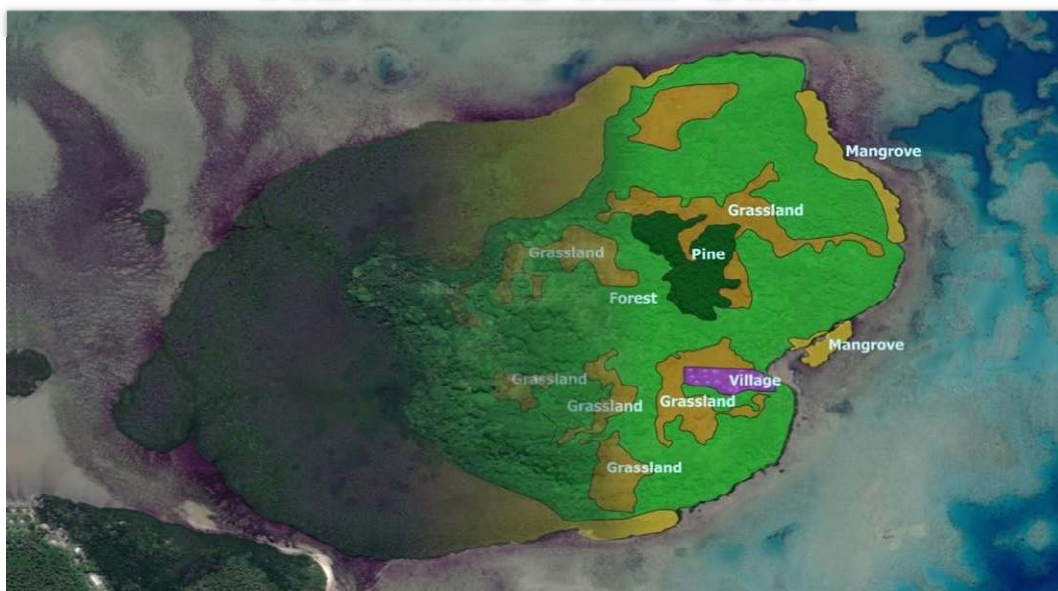


TRAINING REPORT



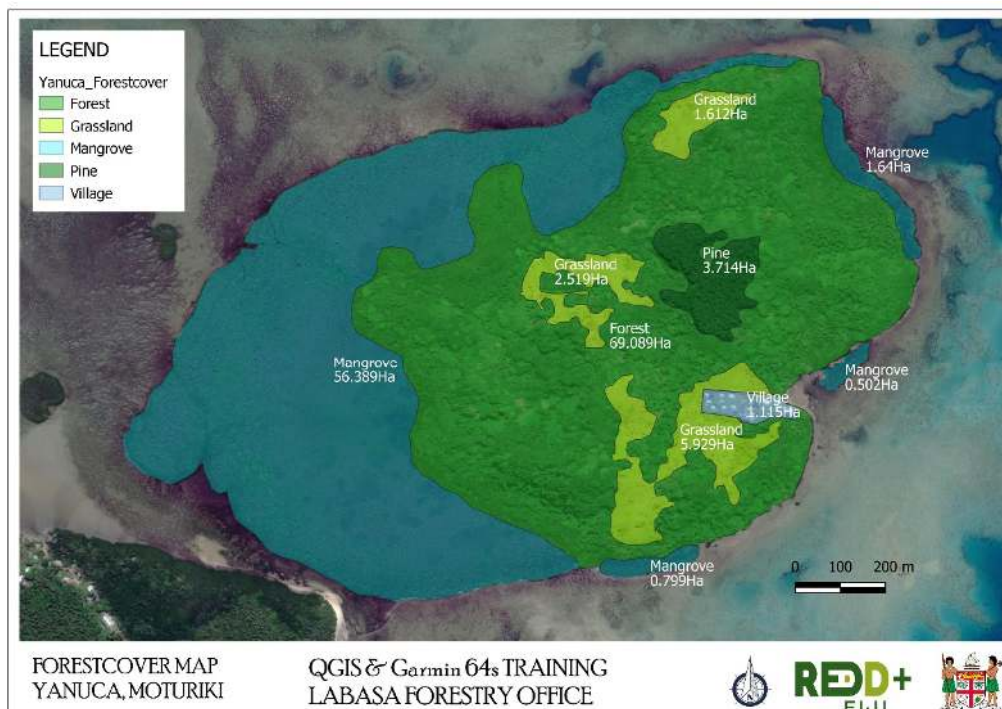
NAME OF TRAINING	Training on Application of GIS/RS for an Assessment of Forest Carbon
HOSTING INSTITUTION	Fiji Carbon Partnership Facility, REDD+, Ministry of Forestry
LOCATION	Novotel Hotel, Suva \ Tanoa International, Nadi\ Forestry Office, Labasa
DATES	17th – 21st June, 2019 \ 8th - 12th July, 2019 \ 22nd – 26th July, 2019

Prepared by: Isireli Buwawa

GIS Consultant

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1.0 INTRODUCTION

Fiji developed its Readiness Preparation Proposal (R-PP) and submitted to the Forest Carbon Partnership Facility (FCPF) in January 2014. In May 2015, Fiji became a recipient of the FCPF REDD+ readiness grant amounting to USD 3.8 mil. Establishment of National Forest Monitoring System and Construction of Forest Reference Level for Fiji are some of the major activities that Fiji has to perform to ready for implementing REDD+ in the country. Besides, in the course of REDD+ implementation a continuous measurement, monitoring, and reporting of forest resources are paramount. Most countries use field measurement and Remote Sensing techniques to assess the forest or carbon.

In Fiji, Management Service Division of Ministry of Forestry has been assessing forest resources with limited knowledge and skills of Remote Sensing and Geographical Information System. Considering the skill and knowledge on RS/GIS that requires for measuring, monitoring, and reporting of forest Carbon, training is essential for staff working in Management Service Division and Divisional Forest Offices is essential.

2.0 OBJECTIVE OF THE TRAINING

The overall objective of the training is to capacitate government staff to acquire the knowledge and skill of GIS and Remote Sensing and apply it to carbon assessment.

The specific objectives of the training are:

- 2.1 To familiarize the participants with the application of GIS and Remote Sensing in the forestry sector.
- 2.2 To enable the participants the application of QGIS in forestry mapping.
- 2.3 To enable participants digitizing images.
- 2.4 To enable the participant's use of GPS for forest mapping.

3.0 TRAINING METHOD

3.1 Participant Introduction

Although most of the participants were already familiar with each other being from the same Ministry there was a need for introductions to take place again so that the facilitators can get to know each participant and also learn certain details like their departments, nature of work, work experience and GIS experience if any.

3.2 Techniques Used

The following techniques were used to train various aspects of GIS/RS for an Assessment of Forest Carbon.

- 3.2.1 Four PowerPoint Presentations were presented. These are:
 - (i) Introduction to GIS
 - (ii) Digital Mapping Essentials
 - (iii) Digital Image Characteristics

(iv) GPS-GNSS

- 3.2.2 Lecture discussions
- 3.2.3 Step by step guided exercises
- 3.2.4 Question & Answer sessions
- 3.2.5 Group work & exercises
- 3.2.6 Participant presentations

In the final day of the training, participants are divided into 5 groups and given a GIS task to complete and report back on in the afternoon. These tasks are:

- (i) Create a harvest area map (All Divisions)
- (ii) Create a reforestation area map (All Divisions)
- (iii) Digitize a locality map of the Forestry Training School in Colo-i-suva (All Divisions)
- (iv) Create map of Research operation areas (All Divisions)
- (v) Flora and Fauna Map within Forest Park (Central Division)
- (vi) Sawmills, PSP plots and stakeholder stations (West & Northern Division)
- (vii) Maverick & Garmin GPS field survey and comparison (Northern Division)

4.0 LIST OF MATERIALS DISTRIBUTED

4.1 Softwares

Softwares distributed to participants include:

- 4.1.1 **64bit version of QGIS version 6.3** - is a free and open-source cross-platform desktop geographic information system (GIS) application that supports viewing, editing, and analysis of geospatial data.
- 4.1.2 **SAS.Planet** – open source software for viewing and downloading high-resolution satellite imagery and conventional maps submitted by such services as Google Maps, DigitalGlobe, Kosmosnimki, Yandex.Maps, Yahoo! Maps, VirtualEarth, Gurtam, OpenStreetMap, eAtlas, Genshtab maps, iPhone maps, Navitel maps, Bings Maps (Bird's Eye) etc., but in contrast to all these services all downloaded images will remain on your computer and you will be able to view them, even without connecting to the internet.
- 4.1.3 **Maverick Pro** - GPS off-road navigation app for Android. It automatically caches all your maps for offline use so that you can access them even without an Internet connection.

4.2 Data

GIS data distributed to participants include layers from

- 4.2.1 Lands Department – Fiji coastline, province, tikinas, rivers, towns & villages.
- 4.2.2 Fiji Roads Authority – GPS surveyed roads

4.2.3 Native Lands Commission – Maqatali Boundaries and Bulibuli

These layers were used in localized exercises to demonstrate various GIS concepts in QGIS environment.

4.3 Curriculum

The contents of the training were prepared to include all basic GIS concepts as well as new remote sensing techniques to enable the participant to create, edit, store, analyze and present forest field data.

The session plan for the entire training was planned, submitted and endorsed before the first training. Topics covered in the training are outlined in **Annex 1**.

5.0 PARTICIPANTS

A total of 73 participants were trained in the two completed sessions. 37 attended in the Central Division, 21 attended in the West and 15 in the North. There were a couple of participants who didn't complete the training because of work commitments.

Participants expressed their gratitude and satisfaction in first of all, being included in the training. They all expressed their gratitude to the organizers and facilitator for the week long training and for all the new skills they have learned. However, there was no feed back questionnaire given to them to gauge individual learning outcomes.

The names and designations of participants is outlined in **Annex 2**.

6.0 TRAINING MANUAL

A training manual will be provided and emailed to participants after the 3rd training as there are different concepts and queries that are requested by participants at different trainings that all need to be included in the manual.

Another reason we provided the manual after the training is force participants to listen and follow the steps more closely during the training as this wouldn't be possible if a manual was provided beforehand. This was evident during sessions where certain participants tend to be much quick learners than others and these would have been the ones who would start following the manual without listening to the delivered lessons. A copy of the manual is attached as **Annex 3**.

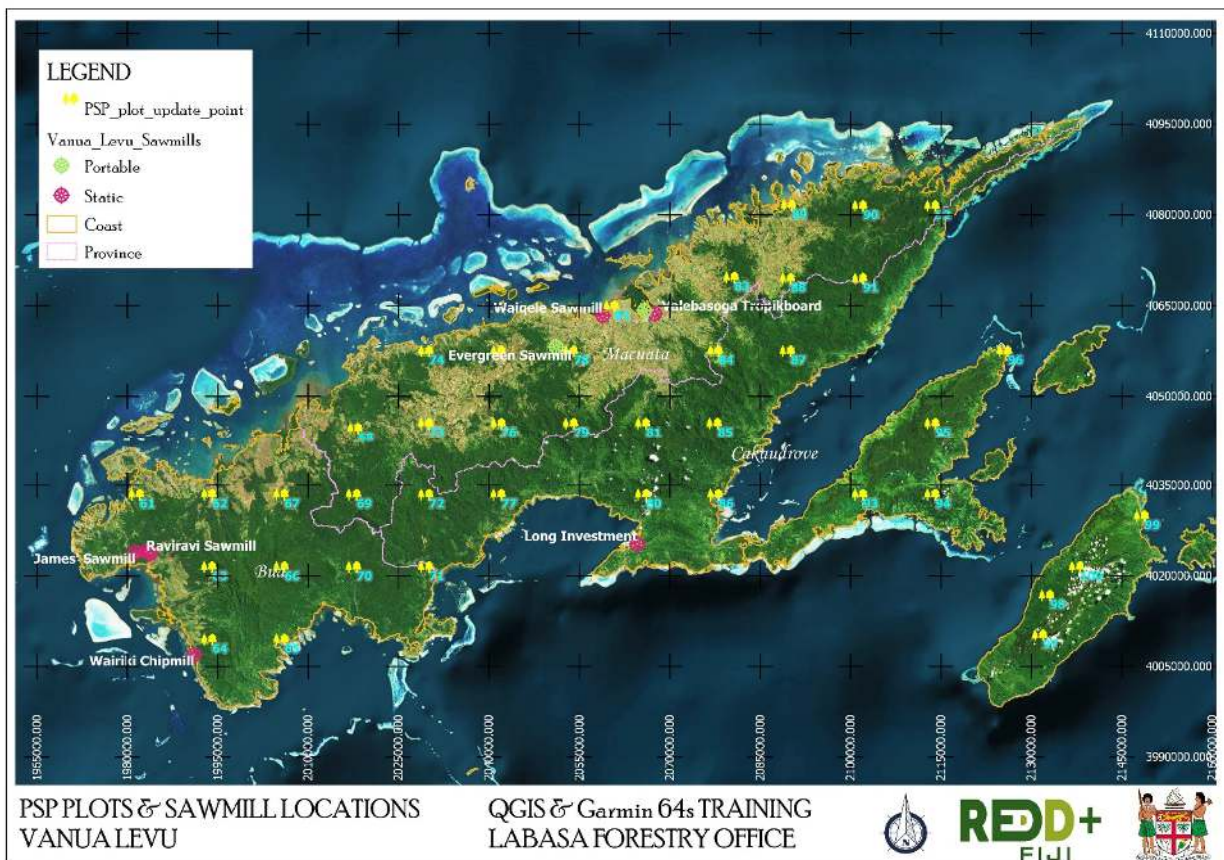
7.0 WAY FORWARD

The following observations can be classed as way forward for the training and its use in Forestry applications for better reporting on the various required data needs:

- 6.1 Participants to follow training manual as it has step by step explanations of topics covered in the training.
- 6.2 Participants to note every detail encountered after using the Softwares for an extended period.

- 6.3 Participants to contact FRAC Division GIS team for internal geospatial queries.
- 6.4 FRAC Division to formulate a template to standardize colour codes for different features.
- 6.4 FRAC Division to create a layout template to be used across all Divisions for uniformity and ease of comprehension of displayed data.
- 6.6 A possible follow up training with 3D terrain modelling, medium level GIS editing and troubleshooting of problems encountered after using QGIS in their own setting.

Isireli Buwawa
GIS Consultant





QUANTUM GIS TRAINING PROGRAM
LABASA FORESTRY OFFICE
22nd to 26th JULY, 2019



TIME	SESSION	MONDAY [8 th]	TUESDAY [9 th]	WEDNESDAY [10 th]	THURSDAY [11 th]	FRIDAY [12 th]
8.30 - 9.00am	1	Registration	Setup and Preparation Recap	Setup and Preparation Recap	Setup and Preparation Recap	Setup and Preparation Recap
9.00 -9:15	2	Welcome/Opening remarks [REDD+/ DO North]	Create vector layer and Digitise features	MapProductionExercise- Digitising forestcover	GNSS (presentation) • Components • How itworks • Typesofrovers	Workingwith data from Ministry ofForestry
9.15 -9:20		Objective and expected outcome [REDD+]				
9.20 -10:00	3	Introduction to GIS (presentation) Digital Mapping Essentials □ Scale □ Projection Exercise - Exploring QGIS				
10.00-10.15am	M O R N I N G B R E A K					
10:15-11:00am	4	Image Characteristic (presentation)	Calculate Area QGIS Calculate Length in QGIS Calculate positions in QGIS	MapProductionExercise- Digitising forestcover	The Garmin 64S	Individual Exercise
11:00-12:15pm		Installing XYZ Tiles Exercise -Exploring Online Imagery	Symbology and geo- visualisation	Symbology and geo- visualisation exercise data	Plotting of waypoints Garmin 64s Field Work	
12:15 - 1:15pm	L U N C H B R E A K					
1:15 -2.00pm	5	Acquiring Imagery - SAS.Planet Using Offline Imagery	Importing spreadsheet Attribute table	Map Layout	Download of Field Data	Individual Presentation
2:00 - 3:00pm		Exercise - Download Imagery				
3.00 - 3.15 pm	A F T E R N O O N B R E A K					
3:15 - 4:15pm	6	Georeferencing Offline Imagery	Editing vector features	Map Layout and printing	GPS Data Import into QGIS andoverlaywith existing data	Closing of Training
4:15 - 4:30pm	7	R E C A P				