Monitoring & Evaluation (M&E) Plan and Impact Statement Form

Objective of the M&E Plan and Impact Statement:

- The M&E Plan and Impact Statement must be designed based on the Technical Assistance Response Plan and must enable the Implementer to complete the Closure Report at the end of the assistance.

Process for filling in the form:

- The Implementer must identify relevant quantitative and qualitative indicators as specified in the Closure Report. A sub-set of indicators to monitor and assess must be chosen among these.
- The Implementer may also identify other specific, measurable, achievable, relevant, and time-bound indicators suitable to monitor Activities, Outputs and anticipated Outcomes from the technical assistance and add to the M&E Plan and Impact Statement.
- During implementation of the TA or FTA, the Implementer must collect all relevant data as described in the Monitoring & Evaluation Plan. Aggregated data on selected indicators as well as an updated version of the Impact Statement will be presented in the Closure Report at the end of the assistance.

Basic Information	
Title of response plan	Developing a framework and methodology to carbon sinks from the forestry sector using Earth observation in Samoa
Technical assistance reference number	CTCN 22-016
Country/ countries	Samoa
NDE focal point and organisation	Frances Reupena, Anne Rasmussen (Ministry of Natural Resources and Environment)
Sector(s) addressed	Forestry
Technologies supported	Forest mapping, assessment of carbon sinks potential from the forestry sector
Implementation period and total duration	1 Oct 2022 – 30 Jun 2024
Total budget for implementation	US$ 250,000
Designer of the response plan	CTCN
Implementer of response plan	National Institute of Green Technology

(A) Outputs and Activities as described in the Response Plan	(B) Indicator	(C) Expected results	(D) Method and frequency for data collection	(F) Comments
	Select relevant indicators from the Closure Report (at least one core indicator, section B). You may also define additional relevant indicators to be added.	*Add the expected quantitative or qualitative target/value of the indicator (e.g. number of studies, policy recommendations, etc.).*	*Describe the expected method and frequency for data collection (e.g. survey, head count at a training workshop, application of a standard methodology etc.)*	*Describe any assumptions made or anticipated challenges for collecting quantitative and qualitative data*
Output 1: Development of revised Response Plan and implementation planning and communication decoments				
Activity 1.1: Revised Response Plan	n/a	n/a	n/a	n/a
Activity 1.2: Detailed implementation plan	n/a	n/a	n/a	n/a
Activity 1.3: Monitoring and evaluation plan	n/a	n/a	n/a	n/a
Activity 1.4: Expected impact at project start	n/a	n/a	n/a	n/a
Activity 1.5 CTCN Closure and Data Collection report	n/a	n/a	n/a	n/a
Output 2: Technical Assistance coordination mechanism established				
Activity 2.1: Map relevant stakeholders and establish a stakeholder working group	Number of events organized	1 working group kick-off meeting conducted	Preparing the presentation material; Producing the meeting minute for shared understanding	n/a
Activity 2.2: Organize consultative meetings with the working group	Number of events organized	4 consultative meetings with the working group conducted	Preparing the presentation material; Producing the meeting minute for shared understanding	n/a
Activity 2.3: Organize a multi-stakeholder inception workshop	1) Number of events organized 2) Number of participants in events	1) 1 inception workshop conducted 2) A total number of 40 participants including the members of working group	Preparing the presentation material; Producing the meeting minute for shared understanding	n/a

Output 3: FOREST MAPPING AND CARBON SINKS POTENTIAL IN SAMOA				
Activity 3.1: Preliminarily analysis/survey of available gridded datasets and Climate data collection; (rainfall and temperature datasets)	Number of other information materials strengthened, revised or created	1 copy of Final Report (Sub-section that contains the result of the analysis)	Analytical report of earth observation data, time series climate data and other ancillary data as necessary (MODIS, Worldclim, Terraclimate etc)	n/a
Activity 3.2: Classification of the forest and land cover by categories	Number of other information materials strengthened, revised or created	1 copy of Final Report (Sub-section that contains the result of the analysis)	Analytical report of earth observation data for land cover and forest classification (Sentinel 2, RapidEye, Landsat, MODIS, KOMPSAT)	Imagery for land cover classification was reviewed, and in this study, the construction of a national land cover map of Samoa. The study utilized the Landsat-8 and Landsat-9 satellites, which can acquire long-term imagery for classification at 5- and 10-year intervals. For land cover classification, GEE was utilized to select images with 30~60% cloud cover during the dry season (May~September) in Samoa.The images were normalized through preprocessing techniques such as Temporal Composite and Multi-temporal Mosaic with Cloud Masking and Median Filter, and all images were composited on a yearly basis from 2013 to 2023 to produce images.
Activity 3.3: Meeting with the working group	Number of training organized by	1 training workshop for local	Preparing the presentation material	n/a

	proponents and implementing partners	practitioners		
Activity 3.4: Assessment of map accuracy through field data collection at sites selected by stratified random sampling. (Identify trees, nature of the forest)	Number of other information materials strengthened, revised or created	1 copy of Final Report	Analytical report on map accuracy assessment based on field survey and earth observation analysis	This study used the machine learning and deep learning methodology, and the results shows that it is more appropriate to apply segmentation than pixel-based classification. After discussions with the Samoan MNRE, it was determined that due to time constraints and accommodation issues, it was not possible to conduct surveys on the island of Savaii due to time constraints and accommodation issues. Therefore, the plan was changed to survey 15 target areas on Upolu Island. We changed our plans to survey 15 target areas on Upolu Island, but some of the areas were inside private property and could not be accessed and surveyed.
Activity 3.5: Meeting with the working group to discuss the model to estimate the amount of carbon sinks that could be stored or captured through each category of land/forest	Number of participants in trainings organized by proponents and implementing partners	20 personnel within NDE involved in forest management and geospatial information etc	Preparing the presentation material	n/a
Activity 3.6:	Number of tools and	1 copy of	Preparing the	n/a

Definition of a methodology and creation of a model to estimate the amount of carbon sinks that could be stored or captured through each category of land/forest	technical documents strengthened, revised or developed	analytical report	presentation material	
Activity 3.7: Presentation of the model in an in-person workshop of a day with the working group and future administrators and users of the model.	Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	1 copy of PPT material	Preparing the presentation material	n/a
Activity 3.8: Testing of the model by the working group, and selected group of stakeholders (future users and administrators of the model)	Number of tools and technical documents strengthened, revised or developed	1 copy of PPT material	Preparing the presentation material; Preparing the meeting minute	n/a
Activity 3.9: Guide for the use of the model	Number of participants in trainings organized by proponents and implementing partners	1 copy of technical guideline for practitioners	Preparing the technical document (guideline) for practitioners	n/a
Output 4: REDD+ and carbon sinks potential in Samoa and develop a framework that would help Samoa in managing its forests sustainably and monitor any landscape changes				
Activity 4.1: Analyse national strategies and identify potential barriers or opportunities to develop REDD+ project in Samoa.	Number of tools and technical documents strengthened, revised or developed	Technical documents to be distributed in May	n/a	n/a
Activity 4.2: Define the framework´s vision and mission (1 or 2 days – open to all stakeholders).	1) Number of events organized 2) Number of tools and technical documents strengthened, revised or developed	1) Steering committee meeting to be held in May 2) Technical documents to be revised during the meeting	Preparing the presentation material; Producing the meeting minute for shared understanding	n/a

Activity 4.3: Define the framework objectives through a workshop (2nd - 3rd day for TA Steering Committee)	1) Number of events organized 2) Number of tools and technical documents strengthened, revised or developed	1) Steering committee meeting to be held in May 2) Technical documents (REDD+ framework) to be revised during the meeting	Preparing the survey material; Producing the meeting minute for shared understanding; Revising the technical documents	n/a
Activity 4.4: Define the Guiding principles through a workshop (4th and 5th day for TA Coordination team).	1) Number of events organized 2) Number of tools and technical documents strengthened, revised or developed	1) Steering committee meeting to be held in May 2) Technical documents (REDD+ framework) to be revised during the meeting	Preparing the presentation material; Producing the meeting minute for shared understanding; Revising the technical documents	n/a
Activity 4.5: Formulate a draft of framework policy based on the inputs received during the 5-day workshops	1) Number of events organized 2) Number of tools and technical documents strengthened, revised or developed	1) Steering committee meeting to be held in May 2) Technical documents (REDD+ framework) to be revised during the meeting	Preparing the presentation material; Producing the meeting minute for shared understanding; Revising the technical documents	n/a
Activity 4.6: Share the draft of framework policy for comments and review from the Steering Committee	1) Number of events organized 2) Number of tools and technical documents strengthened, revised or developed	1) Steering committee meeting to be held in May 2) Technical documents (REDD+ framework) to be reviewed during the meeting	Preparing the presentation material; Producing the meeting minute for shared understanding; Revising the technical documents	n/a
Activity 4.7 Finalize the framework based on the	*Anticipated* number of policies, strategies,	The final framework to be	Preparing the final document	n/a

comments received from the relevant stakeholders	plans, laws, agreements or regulations proposed, adopted or implemented as a result of the TA	shared at the end of the project		

Note: The Response Plan may contain information useful for the section below. The information in the table below will be used by the CTCN for public communication of the achieved and expected results of the Technical Assistance through the CTCN website www.ctc-n.org and other communication channels. See for example: https://www.ctc-n.org/sites/www.ctc-n.org/files/benin_a_ag_forestry.final_.pdf

Impact Statement	
Challenge	• Filling out missing data (especially that should be obtained through field investigation) is the most challenging part for carrying out analytical activities since this impacts the result of the overall accuracy of the developed model.
CTCN assistance	• Producing practical technical guidelines for land cover classification and estimation of forest carbon potential using spatial analysis for practitioners • Producing forest and land use information using field surveys and remote sensing, and developing spatial information-based forest carbon calculation technology • Building the foundation for developing a framework for sustainable forest management and monitoring changes in forest carbon stocks (including building capacity to conduct MRV) • Analyzing REDD+ policy and technical readiness and estimate carbon reduction potential • Producing policy recommendations for developing a framework for sustainable forest management
Anticipated impact	• Anticipated number of direct and indirect beneficiaries as a result of the TA (The main output of this TA; technical guidelines and policy framework are expected to contribute to the facilitation of the policy implementation in the field and could also help practitioners in the field to be equipped with practical knowledge and know-how on how to process advanced earth observation data.)
Anticipated co-benefits from the TA	Boost involvement in carbon credit projects linked to REDD+ by furnishing dependable technical review opinions, establishing a track record for subsequent initiatives. Additionally, contribute to shaping government policies that advocate for international greenhouse gas reduction, with a particular focus on 'forestry,' a sector in high demand in developing nations. This effort aims to lay the groundwork for technology transfer and standardized business models in the field.
Gender aspects of the TA	REDD+ initiatives hold potential gender benefits by empowering women in forest management, promoting income generation through sustainable practices, and recognizing and incorporating indigenous knowledge led by women. These programs also improve health and well-being, as sustainable forest management enhances access to essential resources. Capacity-building efforts under REDD+ contribute to women's skills and knowledge, fostering long-term gender equality. By reducing vulnerability to climate change and promoting social inclusion through multi-stakeholder collaboration, REDD+ can create more equitable and sustainable outcomes for communities, with a

	particular focus on women's roles and contributions.
Anticipated contribution to NDC	• Emission Reductions: REDD+ directly contributes to Samoa's NDC goal of reducing overall greenhouse gas emissions by 26% by 2030, particularly in the AFOLU sector, by preventing deforestation and forest degradation. • Sector-Specific Targets: The sustainable practices promoted by REDD+ align with Samoa's NDC sector-specific targets, such as the 30% reduction in GHG emissions in the energy sector, contributing to broader mitigation efforts. • Adaptation Measures: REDD+ initiatives, through sustainable forest management and community engagement, support Samoa's adaptation strategies by preserving biodiversity, enhancing resilience, and involving local communities in climate resilience efforts. • Financial Support: REDD+ projects often attract external funding, offering financial support crucial for achieving Samoa's NDC targets, including implementing projects that promote sustainable practices and contribute to both emission reduction and climate resilience.
The narrative story	• The Paris Agreement emphasizes the importance of climate technology transfer and cooperation to support less prepared countries, such as Samoa. Samoa has submitted its second NDC, which shows a 2% increase in forest cover by 2030 (compared to 2013). In order to achieve the goals outlined in the NDC requires specific infrastructure and organizational structuring for b*uilding the foundation for sustainable forest and land management.* In that context, land use management without a time-series land cover and land use map is a time and resource consuming process as the map provides specific areas for management. • Therefore, this TA supports Samoa's forest management, land use strategies and forest carbon estimation by producing time series land cover and land use maps. In addition to this technical assistance, a framework is proposed to enable Samoa to implement REDD+ in the long term.
Contribution to SDGs	• SDG 13 - Climate Action: Target 13.1: REDD+ enhances resilience to climate-related hazards and natural disasters by preserving and restoring forests. Target 13.2: It integrates climate change measures into national policies by promoting sustainable forest management and conservation strategies. Target 13.3: REDD+ projects raise awareness and build capacity for climate change mitigation and adaptation, involving local communities. • SDG 15 - Life on Land: Target 15.2: REDD+ supports sustainable forest management, reduces deforestation, and contributes to afforestation and reforestation efforts globally. • SDG 1 - No Poverty: Target 1.4: REDD+ involvement of local communities provides equal rights to economic resources, promotes sustainable resource use, and contributes to poverty reduction.
Reference to knowledge products	• *IPCC guideline for LULUCF (Land use, Land-Use Change and Forestry)*