholders. Overall, the developed grievance redress procedure aimed to provide an accessible and fair mechanism that respected cultural context while ensuring transparency, accountability, and timely resolution of grievances.
Grievance redress procedure	Awareness and Communication: - Disseminate information about the Grievance Redress Mechanism across various channels to the public. Receiving and Recording Grievances: - Collect grievances through multiple channels: email, in-person, telephone, or WhatsApp. - Supervise grievances by an impartial individual who is a committee member of a shareholder but not a board

member.

Initial Attempt at Resolution:

- Initiate an initial attempt at resolution upon receiving a grievance within a Company-specified timeframe.
- Encourage the use of traditional conflict resolution methods upon receiving a grievance, respecting the cultural practices of affected communities.

Mediation:

- Provide mediation as an option.
- Offer qualified mediators with expertise in dispute resolution who are impartial.
- Monitor the progress of the mediation process.
- Share the costs of mediation among all parties involved.

Arbitration or Courts:

- If mediation fails within a specified time, offer arbitration or legal recourse.
- Inform the conditions under which the grievant can request arbitration or file a legal case.
- Have one arbitrator decide the grievance.
- Select arbitrator(s) through one of the following methods:
 - a. Each party presents a list of three arbitrators, and one arbitrator is randomly selected.
 - b. Select arbitrator(s) by a blind draw during the annual general meeting of the Resource Limited, where candidates are chosen from all the ILGs Dispute Settlement Authorities' appointees who are not board members.
- Monitor the progress of the arbitration process.

Documentation and Communication:

- Maintain a comprehensive record of all received grievances, including their status, actions taken, and outcomes.
- Ensure timely communication of the progress and outcome of grievances to all involved parties.
- Voluntarily maintain the collected data in accordance with the National Information and Communication Technology Act of 2009.

Review and Continuous Improvement:

	• Regularly review the grievance redress procedure to identify areas for improvement. • Seek feedback from stakeholders on their experience with the procedure and incorporate lessons learned into future iterations. • Provide opportunities for affected communities and other stakeholders to participate in the review process to enhance transparency and accountability. By documenting and implementing a grievance redress procedure that includes these stages and time limits, the project demonstrates its commitment to addressing grievances in a fair and timely manner while respecting traditional conflict resolution methods and legal frameworks.
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2.3.17 Accessibility of the Feedback and Grievance Redress Procedure (VCS, 3.19; CCB, G3.8)

To address the requirement of describing the accessibility of the feedback and grievance redress procedure, as well as the documentation and public availability of grievances and project responses, V Carbon considered the following information:

1. Publicizing and Accessibility:

- The feedback and grievance redress procedure will be publicized through various channels to ensure broad accessibility. These channels may include the project's website, community notice boards, stakeholder meetings, and relevant local media outlets.
- Efforts will be made to provide the procedure in multiple languages, considering the linguistic diversity of the affected communities.
- Physical copies of the procedure will be made available at community centres, project offices, and other relevant locations to facilitate access for stakeholders who may not have reliable internet access.

2. Grievance Submission:

- The procedure will clearly outline the available channels for submitting grievances, such as a dedicated hotline, email address, physical submission boxes, or designated personnel.
- Grievance submission forms will be developed and made available in multiple formats, including online forms, printable PDFs, and accessible formats for individuals with disabilities.

3. Documentation of Grievances and Project Responses:

- All grievances received, along with relevant details such as the date of submission, grievant's information (kept confidential), nature of the grievance, and any supporting documentation, will be meticulously documented and securely stored.

- Project responses and actions taken to address grievances will also be documented, including the timeline of responses, steps taken for investigation or resolution, and any outcomes or decisions made.
4. Public Availability of Information:
- To promote transparency, aggregated and anonymized data on grievances received and their resolution will be made publicly available.
 - A periodic report summarizing the types of grievances, response times, and resolutions will be published and shared with stakeholders, regulatory bodies, and other interested parties.
 - The project's website will include a section dedicated to grievance redress, providing information on the procedure, contact details for the Grievance Focal Point, and instructions on how to submit grievances.
 - Relevant project documents, such as the grievance redress procedure, annual reports, and summaries of resolved grievances, will be accessible for download from the website.
5. Privacy and Confidentiality:
- Care will be taken to ensure the privacy and confidentiality of grievants through the appropriate handling and storage of personal information. Only authorized personnel involved in the grievance redress process will have access to sensitive data.
 - Grievance responses will be shared with grievants in a manner that respects privacy and ensures confidentiality, while still providing sufficient information on the actions taken and outcomes achieved.

The feedback and grievance redress procedure will be publicized, accessible, and transparent, fostering trust and promoting stakeholder engagement throughout the process.

2.3.18 Worker Training (VCS, 3.19; CCB, G3.9)

V Carbon designed the measures for worker training, including provide orientation and training for project employees and relevant individuals from the communities, while ensuring that local capacity is not lost through staff turnover.

Measures	Description
Orientation and Training Programs	• Develop comprehensive orientation programs for all project employees and relevant community members involved in project activities. • The orientation program should include an introduction to the project's goals, objectives, and activities, as well as an overview of the grievance redress procedure and the importance of stakeholder engagement. • Provide training on relevant technical skills, such as sustainable resource management practices, data collection and analysis, project monitoring and evaluation, and any other skills specific to the project's activities. • Training programs should be designed to be participatory and

	interactive, incorporating both theoretical and practical components to enhance learning effectiveness.
Localized Skills and Knowledge	• Design training programs with a focus on building locally useful skills and knowledge to increase local participation in project implementation. • Engage local experts, community leaders, and traditional knowledge holders to contribute to the training programs, ensuring that local perspectives and traditional practices are incorporated. • Foster a participatory learning environment that encourages the sharing of local knowledge and experiences among participants, promoting a sense of ownership and empowerment.
Training Documentation and Resources	• Develop training materials and resources that are accessible, culturally appropriate, and available in local languages. • Document training sessions, including presentations, handouts, and practical exercises, to create a repository of knowledge that can be referred to and shared with new employees and community members in the future.
Continuous Learning and Development	• Establish a system for ongoing learning and development to ensure that skills and knowledge are continuously built upon and updated. • Encourage employees and community members to participate in relevant workshops, seminars, and capacity-building opportunities outside the project scope. • Foster a culture of learning and knowledge sharing within the project team, promoting regular meetings, discussions, and peer-to-peer learning sessions.
Succession Planning and Knowledge Transfer	• Implement a succession planning strategy to mitigate the loss of local capacity through staff turnover. • Identify potential local leaders or community members who can be trained to take on key roles within the project. • Facilitate knowledge transfer by encouraging departing employees to document and share their experiences, lessons learned, and best practices with their successors. • Foster mentorship programs that pair experienced employees with new recruits or community members, facilitating knowledge sharing and skill development.
Evaluation and Feedback	• Regularly evaluate the effectiveness of the orientation and training programs through feedback sessions, surveys, and assessments. • Solicit input from participants to identify areas for improvement and to ensure that the training programs are meeting their needs and expectations.

	Consider feedback from community members and employees when designing and updating future training initiatives.
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V Carbon aims to build local capacity, empower community members, and ensure the continuity of knowledge and skills even in the face of staff turnover by implementing these measures. This approach promotes sustainable development and creates a sense of ownership and empowerment among local stakeholders.

2.3.19 Community Employment Opportunities (VCS, 3.19.13; CCB, G3.10)

In order to ensure a fair and transparent selection process for community employment opportunities, V Carbon will implement the following measures:

Measures	Description
1. Clear and Well-Defined Selection Criteria	- Establish clear and specific job requirements, qualifications, and skills needed for each position. Ensure that these criteria are relevant and directly applicable to the job responsibilities. - Define the selection criteria in a manner that is objective, measurable, and job-related. Avoid any criteria that may introduce bias or discrimination, especially those against women and vulnerable and/or marginalized people.
2. Standardized Application and Screening Process	- Develop a standardized application form or online application system that collects essential information from all applicants in a consistent manner. - Screen applications based on the established selection criteria to identify candidates who meet the minimum requirements for the position. - Use a scoring or rating system to objectively evaluate and compare applicants' qualifications, skills, and experiences.
3. Multiple Evaluators or Interview Panels	- Establish a diverse panel of evaluators or interviewers who are trained in fair and unbiased assessment techniques. - Include representatives from different backgrounds and expertise to minimize individual biases and bring different perspectives to the selection process. - Conduct interviews and evaluations in a structured manner, using predetermined questions and evaluation criteria to ensure consistency and fairness.
4. Assessment of Job-Related Competencies	- Design assessment methods that directly measure the candidates' job-related competencies, such as practical exercises, simulations, or work samples. - Ensure that the assessment methods align with the job requirements and reflect the actual tasks and

	responsibilities of the position. • Provide clear instructions and criteria to candidates before the assessment to ensure they understand what is expected of them.
5. Transparency and Communication	• Clearly communicate the selection process, including the timeline, steps, and evaluation criteria, to all applicants at the beginning of the process. • Inform candidates about the various stages of the selection process, such as application screening, interviews, and assessments. • Provide feedback to candidates, especially those who were not selected, to help them understand the reasons for their outcome and provide guidance for improvement.
6. Documentation and Record Keeping	• Maintain detailed records of the selection process, including application materials, evaluation scores, interview notes, and assessment results. • Keep these records securely and confidentially to ensure privacy and compliance with data protection regulations. • Maintain a record of the reasons for selecting or not selecting candidates based on the established criteria, demonstrating the transparency and fairness of the process.
7. Regular Review and Improvement	• Conduct periodic reviews of the selection process to identify any potential biases, inconsistencies, or areas for improvement. • Seek feedback from both the selection panel and applicants to gain insights into the effectiveness and fairness of the process. • Make necessary adjustments to the selection process based on the findings of the reviews, ensuring continuous improvement and adherence to fair practices.

These measures can foster a fair and transparent selection process and pay for community employment opportunities. This promotes equal access to job positions and job training, reduces biases, and enhances the overall credibility and trustworthiness of the recruitment process.

2.3.20 Occupational Safety Assessment (VCS, 3.19; CCB, G3.12)

V Carbon established the “Occupational Health and Safety Guidelines” and the “Personal Protective Equipment (PPE) Guidelines” to inform about risks and provided with the necessary knowledge and tools to minimize those risks. This approach helps ensure a safer work environment and reduces the likelihood of occupational hazards and accidents. V Carbon also ensures that the PPE provided meets relevant safety standards, is properly fitted, and maintained

regularly. Additionally, V Carbon provides training to workers on how to correctly use, maintain, and store their PPE to maximize its effectiveness.

Risk Type	Risk description	Measures	Level of concern
Physical Hazards	Working in remote or challenging terrains that may involve uneven surfaces, steep slopes, or difficult weather conditions.	- Conduct thorough site assessments and surveys to identify potential physical hazards and develop appropriate mitigation strategies. - Provide adequate training on safe work practices, including proper handling of equipment and navigation in challenging terrains. - Supply workers with appropriate personal protective equipment (PPE), such as sturdy footwear, helmets, and weather-resistant clothing. - Establish communication protocols and emergency response procedures to ensure workers' safety in remote areas.	High
Wildlife Encounters	Interaction with wild animals, including venomous snakes, large mammals, or insects, which can pose a threat to worker safety.	- Conduct wildlife risk assessments to identify high-risk areas and species. - Provide training on wildlife awareness, including identification, behaviour, and appropriate responses to encounters. - Implement measures to minimize wildlife-human conflicts, such as implementing barriers or deterrents where necessary. - Ensure workers have access to appropriate first aid and medical support in case of wildlife-related incidents.	High
Chemical Exposure	Exposure to hazardous chemicals, such as pesticides, herbicides, or other agrochemicals used in reforestation or land management activities.	- Conduct thorough risk assessments to identify potential chemical hazards and determine appropriate control measures. - Provide training on chemical handling, storage, and proper use of personal protective equipment (PPE). - Ensure workers have access to Material Safety Data Sheets (MSDS) and instructions for safe handling and disposal of chemicals. - Implement strict protocols for the storage, transportation, and application of chemicals to minimize exposure risks.	Low
Machinery	Working with	Provide comprehensive training on the safe	Low

and Equipment	heavy machinery, tools, or equipment, such as chainsaws or vehicles, which can lead to accidents and injuries if not used properly.	operation and maintenance of machinery and equipment. - Regularly inspect and maintain machinery to ensure it is in good working condition. - Enforce the use of appropriate safety devices and guards on machinery. - Implement strict protocols for equipment operation, including proper supervision and adherence to safety guidelines.	
Fatigue and Mental Health	Long working hours, strenuous activities, and demanding project timelines may lead to fatigue, stress, and mental health issues among workers.	- Establish reasonable working hours and implement adequate rest periods. - Educate workers about the importance of managing stress and maintaining mental well-being. - Promote a supportive work environment that encourages open communication and provides access to mental health resources. - Train supervisors and managers to recognize signs of fatigue and stress and provide appropriate support and resources.	Medium
Community and Social Risks	Potential conflicts or social tensions arising from the project's activities, particularly when working in local communities.	- Engage in meaningful consultation and collaboration with local communities to address their concerns and minimize potential conflicts. - Establish clear and transparent grievance mechanisms to address community grievances promptly. - Conduct social impact assessments to identify potential social risks and develop appropriate mitigation strategies. - Foster inclusive and participatory decision-making processes that involve local communities to minimize social risks.	Low

2.4 Management Capacity

2.4.1 Project Governance Structures (CCB, G4.1)

Organization & Role	Responsibilities
V Carbon: Developing partner	1. Project Planning: The project developing partner and joint proponent is responsible for conceptualizing and planning the project, including

and joint proponent	defining its objectives, scope, and timeline. 2. Environmental Impact Assessment: Conducting an assessment of the project's potential environmental impacts, including impacts on climate, communities, and biodiversity. 3. Stakeholder Engagement: Engaging with relevant stakeholders, such as local communities, indigenous groups, NGOs, and government agencies, to understand their concerns, incorporate their feedback, and ensure their participation throughout the project. 4. Compliance with Regulations: Ensuring that the project complies with all applicable laws, regulations, and permits related to environmental protection, land use, and community rights. 5. Mitigation and Conservation Measures: Implementing measures to mitigate adverse environmental impacts and conserve biodiversity, such as incorporating sustainable practices, minimizing carbon emissions, protecting sensitive habitats, and promoting community resilience. 6. Monitoring and Reporting: Monitoring the project's environmental performance, tracking progress towards sustainability goals, and preparing periodic reports, including the CCB report, to demonstrate compliance and transparency.
Nuku Resources Limited: Landowner company	1. Land Stewardship: The landowner group is responsible for managing and stewarding the land in a manner that aligns with sustainable practices and conservation objectives. 2. Collaboration with Project Developer/Owner: Collaborating with the project developer/owner to ensure the project's objectives and activities are compatible with the landowner's goals and values. 3. Participating in Assessments: Providing necessary information and data to support environmental impact assessments and biodiversity surveys conducted by the project developer/owner. 4. Agreement Negotiation: Engaging in negotiations with the project developer/owner to establish agreements that protect the landowner's rights, ensure fair compensation, and address potential risks and liabilities. 5. Monitoring and Compliance: Monitoring the project's activities on the land, ensuring compliance with agreed-upon terms, and reporting any concerns or issues to the project developer/owner.

	6. Community Engagement: Engaging with local communities and stakeholders to ensure their voices are heard, their rights are respected, and their interests are considered in relation to the project.
Deloitte: Consultant	Technical assistance with project planning, validation, verification, and monitoring, carbon credit sales advice and assistance.

Organization structure:

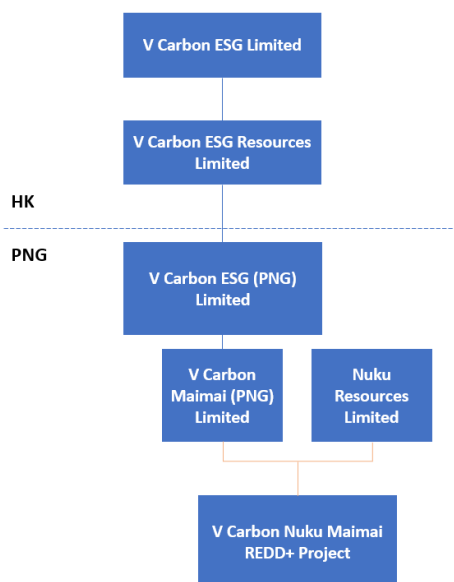


Figure 8: Maimai Project Organization Structure

2.4.2 Required Technical Skills (VCS, 3.19; CCB, G4.2)

Key technical skills	Responsible party
Community Engagement	
Stakeholder Engagement possess strong communication, facilitation, and conflict resolution skills.	Project developer
Social Impact Assessment conducting social impact assessments, community surveys, and participatory approaches to understand and address community concerns	Consultant
Biodiversity Assessment and Conservation	

Biodiversity assessments - species identification, habitat mapping, and ecological surveys - propose conservation measures and habitat management plans	Landowner group and Project developer
Carbon Measurement and Monitoring	
Carbon Accounting quantifying emissions and carbon sequestration for measuring the project's carbon footprint and tracking progress towards emission reduction targets	Consultant
Monitoring and Evaluation	
Designing and implementing monitoring and evaluation systems - assess the project's environmental and social performance - collect relevant data, establish indicators, and analyse the project's progress against sustainability goals.	Consultant

2.4.3 Management Team Experience (VCS, 3.19; CCB, G4.2)

Our management team comprises highly experienced professionals with a proven track record in successfully implementing land management and carbon projects at a similar scale to the current project. The team members bring a diverse range of expertise and extensive experience in the following areas:

Mr. Chris PANG

Mr. PANG is the General Manager of V Carbon ESG Group. He has been a senior management executive with Hong Kong listed companies for the past 20+ years, where he has led his teams to achieve business goals with high productivity by demonstrating strong leadership and interpersonal skills. His experience has led him to be an all-rounded administrator.

Prior to joining V Carbon ESG Group, Mr. PANG was the Resources Director / Assistant General Manager at PNG Resources Company Ltd (HK Listed code: 221.HK) where he spent many years in PNG as a pioneer to PNG Forestry Project. Mr. PANG has the experience in settling licensing matters with related government authorities in PNG including the forestry, environment, transportation, and labour.

Mr. PANG has a Master of Management (Specialized in Logistics & Operations Management) from the Macquarie University.

Ms. Kiri LUK, CPA

Ms. LUK is the Chief Operation Officer of V Carbon ESG Group. She is an accounting professional with more than 36 years of industry experience. Ms. LUK has been leading V Carbon ESG Group's projects in PNG over the past 13 years and is very knowledgeable in the regulation, policies, local technicalities and 3rd party regulatory requirements.

Ms. LUK is a Fellow Member of the Hong Kong Institute of Certified Public Accountants.

Mr. Eugene CHAU

Mr. CHAU is the Director of V Carbon ESG Group. He has spent more than 5 years in PNG as a leader in project management and has over 10 years of experience in financial groups. Mr. CHAU is currently developing ESG projects in PNG to help reduce Green House Gas emissions and to provide practical help to local economic development, employment, education and other aspects to promote poverty eradication and to improve living standards of the local people.

During his time in PNG, Mr. CHAU has established deep trust and friendship with local partners and has developed a deep understanding of PNG regulations, policies and business localization.

Mr. CHAU has a Master's Degree in Business Administration from Cardiff Metropolitan University.

Mr. Andrew CHONG

Mr. CHONG joins the V Carbon ESG Group as Project Manager. Prior to this, he has over 10 years supply chain management experience. Mr. CHONG has diverse experience in Singapore and Malaysia Furniture Business during 2003 to 2019, which included research & development, sales & marketing and factory management.

Mr. Roy HO

Mr. HO has years of experience in the United States of different disciplines of risk management, among model risk, liquidity risk, operational risk, credit risk, concentration risk, reputational risk and most recently climate risk. He contributed his expertise in banks, derivatives and insurance industries, from 15 billion USD community to Spanish and American banks, to the largest general insurance, the largest derivative processor in US, the largest mortgage wholesaler in the world. He holds a MS in mathematics, with one journal publication, from Michigan State University and a BA in Economics from Beloit College.

Mr. John SIBI

Mr. SIBI is the Project Coordinator Officer of V Carbon ESG Group. He has worked as a forestry officer for a number of government and private organizations.

Mr. SIBI has the Certificate in Forestry from Bulolo Forestry College.

The collective experience of our management team provides a solid foundation for effectively implementing the land management and carbon project at the scale envisioned. Their expertise and prior success in similar projects demonstrate their ability to navigate challenges, deliver results, and maximize the project's environmental and social impact.

2.4.4 Project Management Partnerships and Team Development (VCS, 3.19; CCB, G4.2)

As part of our project management strategy, we have established key partnerships with relevant organizations to support the project and fill any experience gaps identified. These partnerships ensure that we have the necessary expertise and resources to successfully implement the project.

1. Advisory from Deloitte:

To support the project, we have sought advisory Deloitte Advisory Hong Kong, a consultancy specializing in carbon project development and Verra registration processes. Deloitte brings extensive experience and expertise in navigating the complexities of carbon market mechanisms and ensuring compliance with Verra standards. Their role as a consultant is to provide guidance and support throughout the Verra registration process, ensuring that all requirements are met and facilitating a smooth project validation and verification.

2. Recruitment Strategy: Recognizing the importance of a well-rounded and experienced team, we have developed a recruitment strategy to fill any remaining gaps in our management team. This strategy includes:

- Identifying specific areas of expertise that are currently lacking within our team.
- Conducting a thorough assessment of required skills, experience, and qualifications for the identified positions.
- Actively seeking qualified professionals through targeted recruitment campaigns, industry networks, and partnerships with relevant academic institutions.
- Implementing a rigorous selection process to ensure that candidates possess the necessary qualifications and align with our project's goals and values.

By establishing partnerships and addressing the gaps through targeted actions and a comprehensive recruitment strategy, we are confident in our ability to assemble a highly capable and diverse project management team. These measures ensure that we have the necessary expertise and resources to successfully implement the project while meeting all the requirements.

2.4.5 Financial Health of Implementing Organization(s) (CCB, G4.3)

We were able to gather enough resources to function as required and cover all operating expenses. V Carbon has no record of fraud, asset misappropriation, manipulation of financial statements, corruption, money laundering and financial difficulties. We have no debt and we pay our invoices on time. Our marketing partner has guaranteed that we will receive the highest market price for the remaining credits when they are issued.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (VCS, 3.19; CCB, G4.3)

We recognize the utmost importance of ensuring that the project proponent and all entities involved in the project implementation uphold the highest standards of integrity and ethics. We are committed to maintaining a zero-tolerance policy towards corruption, bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion. To provide assurance in this regard, we have implemented the following activities and processes:

1. **Code of Conduct and Compliance Policies:** We have developed a comprehensive Code of Conduct and a set of compliance policies that outline our ethical standards and expectations for all individuals and entities involved in the project. These documents explicitly prohibit any form of corruption or unethical behavior and provide clear guidelines on appropriate conduct. All project team members, contractors, suppliers, and partners are required to adhere to these policies.
2. **Anti-Corruption Training and Awareness:** We conduct regular training sessions and awareness programs to educate all project stakeholders about the importance of avoiding corruption and unethical behavior. These training sessions cover topics such as the types of corruption, legal and ethical implications, reporting mechanisms, and the consequences of non-compliance. By promoting a culture of integrity and awareness, we aim to ensure that all individuals involved in the project understand their responsibilities and actively contribute to preventing corruption.
3. **Transparent Procurement and Vendor Selection:** To foster transparency and fairness, we have implemented rigorous procurement and vendor selection processes. These processes involve clear evaluation criteria, competitive bidding, and due diligence assessments. We maintain proper documentation of all procurement activities, including requests for proposals, bid evaluations, and contract awards. By adhering to these transparent procedures, we mitigate the risk of favoritism, cronyism, and collusion.
4. **Whistleblower Mechanism:** We have established a confidential and accessible whistleblower mechanism that allows individuals to report any suspected cases of corruption or unethical behavior. This mechanism ensures that individuals can report concerns without fear of retaliation.

and provides a channel for thorough investigation and appropriate action. The anonymity and protection of whistleblowers are strictly maintained throughout the process.

5. **Third-Party Audits and Compliance Checks:** To reinforce our commitment to integrity, we engage independent third-party auditors to conduct periodic audits and compliance checks. These audits evaluate our processes, financial records, and project implementation to identify any potential irregularities or non-compliance with ethical standards. Any findings or recommendations from these audits are promptly addressed and remedial actions are taken as necessary.
6. **Ongoing Monitoring and Oversight:** We maintain a dedicated internal team responsible for monitoring and oversight throughout the project's lifecycle. This team conducts regular reviews, evaluates performance, and ensures ongoing compliance with ethical standards and anti-corruption measures. Any deviations or suspicious activities are thoroughly investigated and appropriate actions are taken, including disciplinary measures or termination of partnerships if necessary.

2.4.7 **Commercially Sensitive Information** (VCS, 3.5.2 – 3.5.4; CCB Rules, 3.5.13 – 3.5.14)

No commercially sensitive information has been excluded.

2.5 **Legal Status and Property Rights**

2.5.1 **National and Local Laws** (VCS, 3.1, 3.6, 3.7, 3.14, 3.18, 3.19; CCB, G5.6)

All project activities described in this Project Description are in compliance with any and all relevant local, regional and national laws, statutes and regulatory frameworks. Below the most important laws and regulations are mentioned, with a short description of the part most appropriate to the project activities. It should be noted that some of these are still in (final) draft form and at this moment in time not yet legally binding or enforceable, but all of their main requirements and intents will still be met as much as possible.

National Climate Compatible Development Management Policy

This policy, published by the Office of Climate Change & Development (now CCDA), aims to address the climate issues in order to promote climate-friendly development. Under part 1 section J. Partnership states:

1. Partnership Policies:

a. **Equitable, Effective Participation:** Networking, coordination, and equitable engagement with and between multiple stakeholders through active participation, consultation and engagement at national and subnational levels in all climate change programs, incentives and activities.

2. Partnership Strategies:

a. Community Partnerships: Promote recognition and respect of community rights, support for improved community climate change outcomes, and information sharing and collaborative partnerships for community climate risk management.

2.1 Gender-Balanced Decision-Making: Ensure gender balance in all community, national and sub-national decision-making processes.

2.4 Civil Society, Churches and Private Sector Partnerships: Encourage collaboration between government, civil society, churches and private sector through innovative approaches (e.g., MoUs and public private partnerships).

Climate Change (Management) (Amendment) Act 2023 (No. 17 of 2023) (first version: 2015, amendment: 2023)

It is the mitigation and adaptation framework law of Papua New Guinea. It promotes human activities compatible with a stable climate, implements international mitigation and adaptation commitments into national law, and establishes a national authority. The document also establishes mitigation and adaptation laws and institutions.

- Clause 60 - National and international verifiers to be registered: use UNFCCC processes or procedures for verification.
- Clause 87 - Free, Prior and Informed Consent: Landholder consent to be obtained through FPIC.
- Clause 88 – Customary landholders: Rights of customary landholders shall be fully recognised and respected in all transactions affecting the customary land.
- Clause 89 – Obtaining consent of customary landholders: Obtaining consent of customary landholders; (1) land groups to be incorporated as ILG’s for any climate change project agreement, or (2) without ILG if 85% of the adult members of each land group gave FPIC.
- Clause 90 – Climate change related project agreement:
 - 1) A climate change related project agreement shall
 - a) be in writing; and
 - b) specify the monetary and other benefits, if any, to be received by the landholders, as prescribed under Part IX, in consideration for the rights granted; and
 - c) specify the nature of project in the area covered by the agreement; and
 - d) specify a term of sufficient duration in order to allow for proper project management measures to be carried out to completion; and
 - e) be accompanied by a map showing clearly the boundaries of the area covered by the agreement; and

- f) specify any other climate compatible or green growth related land use options, if any.
- 2) An agreement under Subsection (1) shall be lodged with the Office of State Solicitor for necessary legal clearance before execution.
- 3) A copy of a duly executed agreement together with a copy of the legal clearance issued under Subsection (2) shall be lodged with the Authority.
- 4) The Board may, from time to time, determine appropriate lodgement fees in relation to the lodgement of a copy of an agreement.
- 5) An agreement under Subsection (1) shall comply with the requirements under Subsections (2), (3) and (4) and failure to comply with any one or more of those requirements shall render the agreement under Subsection (1) invalid and unenforceable for all intents and purposes.
- **Clause 93 – Landholder participation and benefits:**
 - 1) This Part applies to the participation and benefit sharing or allocation of incentives for climate change related projects or activities.
 - 2) All affected landholders shall participate and benefit from the incentives of a climate change related project implemented on land or at sea.
 - 3) Unless a law provides to the contrary, a Regulation shall provide for the participation and benefit sharing or incentive allocation mechanism under this Part.
 - **Clause 94 – Annual report:**
 - 1) The Authority or any person or entity who undertakes a climate change related project shall use every reasonable means to quantify the net income or net benefits (as the case may be) and present an annual report before or by 31st March of each calendar year to the concerned landholders and the Authority and relevant provincial governments.
 - 2) An abstract or summary of the report under Subsection (1) shall be published at least twice in a daily newspaper circulated nationwide.
 - 3) An annual report produced under Subsection (1) is a public document for all intent and purposes.

Papua New Guinea's National REDD+ Strategy (2017)

The development of the PNG Maimai REDD+ Project targeting the voluntary carbon market is in line with the national approach to REDD+ as set out by the Government of Papua New Guinea in their National REDD+ Strategy 2017-2027. According to point 5 of section 2.2 “require any projects targeting the voluntary carbon market to follow guidelines linked to the national REDD+ development process and UNFCCC guidance”, it states:

“The Government will not seek to develop or promote the development of REDD+ Projects targeting the voluntary carbon market. The government will, however, consider project proposals from landholders, private sector actors and NGOs who are able to demonstrate clear competencies within the areas of project development, secure long term financial investment and a strong commitment to the ongoing support and development of communities within the project location. Any projects developed will also be required to coordinate closely with CCDA and relevant government agencies in the development of project design and implementation. Projects will also be required to ensure that methodologies used for calculating their project scale FRL are in line with those used at the national level and that data can support national systems. Clear national reporting will also be required on the application of safeguards (in line with UNFCCC Cancun Safeguards), the accounting and reporting of emissions and revenue from their sale as well as financial management systems within the project.”

The development of this project is also in accordance with the other conditions set out in the National REDD+ Strategy for the development of projects targeting the voluntary market.

Papua New Guinea’s National REDD+ Development Guidelines (2023)

This REDD+ Development Guidelines (RDG), published by the Climate Change and Development Authority (CCDA) provide a comprehensive framework to guide the development and implementation of REDD+ in Papua New Guinea. The guidelines aim to facilitate the successful and sustainable execution of REDD+ activities, ensuring alignment with both international and national policies, laws, and obligations.

Importantly, the RDG emphasizes the need for strong stakeholder engagement, particularly with customary landowners, local communities, women, youth, and vulnerable or minority groups. The guidelines seek to maximize the monetary and non-monetary benefits of REDD+, with the goals of eradicating poverty, sustaining livelihoods, promoting social stability, and supporting rural development.

The project follows the legal framework for REDD+ established in Papua New Guinea, including the provisions of the Climate Change (Management) Act 2015 (as Amended) and the relevant policies and regulations referenced in the National REDD+ Development Guidelines, such as the National Sustainable Land-Use Policy. Furthermore, the project has obtained all necessary approvals and permits from the relevant government agencies, as required by the guidelines and applicable laws.

The project proponents have also ensured that the project design and implementation adhere to the principles of free, prior, and informed consent (FPIC) with the customary landowners and local communities, in line with the REDD+ legal framework. All relevant agreements, including benefit-sharing arrangements, have been established with the full participation and consent of the affected stakeholders.

By aligning with the National REDD+ Development Guidelines and complying with the applicable national and local laws and regulations, this project aims to contribute to Papua New Guinea's efforts to reduce emissions from deforestation and forest degradation, while ensuring the

sustainable management of forests and the equitable distribution of benefits to local communities.

Papua New Guinea's National REDD+ FPIC Guidelines (2023)

The Guidelines is published by the Climate Change and Development Authority (CCDA). The project adheres to the requirements outlined in the National REDD+ Free, Prior and Informed Consent (FPIC) Guidelines, published by the Climate Change and Development Authority of Papua New Guinea in 2023. These guidelines provide a detailed and comprehensive framework for ensuring the FPIC of customary landowners and local communities throughout the development and implementation of REDD+ initiatives.

In line with the FPIC Guidelines, the project has engaged in extensive consultations with all relevant stakeholders, including customary landowners, local communities, and provincial and local-level governments. The project has obtained the free, prior, and informed consent of the affected communities, and has established mechanisms to ensure their continued participation and decision-making throughout the project's lifetime.

Furthermore, the project's activities, benefit-sharing arrangements, and grievance redress mechanisms are all designed to be in compliance with the principles and requirements set forth in the FPIC Guidelines, as well as other relevant national and local laws and regulations. By adhering to these legal and policy frameworks, the project aims to ensure the protection of customary rights, the equitable distribution of benefits, and the long-term sustainability of its REDD+ interventions.

Papua New Guinea's National REDD+ Benefit Sharing and Distribution Guidelines (2023)

All project activities described in this Project Description are in compliance with all relevant local, regional, and national laws, statutes, and regulatory frameworks. This includes, but is not limited to, the requirements and guidelines outlined in the "National REDD+ Benefit Sharing and Distribution Guidelines" published by the Climate Change and Development Authority of Papua New Guinea in July 2023.

Specifically, the project adheres to the enabling Policy & Legal Framework highlighted in the guidelines, which emphasizes the importance of aligning with the country's National REDD+ Strategy and UNFCCC guidance. The project also follows the principles and procedures outlined in the Financial and Institutional Framework of the Benefit Sharing and Distribution (BSD) Guidelines, which cover both the National Level Approach and the Voluntary Carbon Market (VCM) Projects Approach.

Furthermore, the project ensures that all activities are in compliance with the Climate Change (Management) Act 2015 (as Amended), which sets the foundation for implementing a transparent, equitable, and fair benefit distribution system at the national and project level for REDD+ implementation.

Papua New Guinea's National REDD+ Grievance Redress Mechanism Guidelines (2023)

This guideline established the institutional structure and processes for the national-level and subnational-level grievance redress mechanisms related to REDD+ implementation in the country.

The project adhered to the key principles and requirements specified in these national guidelines, including:

- Providing accessible channels for stakeholders to raise grievances related to REDD+ activities (Section 2.1)
- Ensuring the grievance redress process is guided by principles of transparency, fairness, and responsiveness (Section 2.2.1)
- Coordinating with the designated national and subnational GRM entities, such as the GRM Unit, GRM Focal Points, and Provincial Climate Change Committees (Sections 4 and 5)
- Maintaining records and reporting on grievances received and resolved through the established GRM registry and database (Section 4.1.4)

By aligning with the national guidelines, this project demonstrates its commitment to operating within the legal and regulatory framework for REDD+ implementation in Papua New Guinea.

Papua New Guinea's National REDD+ Forest Reference Level (second version: 2023)

The quantification of GHG emissions and removals and the monitoring plan presented in this PD follows the guidelines given in Papua New Guinea's Second National REDD+ Forest Reference Level document.

Papua New Guinea's Constitution (1975)

According to the Constitution of the Independent State of Papua New Guinea, the National Goal No.4 "National Resources and Environment" stated:

"We declare our fourth goal to be for Papua New Guinea's natural resources and environment to be conserved and used for the collective benefit of all and be replenished for the benefit of future generations."

2.5.2 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18.2; CCB, G3.11)

Employment Act of 1978, PNG laws pertaining to equality of opportunity and treatment, occupational safety and health, conditions of work, and other laws. The DWCP (Decent Work Country Programme) 2018–2022, for Papua New Guinea (PNG), provides a framework to assist the government in achieving the 2030 Sustainable Development Goals (SDGs), the National Development Strategy "Vision 2050," the National Strategy for Responsible Sustainable Development, the Development Strategic Plan 2010–2030, and Medium-Term Development Plans.

The DWCP 2018–2022, which supports the ILO's core mandate to advance opportunities for women and men to obtain decent and productive work in conditions of freedom, equity, security, and human dignity, represents the government's priorities as well as those of the workers' and employers' organizations.

Priorities for PNG's initial DWCP (2008–2012) included (a) capacity building of tripartite partners; (b) labour law reform; (c) the promotion of decent work; and (d) skills development. The second DWCP (2013–2017) prioritized (a) completion and implementation of the labour law reform; (b) development of a national employment strategy and framework aimed at creating and improving access for young women and men to decent employment and (c) strengthen tripartite capacity.

The Ministry of Labour & Industrial Relations, the Papua New Guinea Trade Union Congress, the Employers' Federation of Papua New Guinea, and the ILO collaborated to produce the “PNG's Decent Work Country Programme (DWCP 2018–22)” through a number of reviews and consultations. It identified and agreed on the following key priorities:

Priority 1: Promotion of Labour Law Reform and Labour Administration

Priority 2: Promotion of productive and decent employment opportunities, particularly for young women and men

Priority 3: Capacity building of tripartite constituents

However, PNG still faces challenges to create more jobs for the labour force, strengthen labour legislation and institutional frameworks, improve social protection and further enhance tripartite capacity.” Papua New Guinea has ratified 26 ILO Conventions including all eight Fundamental Conventions:

C.29 - Forced Labour Convention, 1930

C.87 - Freedom of Association and Protection of the Right to Organise Convention, 1948

C.98 - Right to Organise and Collective Bargaining Convention, 1949

C.100 - Equal Remuneration Convention, 1951

C.105 - Abolition of Forced Labour Convention, 1957 (Not in force)

C.111 - Discrimination (Employment and Occupation) Convention, 1958

C.138 - Minimum Age Convention, 1973

C.182 - Worst Forms of Child Labour Convention, 1999

2.5.3 Human Rights (VCS, 3.19)

The project recognizes, respects, and promotes the protection of the rights of Indigenous Peoples (IPs), Local Communities (LCs), and customary rights holders in line with applicable

international human rights law, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the International Labour Organization (ILO) Convention 169 on Indigenous and Tribal Peoples. The following are keyways in which the project upholds these rights:

Free, Prior, and Informed Consent (FPIC): The project is committed to obtaining the free, prior, and informed consent of IPs, LCs, and customary rights holders in activities that may affect their lands, territories, and resources. This process involves engaging with these communities in a meaningful and transparent manner, ensuring that they have access to all relevant information, and that their consent is obtained without coercion or manipulation.

Right to Land and Resources: The project acknowledges and respects the rights of IPs, LCs, and customary rights holders to their lands, territories, and resources. It recognizes their right to use, manage, and control these resources in accordance with their traditional customs, laws, and practices. The project avoids any encroachment or displacement of these communities from their lands and ensures that their rights to communal ownership, ancestral domains, and sacred sites are protected. Since 2016, we have liaised with the National Identity (“NID”) Office for the issuance of NID cards to the customary landowners to enable the ILG registration process and ensure their rights as an ILG.

Cultural Heritage and Traditional Knowledge: The project acknowledges the rich cultural heritage and traditional knowledge of IPs, LCs, and customary rights holders. It respects their intellectual property rights and ensures that their cultural expressions, languages, and traditional knowledge are safeguarded and not exploited without their consent. The project also promotes the equitable sharing of benefits arising from the utilization of traditional knowledge and practices.

Non-Discrimination and Equality: The project is committed to non-discrimination and equality, ensuring that the rights of IPs, LCs, and customary rights holders are respected without any form of discrimination. It promotes inclusive participation and representation of these communities in decision-making processes, allowing for their voices to be heard and their perspectives to be taken into account.

Social and Economic Development: The project recognizes the right of IPs, LCs, and customary rights holders to social and economic development. It aims to support these communities in enhancing their well-being, livelihoods, and sustainable development by providing opportunities for capacity building, education, healthcare, and economic empowerment. The project seeks to create mutually beneficial partnerships that respect the rights and aspirations of these communities.

Remedies and Redress: The project acknowledges the importance of remedies and redress mechanisms for IPs, LCs, and customary rights holders in case their rights are violated or adversely affected. It ensures that these communities have access to effective grievance

mechanisms and legal remedies, and that any disputes or conflicts are resolved in a fair, transparent, and culturally appropriate manner.

Collaboration and Partnership: The project actively engages and collaborates with IPs, LCs, and customary rights holders, recognizing their role as key stakeholders and rights holders. It works in partnership with these communities, their representative organizations, and relevant institutions to ensure that their rights are protected, respected, and promoted throughout the project's lifecycle.

By integrating these principles into its policies, practices, and decision-making processes, the project demonstrates its commitment to recognizing, respecting, and promoting the protection of the rights of IPs, LCs, and customary rights holders in line with applicable international human rights law, UNDRIP, and ILO Convention 169.

2.5.4 Indigenous Peoples and Cultural Heritage (VCS, 3.18, 3.19)

The project represents a significant step towards addressing the global challenges of climate change and biodiversity loss. However, the project's success is not solely measured by its environmental impact. It is equally crucial to acknowledge and prioritize the preservation and protection of Indigenous Peoples' cultural heritage as an integral part of project activities. It acknowledges and honours the rich cultural heritage of Indigenous Peoples, recognizing their deep-rooted connections to the forests and ecosystems they inhabit. Indigenous communities possess invaluable traditional knowledge, practices, and spiritual beliefs that have sustained their cultures for generations. The project recognizes the importance of safeguarding and respecting these cultural assets, which form an inseparable part of their identity and way of life.

It respects their rights to free, prior, and informed consent (FPIC) and endeavours to establish meaningful partnerships with Indigenous communities. By engaging Indigenous Peoples in project planning, implementation, and monitoring, the project ensures that cultural heritage concerns are incorporated into project activities from the outset.

The Maimai project acknowledges the sacred sites and cultural landscapes that hold immense value for Indigenous Peoples. These areas often serve as repositories of traditional knowledge, spiritual practices, and cultural ceremonies. The project takes proactive measures to protect these sites from deforestation, degradation, and encroachment, recognizing their significance not only to Indigenous Peoples but also to humanity as a whole. By safeguarding these sites, the project contributes to the preservation of cultural heritage and the continuity of traditional practices.

Also, it recognizes the importance of building the capacity of Indigenous Peoples to actively participate in and benefit from project activities. It supports initiatives that enhance Indigenous communities' skills, knowledge, and capabilities in cultural heritage preservation, documentation, and transmission. By empowering Indigenous Peoples, the project ensures that they have the tools and resources to protect, revitalize, and transmit their cultural heritage to future generations.

2.5.5 Statutory and Customary Property Rights (VCS, 3.18, 3.19; CCB, G5.1)

The project area falls under the customary land tenure system of Papua New Guinea, where the majority of the land is owned and managed by traditional landowner communities. According to the Land Act 1996, customary land in Papua New Guinea is recognized as the "native lands" that are "owned by the indigenous inhabitants of Papua New Guinea in accordance with the current customary usage and tradition."

The project has mapped the tenure, use, access, and management rights to the lands, territories, and resources in the project zone through extensive consultations with the customary landowners. This mapping exercise has identified the specific clans, tribes, and communities that hold the customary rights over the project area.

Skywalker Global Resources Company (PNG) Limited ("SWGR") (former name "Dali Company Ltd") was established on 12th April 2007 to manage the Maimai Integrated Agro-forestry Development Plan including the logging activities in the Nuku forest area in West Sepik (Sandaun) Province of Papua New Guinea.

"Special Agricultural and Business Lease" ("SABL") is granted to Nuku Resources Limited ("NRL") on 2nd April 2009 for a period of 99 years from 6th March 2009 under the 'Lease-Lease Back Arrangement' with the customary landowners pursuant to Section 11 of the Land Act 1996. All that piece of land known as Portion 26C in West Sepik Province containing an area of 239,810 hectares.

"Agricultural Sub-lease Agreement" has been established between NRL as the landlord and SWGR as the tenant on Portion 26C for 50 years lease term commencing 3rd April 2009.

The landowners re-allocate their resources. The former SABL areas of the Portion 26C have transformed to Nuku Maimai forest area and Nuku Nopan forest area. Nuku Resources Limited now represents the landownership of the Nuku Maimai forest area of 102,779 hectares.

SWGR has obtained the relevant permission and approvals from local government authorities for the planned logging activities. Pursuant to the MOU and Project Agreement between NRL and SWGR dated 14th January 2012 and 12th October 2015 respectively, forest within Portion 26C was planned to be clear-felled by Skywalker Construction (PNG) Limited, the designated logging contractor, and converted as part of the Maimai Integrated Agro-forestry Development Plan.

In sight of the interest to combat climate change and create better value to the local area and community, the parties decided to explore the possibility of changing the business activities from logging to the protection of the Nuku Maimai forest area, by developing Verra REDD+ carbon credit project.

V Carbon ESG Group has been appointed since 2018 to coordinate various activities related to investigating, discussing, conducting feasibility studies on, implementing, managing the REDD+ initiative and carbon credit projects.

On 1st November 2021, the Board of Nuku Resources Limited resolved to develop the REDD+ Project on Portion 26C which will be subdivided to leave Yangkok (the Nopan Project) to have their own project and to submit the Expression of Interest (EOI) to CCDA together with V Carbon as joint proponent to develop the V Carbon Nuku Maimai Project.

“Memorandum of Agreement (MOA)” between Skywalker Construction (PNG) Limited (subsequently changed name to V Carbon Maimai (PNG) Limited) and Nuku Resources Limited on 12th December 2022 has designated V Carbon ESG the right to oversee, operate and administer the day-to-day functions and operation of the projects (including the Carbon Credit Trade) in relation to the GHG Reduction Programme at the Nuku Maimai forest area.

“Memorandum of Agreement (Supplemental)” between V Carbon Maimai (PNG) Limited (formerly named as Skywalker Construction (PNG) Limited) and Nuku Resources Limited on 25th August 2023 superseded the MOA on 12th December 2022 with major changes:

- Project term: 25 years;
- Project area: 102,779 hectares;
- Benefit sharing of the beneficiary group increase to 60% of net revenue after costs pursuant to the National REDD+ Development Guidelines launched on 3rd August 2023.

“Acknowledgement and Endorsement for Nuku Maimai Carbon Offset & Credit Trading Project” is issued by Climate Change and Development Authority (CCDA) on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-national government agencies, its partner and joint project proponent “V Carbon ESG Group” to progress the said project. The letter also serves as acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126.

2.5.6 Recognition of Property Rights (VCS, 3.7, 3.18, 3.19; CCB, G5.1)

V Carbon has entered into legally binding contracts with clans and other stakeholders over rights to land, timber, and/or carbon, and it recognizes the legal and traditional rights of landowners. The PNG Constitution upholds the clans' own ownership rights as the traditional landowners.

The lands producing the GHG reductions and removals are legally owned by the ILGs taking part in the Maimai REDD+ Project.

The project fully recognizes and respects the customary property rights of the indigenous landowners in the project area, in accordance with the Land Act 1996 and the Climate Change (Management) (Amendment) Act 2023.

The project has secured the free, prior, and informed consent of the customary landowners through a series of consultations and negotiations. The project also supports the strengthening of customary land tenure rights by providing legal assistance and capacity building to the landowner

communities. This ensures that the property rights of the indigenous people are fully recognized, respected, and supported throughout the implementation of the REDD+ project.

The Land Groups Incorporation Act recognizes and facilitates the corporate nature of customary groups. The ILGs registered with the Papua New Guinea government are customary and legal owners of land to pursue economic development of larger tracts of land. The 34 ILG shareholders of NRL, the Landowner Company (LOC), are the traditional and legitimate landowners of the Maimai project area.

2.5.7 Free, Prior and Informed Consent (VCS, 3.18; CCB, G5.2)

Description of process for obtaining consent	Stakeholder involvement has been a key objective of the project proponent from the beginning. Before the project's formal start date, stakeholder meetings and consultations got under way. Apart from the 2 main FPIC Process that V Carbon has conducted, there were a number of small awareness that have been conducted by our ground officers. V Carbon ESG has conducted a Free, Prior, Informed Consent (FPIC) process under the REDD+ project adhering to the following process: 1. Preparation and Planning: · We understand the legal and regulatory requirements related to FPIC in Papua New Guinea (PNG). · Identify the key stakeholders and indigenous communities affected by the REDD+ project. · Develop a comprehensive FPIC process plan outlining the objectives, methods, timeline, and communication strategies with our leaflets and awareness materials 2. Engagement and Consultation: · Initiate dialogue with the affected indigenous communities and stakeholders to explain the purpose, goals, and potential impacts of the REDD+ project. · Facilitate open and transparent discussions to ensure stakeholders understand the project and its implications fully. · Provide relevant information, data, and resources in accessible formats to enable informed decision-making. 3. Capacity Building: · Provide training and capacity-building initiatives to indigenous communities and stakeholders on REDD+
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	concepts, land tenure rights, and the FPIC process. · Empower stakeholders to actively participate in decision-making processes and negotiations related to the project. 4. Negotiation and Agreement: · Facilitate negotiations between V Carbon ESG and the local communities to reach a mutually acceptable agreement. · Ensure that negotiations are conducted in good faith, respecting the rights, interests, and cultural practices of the landowners. · Document the terms of the agreement, including rights, responsibilities, benefits, and dispute resolution mechanisms. 5. Obtaining Consent: · Obtain the explicit, free, prior, and informed consent of the affected landowner communities before proceeding with the REDD+ project activities. · Ensure that consent is given voluntarily, without coercion or manipulation, and based on a full understanding of the project's implications. 6. Implementation and Monitoring: · Implement the REDD+ project activities in accordance with the terms of the agreement and the FPIC process. · Establish mechanisms for ongoing monitoring, evaluation, and feedback to ensure compliance with the agreement and address any emerging issues or concerns. 7. Review and Adaptation: · Periodically review and adapt the FPIC process based on feedback from stakeholders and lessons learned during project implementation. · Continuously improve transparency, accountability, and community participation in decision-making processes related to the REDD+ project.
Outcome of FPIC process	The project has received overwhelmingly positive response as a result. Meetings with community members and stakeholders were conducted in the Maimai region from 2021, including clan meetings with clan leaders, meetings with isolated communities, open attendance meetings, and clan committee meetings were among the several meeting kinds. Larger gatherings are frequently conducted in locations with a capacity of over 7000 persons. A lot



of open meetings were also organized where any clan member could attend and discuss the topic with V Carbon management. Meetings were recorded by having a dedicated note-taker who also took pictures of the meeting and wrote down the minutes.

The initial monitoring report will go into further detail about these meetings and following monitoring reports will include information on both ongoing meetings and new meetings added to the project.

From these steps, V Carbon had effectively conducted a Free, Prior, Informed Consent process under the REDD+ project while respecting the rights and interests of indigenous communities and stakeholders. V Carbon has maintained the FPIC Awareness Report after the fieldtrip.

The following are some of the important dates that V Carbon had conducted its awareness under the FPIC process:

DATE	MEETING	PURPOSE
7 th July 2023	Training session to landowner leaders by Freddie Alei, lecturer of UPNG	Landowners' rights under REDD+ projects; FPIC and ILG registration requirements
23 rd August 2023	V Carbon & Landowner	Verra Sampling and Interview
26 th September 2023	V Carbon & Landowner	Sampling Training
11 th January 2024	V Carbon, CCDA & Landowner	FPIC Program
14 th April 2024	Landowner Meeting	ILG Meeting







Figure 9: FPIC Awareness in Tukinaro Village of Nuku Maimai project area

2.5.8 Benefit Sharing Mechanisms (VCS, 3.18, 3.19;)

To enhance transparency, clear guidelines and reporting mechanisms for the benefit sharing mechanism will be established. Reports outlining the allocation of funds, project costs, and the distribution of benefits will be provided to the community, stakeholders, and relevant authorities regularly (on quarterly/annually basis). The community are involved in decision-making process, monitoring and evaluation efforts. Their feedback and suggestions can further enhance transparency and accountability in the benefit sharing mechanism.

Landowners' involvement and participation in decision-making is essential for the Maimai Carbon Credit Project to be effective and to achieve desired social and environmental objectives.

Implementation of the Project on-the-ground in the PNG context can only succeed if customary landholders are fully involved and receive the majority of benefits resulting from emission reductions related to their forest areas, as only their commitments can succeed in permanence of emission reductions. Therefore, the participation of landowners helps to assure that: no Project action unintentionally or inadvertently contributes to or encourages deforestation and/or forest degradation; monitoring systems are established and continually improved to ensure that emission reductions are effective and permanent; that safeguards are addressed and respected; benefits reach the appropriate beneficiaries.

Process used to design the benefit sharing plan	The process to develop the benefit-sharing agreement for this REDD+ project involved extensive consultations and negotiations with the affected customary landowner communities. The project team first conducted detailed mapping and documentation of the customary tenure and resource use rights in the project area, as described in Section 2.5.5. Building on this understanding of property rights, the project team organized a series of workshops and meetings with representatives from the relevant clans, tribes, and community groups. These participatory sessions allowed the community members to fully define the decision-making process and the distribution mechanism for equitable benefit sharing. The discussions were facilitated in local languages and incorporated traditional decision-making practices to ensure the process was culturally appropriate.
Summary of the benefit sharing plan	The beneficiary group including the Project Area Landowners, affected Local Level Government and Provincial Government will share 60% of the net revenues after costs from GHG emissions reductions. This portion of funds will be used for the provision of essential services to local community residents, which is aligned with the PNG National REDD+ Benefit Sharing and Distribution System guidelines, including Community projects, Infrastructure development grants, Future generation trust, Local savings and loans societies, financial literacy training and Micro- and small business support. Below is the distribution of the benefits: · Monetary Benefits: 5% of the net revenue after costs · Non-Monetary Benefits: ○ Community projects: 10% of the net revenue after costs ○ Infrastructure development grants: 20% of the net revenue after costs ○ Future generation trust: 5% of the net revenue after costs ○ Local savings and loans societies: 5% of the net revenue after costs ○ Financial literacy training: 5% of the net revenue after costs ○ Micro- and small business support: 5% of the net revenue after costs ○ Other purposes by CLLCS: 5% of the net revenue after costs
Approval and dissemination of benefit sharing plan	The benefit-sharing agreement was developed through an iterative process of consultation and negotiation with the affected stakeholder groups. The final plan was formally endorsed and signed by the representatives of the project proponent, LOC, community and magistrate. To ensure transparency and accessibility, the project has published a summary of the key terms of the benefit-sharing agreement on its website and in local community forums. The full agreement is available for review by stakeholders upon request, in accordance with the confidentiality provisions agreed to by the community groups.

	Developer's reports are disseminated publicly available in multiple channels in addition to meetings. The Benefit Sharing Plan (BSP) is a public document, written in English and Tok Pisin or a local language if requested, and is made available upon request. The project will continue to hold regular meetings and workshops with the participating communities to monitor the implementation of the benefit-sharing plan and make any necessary adjustments based on feedback and evolving needs.
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2.5.9 Property Rights Protection (VCS, 3.18, 3.19; CCB, G5.3)

We do not anticipate that anyone will be displaced as a result of the project because the project has switched from logging to carbon credits.

2.5.10 Illegal Activity Identification (VCS, 3.19; CCB, G5.4)

Illegal activities that may have an impact on the project's impact can occur on two levels: institutionally through attempts by large-scale logging and agricultural companies, working with corrupt Land Owner Companies and government officials to gain access to the Maimai Community's land and natural resources, and at the community level through noncompliance with the Maimai Community's Sustainable Land Use Plan and Community Conservation Laws by both community members and members of nefarious organisations.

The signing of the Conservation Deed and official government acknowledgement of the project through legal clearance gained from the State Solicitor's Office mitigate any institutional level criminal activity. Our fair and transparent selection process as documented in section 2.3.19, along with our Codes of Conducts, ethics guidelines and trainings ensure that the project does not and will not use victims of human trafficking, forced labour, and child labour.

The Community Conservation Committee monitors and enforces the Sustainable Land Use Plan and Community Conservation Laws on an ongoing basis to mitigate any illegal actions at the community level, including keeping an eye on the project area with the help of satellite technology, stakeholder consultation, regular patrols by local stakeholders, and some UAV-based surveillance of identified issue spots.

2.5.11 Ongoing Disputes (VCS, 3.18, 3.19; CCB, G5.5)

None.

2.5.12 Approvals (CCB, G5.7)

"Memorandum of Agreement (MOA)" between Skywalker Construction (PNG) Limited (subsequently changed name to V Carbon Maimai (PNG) Limited) and Nuku Resources Limited on 12th December 2022 has designated V Carbon ESG the right to oversee, operate and administer the day-to-day functions and operation of the projects (including the Carbon Credit Trade) in relation to the GHG Reduction Programme at the Nuku Maimai forest area.

“Acknowledgement and Endorsement for Nuku Maimai Carbon Offset & Credit Trading Project” is issued by Climate Change and Development Authority (CCDA) on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-national government agencies, its partners and joint project proponent “V Carbon ESG Group” to progress the said project. The letter also serves as acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126.

2.5.13 Double Counting and Participation under Other GHG Programs (VCS, 3.23; CCB G5.9)

2.5.13.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program, or any other form of community, social, or biodiversity unit or credit?

☐ Yes ☒ No

2.5.13.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

2.5.13.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

2.5.14 Double Claiming, Other Forms of Credit, and Scope 3 Emissions (VCS, 3.24)

2.5.14.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

2.5.14.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes

☒ No

2.5.14.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes

☒ No

2.6 Additional Information Relevant to the Project

2.6.1 Leakage Management (VCS, 3.11, 3.15)

Negative leakage undermines local conservation by shifting pressures on forest ecosystems from one area to another. Deforestation leakage can be triggered by activity shifting such as a displacement of people, technology or capital from an area that is newly protected or covered by REDD+ policy to another area that is not covered or protected, and market leakage by making additional harvest from project area. To mitigate leakage, following actions are planned to address the leakage issues:

- 15% of project area (15,416.85 ha) is reserved as buffer zone for local communities to continue their daily operation and activities. Provide support to local communities to extend environmental stewardship to the surrounding region, which can prevent conflicts and increase support among local communities. Conservation interventions that also improve livelihoods, including protected areas that are co-managed by local communities and conservation agencies for better conservation outcomes.
- Establishing a relocation plan including: provide construction support for the new residential areas and infrastructure, assist relocations of the villages away from the HCVs to the more accessible areas close to water resources and main roads, with the goal to better protect and manage the HCVs areas from human activities.
- Establishing an Investment Plan and the benefit-sharing agreement to enable sufficient training, capacity building and awareness programme to educate the villagers on protection and conservation of the HCVs areas.

2.6.2 Further Information

None.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology (VCS, 3.1)

The V Carbon Nuku Maimai Project is designed for validation under the verified Carbon Standard Version 4.6 and AFOLU Requirements Version 3.6. The project applies VM0048 Reducing Emissions from Deforestation and Forest Degradation Version 1.0 ([VM0048, Reducing Emissions from Deforestation and Degradation, v1.0 \(verra.org\)](#)).) Modules establishing similar requirements for forest degradation and planned deforestation are under development. The module for Avoiding Planned Deforestation is expected to be released in 2024. Under this REDD Methodology Framework, the following modules and tools are applied by the project:

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0048	VM0048 Reducing Emissions from Deforestation and Deforestation,	1.0
Methodology	VM0048/VM0007	VM0048/VM0007 REDD+ Methodology Framework (REDD-MF),	1.7
Additionality	VT0001	VT0001 Tool for the demonstration and assessment of additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project activities,	3.0
Permanence	T-BAR	VCS AFOLU Non-Permanence Risk Tool,	4.2
Baseline	VMD0006	VMD0006 Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL),	1.4

Carbon pool above- and belowground biomass	VMD0001	VMD0001 Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB),	1.2
Carbon pool wood products	VMD0005	VMD0005 Estimation of carbon stocks in the long-term wood products pool (CP-W),	1.2
Leakage	VMD0009	VMD0009 Estimation of emissions from activity shifting for avoided planned deforestation (LK-ASP),	1.3
Emissions	VMD0013	VMD0013 Estimation of greenhouse gas emissions from biomass and peat burning (E-BPB),	1.3
Monitoring	VMD0015	VMD0015 Methods for monitoring of GHG emissions and removals in REDD and CIW projects (M-REDD),	2.3
Stratification	VMD0016	VMD0016 Methods for stratification of the project area (X-STR),	1.3
Uncertainty	VMD0017	VMD0017 Estimation of uncertainty for REDD project activities (X-UNC),	2.2
Significance	VM0048 APPENDIX 1	APPENDIX 1: TESTING SIGNIFICANCE OF GHG EMISSIONS	1.0

3.1.2 Applicability of Methodology (VCS, 3.1)

As described underneath, the project activities for the Nuku Maimai Project Area meets each of the applicability conditions of the VM0048 Reducing Emissions from Deforestation and Forest Degradation and the VM0048/VM0007 REDD+ Methodology Framework and the different tools and modules applied by the project. The project qualifies as a REDD project under the VM0048 and VM0007 REDD-MF because:

Reference ID/Title	Applicability condition	Justification of conformance
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VM0048/VM0007	Land in the project area has qualified as forest (following the definition used by the VCS; in addition, see Section 5.1.2) for at least the 10 years prior to the project start date.	Land in the Nuku Maimai Project Area has qualified as forest (following the definition used by VCS) at least 10 years before the project start date;
VM0048/VM0007	Where land within the project area is peatland or tidal wetlands and emissions from the SOC pool are deemed significant, the relevant WRC modules are applied alongside other relevant modules.	There are no peat soils and tidal wetlands present in the Nuku Maimai Project Area;
VM0048/VM0007	Baseline deforestation in the project area falls within either of the following categories: a) Unplanned deforestation (VCS category AUDef) b) Planned deforestation (VCS category APDef).	Baseline deforestation and forest degradation in the project area falls within the category of Planned deforestation/degradation (VCS category APD);
VM0048/VM0007	REDD activity types are not applicable under the following conditions: Leakage prevention activities include: a) Flooding agricultural lands to increase production (e.g., rice paddies); and/or b) Intensifying livestock production through use of feed-lots and/or manure lagoons.	Leakage avoidance activities by the project does not include either agricultural lands that are flooded to increase production (e.g., rice paddy), or intensifying livestock production through use of feed-lots and/or manure lagoons;
VM0048/VM0007	Avoiding planned	The project qualifies as an Avoided

	deforestation activities are applicable under the following condition: Where conversion of forest lands to a deforested condition is legally permitted.	Planned Deforestation/Degradation project (VCS category APD) because: a) The conversion of forest lands to a deforested condition in the Nuku Maimai Project Area is legally permitted under the Nuku Maimai SABL; b) Project documentation is available to clearly demonstrate that the land in the project area would have been converted to non-forest use if not for the REDD project. The project proponents can show ownership of the project site and ownership of the carbon rights for the project area; The proposed project activities within the project area will not lead to violation of any applicable law even if the law is not enforced.
VM0048	This methodology may only be used for eligible REDD projects and activities described in the VCS Methodology Requirements. The applicability conditions for each activity type are listed in AUDef, and will be listed in APDef and AUdeg.	Based on all of the above information, it is clear that this project is an Avoided Planned Deforestation project (APDef).

3.1.3 Project Boundary (VCS, 3.12)

Carbon Pools and sources of GHG emissions in the Baseline Scenario and Project Scenarios are showed below:

Source		Gas	Included?	Justification/explanation
Baseline	Aboveground tree biomass	CO ₂	Yes	This is a mandatory pool
		CH ₄	No	
		N ₂ O	No	
		Other	No	

Source		Gas	Included?	Justification/explanation
	Aboveground non-tree biomass	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Belowground tree biomass	CO ₂	Yes	The carbon stock in this pool is calculated based on the aboveground tree biomass pool
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Soil Carbon	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Dead Wood	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Harvested Wood Products	CO ₂	Yes	The carbon stock in this pool is conservatively included since the carbon storage in the baseline scenario is likely to be a significant pool since large scale deforestation and exportation of timber is expected in the baseline
		CH ₄	No	
		N ₂ O	No	

Source		Gas	Included?	Justification/explanation
Project	Litter	Other	No	
		CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Biomass burning	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Combustion of fossil fuels	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Use of fertilizers	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
Other		No		
Aboveground tree biomass	CO ₂	Yes	This is a mandatory pool	
	CH ₄	No		
	N ₂ O	No		
	Other	No		

Source		Gas	Included?	Justification/explanation
	Aboveground non-tree biomass	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Belowground tree biomass	CO ₂	Yes	The carbon stock in this pool is calculated based on the aboveground tree biomass pool
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Soil Carbon	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Dead Wood	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Harvested Wood Products	CO ₂	Yes	The carbon stock in this pool is conservatively included since the carbon storage in the baseline scenario is likely to be a significant pool since large scale deforestation and exportation of timber is expected in the baseline
		CH ₄	No	
		N ₂ O	No	

Source	Gas	Included?	Justification/explanation
	Other	No	
	Litter	CO ₂	No The carbon stock in this pool is conservatively excluded
		CH ₄	No
		N ₂ O	No
		Other	No
	Biomass burning	CO ₂	No The carbon stock in this pool is conservatively excluded
		CH ₄	No
		N ₂ O	No
		Other	No
	Combustion of fossil fuels	CO ₂	No The carbon stock in this pool is conservatively excluded
		CH ₄	No
		N ₂ O	No
		Other	No
	Use of fertilizers	CO ₂	No The carbon stock in this pool is conservatively excluded
		CH ₄	No
		N ₂ O	No
		Other	No

As described in section 2.1.1 the Nuku Maimai Project Area includes a total area of 102,779 ha out of which 87,362 ha of forest cover is currently planned to be deforested as part of the Maimai Development project under the Maimai SABL. The geographical boundary of the Maimai Project Area is presented in Figure underneath.

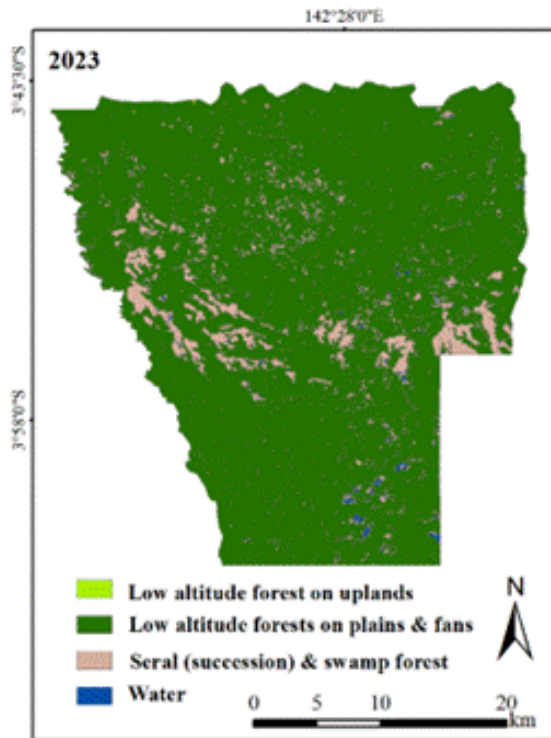


Figure 10: The geographical boundary of the Maimai Project Area

The Global 2010 Tree Cover dataset, which is available on the Global Forest Watch (GFW) platform online, shows that the Maimai Project Area in the Nuku District, Sanduan Province, PNG includes only land qualifying as forest for a minimum of 10 years prior to the project start date. The forest cover in 2010 within the Maimai Project Area is visualized below.

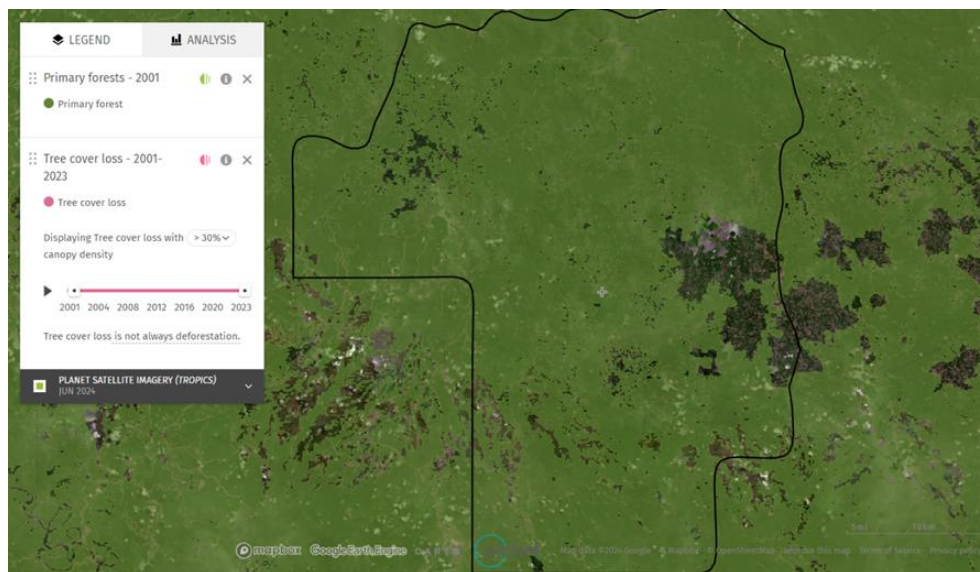


Figure 11: Plant Satellite Image

Source: The Global Forest Watch (GFW) Platform Online.

3.1.4 Baseline Scenario (VCS, 3.13)

Context of Planned Deforestation in PNG

The Government of PNG has designated large tracts of land for the creation of forestry or agricultural plantations as "mini-estates" and, to a lesser extent (and on a smaller scale), as "forest concessions" (FC) or "special agricultural business leases" (SABL). Companies frequently seek operating licenses from persons who represent the community or property owners, with the assistance of government officials.

Climate Change and Development Authority (CCDA) is a new government entity that is now undergoing transition from the former Office of Climate Change and Development (OCCD). CCDA coordinates the Climate Change efforts of the Government of Papua New Guinea, a continuation of basically where the former OCCD left off. It is the coordinating entity for all climate change related policies and actions in the country. Additionally, it is the designated National Authority under the United Nations Framework Convention on Climate Change (UNFCCC). The office is currently undergoing a transitional phase which requires a major re-structure, in a coordinated and structured manner, complying with its own Climate Change Management Act (CCMA) 2015. The CCMA 2015 clearly defines this in Sections 8-11 of the Act on the organisation's establishment, purpose, functions and powers. CCDA is basically tasked with ensuring that Papua New Guinea follows a path of climate-compatible growth; that the country's economy develops while simultaneously mitigating greenhouse gas emissions and reducing vulnerability to climate change related risks.

The Special Agriculture and Business Lease (SABL) is the original principal program. The creation of an ILG by the traditional landowners is the first step in the lease-leaseback arrangement outlined in the SABLs. They can now lease it to the government of the country (the "head lease") with the help of the Ministry for Lands and Physical Planning. For that piece of land, the Ministry grants the ILG a SABL with no initial rent obligation for 99 years. The ILG and a third party, such as a business to develop and maintain the land, may enter into a sublease arrangement based on the SABL. In 1996, the plan was included in PNG's Land Act. The SABL was established to make it easier to cultivate and harvest commercial crops like cocoa, coffee, rubber, and oil palm on traditional lands. The purpose of SABLs was to give agricultural investors protection over their land, while simultaneously enabling traditional landowners to secure financing for their agricultural endeavours by utilizing the lease as collateral.

Companies that obtained a sublease on forest land under SABL pledged to build a large-scale agricultural development (oil palm production) as well as other advantages including a road network, medical facilities, and educational facilities. Approval to the working plan of logging activities at the 26C Land had been issued by the Office of the Managing Director, National Forest Service, Papua New Guinea Forest Authority.

The Baseline Scenario for the Nuku Maimai Project Area

The Project Area was previously a planned logging area. Nuku Resources Limited (“NRL”), the landowners’ company is the registered owner of the Special Agricultural and Business Lease (“SABL”) for a term of 99 years from 6th March 2009 to 5th March 2108 over the 26C Land which was sub-leased to Skywalker Global Resources Company (PNG) Limited (“SWGR”) for a period of 50 years from 3rd April 2009 for the Maimai Integrated Agro-forestry Development Plan. Pursuant to the MOU and Project Agreement between NRL and SWGR dated 14th January 2012 and 12th October 2015 respectively, forest within the Project Area was planned to be clear-felled by Skywalker Construction (PNG) Limited, the designated logging contractor, and converted as part of the Maimai Integrated Agro-forestry Development Plan.

NRL invites V Carbon ESG Group to enter into and undergo the GHG Reduction Program and Sustainable Development (including the Carbon Credit Trade) at the Project Area in line with the National Government Forestry Development Plan of 2050s Vision. V Carbon ESG Group accepts NRL’s invitation and agrees to protect the forest at the Project Area from any kind of deforestation. Skywalker Construction (PNG) Limited pursuantly became a wholly owned subsidiary of V Carbon ESG (PNG) Limited, a member company of the V Carbon ESG Group and renamed to V Carbon Maimai (PNG) Limited (collectively “V Carbon ESG”).

Formerly designated for logging, the area now stands under protection agreements between V Carbon ESG and NRL. With a focus on forest preservation, the project's primary land use remains unchanged, barring grasslands earmarked for agroforestry initiatives and provision of additional and better social services (including the respective facilities and access roads whereto) to the local communities. The project, categorized under Agriculture, Forestry, and Other Land Use (AFOLU) initiatives, targets a 25-year duration, impacting approximately 7,229 individuals (“the Maimai Project”). Efforts include assisting locals in National Identification registration; clan surveys to gauge demographic shifts and Land Group Incorporate (“ILG”) registration.

Climate Change and Development Authority (CCDA) has issued an acknowledgement and endorsement letter for the Nuku Maimai Carbon Offset and Credit Trading Project on 26th September 2023. By which, the Government of Papua New Guinea (GoPNG) through the CCDA confirmed that Nuku Resources Limited is a registered client eligible to have engagement with sub-national government agencies, its partner and joint project proponent “V Carbon ESG Group” to progress the said project. The letter also serves as an acknowledgement and endorsement towards the Nuku Maimai Project officially registered under the REDD+ projects within the REDD+ and Mitigation Division with the project file number REDD-03-2021-126 of which negotiations and registration process started years back since 2018 with the help of the project proponent V Carbon ESG Group. In light of the official moratorium issued in 2022, Nuku Maimai Project can continue its preparation under the Carbon Market Regulation 2023. The scope for this Nuku Maimai Project covers the area within the Portion 26C SABL.

Mitigation measures to prevent planned deforestation will be implemented by stepping up local surveillance, mapping local deforestation patterns, forming collaborations with educational and research institutions, and offering advantages to neighbouring communities with the aim of

minimizing deforestation by providing alternative income, better social services and facilities, education, and professional training..

3.1.5 Additionality (VCS, 3.14)

For all instances of project activities, the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agricultural, Forestry and Other Land Use (AFOLU) Project Activities VT0001 version 3.0 must be used.

3.1.5.1 Regulatory Surplus (VCS, 3.14)

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☐ Yes ☒ No

Please see Section 2.5. for regulations.

3.1.5.2 Additionality Methods (VCS, 3.14)

For all instances of project activities, the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agricultural, Forestry and Other Land Use (AFOLU) Project Activities VT0001 version 3.0 must be used.

According to STEP 2 of VCS VT001 v. 3.0, each instance shall decide the suitable analysis approach based on the additionality evaluation, whether to apply basic cost, investment comparison, or benchmark analysis.

Any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any law, statute, or other regulatory framework that is consistently followed, may not need project instances.

Due to the fulfilment of the following requirements, this tool is appropriate for this project activity:

- a) Even if a legislation is not enforced, AFOLU activities identical to or comparable to the proposed project activity that are carried out on property within the proposed project perimeter with or without registration as the VCS AFOLU project shall not violate any relevant law;

- b) In compliance with VCS AFOLU Requirements, the applied baseline methodology offers a sequential way to support selection of the most plausible baseline scenario.

Identification of alternative land use scenarios to the proposed AFOLU project activity Sub-step 1a. Identify credible land use scenarios to the proposed VCS AFOLU project activity.

The plausible and realistic land use scenarios that would have taken place inside the planned project perimeter in the absence of the AFOLU project activity under VCS are described below.

Alternative land use scenarios		Consistency with enforce mandatory applicable laws and regulations	Plausibility
Alternative 1	Large-scale agricultural project: The SABL sublease holder clear-cuts a forest and establishes a large-scale agriculture enterprise.	(Consistent) It is evident from section 3.1.4's description that a formal approval to the working plan of logging activities under the Maimai SABL had been issued.	(Most plausible) This scenario depicts the most enforceable action that a project agent can do, making it plausible and realistic.
Alternative 2	Deforested degraded fallow land: The SABL sublease holder clear-cuts the forest and abandons the area. Over time, the deforested area can transition to secondary forest.	(Consistent) Same as Alternative 1	(Less plausible) Comparable to the above, but less plausible, because the SABL and the approval of working plan of logging activities fundamental tenet is the creation of a sizable agricultural project.
Alternative 3	Forest remains forest: Because of the poor earnings and hefty investment expenditures, the SABL sublease holder does not log the forest.	(Consistent) Same as Alternative 1 and 2	(Not plausible) According to trends in logging and wood export, PNG is currently the world's top exporter of round logs. Logging project can make considerable profit.

It is possible to infer from the scenarios given that Scenario I represents the baseline scenario. The most lucrative alternative land use is large-scale agricultural, therefore clearing the area and carrying out the authorization is the most likely baseline scenario.

Step 2: Investment Analysis

Objective

The purpose of this step is to establish whether the proposed VCS AFOLU project is economically or financially less attractive compared to other viable alternative land use scenarios. This analysis excludes any revenue from the sale of GHG credits.

Sub-step 2a: Determination of Appropriate Analysis Method

Given that the project generates financial benefits beyond VCS-related income, we will use the simple cost analysis (Option I). This method will allow us to compare the financial viability of the proposed project against alternative land use scenarios using the costs associated with the VCS AFOLU project and demonstrate that the activity produces no financial benefits other than VCS related income.

Sub-step 2b – Option I: Apply simple cost analysis

Cost Information:

- Based on the investment plan of this VCS AFOLU project designed by V Carbon. The total cost of implementing and maintaining the REDD+ project over 25 years is USD 84,480,000 mainly for community projects (e.g., churches, computer rooms, clinics, eco-tourism, admin, others and contingency), infrastructure development grants and future generation trust, etc.

Step-by-step Analysis:

1. Document the Costs: The total projected cost for the REDD+ project is USD 84,480,000 over 25 years. This includes all expenses related to project implementation, monitoring, maintenance, and reporting.

Particular	Details	Benefit Sharing Percentage
Monetary	N/A	5%
Community projects	Churches, houses, solar fridges, health service, centre, restaurants, etc.	10%
Infrastructure development grants	Roads, house, clean water mechanism, energy supply, admin, others and contingency.	20%
Future Generation Trust	Primary school, library, scholarship for higher education, admin, others and contingency.	5%
Local savings and loans societies	Committee for assessment, training, labours, tax and accounting supports.	5%
Financial literacy training	Sustainable development seminar, fireproof, firefighting and CCB trainings	5%

Micro- and small business support	Agricultural activities, livestock activities, fish farming	5%
Other purposes by CLLCs	Technical and vocational education school	5%

2. Demonstrate Lack of Financial Benefits (Other Than VCS Income): REDD+ Project: The REDD+ project does not produce any financial returns from traditional land use activities such as agriculture, logging, or other commercial uses. Its financial viability relies solely on the revenue generated from the sale of carbon credits under the VCS scheme.

3. Baseline Scenario (Large-scale Agriculture): The baseline scenario, which involves clearcutting the forest and establishing a large-scale agricultural enterprise, would generate substantial economic benefits through the sale of agricultural products. This makes it the most economically attractive scenario without considering carbon credits.

Conclusion in Step 2

Given that the REDD+ project incurs significant costs (USD 84,480,000) without generating any financial benefits other than those derived from VCS-related income, it is economically less attractive compared to the baseline scenario of large-scale agriculture. Therefore, the REDD+ project relies on the revenue from the sale of GHG credits to be viable. Since the proposed REDD+ project produces no financial benefits other than VCS-related income, it satisfies the criteria for additionality under the simple cost analysis approach.

Step 3 Barrier Analysis

Please see Section 2.2.2.

For financial analysis will update later when V Carbon finalized their investment plan.

Common practice analysis

In Papua New Guinea, it is uncommon for landholder companies, including the project proponent, to conserve forested areas solely for financial gain when carbon finance is not available. The V Carbon Nuku Maimai Project, initiated by the project proponent, is one of the few AFOLU (Agriculture, Forestry, and Other Land Use) projects of its kind that will undergo validation under the Verified Carbon Standard (VCS) in Papua New Guinea. The proposed AFOLU project activity under the VCS is not considered the baseline scenario and is therefore considered it is additional.

Conclusion

Based on the aforementioned analysis, we have come to the conclusion that the project can be considered **additional** and Alternative 1 is regarded as the most plausible Baseline Scenario.

3.1.6 Methodology Deviations (VCS, 3.20)

No methodology deviations are made.

3.2 Quantification of Estimated GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

For the emission of baseline carbon stock changes and greenhouse gas emissions from the planned emissions from the planned deforestation under the V Carbon, the VCS module VMD0006 "Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation and planned degradation (BL-PL)" is planned.

The VMD0006 module prescribes that the baseline net GHG emissions for planned deforestation will be determined as:

$$\Delta C_{BSL,planned} = \sum_{t=1}^{t^*} \sum_{i=1}^M (\Delta C_{BSL,i,t} + GHG_{BSL,E,i,t}) \quad (1)$$

Where:

$\Delta C_{BSL,d}$	Net GHG emissions in the baseline from planned deforestation; tCO ₂ e
$\Delta C_{BSL,,}$	Net carbon stock changes in all pools in the baseline stratum i at time t; tCO ₂ e
$GHG_{BSL,,}$	Greenhouse gas emissions as a result of deforestation activities within the project boundary in the baseline stratum i during project year t; tCO ₂ e year-1
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the projected start of the REDD+ project activity

This quantification of the baseline emissions is done through the following three steps:

1. Calculation of annual area of land deforested
2. Calculation carbon stock change in the baseline
3. Calculation greenhouse gas emissions in the baseline

Step 1 – Calculation of annual area of land deforested

The annual area of deforestation in the first year of the baseline scenario is:

$$AA_{planned,i,t} = (A_{planned,i} * D\%_{planned,i,t}) * L - Di \quad (2)$$

Where:

$AA_{planned,i,t}$	Annual area of baseline planned deforestation for stratum i at time t; ha
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$D\%_{planned,i,t}$ Projected annual proportion of land that will be deforested in stratum i during year t; %

$A_{planned,i}$ Total area of planned deforestation over the baseline period for stratum i; ha

$L-Di$ Likelihood of deforestation for stratum i; %

As described in the baseline scenario, Alternative 1 (a description about the planned deforestation).

For the Nuku Maimai with a total area of 102,779 ha, the loggable area is 87,362 ha. It is planned to clear the area over a time span of 5 years (17,472ha/year) and convert it into agricultural uses. ("the project logging plan")

Based on the deforestation plan, it is found that the total area of planned deforestation over the baseline period (i.e., 5 years) $A_{planned,i}$ is 17,472 ha out of 87,362 total area. The annual deforestation rate $D\%_{planned,,}$ is 20%.

Since the area under Nuku Maimai Project is not under government control nor under the control of the original customary landowning clans (V Carbon owns the 99-year State Lease over the total area under the SABL), the likelihood of deforestation $L-Di$ is set to 100%.

Thus, the total area of planned deforestation over the baseline period (i.e., 5 years) for the Nuku Maimai is:

$$A_{planned,i} = 17,472 \text{ ha}$$

And the annual area of deforestation in the first year of the baseline scenario is:

$$AA_{planned,i,t} = (A_{planned,i} * D\%_{planned,i,t}) * L-Di = (87,362 * 20\%) * 100\% = 87,362 \text{ ha}$$

The deforestation plan for the Nuku Maimai is presented in the Table below,

Table - Nuku Maimai Deforestation Plan

Year (Baseline Period)	Annual deforestation rate (%) $D\%_{planned,i,t}$	Annual deforestation in open forest (ha) $AA_{planned,i,t}$
VT01	20	17,472
VT02	20	17,472
VT03	20	17,472
VT04	20	17,472
VT05	20	17,472
Total		87,362

Step 2 – Calculation carbon stock change in the baseline

The net carbon stock changes in the baseline are equal to the baseline pre-deforestation stock minus the long-term carbon stock after deforestation and minus the baseline stock that enters

the wood products pool at the time of deforestation (i.e., not emitted from aboveground biomass at the time of deforestation).

The carbon pools included for this project in table below are the aboveground tree biomass, the belowground tree biomass and the harvested wood products.

Table– Carbon Pools and sources of GHG emissions in the Baseline Scenario

Source		Gas	Included?	Justification/Explanation
Baseline scenario	Aboveground tree biomass	CO2	Yes	This is a mandatory pool
		CH4	No	
		N2O	No	
		Other	No	
	Aboveground non-tree biomass	CO2	No	The carbon stock in this pool is conservatively excluded
		CH4	No	
		N2O	No	
		Other	No	
	Belowground tree biomass	CO2	Yes	The carbon stock in this pool is calculated based on the aboveground tree biomass pool
		CH4	No	
		N2O	No	
		Other	No	
	Soil Carbon	CO2	No	The carbon stock in this pool is conservatively excluded
		CH4	No	
		N2O	No	
		Other	No	
	Dead Wood	CO2	No	The carbon stock in this pool is conservatively excluded
		CH4	No	
		N2O	No	
		Other	No	
	Harvested Wood	CO2	Yes	The carbon stock in this pool is conservatively included since the carbon storage in the

Source		Gas	Included?	Justification/Explanation
	Products			baseline scenario is likely to be a significant pool since large scale deforestation and exportation of timber is expected in the baseline
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Litter	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Biomass burning	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Combustion of fossil fuels	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	
	Use of fertilizers	CO ₂	No	The carbon stock in this pool is conservatively excluded
		CH ₄	No	
		N ₂ O	No	
		Other	No	

Above- and belowground tree biomass pools

Carbon stock changes in the aboveground tree biomass (AGB) and belowground tree biomass (BGB) pools are calculated by subtracting post-deforestation carbon stocks from pre-deforestation forest carbon stocks in the baseline:

$$\Delta C_{ABtree,i} = C_{ABtreebsl,i} - C_{ABtreepost,i} \quad (3)$$

$$\Delta C_{BBtree,i} = C_{BBtreebsl,i} - C_{BBtreepost,i} \quad (4)$$

Where:

$\Delta C_{ABtree,i}$ Baseline carbon stock change in aboveground tree biomass in stratum i; tCO₂e ha⁻¹

$C_{ABtreebsl,i}$ Forest carbon stock in aboveground tree biomass in stratum i; tCO₂e ha⁻¹

$C_{ABtreepost,i}$ Post-deforestation carbon stock in aboveground tree biomass in stratum i; tCO₂e ha⁻¹

$\Delta C_{BBtree,i}$ Baseline carbon stock change in belowground tree biomass in stratum i; tCO₂e ha⁻¹

$C_{BBtreebsl,i}$ Forest carbon stock in belowground tree biomass in stratum i; tCO₂e ha⁻¹

$C_{BBtreepost,i}$ Post-deforestation carbon stock in belowground tree biomass in stratum i; tCO₂e ha⁻¹

To estimate the pre-deforestation carbon stocks in above- and belowground tree biomass in Nuku Maimai Project Area, a forest inventory was carried out by V Carbon. During the forest inventory tree biomass was measured on 22 different sample plots randomly distributed over Nuku Maimai Project Area. Although 40 sample points were randomly generated, considering that there were no accessible roads in contiguous primary forest areas, the sampling measurements were carried out using a combination of river access, terrain considerations, and on-foot surveys. This approach ensured that 22 sampling measurements were conducted, covering each carbon layer and maximizing diversity as much as possible. The sample plots were installed in the project area according to stratified sampling design (see Figure below). The forest stratification was conducted by i-Greenbank.



Based on the measured tree diameter (DBH) and tree height (H) on the sample plots, the aboveground tree biomass is calculated for each tree using the allometric equations²¹ and wood density values provided in the FAO database for tree species²². The mean Belowground tree biomass (BGB) is subsequently calculated using the default root-to-shoot ratio according to IPCC

²² Appendix 1 - List of wood densities for tree species from tropical America, Africa, and Asia. (fao.org)

2006 Guideline²³. For the forest strata in the project area, the root-to-shoot ratio is 0.28 (average value for tropical rainforest with aboveground biomass > 125 ton/ha). For the calculation of the carbon content in the whole tree biomass, the default carbon fraction (CF) for PNG of 0.47 tC/t biomass dry matter is used as given in PNG's FREL and the IPCC 2006 Guideline⁴. Furthermore 44/12 is used as the standard ratio molecular weight of CO₂ to carbon (CO₂F). The results of the 2021 baseline (pre-deforestation) forest carbon stock inventory are presented for the different strata.

Carbon Stratum	No. Plots (n)	Area (ha)	Mean aboveground biomass (DBH > 10 cm) carbon stock in plot (t CO ₂ -e/ha)	Mean belowground biomass (DBH > 10 cm) carbon stock in plot (t CO ₂ -e/ha)	Uncertainty
Low altitude forest on uplands	4	11.7	344.3	93.0	14.0%
Low altitude forests on plains & fans	18	87,350.4	547.8	147.9	
Weighted average			547.8	147.9	

Post-deforestation carbon stock

As for the post-deforestation carbon stock a combination of land uses is proposed by the project developer in the baseline: The land use plan of post-deforestation is 20% cocoa and coffee plantation, 30% oil palm, and 50% subsistence and other land use. The IPCC Guidelines 2006 and PNG's FREL provides default carbon stocks for the different land uses. Based on these defaults a mean post-deforestation carbon stock in AGB is calculated at **118.5 tCO₂e ha⁻¹** and the carbon stock in BGB at **32.0 tCO₂e ha⁻¹**.

Thus, based on the mean values given by PNG's FREL, the baseline carbon stock change in aboveground tree biomass for the two different forest strata area calculated as:

$$\Delta C_{ABtree} = C_{ABtreebsl.i} - C_{ABtreepost.i} = 547.8 - 118.5 = 429.3 \text{ tCO}_2\text{e ha}^{-1}$$

When the root-shoot ratio (RS) of 0.27 is applied, the baseline carbon stock change in belowground tree biomass for the two different forest strata is calculated as:

$$\Delta C_{BBtree} = C_{BBtreebsl.i} - C_{BBtreepost.i} = 147.9 - 32.0 = 115.9 \text{ tCO}_2\text{e ha}^{-1}$$

Harvest Wood Product Pool

See the calculation in spreadsheet Tab: VM0007_CP-W

Table - Stock Change in the baseline carbon pools

²³ IPCC 2006 INV GLs AFOLU Chapter 4

Year	Annual deforestation in open forest (ha)	Stock change in AGB (tCO ₂ e)	Stock change in BGB (tCO ₂ e)	Stock change in HWP (tCO ₂ e)	Sum of stock change in all baseline carbon pools
Year 1	17472.4	7,500,342	2,025,092	25,449	8,967,195
Year 2	17472.4	7,500,342	2,025,092	50,898	8,992,644
Year 3	17472.4	7,500,342	2,025,092	76,346	9,018,093
Year 4	17472.4	7,500,342	2,025,092	101,795	9,043,542
Year 5	17472.4	7,500,342	2,025,092	127,244	9,068,991
Year 6				127,244	127,244
Year 7				127,244	127,244
Year 8				127,244	127,244
Year 9				127,244	127,244
Year 10				127,244	127,244
Year 11				127,244	127,244
Year 12				127,244	127,244
Year 13				127,244	127,244
Year 14				127,244	127,244
Year 15				127,244	127,244
Year 16				127,244	127,244
Year 17				127,244	127,244
Year 18				127,244	127,244
Year 19				127,244	127,244
Year 20				127,244	127,244
Year 21				127,244	127,244
Year 22				101,795	101,795
Year 23				76,346	76,346
Year 24				50,898	50,898
Year 25				25,449	25,449

3.2.2 Project Emissions (VCS, 3.15)

The project will avoid deforestation, illegal fuelwood, selective logging without FSC certification, natural disturbances, and other degradation activities, and no tree growth will be assumed to be conservative.

3.2.3 Leakage Emissions (VCS 2.5, 3.2, 3.6, 3.15, 4.3)

In this project, leakage does not need to be considered as there is no materially changed as a result of the project (e.g., the deforestation agent has not designated new lands as timber concessions, increased harvest rates in lands already managed for timber, cleared intact forests for agricultural production or increased fertilizer use to enhance agricultural yields).

Applied VM0048 APPENDIX 1: TESTING SIGNIFICANCE OF GHG EMISSIONS to test the significance GHG emissions. It is an adaptation of the CDM Tool for testing the significance of GHG emissions in A/R CDM project activities, v01. The procedure may be used to justify the omission of pools and GHG sources within the project boundaries, as well as to justify the omission of GHG emissions resulting from leakage mitigation measures.

According to the following equation to calculate the relative contributions of the GHG emissions:

$$RC_{Ei} = \frac{E_i}{\sum_{i=1}^I E_i} \quad (5)$$

Where:

$RC_{E,i}$ Relative contribution of each source i to the sum of project and leakage GHG emissions

E_i GHG project and leakage emissions for source i as estimated under Step 2a–c in the VM0048 APPENDIX 1

i , Index for individual sources of project and leakage GHG emissions due to leakage mitigation measures (I = total number of sources considered in Step 1) in the VM0048 APPENDIX 1

The estimation of net carbon stock changes by pool for this REDD+ project is 1 due to there was no any pre-project planned forest. And the index for individual source is 1. Thus, the sum of project and leakage GHG emissions equal to 1. The result is larger than the threshold of 0.95.

3.2.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals (VCS, 3.15, 4.1)

See the calculation in spreadsheet Tab: AFOLU_Non-Permanence_Risk-Tool_v4.0.

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation (VCS, 3.16)

Data / Parameter	i
Data unit	Dimensionless
Description	Stratum
Source of data	iGreenBank GIS Map

Value applied	Land-use categories present in the Nuku Maimai Project Area: • Low altitude forest on plains and fans • Low altitude forest on uplands
Justification of choice of data or description of measurement methods and procedures applied	The original classification data comes from Landsat 8 and Landsat 9 surface reflectance data, as well as SRTM 30 DEM data, with a resolution of 30 meters. The classification and validation samples were created based on high-resolution Google Earth imagery: 1. Calculate the annual maximum Normalized Difference Vegetation Index (NDVI) and annual maximum Modified Normalized Difference Water Index (MNDWI) based on surface reflectance data. 2. Select appropriate reflectance bands, annual maximum NDVI, annual maximum MNDWI, and DEM data based on the specific carbon layer distribution characteristics of the region as input data for the SVM classifier. 3. Input the sample point data created based on high-resolution imagery into the SVM classifier, with 75% of the data used as training samples and the remaining 25% as validation samples. 4. Based on the classification results, statistically analyse the distribution area of the corresponding carbon layers for different years.
Purpose of Data	• Determination of baseline scenario • Calculation of baseline emissions • Calculation of project emissions
Comments	

Data / Parameter	t
Data unit	Year
Description	Years elapsed since the projected start of the REDD project activity
Source of data	N/A
Value applied	1, 2, 3, ...
Justification of choice of data or description of measurement methods	N/A

and procedures applied	
Purpose of Data	• Determination of baseline scenario • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	

Data / Parameter	$AA_{planned,i,t}$
Data unit	Ha
Description	Annual area of baseline planned deforestation for stratum i at time t
Source of data	The working plan of logging activities
Value applied	The project logging plan
Justification of choice of data or description of measurement methods and procedures applied	The working plan of logging activities
Purpose of Data	• Determination of baseline scenario • Calculation of baseline emissions
Comments	

Data / Parameter	$A_{planned,i}$
Data unit	Ha
Description	Total area of planned deforestation over the baseline period for stratum i
Source of data	The working plan of logging activities
Value applied	87,362 ha
Justification of choice of data or description of measurement methods and procedures applied	The working plan of logging activities and the project logging plan

Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$D_{\text{planned},i,t}$
Data unit	%
Description	Projected annual proportion of land that will be deforested in stratum i during year t
Source of data	The working plan of logging activities
Value applied	Year 1: 20% Year 2: 20% Year 3: 20% Year 4: 20% Year 5: 20%
Justification of choice of data or description of measurement methods and procedures applied	The working plan of logging activities and the project logging plan
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	Will be revisited at the time of baseline revision

Data / Parameter	$L-D_i$
Data unit	%
Description	Likelihood of deforestation for stratum i
Source of data	VMD0006
Value applied	100%
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed: For all areas not both under Government control and zoned for deforestation, $L-D_i$ shall be equal to 100%
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions

Comments	
Data / Parameter	$\Delta C_{ABtree,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Baseline carbon stock change in aboveground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	See section 3.2.1
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$\Delta C_{ABtree,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Baseline carbon stock change in aboveground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	See Table– Carbon Pools and sources of GHG emissions in the Baseline Scenario
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$C_{ABtreebsl,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Forest carbon stock in aboveground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	547.8 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$C_{ABtreepost,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Post-deforestation carbon stock in aboveground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	118.5 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$\Delta C_{BBtree,i}$
Data unit	tCO ₂ e ha ⁻¹

Description	Baseline carbon stock change in belowground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	115.9 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	• Determination of baseline scenario • Calculation of baseline emissions
Comments	

Data / Parameter	$C_{BBtreebsl,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Forest carbon stock in belowground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006 Guidelines
Value applied	147.9 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	• Determination of baseline scenario • Calculation of baseline emissions
Comments	

Data / Parameter	$C_{BBtreepost,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Post-deforestation carbon stock in belowground tree biomass in stratum i
Source of data	iGreenbank GIS map, Forest inventory data 2023, IPCC 2006

	Guidelines
Value applied	32.0 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Determination of baseline scenario (AFOLU projects only) - Calculation of baseline emissions
Comments	

Data / Parameter	R/S ratio
Data unit	dimensionless
Description	Ratio of belowground biomass to aboveground biomass
Source of data	IPCC 2006 Guidelines
Value applied	0.27
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	- Calculation of baseline emissions - Calculation of project emissions - Calculation of leakage
Comments	

Data / Parameter	CF
Data unit	dimensionless
Description	Conversion factor for conversion of oven-dry weight to carbon stock in tree biomass
Source of data	IPCC 2006 Guidelines
Value applied	0.47 tC tdm ⁻¹
Justification of choice of data or description of	VMD0006 is followed as guideline for calculations

measurement methods and procedures applied	
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	

Data / Parameter	CO ₂ F
Data unit	dimensionless
Description	Standard ratio molecular weight of CO ₂ to carbon
Source of data	PNG's FREL and IPCC 2006 Guidelines
Value applied	44/12
Justification of choice of data or description of measurement methods and procedures applied	VMD0006 is followed as guideline for calculations
Purpose of Data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	

Data / Parameter	$C_{WP,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Carbon stock entering the wood products pool at the time of deforestation from stratum i
Source of data	The working plan of logging activities
Value applied	33.4 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	Followed VMD0005, using values from deforestation plan
Purpose of Data	• Determination of baseline scenario

	Calculation of baseline emissions
Comments	

Data / Parameter	$C_{XB,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Mean stock of extracted biomass carbon at the time of deforestation from stratum i
Source of data	The working plan of logging activities
Value applied	44.0 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	Followed VMD0005, using values from deforestation plan
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	WW_{ty}
Data unit	dimensionless
Description	Wood waste. The fraction immediately emitted through mill inefficiency by class of wood product ty
Source of data	VMD0005
Value applied	0.24
Justification of choice of data or description of measurement methods and procedures applied	Default factor for wood waste of 0.24 as given by VCS module VMD0005 for developing countries Since VMD0005 provides a single default wood waste factor for all timber categories in the developing countries, only one class of Wood products is used for the calculation of the Harvested Wood Product pool
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions

Comments	
Data / Parameter	<i>ty</i>
Data unit	
Description	Wood product class
Source of data	VMD0005
Value applied	defined here as sawnwood (s), wood-based panels (w), other industrial roundwood (oir), paper and paper board (p), and other (o)
Justification of choice of data or description of measurement methods and procedures applied	Since VMD0005 provides a single default wood waste factor for all timber categories in the developing countries, only one class of Wood products is used for the calculation of the Harvested Wood Product pool
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$C_{WP100,i}$
Data unit	tCO ₂ e ha ⁻¹
Description	Carbon stock entering the wood products pool at the time of deforestation that is expected to be emitted over 100-years from stratum i
Source of data	The working plan of logging activities
Value applied	29.1 tCO ₂ e ha ⁻¹
Justification of choice of data or description of measurement methods and procedures applied	Followed VMD0005, using values from deforestation plan
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	SLF_{ty}
Data unit	Dimensionless
Description	Fraction of wood products that will be emitted to the atmosphere within 5 years of timber harvest by class of wood product ty
Source of data	VMD0005
Value applied	0.2
Justification of choice of data or description of measurement methods and procedures applied	Followed VMD0005, using default fraction parameters for roundwood
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	OF_{ty}
Data unit	Dimensionless
Description	Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years of timber harvest by class of wood product ty
Source of data	VMD0005
Value applied	0.84
Justification of choice of data or description of measurement methods and procedures applied	Followed VMD0005, using default fraction parameters for roundwood
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$\Delta C_{BSL,planned}$
Data unit	tCO ₂ e

Description	Net GHG emissions in the baseline from planned deforestation i
Source of data	Based on the working plan of logging activities and default C-stocks provided in PNG's FREL and IPCC 2006 Guidelines
Value applied	47,380,857 tCO ₂ e
Justification of choice of data or description of measurement methods and procedures applied	The working plan of logging activities and the project logging plan
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$\Delta C_{BSL,i,t}$
Data unit	tCO ₂ e
Description	Sum of the baseline carbon stock change in all pools in stratum i at time t
Source of data	Based on the working plan of logging activities, and default C-stocks provided in PNG's FREL and IPCC 2006 Guidelines
Value applied	See the calculation in spreadsheet Tab: VM0007_Summary
Justification of choice of data or description of measurement methods and procedures applied	The working plan of logging activities and the project logging plan
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$GHG_{BSL,E,i,t}$
Data unit	tCO ₂ e
Description	Greenhouse gas emissions as a result of deforestation activities within the project boundary in the baseline stratum i during project year t

Source of data	
Value applied	0 tCO ₂ e
Justification of choice of data or description of measurement methods and procedures applied	The GHG emissions as a result of deforestation activities in the baseline for the Nuku Maimai Project Area are conservatively set to 0 tCO ₂ e for all years
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$E_{FC,i,t}$
Data unit	tCO ₂ e
Description	Emission from fossil fuel combustion in stratum i in year t
Source of data	
Value applied	0 tCO ₂ e
Justification of choice of data or description of measurement methods and procedures applied	The Emission from fossil fuel combustion in the baseline for Nuku Maimai the Project Area are conservatively set to 0 tCO₂e for all years
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$E_{BiomassBurn,i,t}$
Data unit	tCO ₂ e
Description	Non-CO ₂ emissions due to biomass burning in stratum i in year t
Source of data	
Value applied	0 tCO ₂ e
Justification of choice of data or description of measurement methods	The Non-CO ₂ emission ue to biomass burning in the baseline for Nuku Maimai the Project Area are conservatively set to 0 tCO₂e

and procedures applied	for all years
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

Data / Parameter	$N_2O_{direct-N,i,t}$
Data unit	tCO ₂ e
Description	Direct N ₂ O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t
Source of data	
Value applied	0 tCO ₂ e
Justification of choice of data or description of measurement methods and procedures applied	The Direct N ₂ O emission as a result of nitrogen application in the baseline for Nuku Maimai the Project Area are conservatively set to 0 tCO ₂ e for all years
Purpose of Data	- Determination of baseline scenario - Calculation of baseline emissions
Comments	

3.3.2 Data and Parameters Monitored (VCS, 3.16)

Data / Parameter	$\Delta CPRJ$
Data unit	tCO ₂ e
Description	Net greenhouse gas emissions within the project area under the project scenario
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of	

monitoring/recording	
Value applied	0 tCO ₂ e
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta C_{PPRJ,DefPA,i,t}$
Data unit	tCO ₂ e
Description	Net carbon stock change as a result of deforestation in the project area in the project scenario in stratum i at time t
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO ₂ e
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta C_{PRJ,Deg-IT,i,t}$
Data unit	tCO ₂ e

Description	Net carbon stock change as a result of forest degradation through extraction of trees for illegal timber or fuelwood and charcoal in the project area in the project scenario in stratum i at time t
Source of data	Nuku Maimai Land Use Plan and PRA
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO _{2e}
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta CPRJ, Deg-FSC, i, t$
Data unit	tCO _{2e}
Description	Net carbon stock change as a result of forest degradation due to selective logging of forest management areas possessing a FSC certificate in the project area in the project scenario in stratum i at time t
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO _{2e}

Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta CPRJ, DistPA, i, t$
Data unit	tCO ₂ e
Description	Net carbon stock change as a result of natural disturbance in the project area in the project scenario in stratum i at time t
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO ₂ e
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta GHGPRJ-E, i, t$
Data unit	tCO ₂ e
Description	Greenhouse gas emissions as a result of deforestation and degradation activities within the project area in the project

	scenario in stratum i at time t
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO ₂ e
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$\Delta CPRJ, Enh, i, t$
Data unit	tCO ₂ e
Description	Net carbon stock change as a result of forest growth and sequestration during the project in areas projected to be deforested in the baseline in stratum i at time t
Source of data	Nuku Maimai Land Use Plan
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	0 tCO ₂ e (conservative)
Monitoring equipment	
QA/QC procedures to be applied	

Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	ΔCLK
Data unit	tCO _{2e}
Description	Net GHG emissions due to leakage from the REDD project activity over the project period
Source of data	
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

Data / Parameter	$NERREDD$
Data unit	tCO _{2e}
Description	Total net GHG emission reductions of the REDD project activity over the project period
Source of data	
Description of measurement methods and procedures to be applied	

applied	
Frequency of monitoring/recording	
Value applied	
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of data	Calculation of project emissions
Calculation method	
Comments	

3.3.3 Monitoring Plan (VCS, 3.16, 3.20)

The project is under the greatest direct illegal threat, which has been determined to be illegal logging. In order to detect and stop unlawful logging, V Carbon is keeping an eye on the project area with the help of satellite technology, stakeholder consultation, regular patrols by local stakeholders. To aid participants in locating and stopping unlawful logging, we've started the Forest Incident Response System.

The V Carbon's monitoring plan will be updated as new project activities are carried out in the project area with their unique monitoring techniques. The monitoring and implementation plans for the V Carbon Nuku Maimai REDD+ Project will be amended if any project activities or monitoring activities need to be phased out or added at a later time owing to adaptive management. Table below provides a summary of the project's monitoring efforts for measuring its climatic benefits.

Activity	Frequency	Method
Forest Patrols and Community Observations	Once every reporting period	Patrol teams monitor project area perimeters and various routes through project area
Plot Measurements	Once before every baseline update	Inventory teams re-inventory carbon stocks and merchantability within

3.3.4 Dissemination of Monitoring Plan and Results (VCS, 3.18; CCB, CL4.2)

This Nuku Maimai project also seeks validation under the Voluntary Carbon Standard VCS. In the Project Design Document for VCS validation, a full monitoring plan is contained as prescribed in the LtPF Methodology. Within 6 months, this project will have developed a full monitoring plan for review under VCS PDD Validation.

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (CCB, GL1.1)

As the climate in this project area is influenced by seasonal alternations, harvesting and planting activities throughout the year can be determined with the weather change. Nuku Maimai as one of the high rainfall areas, the weather patterns will highly influence the rainfall patterns of the area. Without the conservation of Nuku Maimai Forests, it is likely to affect the forest cover and plant diversity in the area, increasing the intensity on global warming. Also, occasional flooding from the large rivers has been reported, which will damage socioeconomic activities of the people and the environment.

3.4.2 Climate Change Impacts (CCB, GL1.2)

With the project, the Nuku Maimai Community would be more resilient to the impacts from climate change. Currently, the forestation practices and the well-being of the Nuku Maimai community is affected, due to low predictability of the weather, resulting in low crop resilience and poor forest conservation. Also, the occasional flooding of large rivers is likely to damage the harvesting or habitats. Under this project, members of the community will be better protected from prolonged midday heat and promotes better living standard, alongside with promotion of climate change adaptation through education.

3.4.3 Measures Needed and Designed for Adaptation (CCB, GL1.3)

The project will oversee climate change adaptation for the Nuku Maimai Community through conservation and protection. Based on the plan, increasing surveillance will be carried out with partnerships on research institutions to fit the local activity patterns. On top of these, community plans to raise awareness on climate change adaptation will be through literacy and housing improvements, and micro-financing the restoration of carbon pools. Based on these plans, V Carbon will set up institutions to provide benefits on community restoration. With plans on avoiding and stopping deforestation, the Nuku Maimai Community will be more climate resilient with retained forests and biodiversity.

Through these measures and planning, it is expected to bring these impacts to the project area:

- a) The Nuku Maimai Community will be aware of the climate change and related risks, and trained to these measures;

- b) Stronger surveillance and future planning on the forests.

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CCB, CM1.1)

The Nuku Maimai community is a collective of smaller village communities, with 7,229 indigenous people (3,715 adults and 3,514 children under 18) living in small to medium-sized villages on the outskirts of the project area. These villages are grouped together based on ancestral language, with a total of 12 ancestral languages represented.

At the core of the community structure is the clan, which exists beneath the sub-community or village level. Each individual in the Nuku Maimai community belongs to a clan, which is formed through extended family relationships known as "brother ties." Clans serve as the primary unit for economic activities and social obligations, and they distribute wealth through these brotherly ties, a practice known as "wontokism."

The Landowner Group Incorporation Act of 1974 legally recognizes land ownership at the clan level, making clans responsible for land use and resource allocation decisions. Clans are organized into Nuku Resources Limited to exercise their resource management rights. Nuku Resources Limited have a greater opportunity for wealth creation as they receive revenue from resource management decisions. Although wealth distribution may not be completely equal, Nuku Resources Limited are obliged to share the wealth with their clan members, a tradition deeply ingrained in their culture.

Wealth creation in the community is derived from wage-earning opportunities and the utilization of natural resources. However, it is challenging to measure wealth since the concept of wealth extends beyond purely economic terms. Vulnerable households or those without employment or development opportunities represent the poorer segments of the community.

The remote location of the project area, coupled with a lack of commercial infrastructure and limited support for education and skills development, restricts opportunities for economic and wage-paying employment. Most employment opportunities come from neighbouring villages with commercial developments. While there is evidence of a small cash economy through wages and resource management opportunities outside the area, there are no specific economic figures available. Additionally, a subsistence-based economy coexists alongside the cash economy.

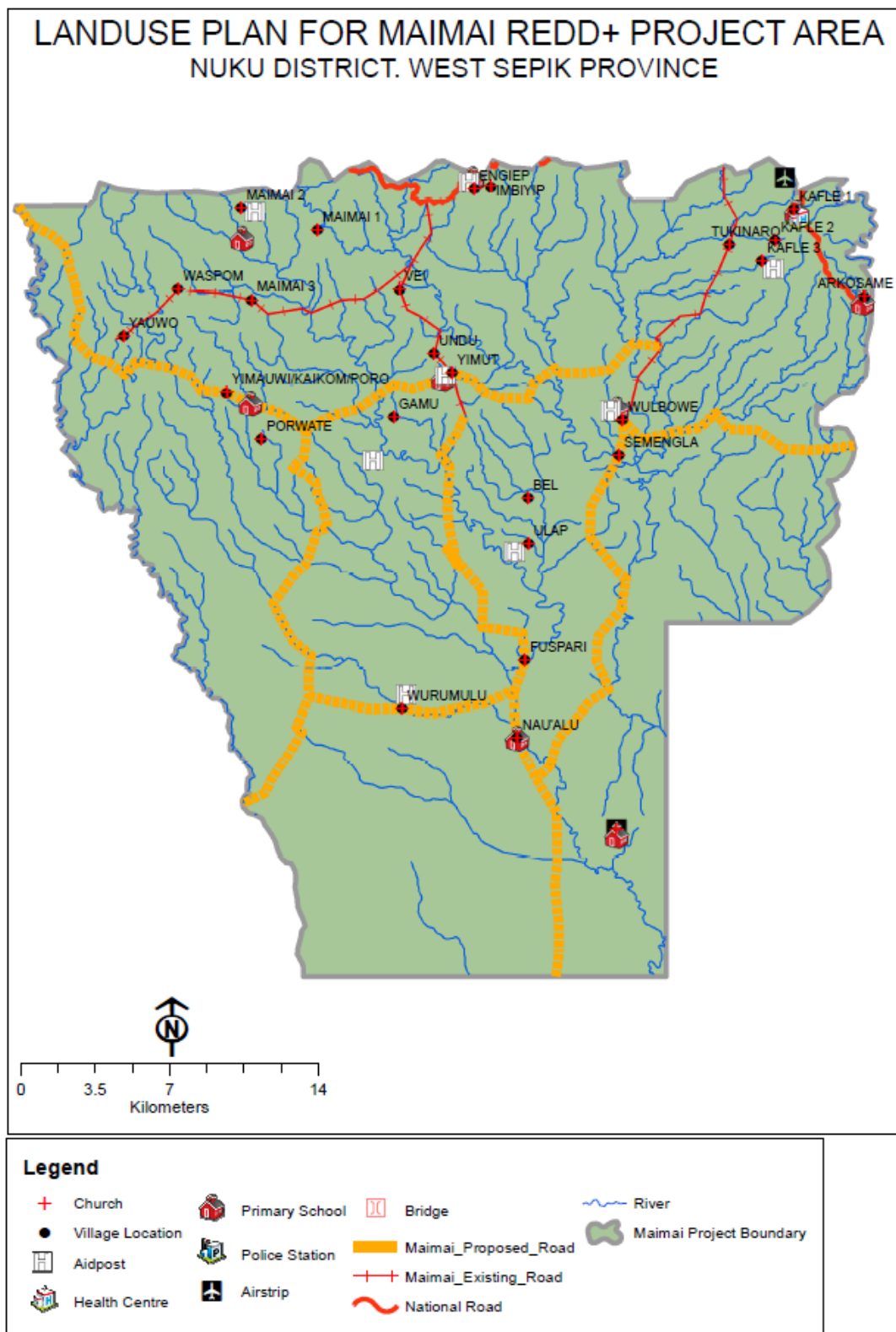
The project's remote location also hinders the establishment of accessible health and education services. Reports from advisors and assessments by the World Health Organization (WHO) indicate consistent challenges in staffing, supervision, and the regular provision of supplies in the health services of the Sandaun Province of Papua New Guinea. The education

system in Papua New Guinea provides schooling, but the Nuku Maimai community lacks formal educational infrastructure. The cost of learning is high, making it difficult for the majority of the community to speak or read English.

4.1.2 Interactions between Communities and Community Groups (VCS, 3.19; CCB, CM1.1)

Under V Carbon's engagement, it is to ensure all community groups will be included in the project for participation and ensuring ownership. As Nuku Maimai is separated by clans, the members under the 34 ILGs provided their consensus on the project development. This approach allows all voices and opinions to be heard, such that youth and women from the clans will also be able to express their considerations, and the overall community consensus are seriously considered.

4.1.3 High Conservation Values (CCB, CM1.2)



High Conservation Value	Areas that provide critical ecosystem services
Qualifying Attribute	The area provides essential ecosystem services that are critical for the local environment and community. These services may include, but are not limited to, water regulation and purification, soil conservation, climate regulation, flood mitigation, and habitat provision for biodiversity. The loss or degradation of these areas would have a significant and detrimental impact on the local community's well-being and the overall ecological balance of the region.
Focal Area	Whole project area The primary objective of this REDD+ project is to protect the existing forest areas and prevent further logging and deforestation. As such, the project activities are specifically designed to have a positive impact on the identified HCV areas and ensure that there are no negative consequences.

High Conservation Value	Areas that are fundamental for meeting the basic needs of local communities
Qualifying Attribute	The forests and natural habitats within the project zone are a primary source of food, fuel, construction materials, and traditional medicines for the local communities. These natural resources are integral to the subsistence and livelihood activities of the smallholder farmers and indigenous groups in the region, and have limited readily available alternatives.
Focal Area	Area where local community live The project recognizes the importance of these areas for the local community's subsistence and livelihood. To ensure that the community's access to essential resources is not disrupted, the project has reserved a 15% buffer area within the protected forest. This buffer area will be designated for the community's traditional resource-use patterns, allowing them to continue accessing essential food, fuel, fodder, medicines, and building materials without interruption. In order to improve their livelihood, the project will also invest in infrastructure such as school, clinic, road and energy supply, etc.

High Conservation Value	Areas that are critical for the traditional cultural identity of communities
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Qualifying Attribute	The project area encompasses sites and landscapes that hold deep cultural, spiritual, and historical significance for the local indigenous communities. These include ancestral burial grounds, church, and areas that are central to traditional customs, ceremonies, and the transmission of cultural knowledge. Maintaining the integrity of these culturally important areas is fundamental to the communities' identity and way of life.
Focal Area	Local Village The project's emphasis on forest protection and conservation will ensure that these culturally significant areas are preserved and maintained. The project will collaborate extensively with the local community to identify and protect these areas, recognizing their importance for the community's traditional practices, beliefs, and cultural heritage. The project activities will not interfere with or compromise the community's access to or use of these areas. Furthermore, the project will actively enhance the cultural identity of the local community by supporting the construction of a new church within the project area. This church will be built in collaboration with the community, respecting their traditional architectural styles and spiritual practices. The establishment of this cultural landmark will strengthen the community's ties to the land and reinforce their sense of cultural identity.

4.1.4 Without-Project Scenario: Community (CCB, CM1.3)

Methodology for measuring performance

The methodology will measure impacts of the project and “without project” scenario in terms of output applied to SRL indicators. Determining impact requires the quantification of the likelihood of the asset indicator being delivered. Considering that potential for degradation or a reduction in asset value exists, the scale will run from -5 to +5.

5 High probability of realization

4 Med-High probability of realization

3 Medium probability of realization

2 Low-Med probability of realization

1 Low probability of realization

0 No affect

- 1 Low risk of degradation
- 2 Low-med risk of degradation
- 3 Risk of degradation
- 4 Med-high risk of degradation
- 5 High risk of degradation

Based on the activities from without project scenario, the relevant results have been observed by local and international NGOs. It should be noted these results correspond to testimony of occurrences. And that it does not infer such events will happen or have happened at every site on a large scale. The results driven indicates the risk of degrading or potential realization of performance indicators.

Table Relevant indicators – Without Project Scenario

"Without project" scenario results		Relevant indicators
Training: provides fundamental skills training for project activities and security		Source of income
Paid Wages: testimony reveals wages are reduced by requirements to pay for food and clothing on site. Studies show no lasting economic benefits are generated		Source of income, Worker's rights
Arbitrary Detention and Physical Brutality: attempts to restrain due process in property appropriation are being dealt with brutally, sometimes by police "moonlighting" for logging companies		Individual rights, Stability of leadership
Contamination of food and water sources: sediment from cleared forests and roads is polluting rivers, as are chemicals used to kill timber pests and preserve felled logs		Source of income, Clean drinking water
Destruction of cultural sites, artefacts and grave-sites: these acts deny the rights of communities to us their own land for cultural and spiritual purposes		Source of income, Strengthen traditional institutions, Preservation of indigenous knowledge
Unjust working conditions: the appalling labour conditions in many logging camps are again exposed.		Worker's rights, Individual rights
Environmental Degradation: Logging practices at neighbouring sites have been responsible for long-term environmental costs		Sustainable use of environmental assets, Protection of environmental asset
"Without Project" Scenario Indicator	Impact	Comments
Education Opportunities	0	
Access to Health Care	0	
Worker's Rights	-3	
Individual rights	-3	

Structural integrity of shelters	0	
Energy infrastructure	0	
Clean drinking water	-3	
Rights to resource management	0	
Strengthen traditional institutions	-2	
Preservation of indigenous knowledge	-3	
Stability of leadership	-2	
Sustainable use of environmental assets	-2	
Stable food supply	0	
Protection of environmental services	-4	Climate Services
Source of income	2	
Access to external market	0	
Asset ownership	0	
Net Project Impact	-20	

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CCB, CM2.1)

Based on the results from identified activities and outputs, as well as the outcomes, the expected impacts have been presented in the Project's Theory of Change under Section 2.1.17 of this document.

As mentioned in detail under Section 2.3, effort has been made to engage all clans in the Nuku Maimai Community in identification of activities and evaluation of project outcomes and impacts. This work has been done during the development of our management plan.

In section 2.3.6, community meetings have been done to evaluate the project benefits, costs and risks related at Nuku Maimai.

Community group	Whole Community
Impact(s)	Improved access to basic services and community facilities
Type of benefit/cost/risk	Community Projects
Change in well-being	The construction and upgrading of community infrastructure like schools, clinics, places of worship, and eco-tourism facilities is expected to significantly enhance the overall quality of life for the entire community. These shared public spaces and services will foster greater community cohesion, pride, and feelings of belonging. Improved access to quality education and healthcare in particular will have wide-ranging positive impacts on human development outcomes.

Community group	Adults
Impact(s)	Increased economic opportunities and financial security
Type of benefit/cost/risk	Infrastructure Grants, Savings/Loans, Micro-business Support
Change in well-being	The infrastructure development grants for roads, housing, water, and energy systems are anticipated to improve living standards, reduce household burdens, and enable greater economic productivity. Meanwhile, the access to savings, loans, and business support services will empower adults to grow their incomes, build assets, and plan for the future with greater financial resilience. This is expected to translate into improved food security, nutrition, and overall household welfare.

Community group	Youth
Impact(s)	Expanded educational and skills development pathways
Type of benefit/cost/risk	Future Generation Trust, Vocational Training
Change in well-being	The educational scholarships and vocational training programs will give young people greater opportunities to develop knowledge and skills aligned with their interests and aspirations. This investment in human capital development is expected to enhance future employment prospects, entrepreneurial potential, and social mobility for the younger generation. Improved access to quality education will also cultivate essential skills for community leadership and self-determination.

Community group	Children
Impact(s)	Improved access to basic services and educational facilities
Type of benefit/cost/risk	Community Projects, Future Generation Trust
Change in well-being	The new or upgraded schools, libraries, and other child-



focused infrastructure are anticipated to provide safer, more stimulating, and conducive learning environments for children. This is expected to foster improved educational outcomes, cognitive development, and overall well-being for the younger generation. Better child health and nutrition outcomes may also result from the enhanced community services and facilities.

4.2.2 Negative Community Impact Mitigation (VCS, 3.19; CCB, CM2.2)

Culture and Tradition

The strategies for attaining long-term objectives go hand in hand with the principles of the Natural Resource-Asset Management System. This system serves as a catalyst for empowering communities to manage their natural and financial resource-assets. By adopting this distinctive project design approach, communities and proponents can pass on their traditional values and culture to future generations.

Undoubtedly, social systems and networks will undergo changes. The global economy and markets will influence the cultural dynamics of local communities in Nuku Maimai. It is inevitable that these communities cannot be isolated from the outside world, as this is an undeniable reality.

The Project's Natural Resource-Asset Management System is designed to prevent any interference or forced cultural transition caused by development. Instead, it aims to revitalize traditional processes and methods, allowing indigenous knowledge and values to be applied now and in the future. By bolstering these systems, the culture is effectively equipped to endure in the face of external pressures.

International development has emerged as a dedicated field of study, supported by a substantial body of empirical evidence that highlights the effectiveness of best-practice methods. Lessons learned from Melanesian development programs reveal that projects designed to embrace and incorporate existing systems, along with traditional structures and values, are most successful in maintaining social cohesion and safeguarding cultural heritage.

Sustainable Livelihood

The Committees and its Board have responsibility to guide the delivery method of community enhancement programs. The provision of benefits can inherently generate long-term advantages. Both new and existing channels for resource distribution will be strategically designed to convert revenues from commercial activities into valuable resources. These resources will manifest as equipment and training programs aimed at developing essential

skills. By transforming financial capital into human capital, the project empowers the people of Nuku Maimai with the necessary means for sustainable progress and advancement.

For instance, a pressing and widespread community need is the construction of adequate shelters, specifically roofs. Through the Public Infrastructure Delivery Channel, the project will offer tools and training to build sturdy structures with waterproof roofs. These tools and training will not vanish once the roofs are repaired and structures are reinforced; instead, they will establish a continuous source for ensuring dry shelters in the future.

By directing revenues to resources and skills, sustainable livelihoods will be promoted through the project, alongside addressing community needs. This approach ensures the longevity of project benefits, extending them beyond the project's duration and benefiting multiple generations.

4.2.3 Net Positive Community Well-Being (VCS, 3.19; CCB, CM2.3, GL1.4)

Below is an overview of related to various aspect of the community's well-being:

Access to land and resources: With the support from a Community Conservation Association, High Conservation Values assessment will be taken to understand the sustainable land use. Community conservation laws will be applied to preserve land use of the Nuku Maimai project area.

Employment & skills enhancement: Under the project, life skills training will be provided to different members of the Nuku Maimai community. Through skill building and a range of support provided, the local community will be empowered with valuable tools, and build up resilience to changing environments. Through multiple channels including education and workshops, the needs and preferences of the local communities will also be considered. Without the project, it may be hard to adapt to new living environment or climate change.

Education: With the project, schools will be built up to provide education services for the community. A scholarship fund will be set to allow more children and low-income families to access the opportunity for education. Without the project, literacy rate of the Nuku Maimai community would not be raised by improving the education of the younger generation, and it is likely to slow down the community education levels for lower-income families.

Community self-reliance: In a scenario with project, the Nuku Maimai area will operate with its existing Community Conservation Laws, clan tradition and culture and custom practices. With the forests preserved, it will be providing a more comfortable life to the community by supplying fundamental necessities, e.g., fresh water, biodiversity which can be maintained for current and future generations. Community members will be equipped with awareness to take sustainable practices. With different support and funding, the Nuku Maimai Community will be strengthened through long-term community development. Throughout the project lifetime of 25 years, the community will be able to continue their self-reliance. In the absence

of the project, the Nuku Maimai Community will be highly reliant on external businesses in the land for income and essential services. Over the time, this lack of self-reliance may be a potential disruption to their natural resources and vital environmental services.

Climate change adaptation: The project will be highly aware to climate change adaptation and mitigation of the Nuku Maimai community to implement related measures. Together with different groups and collaboration, the community will be receiving greater support to adapt to climate change. Without the project, the Nuku Maimai community would face growing vulnerability to the impacts of climate change.

4.2.4 High Conservation Values Protected (CCB, CM2.4)

The project will secure carbon credits through forest management activities implemented by the local communities. Tropical rainforest biodiversity has been identified as one of the HCVs in the project area. Activities carried out by the communities will help protect HCV areas and prevent forestland from being degraded. A baseline biodiversity assessment, involving community members in surveying and ongoing biodiversity monitoring, and the PS6 & ESS6 report generated by under license 41728-60415 from the Integrated Biodiversity Assessment Tool (IBAT) that against IFC and World bank performance standards will help to define the HCV areas to develop plans for their protection. Water supply and soil fertility will not be negatively affected by the project. Rather the project will help restore the forest cover and improve the water-holding capacity of the project site which serves as catchment area for the domestic water supply to the adjacent communities. Some of the activities undertaken as part of the operation phase of the project may improve the forest cover to help minimize soil erosion and hazards due to grassfires, improve site conditions conducive to biodiversity. Project activities also include support to allow the communities improve their livelihood which do not require them to degrade the project zone. In summary, there is no expectation of any negative effects on HCV areas within the project.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.1)

Impacts on Neighbouring Communities

The project will likely cause an array of positive social impacts. Most significantly in demonstrating alternative means for development and opportunity for resources, realizing a retraction in unsustainable resource exploitation. Also, the neighbouring communities can be benefited from the education initiatives. Workshops and training will be provided for the communities to build up the skillset and disseminate knowledge about sustainable resource management. There are no direct negative social impacts projected.

Impacts on Local Level Government and the State

While the REDD+ project may lead to a decrease in revenue from logging activities for local and state governments, this impact can be substantially compensated by the sales revenue generated from the carbon credits. Furthermore, the conservation of the forest and biodiversity through the REDD+ project will provide significant long-term environmental and economic benefits for the region that can offset any short-term revenue reductions.

The forest protection and restoration activities are expected to enhance essential ecosystem services, such as water regulation, soil conservation, and climate change mitigation. These environmental benefits can translate into cost savings and economic opportunities for the local and state authorities in areas like disaster risk reduction, agricultural productivity, and eco-tourism. Additionally, the increased community well-being and economic development resulting from the REDD+ benefit sharing mechanisms will contribute to a more prosperous and resilient local economy, which can generate new revenue streams for the government.

Overall, while there may be some initial fiscal impacts, the net long-term benefits of the project for local and state governments are anticipated to be highly positive. The revenue from carbon credit sales, ecosystem service enhancements, and socioeconomic development are expected to outweigh any potential losses from reduced logging activities. The project therefore represents a strategic opportunity for local and state governments to diversify their revenue sources, foster sustainable development, and ensure the long-term environmental and economic prosperity of the region.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.2)

The reduction in centralized decision-making will be offset by the expansion of local decision-making capacity. The project will redistribute control over resources to the registered landowners. In addition, the project fulfilled all formal approval requirements set forth by the Climate Change and Development Authority (CCDA) of Papua New Guinea.

The revenue that would have been generated from approval processing and planning will be redirected from a central authority to the local level. Stakeholder consultation, capacity building and local level planning require significant local-level investment. The project has also paid approval fees set forth by the Climate Change and Development Authority (CCDA) of Papua New Guinea. The government of Papua New Guinea will experience a reduction in revenue from direct taxes on individual logs, but this shortfall will be compensated by the revenue generated through the sale of carbon credits and other economic activities stimulated by the project.

4.3.3 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.3)

The project aims to minimize negative offsite impacts through various measures. It focuses on building and strengthening community institutions to effectively manage and conserve local forests. Furthermore, it creates employment as well as livelihood opportunities and

supports the formation of capital in community finance institutions. These efforts contribute to reducing negative offsite effects.

Meanwhile, the project recognizes the importance of engaging neighbouring communities outside the project area. The project activities include neighbouring communities in socio-economic monitoring activities, allowing them to provide feedback on both positive and negative impacts they experience from the project. Through an inclusive approach, the project ensures the perspectives of non-project communities and addresses any concerns or issues that may arise. Overall, the project strives to minimize negative offsite impacts while promoting sustainable development and community well-being.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CCB, CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

To ensure the project's investments in the local community deliver the intended benefits, a comprehensive monitoring plan has been developed. This monitoring plan identifies the key community groups and stakeholders to be monitored, the variables and indicators that will be tracked, and the methods and frequency of data collection and reporting.

The monitoring plan is designed to assess the project's progress and impacts across the key benefit areas outlined in the investment plan, which include community projects, infrastructure development, higher education support, local savings and loans, financial literacy, micro- and small business support, and additional technical/vocational education.

Importantly, the monitoring plan will evaluate the differentiated impacts on various community groups, and will incorporate feedback and evaluations from the affected communities themselves. This approach aims to maintain transparency, foster accountability, and enable the project to adaptively manage its activities in response to the evolving needs and priorities of the local stakeholders.

The following details the specific components of the Community Monitoring Plan, including the objectives, monitored communities, variables and indicators, and the methodologies and frequencies for data collection and reporting.

Monitoring Objectives:

The community monitoring plan aims to assess the impacts of the project's activities on the well-being and development of the local communities, with a focus on the key benefit areas identified in the project's investment plan.

Monitored Communities and Stakeholders:

The monitoring plan will cover the following communities and stakeholder groups:

1. Community groups directly benefiting from the project's investments (e.g., church groups, computer/internet hub users, clinic patients, eco-tourism participants)
2. Households and individuals receiving infrastructure development grants (e.g., road, housing, water, energy)
3. Recipients of higher education/tertiary scholarships
4. Members of local savings and loans societies
5. Participants in financial literacy and sustainable development training
6. Beneficiaries of micro- and small business support (agriculture, livestock, fisheries)
7. Students and faculty of the technical/vocational education school
8. Local authorities and community leaders

Key Variables and Indicators to be Monitored:

1. Community Projects:
 - Number of community facilities constructed (church, computer room, internet hub, clinic, eco-tourism, admin)
 - Number of local people employed in the construction and operation of the facilities
 - Utilization rates and user satisfaction for the community facilities
2. Infrastructure Development Grants:
 - Number of households receiving infrastructure grants (road, housing, water, energy)
 - Quality and functionality of the infrastructure developed
 - Household satisfaction with the infrastructure
 - Changes in household access to basic services
3. Future Generation Trust (Higher Education/Tertiary):
 - Number of scholarships awarded
 - Academic performance and graduation rates of scholarship recipients
 - Employment and income levels of scholarship recipients post-graduation
4. Local Savings and Loans Societies:
 - Number of members in the savings and loans societies
 - Total savings and loans disbursed
 - Loan repayment rates
 - Household incomes and asset levels of members
5. Financial Literacy:
 - Number of participants in sustainable development, fire safety, and forest management trainings
 - Knowledge and skills gained by participants
 - Changes in household financial management and decision-making
6. Micro- and Small Business Support:

- Number of households/individuals receiving business support (agriculture, livestock, fisheries)
- Increases in production, income, and asset levels for supported businesses
- Adoption of sustainable practices
- 7. Technical and Vocational Education:
 - Number of students enrolled and graduated
 - Employment rates and incomes of graduates
 - Alignment of curriculum with local job market needs

Additional Variables and Indicators to be Monitored:

1. Adaptation benefits for communities:
 - Indicators of increased resilience to climate change impacts
 - Adoption of climate-smart agricultural practices
 - Access to climate information and early warning systems
2. Well-being impacts and risks for smallholder/community members:
 - Changes in household income and assets
 - Food security and dietary diversity
 - Access to and control over productive resources
3. Impacts on women:
 - Women's participation in decision-making processes
 - Women's access to and control over resources
 - Women's workload and time use
 - Women's health and education outcomes

Monitoring Methods and Frequency:

The monitoring plan will employ a combination of quantitative and qualitative methods, including:

- Household surveys (baseline, midterm, and end-line) to assess changes in well-being, access to services, and livelihood indicators
- Focus group discussions and key informant interviews with community members, leaders, and other stakeholders
- Facility assessments and user satisfaction surveys for community infrastructure and services
- Review of project records, financial statements, and administrative data
- Participatory monitoring and evaluation activities involving the affected community groups

The monitoring will be conducted periodically, with the results compiled into reports that will be made publicly available on the project's website and shared with the affected communities through meetings and other communication channels.

4.4.2 Monitoring Plan Dissemination (CCB, CM4.3)

The project will ensure transparency and accessibility of the monitoring plan and results. The full monitoring plan and biannual monitoring reports will be publicly available on Verra's

website. The monitoring plan will also be shared with the affected community groups through community meetings and consultations. This will ensure the affected community groups and other stakeholders have access to the monitoring plan and results, and can actively participate in the monitoring and evaluation process.

4.5 Optional Criterion: Exceptional Community Benefits

4.5.1 Exceptional Community Criteria (CCB, GL2.1)

The project area is situated in a remote region of Papua New Guinea, according to the World Bank, applying the international poverty line to rural areas, the poverty rate is 40 percent, higher than for urban areas where it is 27 percent. According to the multi-dimensional poverty measure, 74.2 percent of the population is living in poverty. This is due to the high rate of monetary poverty, low educational achievement, and most of the population (82.1 percent) having no access to electricity. The Gini index, which measures inequality, was estimated to be 41.9.

The Nuku Resources Limited, which represents the 34 Incorporated Landowner Groups (ILGs) who are the traditional landowners in the Nuku Maimai project area, have demonstrated their ownership and management rights over the land. The Land Groups Incorporation Act in Papua New Guinea acknowledges and supports the collective nature of these customary groups, allowing them to register as the lawful owners of the land and establish Landowner Companies to pursue economic development.

By targeting a low human development region with high poverty prevalence, and by engaging communities with secure land tenure and resource management rights, this project demonstrates its alignment with the exceptional community criteria required for comprehensive monitoring and evaluation of social, economic, and environmental impacts.

4.5.2 Short-term and Long-term Community Benefits (CCB, GL2.2)

See Sections 4.2.1 and 4.2.3

4.5.3 Community Participation Risks (CCB, GL2.3).

The project has undertaken a comprehensive, participatory process to identify potential risks and trade-offs for the smallholders and community members in participating in the initiative. This inclusive assessment involved direct engagement and consultation with the Incorporated Landowner Groups (ILGs), Landowner Companies, and other key stakeholders within the local communities.

There was a concern that the project activities and conservation measures could potentially restrict the communities' ability to access and utilize the land and natural resources they have traditionally relied upon for their livelihoods and subsistence needs.

To address the identified risk and avoid potential trade-offs, the project activities have been carefully designed in collaboration with the communities to align with and support their existing land use patterns, cultural traditions, and customary resource management systems.

4.5.4 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

The project engages with several marginalized and vulnerable community groups, including children, smallholders, youth, and women. Here's an overview of how each group may gain net positive benefits, along with potential impacts:

Community Group	Children
Net positive impacts	Children would benefit from the preservation of their natural environment, which contributes to their overall well-being and future opportunities. Avoiding deforestation helps maintain biodiversity, clean water sources, and ecological balance, which are crucial for children's health and development.
Benefit access	Children may indirectly benefit from improved access to education, healthcare, and a healthier environment.
Negative impacts	If deforestation were to occur, children could experience adverse effects such as loss of habitat, increased exposure to pollution, and potential disruption of their education and social structures.

Community Group	Smallholders
Net positive impacts	Smallholder farmers who rely on forest resources can benefit from the avoided deforestation project. By preserving forests, they retain access to traditional livelihood practices such as agroforestry, non-timber forest products, and sustainable harvesting of timber. This can lead to improved food security, income generation, and sustainable farming practices.
Benefit access	Smallholders can access training programs, capacity building initiatives, and market linkages to enhance their skills, knowledge, and market opportunities.

Negative impacts	Negative impacts are not expected. Ongoing monitoring and necessary interventions will be implemented to assess the use and impact of the benefits derived from the project, and to enhance the effectiveness. If deforestation were to occur, smallholders might lose access to forest resources, leading to diminished income opportunities, increased competition for limited resources, and potential displacement.
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Community Group	Youth
Net positive impacts	Through the project, it is expected to bring many job opportunities to the members of the Nuku Maimai Community, which may tend towards the youth. With enhanced education chances to the younger generation, improved literacy will also bring benefits to the rural community by increased productivity and better quality of life.
Benefit access	Youth can access training programs, vocational skills development, entrepreneurship support, and mentorship initiatives, enabling them to participate in sustainable economic activities and environmental stewardship.
Negative impacts	Negative impacts are not expected. Ongoing monitoring and necessary interventions will be implemented to assess the use and impact of the benefits derived from the project, and to enhance the effectiveness.

Community Group	Women
Net positive impacts	Under the project, there is a requirement of involvement by women in the community. Moreover, a National Women's Policy was developed in 1990 to ensure women's participation in projects. Equal opportunities for females to have access to resources, employment and education will be supporting with microfinancing schemes, where it allows them to be involved during the project. Women often play a vital role in forest-dependent communities. The avoided deforestation project can benefit women by preserving their access to forest resources,

	enhancing their participation in decision-making processes, and supporting their economic empowerment. It can also improve women's health and well-being by protecting clean water sources, reducing exposure to harmful pollutants, and promoting sustainable practices.
Benefit access	Women can access training programs, capacity building initiatives, microfinance opportunities, and entrepreneurship support tailored to their needs, enabling them to engage in sustainable income-generating activities.
Negative impacts	Negative impacts are not expected. Ongoing monitoring and necessary interventions will be implemented to assess the use and impact of the benefits derived from the project, and to enhance the effectiveness. If deforestation were to occur, women may experience a loss of traditional knowledge, increased workloads due to resource scarcity, and limited participation in decision-making processes, further exacerbating gender inequalities.

4.5.5 Net Impacts on Women (CCB, GL2.5)

See Section 4.5.4 above

4.5.6 Benefit Sharing Mechanisms (CCB, GL2.6)

See Section 2.5.8 above

4.5.7 Benefits, Costs, and Risks Communication (VCS, 3.18; CCB, GL2.7)

See Section 2.3.4

4.5.8 Governance and Implementation Structures (CCB, GL2.8)

Establish Governance Systems includes the following operations:

- Prepare the Terms of Reference (TORs) for the Committees and its administrative team;
- Appoint the Board of Directors of the Committees;
- As a result of the consultation process, develop a program of community-based projects to be implemented; and
- Assess the pros and cons of each potential resource distribution channel and decide which ones will be used for this project.

Community Development Committee and Project Board will oversee and facilitate the implementation of forestry and community development projects. The Committee and its Board will be composed key stakeholders, experts and administrators who will be tasked to organise the resources generated by the carbon credits to allocate the funds through various Resource Distribution Channels. The mechanism for Board Member selection will be finalised during the community engagement process.

As part of project monitoring, the Committee will interpret micro-economic data to obtain a measure of the community's absorptive capacity. The local economy of Nuku Maimai cannot currently absorb large flows of capital in the form of cash. To mitigate negative feedbacks from absorptive risk, financial capital will be converted to Resource Distribution Channels, in the form of social programs, skills and capabilities training as well as tools and other resources. In addition to fulfilling immediate social needs of the community, these resources will spark economic development by generating goods and services of value. Currency is merely a unit for this measure; in order to maintain a stable local economy driven by cultural mechanisms, the value of goods and services produced internally, plus an appropriate flow of locally sourced external goods and services must always exceed capital flows. Determining this balance is not an easy task. Whilst it will be the community who decide on the amount of imported goods, the role of the Committee board will be to coordinate with the Nuku Maimai Land Group Board to provide access to external markets delivering the means to improve wellbeing and develop sustainable livelihoods.

The Committee Board will make program decisions on operations and ensuring sustainable community development. Board members will be sourced from the Nuku Maimai Land Group Board, ILG representatives, international financial experts and NGO expertise/project managers. Strategic decision-making responsibility will remain with the community decision-makers, the Nuku Maimai Land Group Board. External Committee board members will provide advice and guidance in specific areas of need. This structure bolsters traditional hierarchy and organizational structure being egalitarian with an emphasis on collectivity. It is an appropriate structure to represent the wishes of individual community members while at the same time utilize expertise in international finance.

The Committee Board will execute resource allocation and social programs through Resource Distribution Channels. These channels represent a conversion of financial capital from carbon credits sales to resource capital, the on-the-ground needs of the community as determined by community engagement during the Execution phase. Early community engagement in the Planning phase has led to the design of a menu of options for resource distribution channels.

4.5.9 Smallholders/Community Members Capacity Development (CCB, GL2.9)

See Section 2.3.14

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (VCS, 3.19; CCB, B1.1)

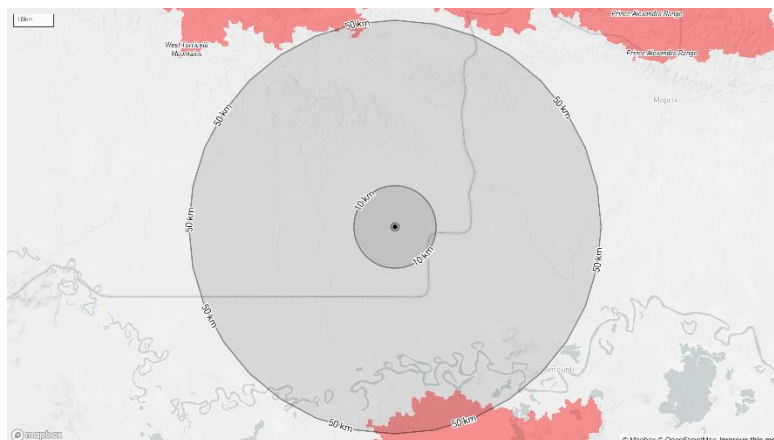
Papua New Guinea (PNG) is globally significant in its natural and cultural richness, housing up to 5% of the world's plant and animal species. Papua New Guinea's vast diversity has several ecosystems which are significant globally for biodiversity conservation and carbon sequestration. Papua New Guinea has 1,571 known bird, mammal and reptile species with more than a quarter endemic and 7% considered threatened along with 11,544 species of vascular plants. In total there are 29,987 recorded species of animals and plants. Much of this biodiversity resides in the expanse of tropical rainforest that still covers 65% of the land area of the country. And yet, only 4% of the terrestrial landmass and 0.4% of the marine territory is legally protected.

Nuku Maimai project encompasses an immense land area of 102,779 hectares. According to PS6 & ESS6 report generated by under license 41728-60510 from the Integrated Biodiversity Assessment Tool (IBAT) that against IFC and World bank performance standards, it has been identified that the project area and its 50 km buffer zone that includes one protected area and two key biodiversity areas.

Area Name	Hunstein Range
Important Bird And Biodiversity Areas	No
Alliance For Zero Extinction Sites <i>Site with one or more endangered or critically endangered species.</i>	No
Recommendation	Assess for biodiversity risk

Area Name	West Torricelli Mountains
Important Bird And Biodiversity Areas	No
Alliance For Zero Extinction Sites <i>Site with one or more endangered or critically endangered species.</i>	Yes
Recommendation	Highest risk. Need to seek expert help.

The following key biodiversity area is found within project area and its 50 km buffer area.



Source: IBAT Report of Nuku Maimai (GPS: -3.9, 142.5)

The influence of altering land use and constructing infrastructure within the project area is minimal, primarily because the human population is thinly spread across the region and the governments have limited financial resources at their disposal. However, the primary risk to the invaluable biodiversity in this area stems from the logging operations carried out for commercial timber harvesting.

We will identify and safeguard any areas that hold significance in terms of biodiversity or culture. Moreover, the project will facilitate the establishment and expansion of bioinformatics and biodiversity data that are pertinent for evaluating conservation efforts.

5.1.2 High Conservation Values (CCB, B1.2)

The project zone encompasses a remarkable concentration of biodiversity values that hold global significance. This includes the presence of protected areas, as well as the occurrence of threatened and endemic species. Moreover, the project zone represents a landscape-level area of utmost importance on a global scale, as it harbors viable populations of nearly all naturally occurring species, exhibiting their characteristic patterns of distribution and abundance.

However, it is crucial to acknowledge that the project zone also faces significant threats, notably deforestation and forest degradation, which are among the primary drivers of biodiversity loss. The integrity and survival of these ecosystems are at stake, necessitating urgent conservation measures to safeguard their ecological balance and preserve the invaluable biodiversity they harbor.

In accordance with the IBAT report, there is one key biodiversity area (KBA) identified within the project area and its 50 km buffer area. KBAs are defined as sites that make substantial contributions to the global persistence of biodiversity in terrestrial, freshwater, and marine ecosystems. To qualify as global KBAs, these sites must meet one or more of the 11 criteria,

which are clustered into five categories: threatened biodiversity, geographically restricted biodiversity, ecological integrity, biological processes, and irreplaceability.

Regarding the biodiversity existing conditions, there are 24 IUCN Red List of Threatened Species that potentially occur within project area and its 50 km buffer area, including 11 critically endangered and 13 endangered species.

Examples of endemic and endangered species reported in the project area are suggested below:

Species Name	Common Name	IUCN Category	Population Trend	Photos
Dendrolagus scottae	Tenkile	Critically endangered	Stable	
Spilocuscus rufoniger	Black-spotted Cuscus	Critically endangered	Decreasing	
Horsfieldia sepikensis	/	Critically endangered	Unknown	
Actinodaphne caesia	/	Critically endangered	Unknown	
Pteropus conspicillatus	Spectacled Flying Fox	Endangered	Decreasing	
Numenius madagascariensis	Far Eastern Curlew	Endangered	Decreasing	

Examples of restricted range endangered species that have a limited geographic distribution reported in the project area are suggested below. These species are typically confined to specific regions or habitats, often with narrow ranges that may be isolated or fragmented. They have evolved to adapt and thrive within their restricted habitats, making them highly specialized and vulnerable to changes or disruptions in their environment (i.e., freshwater, terrestrial, and marine).

Species Name	Common Name	IUCN Category	Population Trend	Photos
Dendrolagus scottae	Tenkile	Critically endangered	Stable	
Oreophryne cameroni	/	Endangered	Decreasing	

High conservation value	Protected Area and Key Biodiversity Area (KBA)
Qualifying attribute	KBA are sites contributing significantly to the global persistence of biodiversity, in terrestrial, freshwater and marine ecosystems.
Focal area	Two key biodiversity areas: - West Torricelli Mountains - Hunstein Range

High conservation value	Threatened Species
Qualifying attribute	According to IBAT report, there are 11 IUCN Red List of Threatened Species that potentially occur within project area and its 50 km buffer area
Focal area	11 critically endangered, 13 endangered, 14 vulnerable, 23 near threatened, and 842 least concern species have been identified in the project area. IBAT will continuously monitor biodiversity on an ongoing basis and with a focus on the threatened species found.

High conservation value	Endemic Species
Qualifying attribute	According to IBAT report, there are 4 IUCN Red List of Threatened Species that have a limited geographic distribution within project area and its 50 km buffer area. Conservation efforts focused on Restricted Range Species aim to protect and restore their habitats, mitigate threats, and ensure their long-term survival. By safeguarding these species and their habitats, we can contribute to the preservation of biodiversity and maintain the ecological integrity of the regions where they occur.
Focal area	1 critically endangered, 1 endangered, and 14 least concern species have been identified in the project area. IBAT will continuously monitor biodiversity on an ongoing basis and with a focus on the threatened species found.

5.1.3 Without-project Scenario: Biodiversity (CCB, B1.3)

In the without-project scenario, 85% of Nuku Maimai Project Area (87,362 ha) was planned to conduct logging activities and converted into agriculture and other land uses. This extensive transformation represents a substantial disturbance to the natural forest structure and ecosystem, leading to loss of forest habitat and potential biodiversity decline.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (VCS, 3.19; CCB, B2.1)

Biodiversity Element	Mammals, Birds, Reptiles, Amphibians, Fishes, Mollusks, invertebrates and Plants
Estimated Change	Maintain the species richness
Justification of Change	The primary goal of this project is to safeguard primary tropical forests by preventing timber harvesting. By preserving the designated project area, the project aims to maintain undisturbed habitats that provide essential resources, such as food, shelter, and breeding sites, for a wide variety of plant and animal species. This preservation effort contributes to the overall conservation of habitats and enhances the long-term sustainability of diverse species populations. Furthermore, the project places a strong emphasis on identifying and documenting species with significant conservation value, including endemic species or those with restricted distributions. To accomplish this, the project involves conducting thorough

	biodiversity surveys and assessments to accurately recognize and document species of high conservation importance within the project area. The listing of these species is a crucial step that ensures appropriate measures are implemented to safeguard and protect them effectively. By preventing timber harvesting and maintaining the integrity of the primary tropical forests, the project aims to preserve the essential resources and habitats that support the survival and thriving of diverse plant and animal species in the region.
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5.2.2 Mitigation Measures (VCS, 3.19; CCB, B2.3)

The main objective of this project is to ensure the protection and conservation of Nuku Maimai, an unlogged primary forest. The project activities are not expected to have any negative impacts on the forest's biodiversity. The project employs a range of strategic activities to achieve its goals. Firstly, it utilizes legal mechanisms that restrict the right to harvest timber within the designated project area, effectively preventing any logging activities that could compromise the integrity of the forest.

In addition to these legal restrictions, the project implements regular patrols and comprehensive monitoring systems to closely oversee the project area. By maintaining a vigilant presence, the project team aims to deter and promptly address any attempts of unauthorized timber harvesting or other forms of exploitation.

Preserving the high conservation value (HCV) of the forest is another key objective of the project. The project extends its efforts beyond the mere preservation of trees and focuses on safeguarding the intricate forest structure and essential ecological processes observed in primary forest ecosystems. This approach ensures the uninterrupted functioning of vital functions like nutrient cycling, seed dispersal, and habitat provision, supporting a diverse range of plant and animal species.

To further enhance the HCVs, the project emphasizes the retention of a substantial tract of the forest in an intact state. This large contiguous area is essential for the preservation of ecological connectivity and the uninterrupted functioning of the forest ecosystem. Moreover, it acts as a protective buffer against potential negative impacts from adjacent forest concessions located to the north, west, and south of the project area. By creating this buffer zone, the project mitigates the risks associated with the encroachment of commercial logging activities and helps maintain the ecological balance and resilience of the entire region.

5.2.3 Net Positive Biodiversity Impacts (CCB, B2.2, GL1.4)

The project's anticipated net impacts on biodiversity in the project zone will be positive compared with conditions under the without-project land use scenario.

The project activity implementation will avoid 87,362 ha planned deforestation, contributing to the conservation of forest ecosystems and biodiversity.

5.2.4 High Conservation Values Protected (CCB, B2.4)

The focus of the project is to protect primary forests from commercial timber harvesting, resulting in the retention and enhancement of High Conservation Values (HCVs) within the project area. This will be achieved through increased vigilance and improved resource management practices around villages.

An objective of the project is to demonstrate the value of forest retention to the maintenance and resilience of ecosystem services, especially clean water. Local communities highly value water resources, and therefore, monitoring activities will focus on ensuring that water quality is preserved throughout the project's implementation. The aim is to demonstrate that water quality remains unaffected by the project activities, emphasizing the significance of forest protection for ecosystem resilience and the provision of essential services.

5.2.5 Species Used (VCS, 3.19; CCB, B2.5, B2.6)

The project activities primarily focus on forest conservation, and as such, there will be no utilization of species from outside the project area. The project does not involve any planting or active vegetation management that would require the use of species beyond those naturally occurring within the project area.

5.2.6 Invasive Species (VCS, 3.19; CCB, B2.5)

The project acknowledges that certain development activities, such as road construction, may create opportunities for invasive or weed species to thrive at the project's margins. However, the relatively low human population density, concentrated around a few villages, reduces the risk of these species spreading throughout the majority of the project area, which remains largely uninhabited.

To proactively address this concern, the project will implement a comprehensive environmental monitoring program. This program will include robust procedures to identify potential invasive species and promptly implement targeted activities aimed at limiting their spread. Where feasible, the project will make concerted efforts to eradicate these invasive species entirely.

By adopting this systematic approach, the project aims to effectively mitigate the risks associated with invasive species and preserve the ecological integrity of the Nuku Maimai forest ecosystem. The environmental monitoring program will enable the project team to stay vigilant and respond swiftly to any signs of invasive species encroachment, ensuring the long-term protection of this valuable primary forest.

5.2.7 GMO Exclusion (CCB, B2.7)

No GMOs will be introduced by the project to generate GHG emission reductions or removals.

5.2.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

Under VM0048/VM0007 Methodology, no fertilizers, chemical pesticides, biological control agents and other inputs are used for the project.

5.2.9 Waste Products (VCS, 3.19; CCB, B2.9)

No significant waste is expected to be generated by the project activities implementation. It is strictly forbidden to dispose of any waste in forests or streams. Potential wastes generated during road construction may include timber, oil and grease, metals, and other manufactured products. The proponent is committed to minimizing waste and ensuring proper disposal through best and acceptable practices.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Measures (CCB, B3.2)

No negative impacts on biodiversity outside the project zone are expected for this conservation project.

5.3.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

No negative impacts on biodiversity outside the project zone are expected. The net effect of the project on biodiversity is positive.

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (CCB, B4.1, B4.2, GL1.4, GL3.4)

In the project case the natural disturbance regimes will not be altered and the dynamics of what is a large tract of primary forest will be retained. Human use of forest products for domestic purposes will continue at levels consistent with historical trends. Consequently, the net change in biodiversity within the project boundaries over the project lifetime as a result of project activity will be neutral.

The challenge for biodiversity monitoring is to gather data to detect any significant change from the natural dynamic in the project area when the natural dynamic is initially unknown.

The plan is to build on project team experience with rapid biodiversity assessment techniques, biodiversity survey design and the application of biodiversity monitoring to assess environmental health to select biodiversity metrics that will provide relevant data across spatial

and temporal scales to a) quantify the natural dynamics, b) detect deviation from the natural pattern (at points and over time) and c) compare biodiversity metrics with the baseline case.

The choice of aquatic organisms in the biodiversity monitoring may not be intuitive for a forest project but maintenance hydrological function and of water quality is essential to the terrestrial system of the forest and the delivery of offsite ecosystem services and environmental values. The Ausrivas program is designed for community use, focuses on both water quality and aquatic biota and has an established record of delivery of data able to provide point source evaluation and trend monitoring.

In addition to these direct biodiversity metrics the plan will include the development of a contingent evaluation methodology to provide cost-benefit analysis of environmental and biodiversity assets.

Facilitation is needed to acquire robust data for each of these metrics. The project team will provide:

- Training to in-country staff and local communities to build on the forest inventory techniques already delivered
- Data management capability that will include the biodiversity inventory system Biota
- Expertise in field sampling protocols and specimen management

The project team will also maintain GIS capability, data quality assurance and data analysis.

In a country with no official conservation reserve system and a complex tribal land tenure and resource rights a project area of this size in primary forest represents significant biodiversity protection.

The Biodiversity Assessment and Monitoring Plan will generate information on populations of endangered species and taxa. Given the remote location and paucity of existing records, monitoring is likely to sample species yet to be recorded in inventories.

The proponent will develop a program to use the data generated in the project area biodiversity inventory and facilitate a research program along with national and international partners to understand the value of the project area in the global, national and regional contexts.

5.4.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

The project proponent commits to developing a full monitoring plan from the framework described here that will include:

- Rapid biodiversity assessment of flora and fauna
- Contingent evaluation of biodiversity assets
- Autecological surveys of key resource species

- Program for environmental water quality monitoring for both the project area and areas of forest that have been harvested for timber (baseline case)

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (CCB, GL3.1)

According to IBAT report, there are 24 IUCN Red List of Threatened Species that potentially occur within project area and its 50 km buffer area. 11 critically endangered, 13 endangered, 14 vulnerable, 23 near threatened, and 842 least concern species have been identified in the project area. IBAT will continuously monitor biodiversity on an ongoing basis and with a focus on the threatened species found.

5.5.2 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Trigger species	Dendrolagus scottae (Tenkile) The species is endemic to a restricted area of Nuku Maimai, Papua New Guinea Tenkiles have a very limited habitat. They are found at about 900-1,700 meters above sea level in the Torricelli Mountain Range. Their total Habitat does not exceed 125 square kilometres. The tenkile inhabits mid-mountain rain-forests predominated by Podocarpus, Libocedrus, Araucaria and Rapanea. It feeds on epiphytic ferns, green leafy material and vines including Scaevola and Tetracera. However, serious studies have not been conducted on the species. Currently, research is being compiled from the knowledge of the local people and a collection of the animals' specific diet is being prepared.
Population trend at start of project	Stable (IBAT report)
Without-project scenario	Tenkiles have declined greatly over the past 50 years, including an 80% decline in ten years. It is currently restricted to three remote areas along the summit of the Torricelli Range, the eastern Bewani Range, the Menawa Range, and the Torricelli Mountains in the Fatima area of Papua New Guinea where it is found at altitudes between 900 and 1,700 metres (3,000 and 5,600 ft) above sea level. The animal is hunted by indigenous people for food and the sub-population in the Torricelli Mountains is believed to number fewer than 250 individuals. The International Union for Conservation of Nature has

	assessed the animal's status as being "critically endangered" and a moratorium on hunting has been arranged with the local community in the Swelpini area.
With-project scenario	The following measures and conservation efforts would be adopted to stabilize the population of the Tenkiles within the project zone, and facilitate the estimation of the number of this species: 1) Establishing protected areas or conservation zones within the project zone that encompass the turtle's habitat. This would help safeguard their nesting areas, feeding grounds, and freshwater habitats. 2) Conducting research within the project zone to gather data on the turtles' population size, distribution and habitat requirements, in order to identify any emerging threats and facilitate conservation plan 3) Collaborating with local communities, conservation organizations, and relevant government agencies to develop and implement conservation strategies to protect their habitats