



# Forestry Field Manual for Bhutan

Community Forestry Manual

Third Edition, 2018



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## FOREWORD



Community Forestry is one of the key components of Bhutan's National Forest Policy and is developing very dynamically in our country. As of June 2018, there were 750 community forests covering an area of 85,831.183 hectares and involving 31,087 rural households. Thus, Community Forestry has now passed the piloting stage and has become an institutionalized part of the system for the sustainable management of Bhutan's rich and diverse forest resources.

The Social Forestry and Extension Division (SFED) took the lead role in revising this manual. It has been revised in a truly participatory way by involving all relevant stakeholders. The first manual was developed in 2004 and revised in 2012 by international consultants based on Forest and Nature Conservation Rules (FNCR) 2006. This third edition is based on Forest and Nature Conservation Rules & Regulations (FNCRR) 2017 and revised by our national expertise within the Department. The first core group workshop was held from 5<sup>th</sup> to 7<sup>th</sup> of October 2017 in Bajo, Wangdi Phodrang which provided important inputs for the future of Community Forestry in Bhutan.

This edition of "Community Forestry Manual" results from an extensive revision of previous manual which such that the provisions in Forest and Nature Conservation Act 1995, National Forest Policy 2011, National Strategy for Community Forestry 2010 and FNCRR 2017, are all considered. This revision was made possible with financial support from the Community Forestry Support Project funded by the HELVETAS Swiss Intercooperation (HSI).

The Department of Forests and Park Services (DoFPS) in line with FNCRR 2017 is fully committed in the implementation of this manual. We wish everybody involved in its implementation and in the further development of Community Forestry in Bhutan for the benefit of the rural people.

I deeply appreciate and thank the core group members who had to put in lot of efforts and work overtime in order to bring out this manual. In particular, I would like to thank the Social Forestry & Extension Division for timely revision of the manual which will enable the Royal Government of Bhutan in general and the Department in particular to achieve its multiple objectives through establishment and sustainable management of the community forests in our country.

(Phento Tshering)

DIRECTOR

Department of Forests and Park Services

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## ABBREVIATIONS

AAC	Annual Allowable Cut
AGB	Above Ground Biomass
ANSAB	Asia Network for Sustainable Agriculture and Bio resources
AWP	Annual Work Plan
BA	Basal Area
BGB	Below Ground Biomass
CF	Community Forest/Community Forestry
CFMG	Community Forest Management Group
CFMP	Community Forest Management Plan
CFO	Chief Forestry Officer
cft	Cubic foot/feet
dbh	Diameter at Breast Height
DoFPS	Department of Forests and Park Services
DT	Dzongkhag Tshogdu
FAO	Food and Agriculture Organization of the United Nations
FMU	Forest Management Unit
FNCA	Forest and Nature Conservation Act, 1995
FNCRR	Forest and Nature Conservation Rules & Regulations, 2017
FRMD	Forest Resources Management Division
FYP	Five Year Plan
GPS	Global Positioning System
GT	Geog Tshogde
ha	Hectare
IPCC	Intergovernmental Panel on Climate Change
MA&D	Market Analysis and Development
MoAF	Ministry of Agriculture and Forests
M <sup>3</sup>	Cubic meter
Nu	Ngultrum
NWFP	Non-Wood Forest Produce
OP	Operational Plan
PFMP	Participatory Forest Management Project
PRA	Participatory Rural Appraisal
RDC	Research and Development Centre
RGoB	Royal Government of Bhutan
SDC	Swiss Agency for Development and Co-operation
SFED	Social Forestry and Extension Division
SRF	State Reserved Forest

## ACKNOWLEDGEMENTS

This edition of Community Forestry Manual for Bhutan is based on Community Forestry Manual 2012 which was developed by Social Forestry and Extension Division (SFED) of the Department of Forests and Park Services (DoFPS) with the support of Community Forestry Support Project (CFSP) funded by the HELVETAS Swiss Intercooperation (HSI). It involved both extensive and intensive process of consultation with many individuals in Bhutan who have experience of working in community forestry. A Core Group was formed with forestry officials from different field offices under the Department of Forests and Park Services who had long experience in Community Forest management. The core group met from 5<sup>th</sup> to 7<sup>th</sup> October, 2017 at Bajo, Wangdi Phodrang and their valuable contributions are acknowledged here. This edition of the manual reflect the ideas and suggestions that came from this workshop and are based on genuine practical experiences and reflections of an experienced group of participants. Task Force was formed to validate and field test the circular sample plot which is practiced in many tree resource survey/inventory in three different forest types and the results compared in terms of ease and precision. Earlier, rectangular sample plot was followed as per CF Manual 2012. The first field test was conducted in Bumthang for Bluepine forest from 4 to 11 November, 2017, the second field test was conducted in Mongar for Chirpine forest from 13 to 19 November and the third for cool broad leaf forest was conducted in Kangpara, Tashigang from 21 to 27 November, 2017. Lastly the field test in warm broadleaf forest was conducted in Samtse from 11 to 17 December, 2017.

Extensive online discussions to gather comments and suggestions on the CF manual revision were held in social media and with a group formed as “Community Forestry in Bhutan”. As a result, this revised manual is now more strongly based on ground realities and practical experiences with national standard sample plot layout including the Annual Harvesting Limit (number of trees) which can also be converted easily into volume basis.

To ensure that this edition of CF manual is up to date, numerous policy documents and rules were referred to, namely the Forest and Nature Conservation Act 1995, National Forestry Policy 2011, National Community Forestry Strategy 2010, Forests and Nature Conservation Rules & Regulations 2017, Private Money Lending Rules 2016 and Local Government Act 2009.

Field Foresters and CFMG members were involved in a number of field visits carried out in four Dzongkhags. Without their co-operation and enthusiasm it would have not been possible to revise this manual.



(Pasang Wangchen Norbu)

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## CHAPTER I

### Introduction

The community forestry program was initiated in Bhutan, after the declaration of Social Forestry Day in 1985 by His Majesty the Fourth Druk Gyalpo. Since then Community Forest (CF) program has moved from pilot basis to full fledged program in the 10<sup>th</sup> Five Year Plan. During the piloting of CF program, a lot of experiences have gained, which contributed to natal of the manual in 2004. As the CF program progressed, the manual also needed to embrace emerging opportunities and issues, hence revised in 2012. Over the period, numerous CFs have been established in almost all the gewogs and handed over to the community forest management groups. CF program is now mainstreamed in development program and has to embrace not just sustainable management of forest resources and improved livelihoods but it has to clutch the global issues such as climate change, enterprise development, network and networking association for betterment of CFMGs in terms of economic, capacity and equity. That is why the CF Manual 2012 had to be revised.

The third edition of Community Forestry Manual is divided into seven chapters. In addition, there are number of Annexes that provide additional reference and information. The chapters are based on the earlier version of the community forestry manual but they have all been extensively revised and updated.

### The Policy Basis for Community Forestry

In 1979, His Majesty King Jigme Singye Wangchuck proclaimed that *“The participation of the local community is the key to conservation and utilisation of forest resources”*.

This was the starting point for the development of social forestry in Bhutan as a government-supported program. In 1995, HRH Ashi Sonam Choden Wangchuck stated that Community Forestry *“builds on existing local knowledge and traditional forest management systems, and develops means to devolve management responsibility for forest areas to the people that actually depend on the forest for their sustenance.”*

Community Forestry is now firmly on the agenda for Bhutan as part of the Five-Year Plans and it forms part of the National Forest Policy 2011.

The broad policy objective of CF according to National Forest Policy 2011 is *‘to empower rural communities to manage forests sustainably for socio-economic and environmental benefits, poverty reduction and to contribute to overall sustainable forest management at national level’* by pursuing the following policy measures:

- i. Strengthen the rights and responsibilities of local communities to regulate access and use of forest resources in and around villages through decentralization and devolution of management authority from the central government to local communities.
- ii. Manage CF based on principles of good governance to ensure transparency, accountability, participation, predictability, empowerment, inclusiveness, equity and benefit sharing, and in line with decentralisation and devolution policies.
- iii. Manage CF to meet the requirements of timber, firewood of the local people and other goods and services.
- iv. Manage CF by applying principles of Sustainable Forest Management to achieve ecological, social and economic objectives.
- v. Manage CF to generate a wide range of other goods and services contributing to rural poverty reduction through sale of forest products and services.
- vi. Enhance sustainable rural livelihoods through income generating opportunities, creation of on and off farm employment opportunities and strengthen community skills related to such opportunities.
- vii. Facilitate establishment of CF in the Protected Areas without compromising with the objectives of Protected Areas.
- viii. Interface contemporary management and institutional arrangements with indigenous and traditional approaches to forest management.
- ix. Create an enabling regulatory, technical backstopping and extension framework for CF.

- x. Establish mechanism to compensate the loss of area or resources due to developmental activities from the designated community forests.
- xi. Monitor and evaluate the biophysical and socio-economic outcomes of CF.
- xii. Establish strong monitoring and evaluation mechanism.

### The Legal Basis for Community Forestry

Section 17 of the Forest and Nature Conservation Act of Bhutan 1995 entrusts the Ministry to make rules for the establishment of CF on Government (State) Reserved Forest Land with communities being granted management and use rights under conditions set in the approved CF management plans. The Community Forestry Chapter states that:

- a) *“The Ministry may make rules for the establishment of community forests on Government Reserved Forest”.*
- b) *“The rules for community forests may provide for the transfer of ownership of the forest produce in the community forest to appropriate groups of inhabitants of community adjoining the forest”.*
- c) *“The group of which community forests have been transferred shall manage them for sustainable use in accordance with the rules for community forests and the approved management plan”.*
- d) *“Permits, royalties and other charges, as well as assistance to community forestry, shall be governed by the rules for community forests”.*

Forest and Nature Conservation Act 1995 and Forest and Nature Conservation Rules & Regulations of Bhutan 2017 provide the legal basis for community forestry. Partnerships between local communities and the RGoB through the formation of CFMGs are encouraged under these rules and CF management by traditional users or communities is legitimized providing that national interests and the principles of inclusiveness, equitability, sustainability and efficiency are also safeguarded.

The **Local Government Act of Bhutan, 2009** specifically empowers the Gewog Tshogde (GT) and says GT shall *“Regulate the protection and harvesting of edible forest products in the community forest in accordance with the Forest and Nature Conservation Act of Bhutan”*. The GT shall *“Be the custodian of community land, community forests, including sokshing, nyekhor tsamdro, and medicinal herbs and accordingly prevent illegal house construction and all other types of encroachments in such community land as well as on government land and forests”*. This means that they should be involved in planning for community forestry identifying suitable sites for CF; processing applications; and being consulted about the approval of CF Management Plans.

### What is Community Forestry?

Community Forestry is a form of forestry that operates as a completely different paradigm from conventional forestry. The fundamental basis of the difference is a significant shift in the locus of power for major decision making from government to local communities.

Rural Bhutanese people usually live near forests and rely heavily on them for their basic needs. Forests provide them with products and services such as firewood, timber, fodder and pasture, foods, medicines, leaf litter, water for drinking and irrigation and spiritual grounds.

Management and use of forests is regulated by the Department of Forests and Park Services (DoFPS) but there is recognition that the local forest users can also be the resource managers. This is the basis for community forestry since, according to the FNCRR 2017 *“The Department may designate any area of State Reserved Forest Land, including degraded and barren areas for improvement, in the vicinity of human settlement, suitable for control and management by Community Forest Management Group, as Community Forest”*. Community forestry therefore implies the control and management of forests by local forest users as part of their livelihoods system.

## Objectives of the Manual

1. To guide the forestry staff and community forest management groups to establish CFs and prepare the management plan using participatory tool and technical methodologies.
2. To be used as a training manual for developing the skills and techniques needed to work in community forestry in Bhutan.

## Using the Community Forestry Manual

1. This manual is intended primarily for Forestry staff working in the field Divisions and Protected Areas who support villagers and Community Forestry Management Groups (CFMGs) to establish and manage their community forests.
2. The manual can also be used by community members including members of the Gewog Tshogde and any others interested in community forestry.
3. The manual forms a guide to implementing and managing community forest, but it can also be used as a training tool for developing the skills and techniques needed to work in community forestry.

## The Community Forestry Processes

There are four main processes in community forestry program.

1. Application process
2. CF management planning process
3. Approval process
4. Implementation process

These processes are mostly participatory involving community people and other stakeholders. Participatory Rural Appraisal (PRA) and some of its tools are used in different processes. Annex 17 provides basic methods of PRA and few of its tools. The flow chart (Figure 1) shows the whole processes starting from establishment to implementation and revision. The processes are further divided into several steps.



Figure 1: Community Forestry Process flowchart

## CHAPTER II

### CF Application Processes

#### Step 1. Formation of CFMG and Submission of Application

In accordance with Section 78 (1) of FNCRR 2017, a village with at least five households willing to establish and manage a community forest can form a Community Forest Management Group (CFMG). The CFMG submits application (Annexure VI of FNCRR 2017) to the Gup, who shall review and recommend to the CFO.

#### Step 2. Field Verification of the proposed CF area

Upon receipt of the CF application from the Gup, the CFO shall form a field verification committee. The committee shall comprise of CFMG representatives, CFO, Dzongkhag Land Record Officer, Gup and adjacent community among other relevant agencies and officials. The team shall check whether or not the proposed CF area fulfils the criteria mentioned below.

##### Selection Criteria from the FNCRR 2017.

In accordance with Section 75 of the FNCRR 2017, selection criteria for CF sites are:

(1) *Any area of State Reserved Forest Land, including degraded and barren areas for improvement, in the vicinity of human settlement, suitable for control and management by Community Forestry Management Group, as Community Forest.. The designation of an area as CF shall comply to the following procedures and criteria:*

- (a) *the area is traditionally used and managed by the community;*
- (b) *the area has production potential to meet subsistence requirement of forest produce and income generation for CFMG members. Tsamdro/Sokshing land reverted to SRF Land shall not be designated as Community Forest unless the reverted Tsamdro/Sokshing is no longer required for lease as Tsamdro/Sokshing by the individual/community;*
- (c) *the area is suitable for sustainable management and utilization of forest produce;*
- (d) *the local household are willing to form and cooperate as a CFMG to manage the forest in accordance with the following conditions:*
  - i. *establishment of CF in the PA and Biological Corridor within the vicinity of the existing settlement may be allowed, if feasible;*
  - ii. *sacred forests or tree, significant Wetland, Heritage forests or any forest area of cultural and religious importance shall be protected from designation as CF;*
  - iii. *any area of government plantation in small patch less than three years or plantation area measuring less than five hectares located within the proposed CF, shall be included in the CF for better management by the CFMG after obtaining clearance from the Department.*
- (e) *the boundary and size of CF area shall be determined by the following criteria:*
  - (i) *availability of SRF Land;*
  - (ii) *traditional and natural boundary within the village;*
  - (iii) *customary rights and practices of resource utilization;*
  - (iv) *level of dependence of the community on such forests;*
  - (v) *availability of adequate area to meet the resource needs of neighboring communities;*
  - (vi) *the maximum ceiling of CF area to be allotted to individual household (hh) shall be as follows:*
    - (1) *Mixed conifer/blue pine forest 3 ha/hh.*
    - (2) *Chir pine forest 4 ha/hh.*
    - (3) *Mixed broadleaved and other forest type 5 ha/hh.*

*(f) the proposed area decided by the committee comprising of representative of CFMG, CFO, DLRO, Gup and adjacent community shall be endorsed and shall form the basis for the CF establishment.*

Net operable (production) area for community forests should be calculated after determining the important areas (water source, wetland, cliff, rock outcrops, etc.) and deducting them from the overall CF area. However, those areas should be brought under appropriate management regime within the CFMP.

### **Step 3. Approval of CF Application**

The CFO, upon field verification by the committee approves the application for establishment of the CF. The CFO then instructs the concerned Forestry Official(s) to facilitate the community forest management planning exercises and framing of CFMG By-laws.

## CHAPTER III

### Community Forest Management Planning Process

#### Principles of the CF Management Planning

Some principles need to be followed during Community Forest Management Plan (CFMP) preparation. These are shown in figure 2. The CFMP should:

- Contain all the information the CFMG needs to manage their CF.
- Not contain extra information (not actually required for managing the CF).
- Be prepared by the CFMG with concerned Forestry Officials as facilitators and trainers.
- Be “owned” by the CFMG.
- Be written in a national language
- Include maps, diagrams, charts and drawings to be easily understood.
- Include all the actual activities which the CFMG agree to implement.
- Contain agreed responsibilities for implementation and procedures which the CFMG can follow.

Figure 2: Principles of Community Forest Management Plan



#### Who should prepare the Community Forest Management Plan?

In accordance with Section 78 (2) of the FNCRR 2017, “CFO shall assist CFMG in preparation of Community Forest Management Plan, through consultation and collaboration”. The CFMP will be prepared by the CFMG with technical support and facilitation by field forestry staff as per the standard template prescribed in Annex 4.

#### Step 1. CF Boundary Survey and Demarcation

CF boundary needs to be clearly demarcated and mapped. Boundary survey is done by GPS involving the CFMG representatives and communities from adjacent villages. For boundary survey, a checklist of suggested equipment are mentioned in the box.

Equipment:  
GPS (e.g. Garmin), spare batteries, Compass, GPS Survey Sheet, clipboards, pen/pencils, permanent marker (Paints), knives.

#### How to do a boundary survey with GPS

- Agree on the starting point for the traverse of the CF boundary with CFMG members. This should be an accessible and easily locatable point e.g. on a roadside/Chorten/Lhaxhang or river/stream/cliff, etc.
- Set the reference point as the starting point on your GPS. Make notes on your GPS Survey Sheet (referring to the point number or name). Or record the corresponding Waypoint ID in the GPS Survey Sheet.
- Setup GPS position format in decimal degrees (hddd.ddddd°).
- Before starting to walk the boundary, make sure the GPS is set up properly to record the Track.
- Turn on the Track log and mark Waypoints while walking along the CF boundary. If the area is too large, we may have to set the Track log recording method into auto. We also have options to record the Track log by distance, time and its corresponding recording intervals. If the Track logs are more than 700, we face some problem while digitizing in ArcMap.
- Explain to the CFMG members that you are going to record the CF boundary with the GPS. Show some tracks and waypoints already stored on the GPS and explain the importance of following the exact (proposed) boundary of the CF without taking shortcuts (the GPS will only record the places you have actually been).

- Stop at each locatable point e.g. path junctions, rock outcrops, gullies, streams and houses or specific forest areas and store a Waypoint on your GPS.
- Write the GPS ID names using permanent marker or paints on the trees, rocks to help CFMG members in identifying the CF boundaries in future.
- Note down any features and area names on your GPS Survey Sheet.

GPS Survey Sheet		
Survey team members:		Name of forest:
Date:		
GPS ID	Features	Remarks
(WPT No./Name)	(Ridges, paths, road, boundaries of cultivated land, power line, etc.)	(Name, condition, use, etc.)

- Continue around the entire CF boundary. As far as possible try to have the boundary following recognizable features like ridges, paths, roads, boundaries of cultivated land, etc.
- When you regain the starting point you will have a complete GPS survey of the boundary. It is usually convenient to upload Waypoints and Tracks through OziExplorer as you can view time, date and geo-coordinates you travelled from that place in its Track log. You also have other options to upload GPS data onto your PC (DNRGPS, QGIS software, etc.).

**Steps to upload GIS data in GPS (see figure 3a to 3i).**

a) Open DNRGPS software from the file directory, see figure 3a.

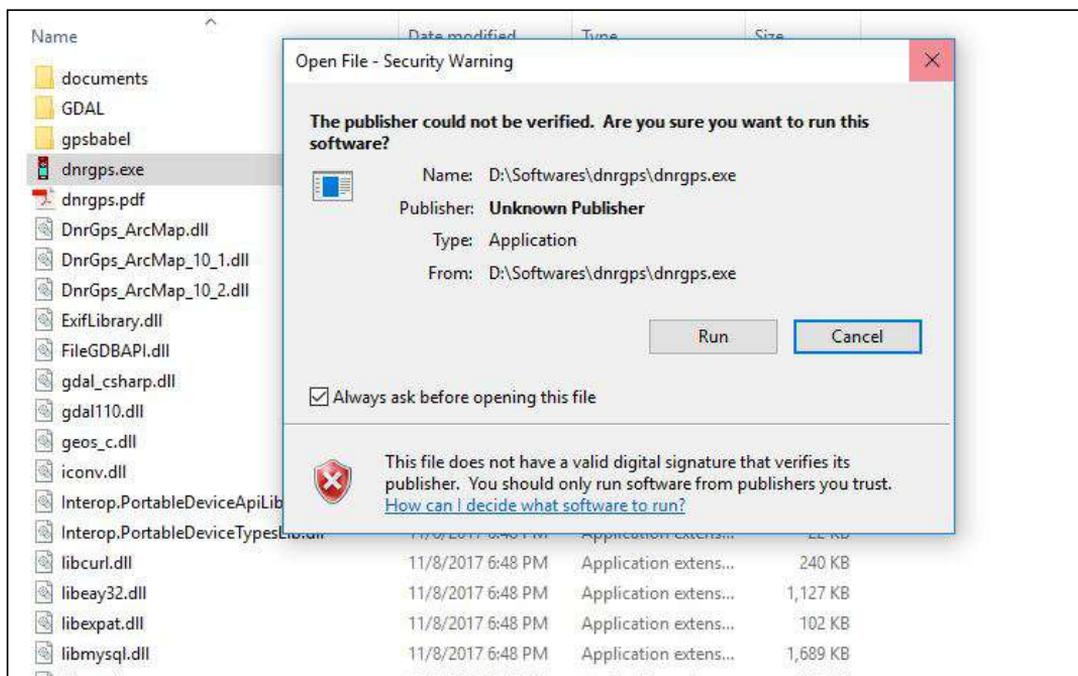


Figure 3a

b) Run the exe. file and screen occurs as shown in figure 3b below.

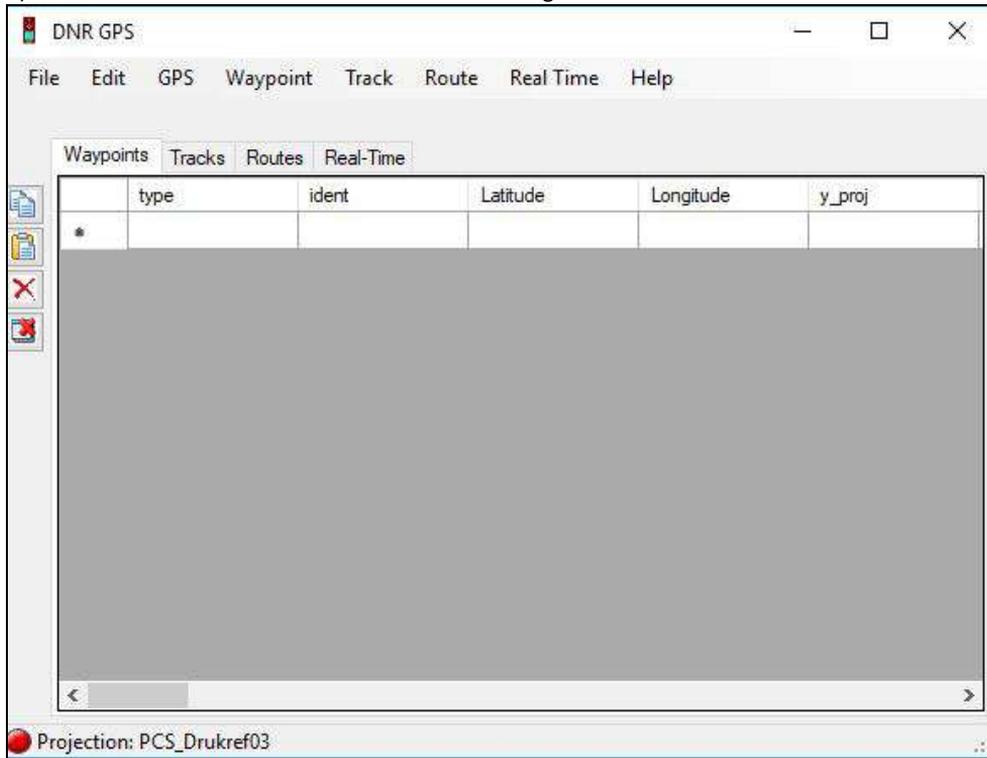


Figure 3b

c) Now connect your GPS and find GPS from the top menu. It will take some time to find your GPS and name of GPS occurs above the screen box as indicated in figure 3c.

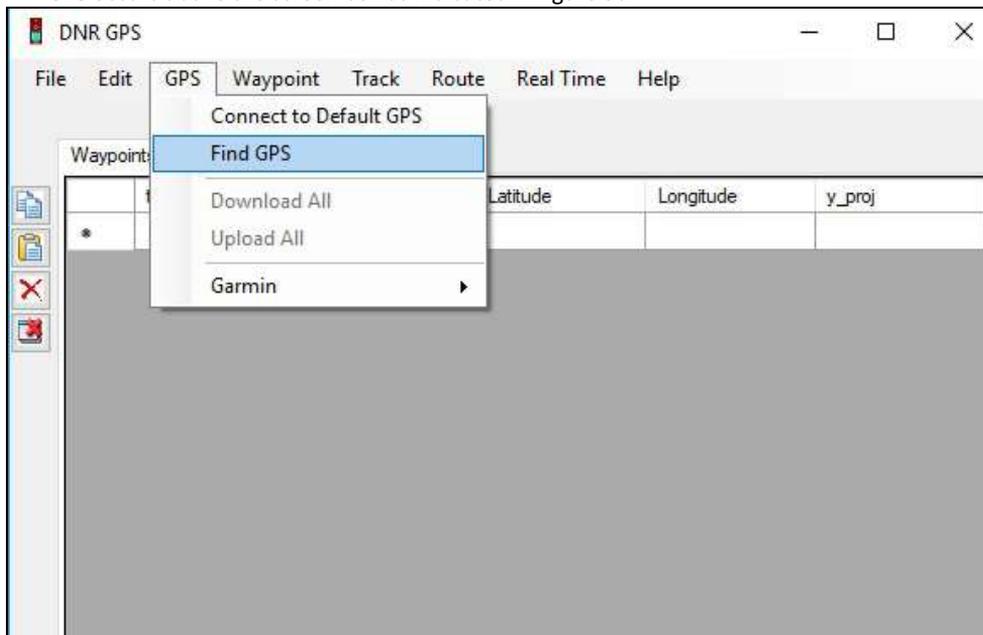


Figure 3c

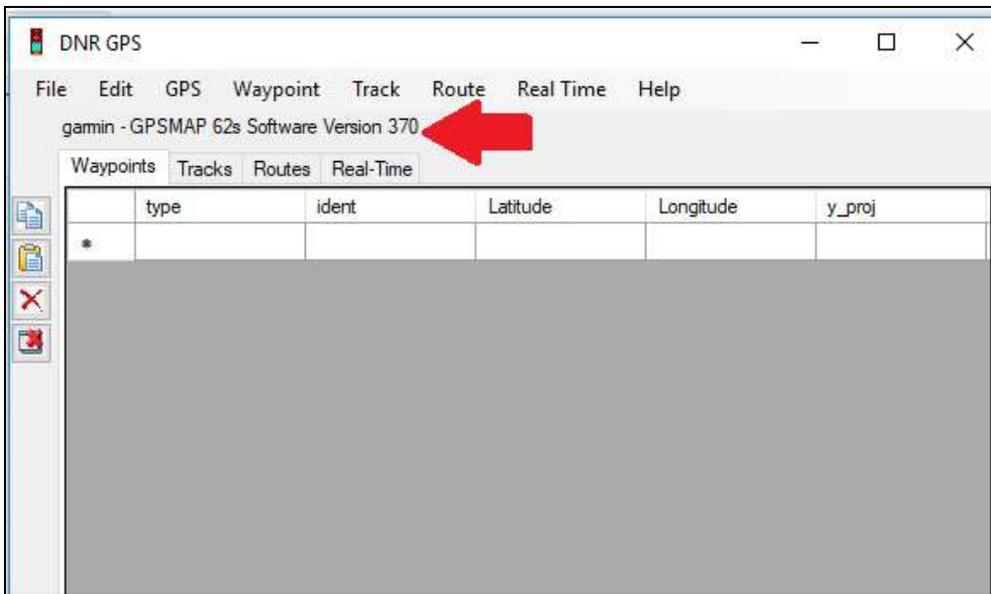


Figure 3d

d) Now load the waypoints/plots from the file directory, see figure 3e to 3g below.

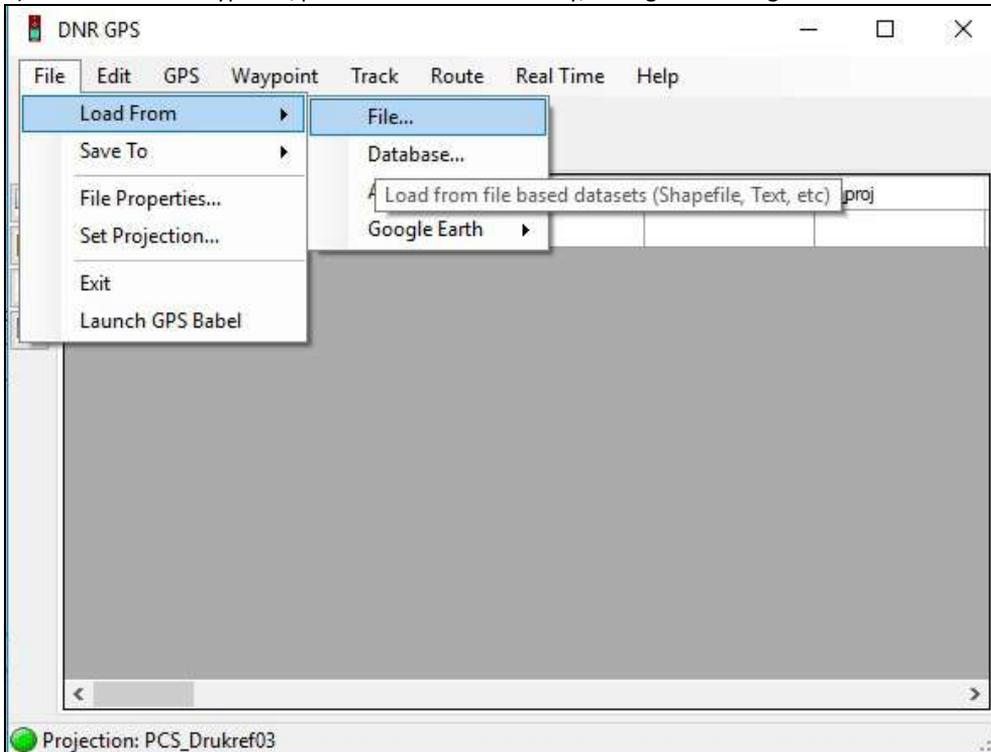


Figure 3e

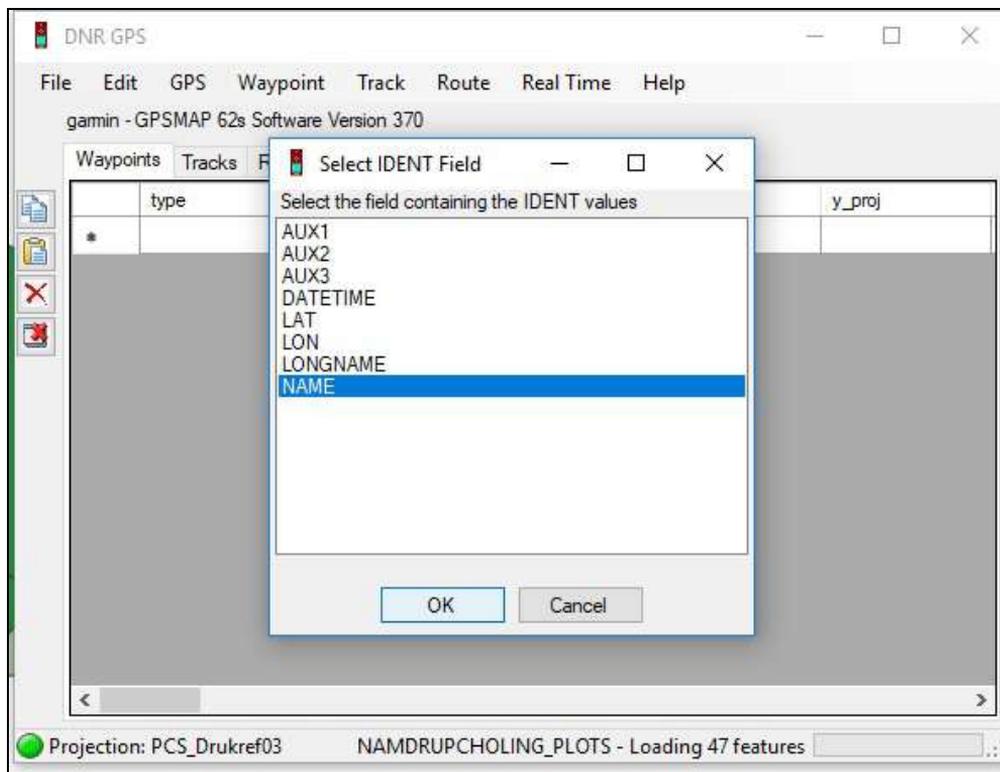


Figure 3f

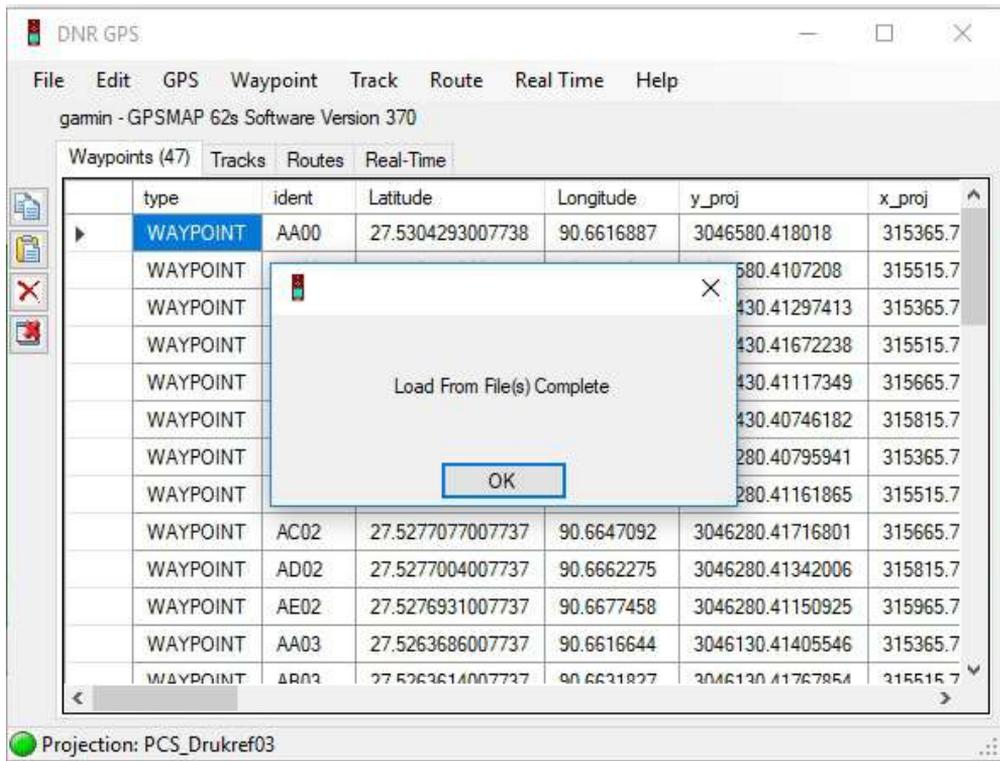


Figure 3g

e) Now upload the Waypoint to GPS from the waypoint menu and upload the waypoints until it is complete, see figure 3h below.

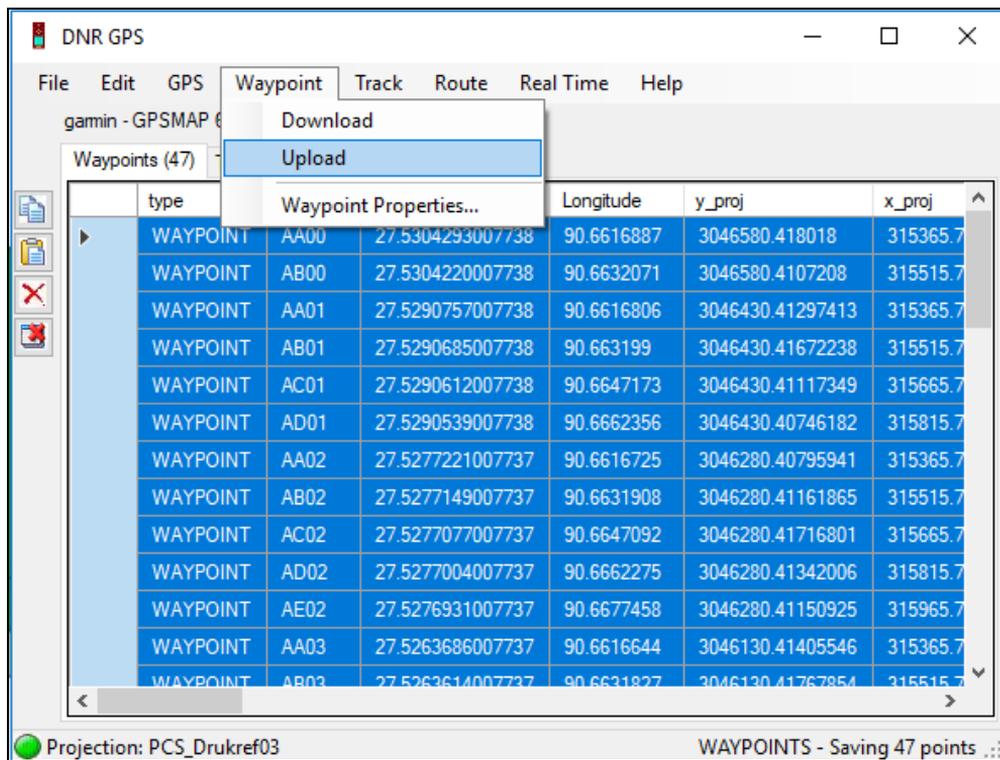


Figure 3h

f) Now the Waypoints/plot identity is ready for use in the field

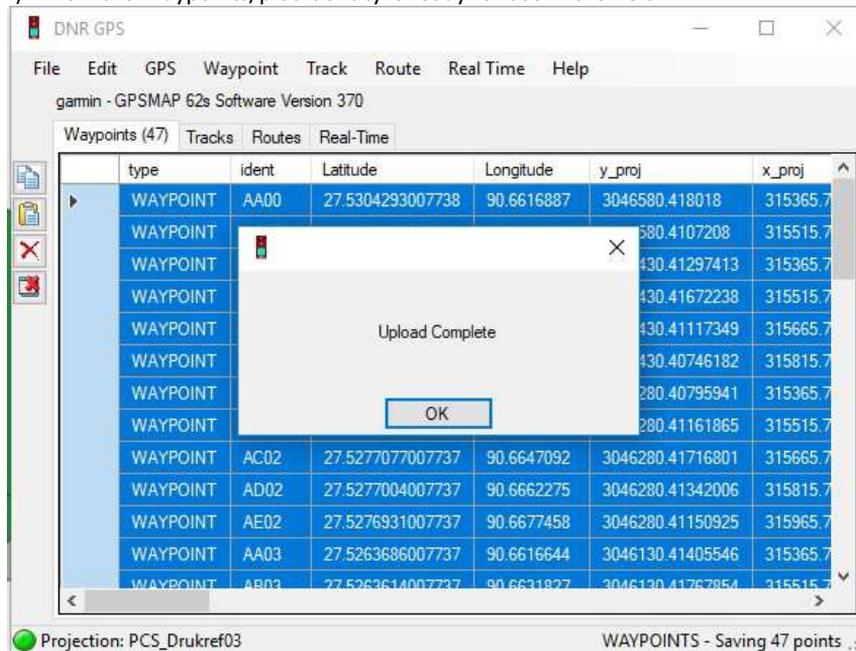


Figure 3i

## How to produce boundary map using QGIS

a. Upload field data from GPS (figure 4a below)

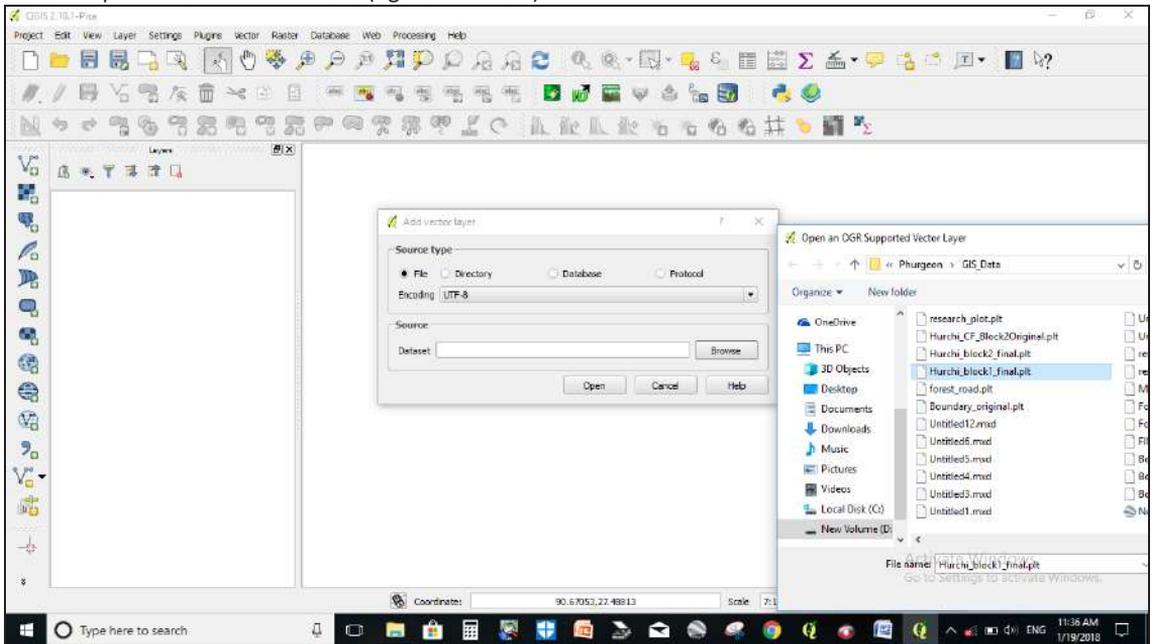


Figure 4a

b. Add GPS raw data from GPS or downloaded file directory using add vector layer button.

c. Select tracks multi-string type and click ok (Figure 4b below).

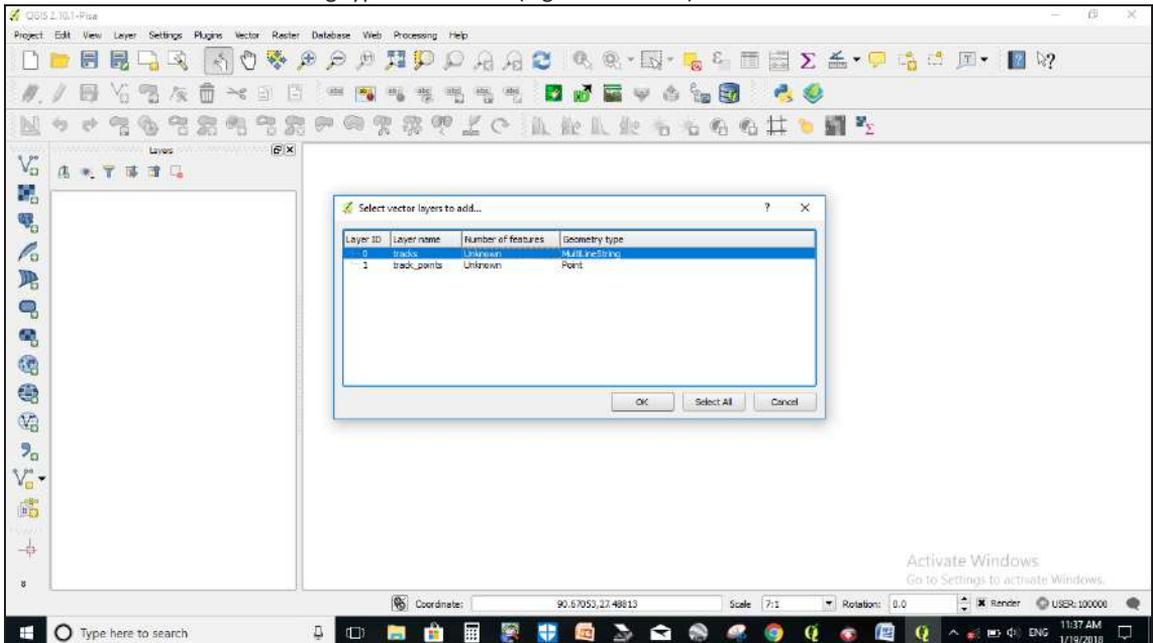


Figure 4b

d. The boundary will be displayed in the main screen. You will see the layer file as track any in the layer menu (figure 4c).

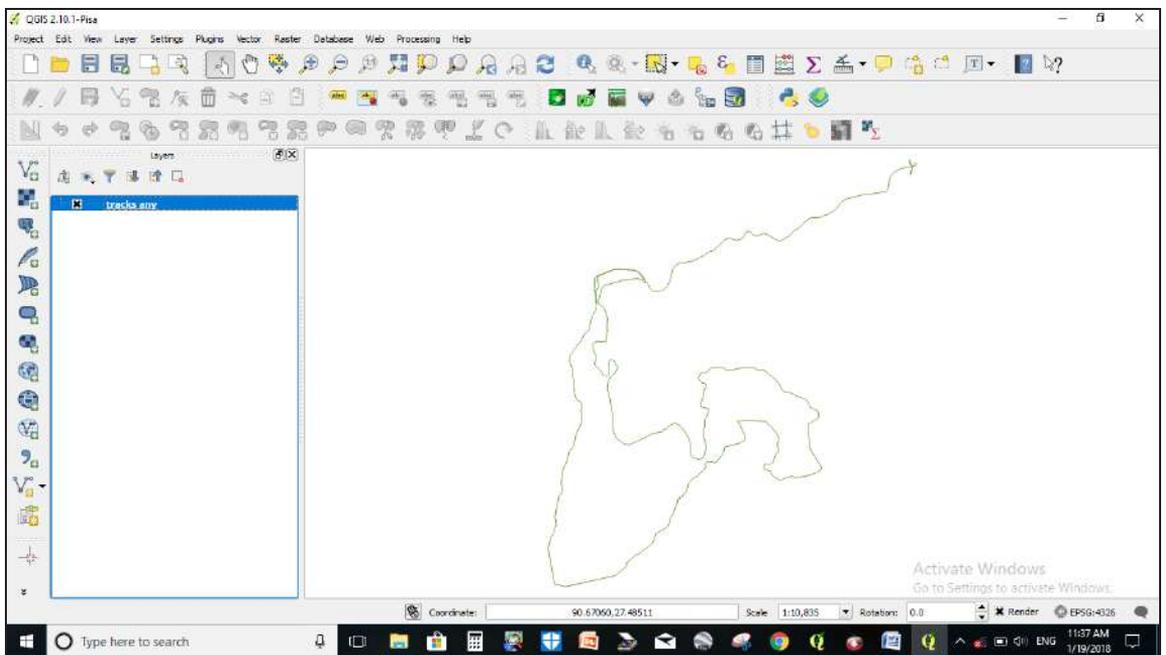


Figure 4c

e. Now we have to project the raw data by saving as project file (figure 4d below).

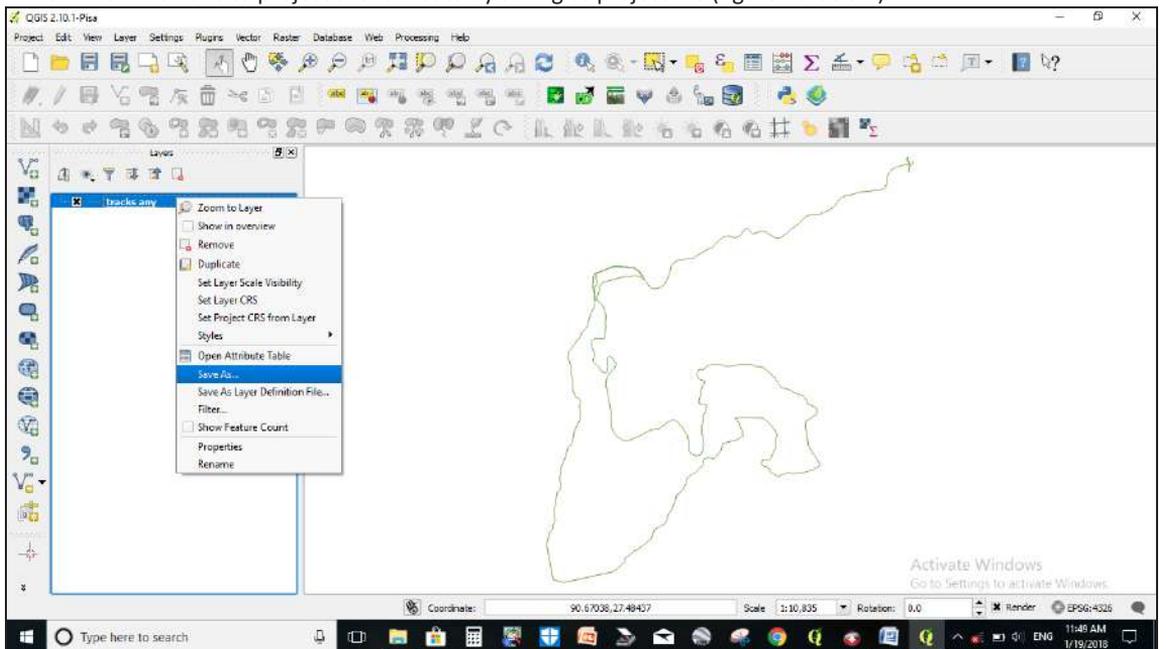


Figure 4d

f. Select the CRS format as shown and save the file in the designated directory (figure 4e below).

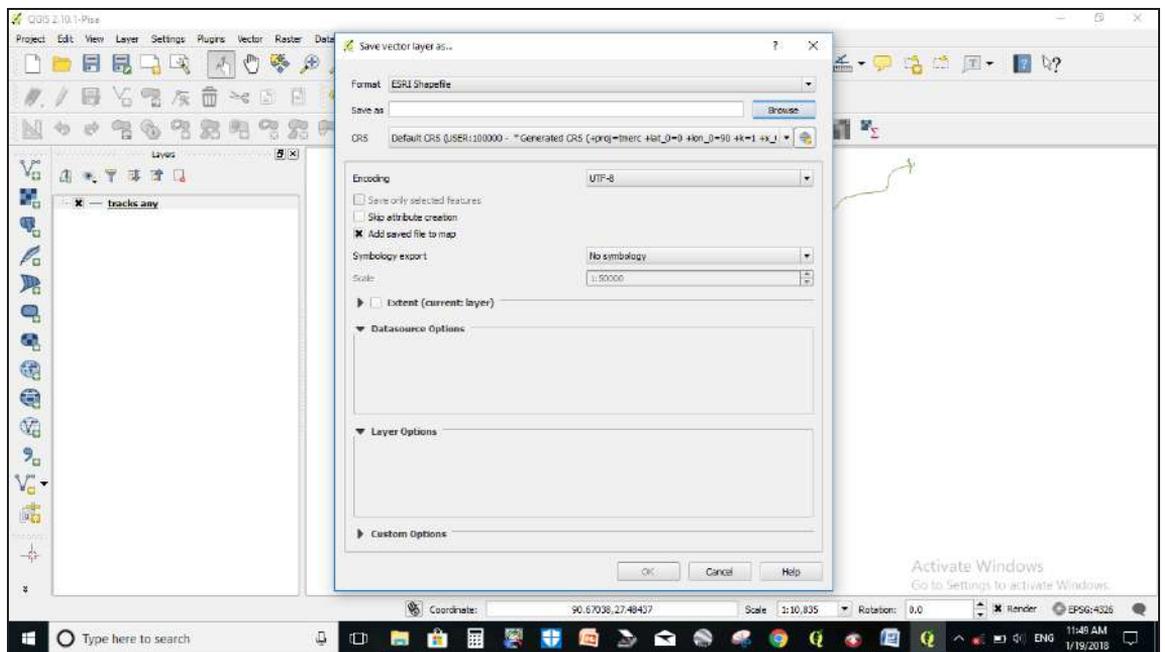


Figure 4e

g. Apply and click ok figure (4f below).

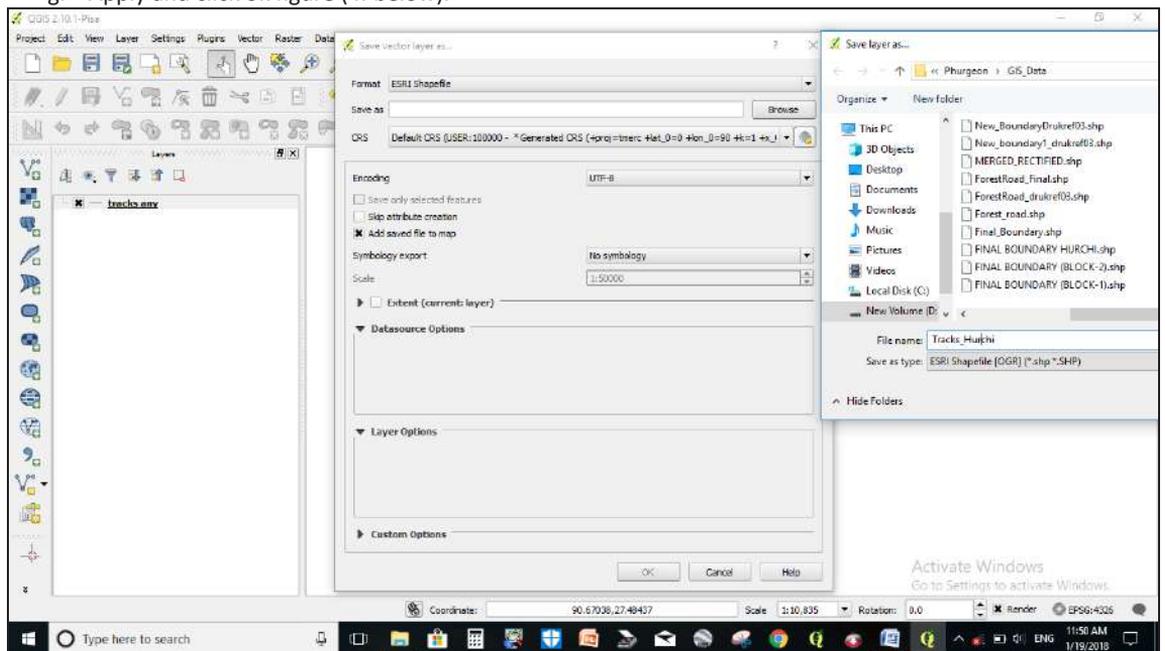


Figure 4f

h. Digitize the data using add new shape file layer as indicated in figure 4g below.

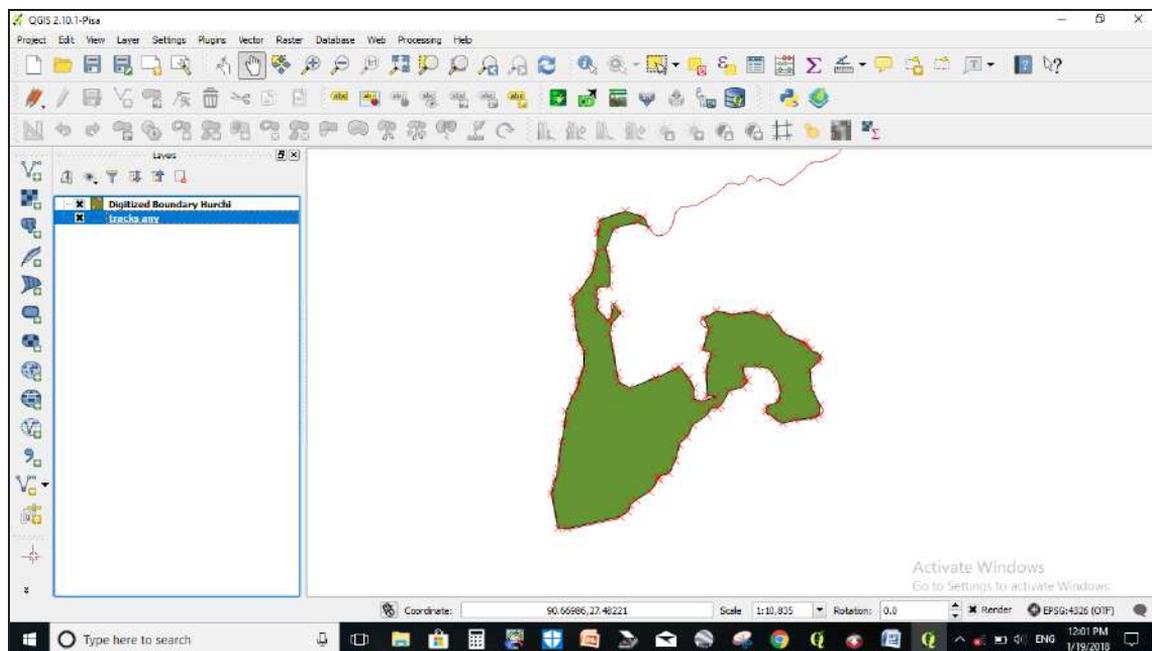


Figure 4g

i. Disable the original boundary file and select the new boundary.

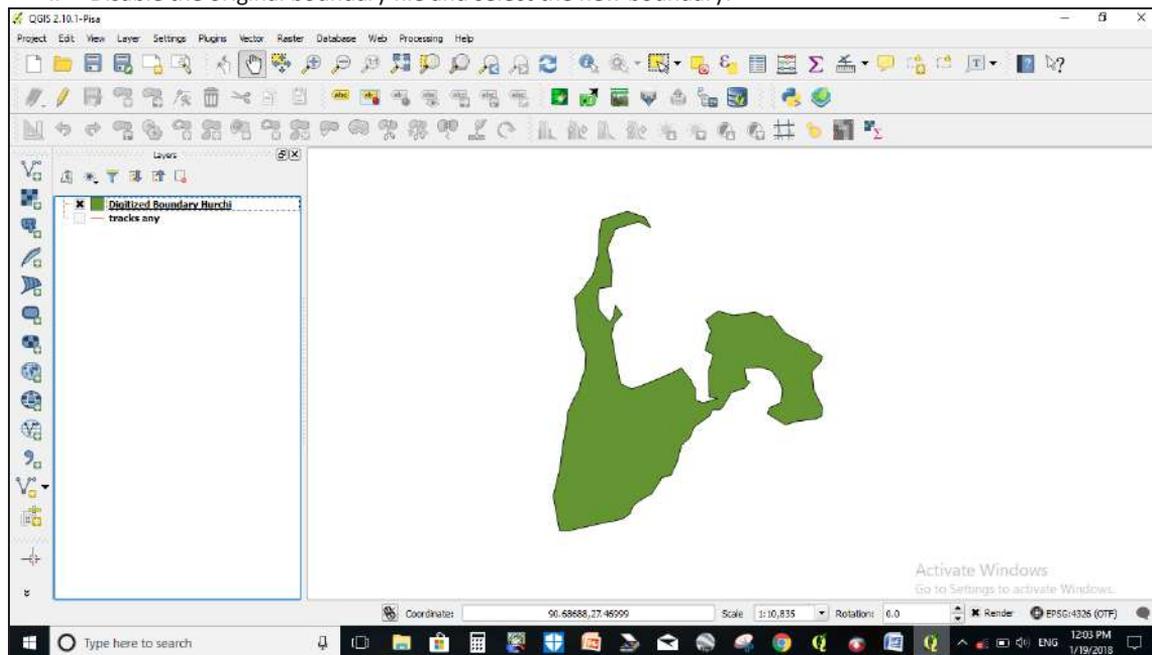


Figure 4h

- j. Add land use data and finalize the map, see figure 4i below (Google map superimposed with required attributes and Land use map which can be incorporated in the management plan).

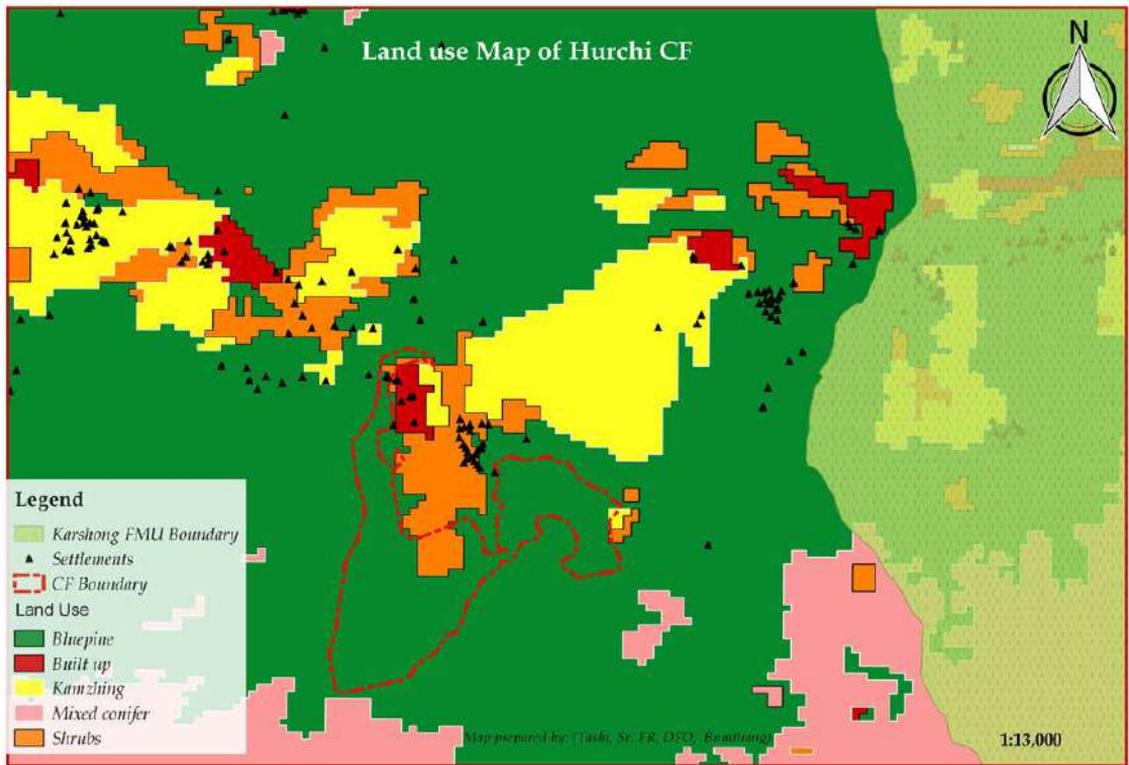


Figure 4i

In order to identify land use around the proposed CF area, you may officially write to National Land Commission Secretariat or Dzongkhag Administration to consider providing the private land Shape files and their details so as to avoid boundary issues with private land owners in future. It is convenient to superimpose on Google map as it is more convincing to the CFMG members and other relevant stakeholders (e.g. Figure 5a and 5b).

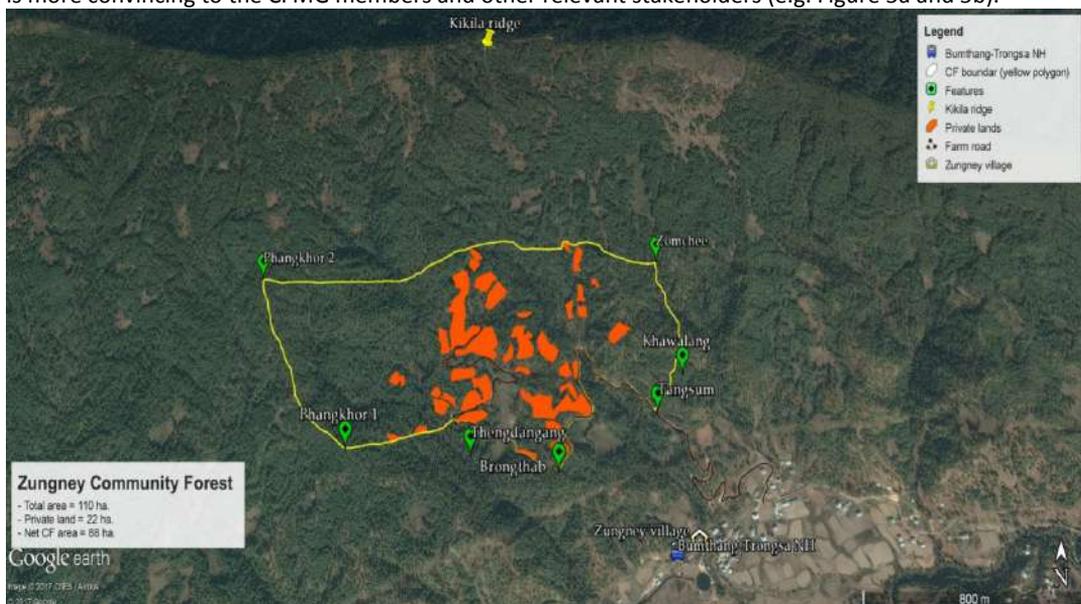


Figure 5a above shows Google image with superimposed private lands

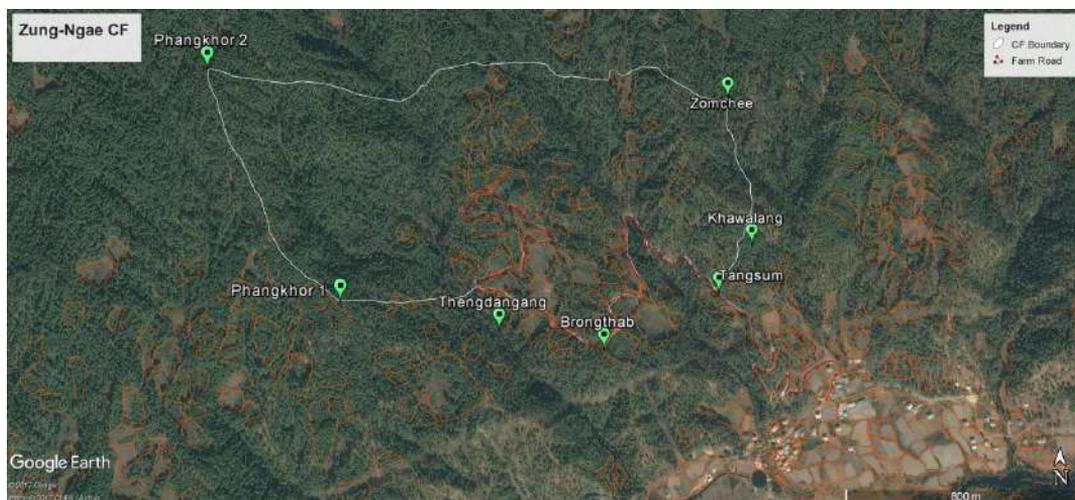


Figure 5b shows CF boundary with private lands, settlements and other features

We can produce GIS map with recent land cover map (see figure 5b). Currently, we have land cover, 2016 with updated features and land cover. The map must have several features like scale, direction marker showing North and legend. You need to print the map, as large as possible and preferably in color. Few copies may be needed. Calculate the area enclosed by the GPS survey (your GPS/GIS software will do this). After preparation of Google/GIS map, ask CFMG members if the features are complete. If not, add features that they feel are important for them. The following layers are mandatory in google maps:

- Private land shape files
- Show settlements
- Show Protected Areas, Biological Corridors, FMUs or any other forest management regime boundaries if available.
- Using the **add placemark** function in the Google Earth; level the important features (Chorten, Lhakhang, Road, rivers, Gewog Administration Office, drinking water source, etc.).
- Update settlements using GPS (marking Waypoints) since the older versions are not accurate.

## Step 2. Participatory Forest Resource Mapping

This PRA tool helps to get a better understanding about how forests are used by different people in the village, where different forest produce come from. From this exercise, a participatory forest resource map can be developed by villagers using google map.

### How to do Participatory Forest Resource Mapping using google earth

- Show google earth map printed in color or over a projector if you are equipped with to the CFMG.
- Let them locate and name the areas of specific resource collection and use. Also mark other important features (water source, sacred sites, etc.) on the map.
- Let them copy on the chart and locate the resources simultaneously from the Google map (barren land, *Tsamdro*, *Sokshing*, water sources, forest types, plantations, etc.).
- In the areas where electricity is not accessible, concerned Forest Officer may invite their CF Management Committee in the office and discuss the above steps and take a printed copy of Google map for discussion with their members in the field.
- As a facilitator stay in the background and only get involved if there is a problem or for clarification. Your role at this point is to listen carefully.
- The groups may debate which characteristics are important, and as result, a wide variety of relevant and unexpected information may emerge.

- At the end of this stage, the google map shows the resources collection location, boundaries, and the names of important physical features, including the village (figure 6). This provides the basic framework on which the rest of the map is constructed.
- Keep the legends as clear as possible.
- Remember that this is not supposed to be a highly ‘accurate’ map.

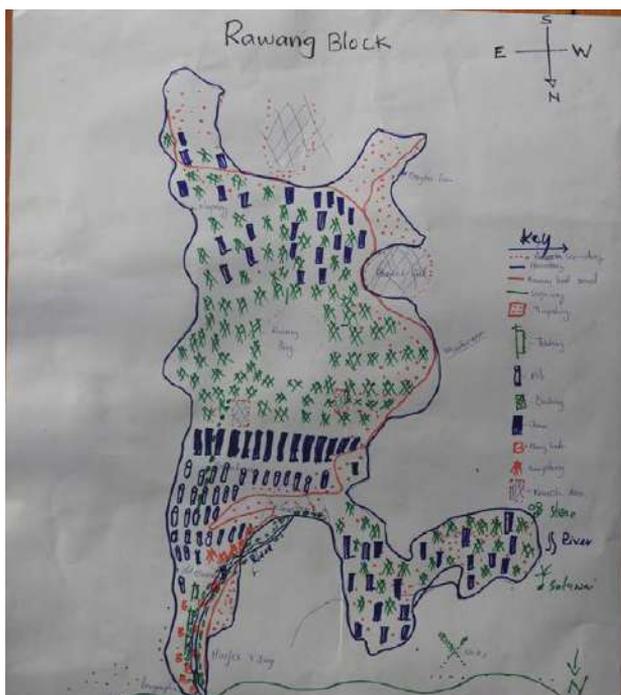


Figure 6 above shows Participatory Forest Resource Map transferred from Google map.

The table below lists some of the checklist of questions for the facilitators to trigger the discussion.

<b>Checklist for Participatory Forest Resource Mapping</b>	
Who?	Who are the forest users and what are their names? Who collects the forest produce? Do outsiders use the forest resources around the village? Who are they, where do they come from, what do they use, when, where, how? Are there any conflicts between users?
What?	What products are readily available and what are scarce? Where are they? What are the forest produce they use? What are their requirements and needs from the forest? What do they use these products for? What other forest use problems do they have?
Where?	Where are the forest produce found? Where do the users live? Which areas are used for different produce e.g. grazing, NWFP collection, fuelwood collection, etc.? Where other forest use areas are located e.g. FMU, Buffer Zone, PAs, Wetland, Biological corridors, water source, religious areas, etc.? Where are the “degraded” forest areas? Why are they degraded? Are there any areas for carrying out improvement work?
When?	When are different kind of forest produce available? When (in a year) are different produce collected? Does the village population change during the year?

<b>Checklist for Participatory Forest Resource Mapping</b>	
	Does this affect use of the forest? How has the forest changed over the years?
How?	How much time does it take to collect different produce? How does the village collect forest produce? What system is used for collecting and distributing forest produce? Are there limits on how much can be collected at any time? Are there any issues on how the forest is used?

### Step 3. Division of CF into Blocks

CF areas may be divided into blocks to make forest resource assessment (inventory) easier and to make the management plan more site-specific. It is not necessary that all CFs must be divided into blocks. Blocks are made when there is distinct forest type and condition which may require separate management regimes.

Net operable (production) area for CF should be calculated after determining the important areas (water source, wetland, inaccessible area, etc.) and deducting them from the overall CF area. However, those areas should be brought under appropriate management regime within the CFMP.

#### How to divide the CF into Blocks

- Divide CFMG members into small groups
- Show the CF resource use map produced in Chapter III Step 2.
- Ask each group how they would use the listed criteria to divide the CF into blocks.
- To divide the CF into blocks, you can use Google earth and confirm through field verification.
- Choose someone from each group to present the block map to the whole group.
- When the whole group agree on where the block boundaries should lie and mark them permanently on the map. This is now your CF map (base map) showing blocks. It will be the main map for management purposes.
- Describe the boundaries of each block and write these down e.g. describe what actually lies to the North, South, East and West of each block.

#### Criteria for Dividing CF into Blocks

**Forest type** – each block could have a different forest type e.g. broadleaved, conifer, etc.

**Forest condition** – each block is in a different condition e.g. degraded, dense, etc.

**Use patterns** – different blocks accessible to or used by different households or villages

**Natural features** – so that boundaries of blocks follow clear features that can be seen on the ground e.g. ridges, streams, rivers, footpaths, roads, cliffs, power lines.

**Number** – do not have too many blocks otherwise the management plan will become very complicated.

### 3.1 Measuring block areas

There are two options to measure block area.

#### (A) Measuring block area by using a GPS

You can measure the area of each block by GPS. To do this you must walk along the boundaries of each block and take GPS readings.

#### (B) Measuring block area by Google Earth/ArcGIS

Once the CFMG has demarcated the block boundaries we can follow following steps to calculate the block areas:

1. Using **add path** function in Google earth, draw path on the Google map as desired by the CFMG members.
2. Save the path in a given directory. From the side bar, right click and save place mark as .kml file in the given folder directory.
3. Import into ArcMap and project the kml file to drukref03.
4. Using **split tool** under Analysis Tools, split the polygon on the path file we have created and save it. Complete and task and calculate area from attribute table (see figure 7a, 7b and 7c).

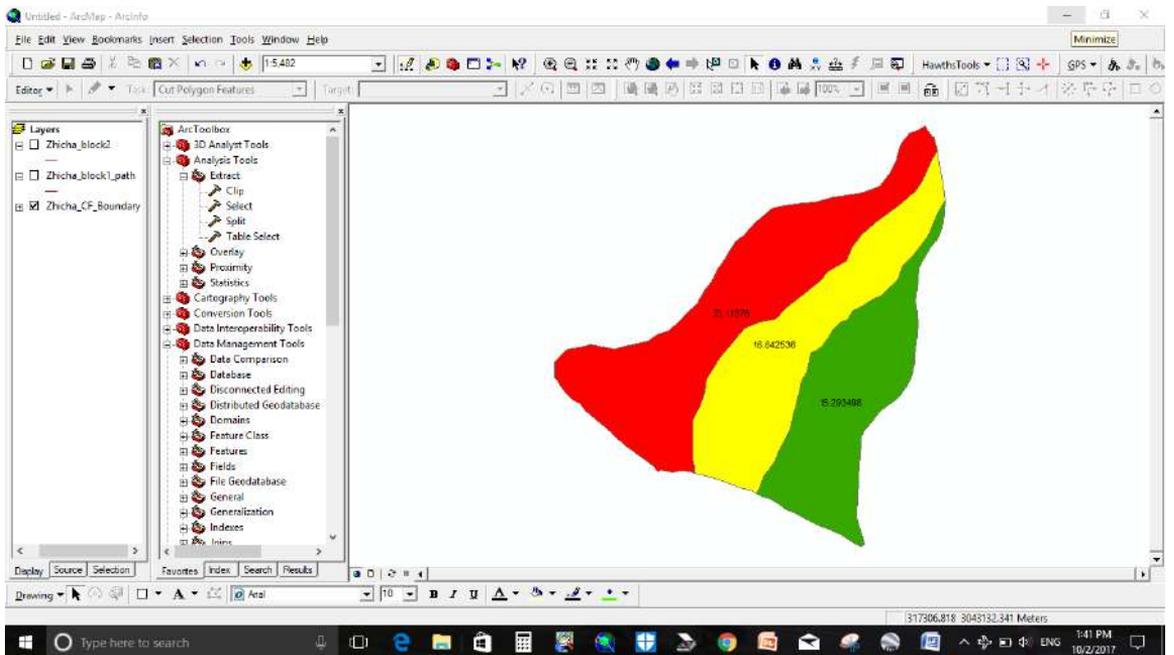


Figure 7a

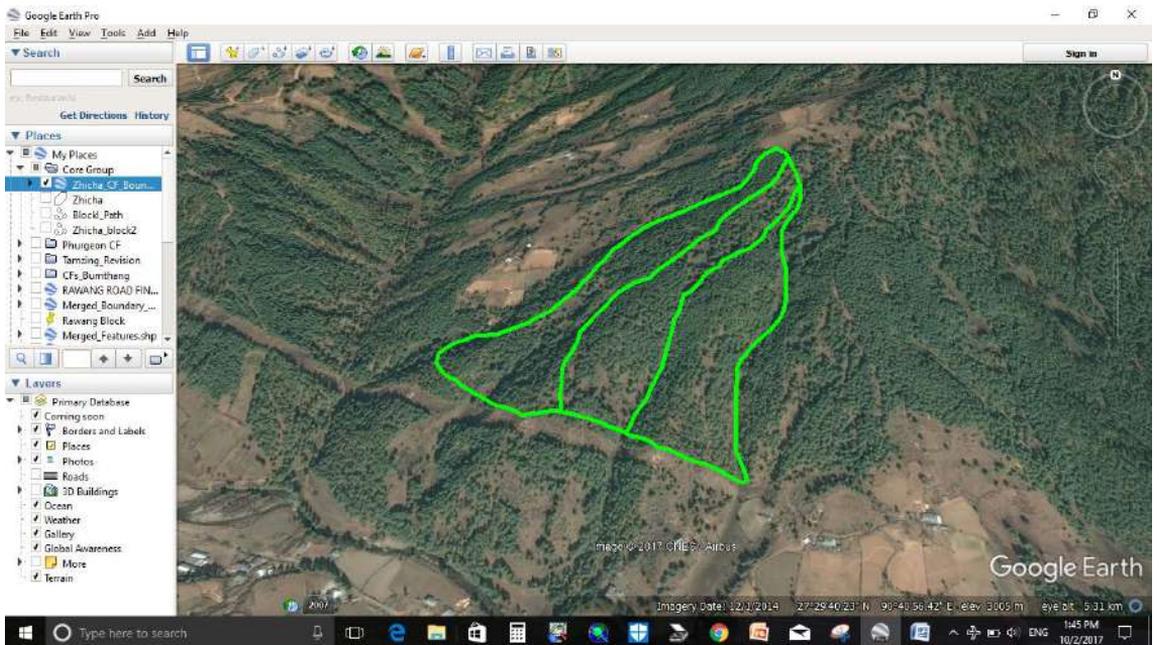


Figure 7b

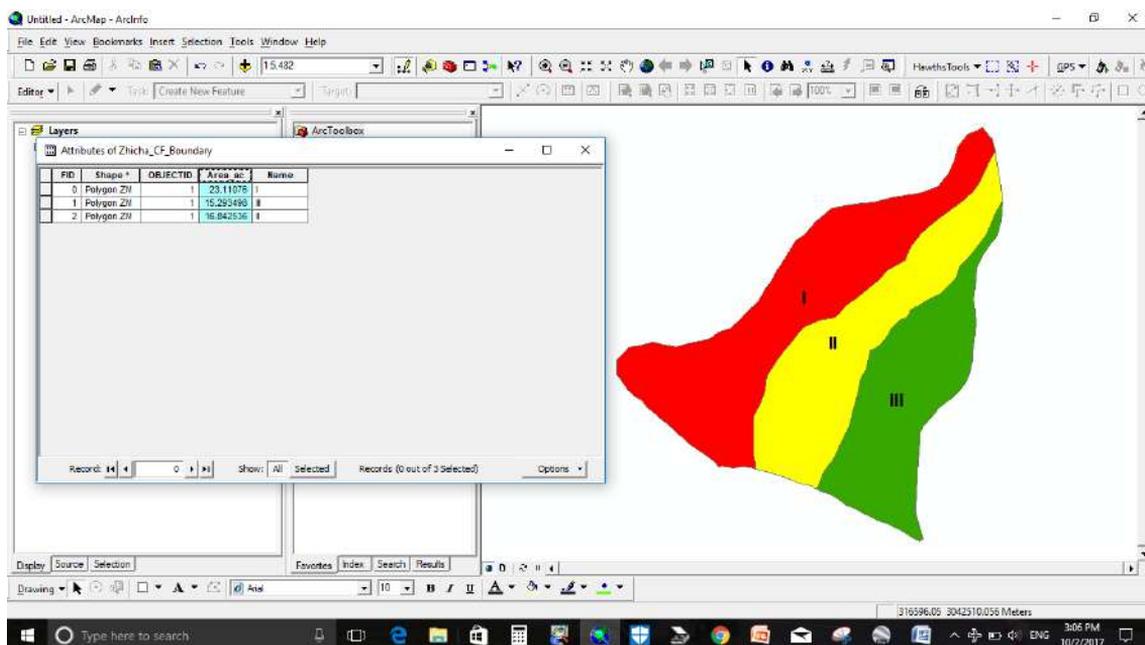


Figure 7c

### Step 4. Forest Resource Assessment

Forest resource assessment means describing and measuring forest to find out what resources it contains. Complete Format 1 under Annex 1. Some suggested equipment for forest resource assessment are listed in the box.

**Equipment**  
 Hypsometer, compass, measuring tape and thick measuring rope, diameter tape, map, tally sheets, pen/pencil, etc.

#### Why is forest resource assessment needed?

- To provide information about the forest so that appropriate forest management prescriptions can be adopted
- To provide information for calculating the quantities of timber and other forest produce (NWFPs, sand, stone and boulders, etc.) that can be sustainably harvested.
- To provide a baseline for monitoring and evaluation.

Forest resource assessment is conducted using sample plots involving the CFMG members. This will show the growing stock (of timber) in the block in order to calculate the timber available for harvesting during the CF Management Plan period. It will also assess the stock of any NWFPs that may be prescribed for sustainable management. Complete tally sheets (Annex 1, Format 2), one sheet for each sample plot in the CF/block.

#### How to conduct Forest Resource Assessment

##### a. Calculation of number of plots and determining the grid lengths

The forest type needs to be pre-stratified as per the Coefficient of Variation (CV) % of different forest types (see table below) prior to determining the number of sample plots. For example, the total gross area of a CF is 600 ha.

Forest Types	Net Production Area (Ha)
Fir	100
Mixed Conifer	200
Blue Pine	300
<b>Total</b>	<b>600</b>

The table below shows the Coefficient of Variations for typical forest types obtained on 0.05 – 0.1 ha fixed plot size.

Forest type	CV%
Fir	50
Spruce	70
Blue Pine	105
Mixed Conifer	70
Combined conifer	80
Oak ( <i>Q. semicarpifolia</i> )	65
Mixed Broadleaf	85
Combined Broadleaf	85
Combined all	85

### Example of pre-stratification and generation of number of plots

Suppose we have three strata with the following areas and estimated CV%. We need to calculate the number of plots required in each to achieve a target sampling error of 10% at 95% confidence level over the whole area:

Forest Type	Area (Ha)	CV%	Weighted CV
Mixed Broadleaf	100	85%	$(85/100*100) = 85$
Mixed Conifer	200	70%	$(70/100*200) = 140$
Blue Pine	300	105%	$(105/100*300) = 315$
	600		540

The weighted average CV% =  $(540/600)*100$  is therefore 90%.

Therefore, the number of plots  $(n) = t^2 \times CV\%^2 / SE\%^2$

Where:

$n$  = number of sample plots

$t$  = value of  $t$  distribution (see Annex 8)

CV% = coefficient of variation (in %) for the forest, using the same type of sample plot

SE% = the target sampling error (in %) to be attained

Therefore, from above example,  $(2)^2 \times (90)^2 / (10)^2 = 324$  plots

The target *sampling error* to be attained has been set at +/- 10% (SE % = 10%) of the average gross volume per ha, given a confidence level of 95%. The *t-value* is obtained from a *t*-table (Annex 8), using the correct number of degrees of freedom  $df$  ( $df = n - 1$ ), and probability level  $p$ . The probability level, or risk level, is the opposite of the confidence level: if we are 95% confident we run a risk of  $100\% - 95\% = 5\%$ . Our probability level is then  $p = 0.05$ .

We had found the size of the community forest to be 600 ha. And have now determined that  $n = 324$  plots are required. Allocating our plots proportionally this means that one plot should cover on average  $(600/324) = 1.85$  ha. Given the many practical advantages we will arrange the plots according to a systematic, square sampling grid. A square grid would have sides of 136 m calculated as follows  $(1.85*10,000 \text{ m}^2 = 18,500 \text{ m}^2)$ , and square root of  $18,500 = 136 \text{ m}$ . Thus a systematic sampling grid of 136 m between plots on a line, with each plot representing  $(600/324) = 1.85$  ha will be considered for creating the sampling design for the CF area (plot to plot is also 136 m).

### Preparation of Sampling Design

Preparation of sampling design can be carried out in GIS or QGIS. However, it is much simpler and faster in QGIS. The following steps may be followed for designing a sampling design of a CF area:

i. Load the shape file of the CF in QGIS. Please note that the file must be ESRI shape file and NOT other types of file. Go to tab 'vector' as shown in the Figure 8a and select Research tools on the drop down. Under the Research tools, select Regular points in the drop down.

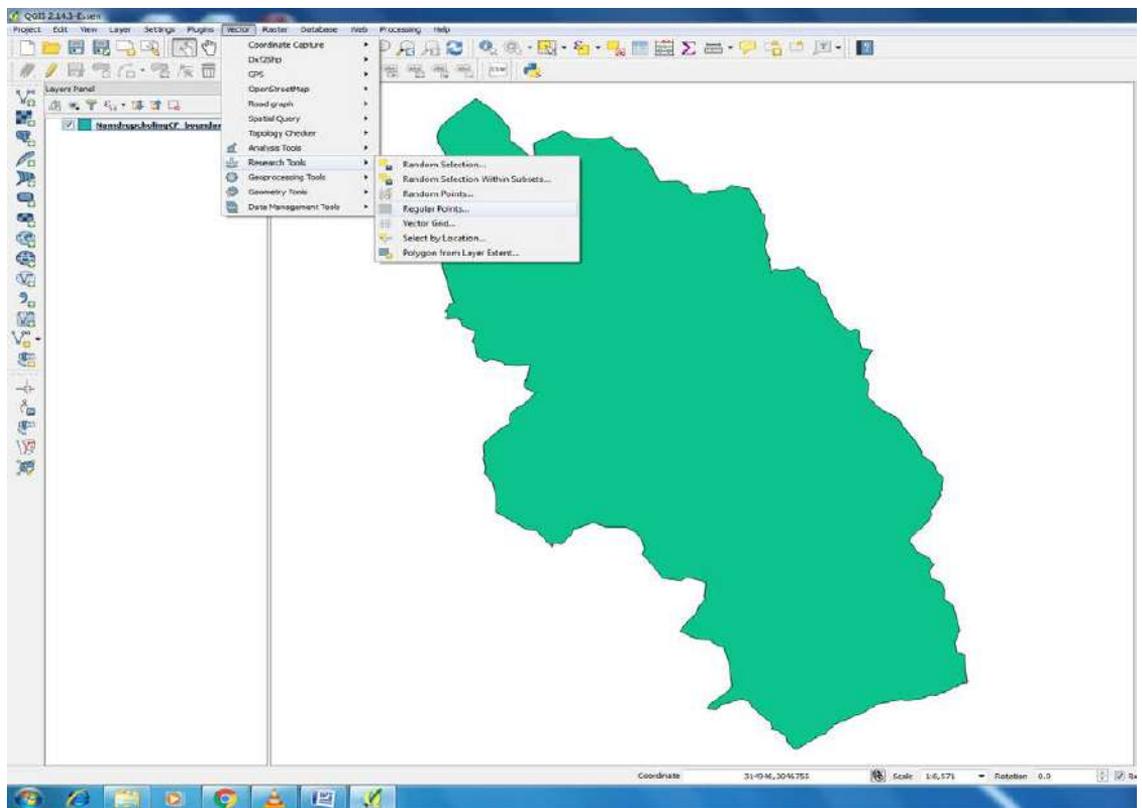


Figure 8a

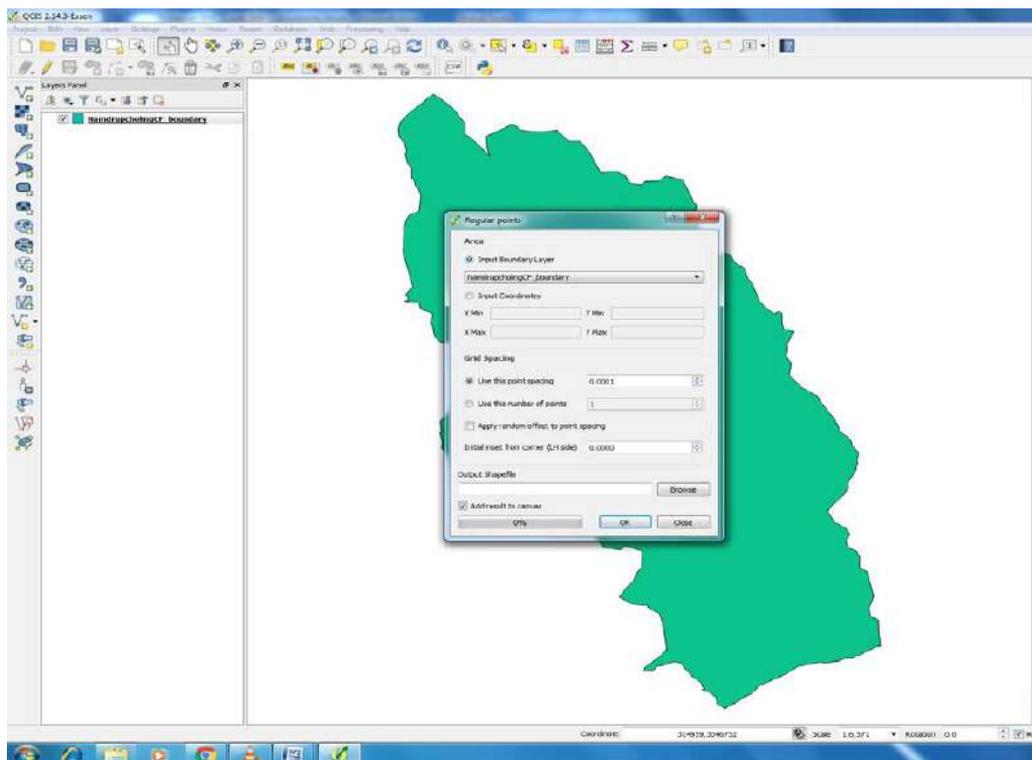


Figure 8b

ii. Once you click on the Regular Points, a window **“Regular Points”** will pop up as shown in the Figure 8b above. The **“input boundary layer”** will be the shape file of the CF for which the sampling design is prepared. The **Grid spacing** will be the spacing that is calculated in previous step (i). The grid thus created needs to be saved by giving a file name (e.g. Grid name of the CF) and saving in an appropriate folder. The file can be saved by choosing the appropriate folder using **“Browse”** tap in the window. After filling up all the requirements, click **“OK”** to generate the grid.

iii. Once you click **“OK”**, a grid with spacing you provided will be created as shown in the figure 8c. For now, the name of the grid is given as Grid CF. However, since you need the grid just within the CF boundary, the grid thus created (Grid-CF) needs to be clipped with the CF boundary to get the final grid of the community Forest.

How to do:

- Go to the tap **“Vector”**. Click on **“Geoprocessing tools”** on the drop down and subsequently click on **“Clip”** as shown in the Figure 8c.

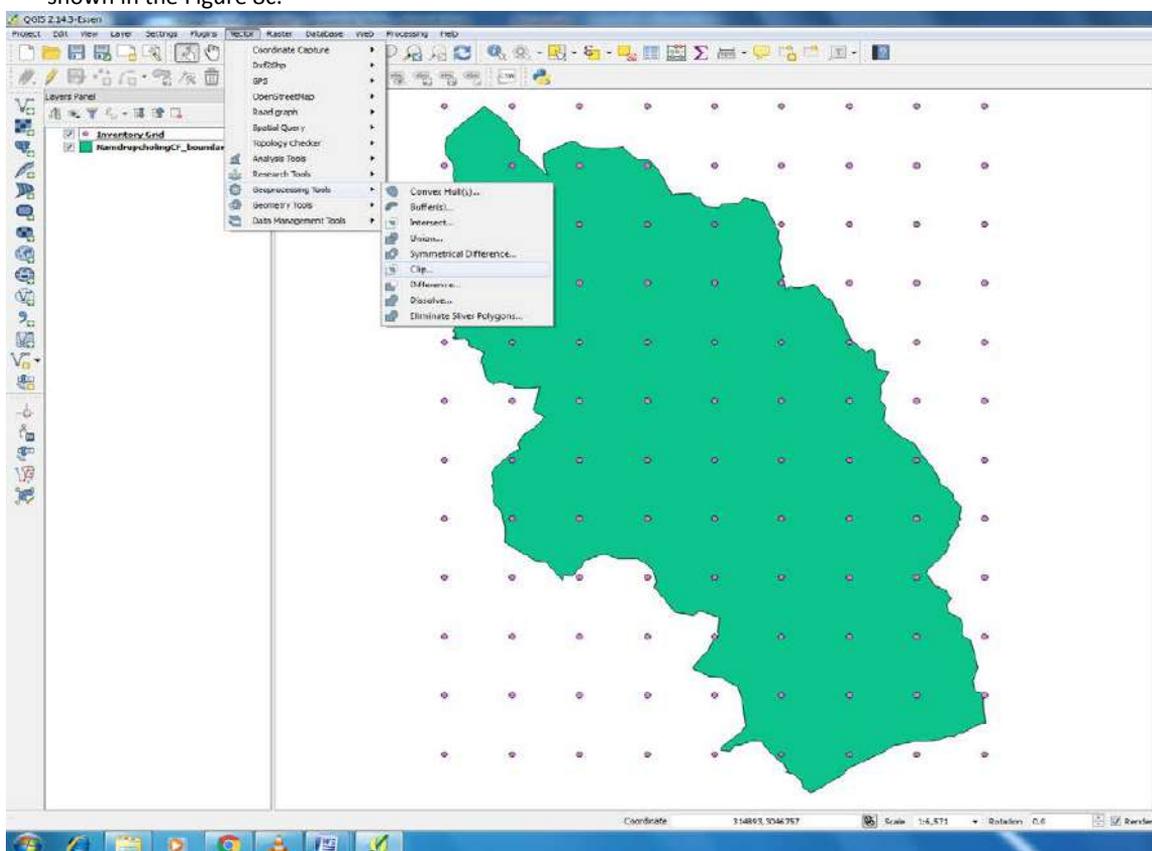


Figure 8c

- A window **“Clip”** will appear as shown in the Figure 8d. **“The input vector layer”** will be the Grid that is just created which is **“Grid\_CF”** for this case. **“The Clip layer”** will be the CF boundary shape file for which the sampling design is being created. The grid thus clipped needs to be saved by giving a file name (e.g. Grid name of the CF Final) and saving in an appropriate folder. The file can be saved by choosing the appropriate folder using **“Browse”** tap in the window. After filling up all the requirements, click **“OK”** to generate the final grid.

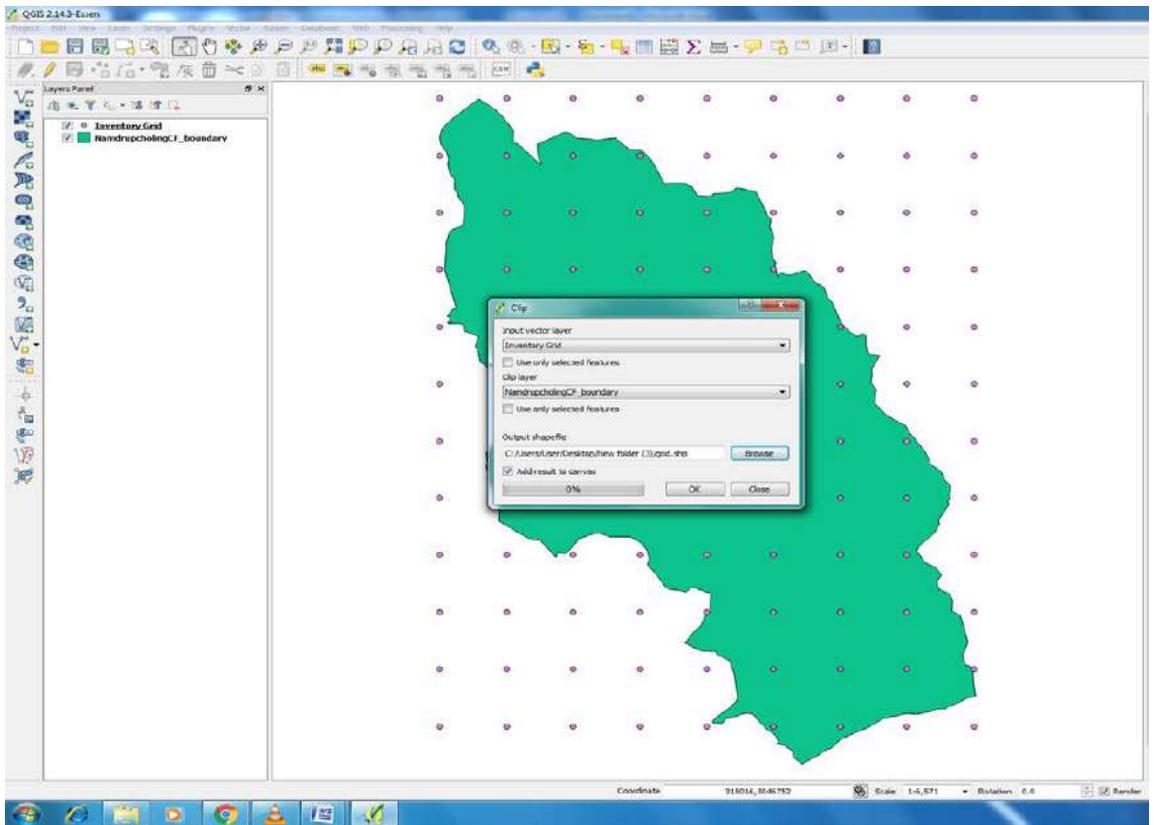


Figure 8d

- The final grid of the CF is created as shown in the Figure 8e below.

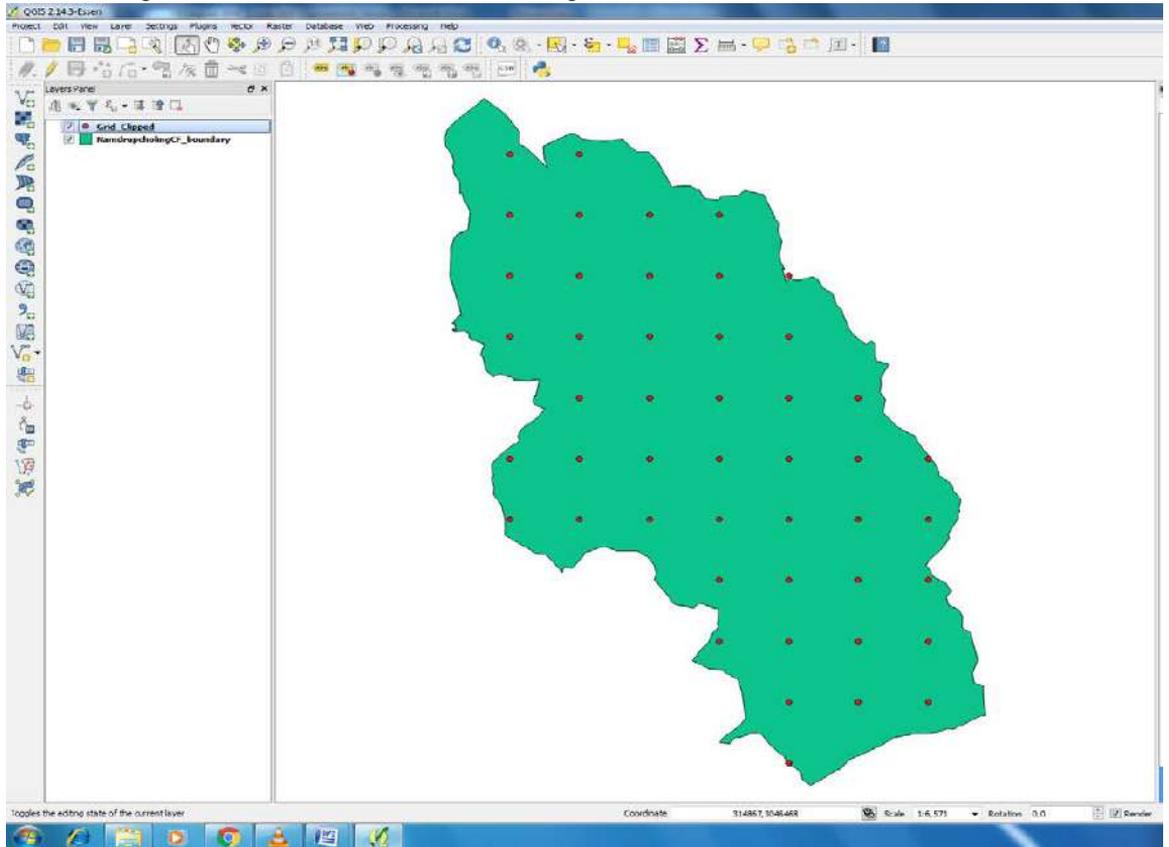


Figure 8e

**b. Overlay the Grid in Google Earth**

The shape file of the Final Grid of the CF thus created can be transferred to Google Earth to have better view. Upon importing the shape file to Google earth you can view the plots as shown in the figure 9a and 9b.

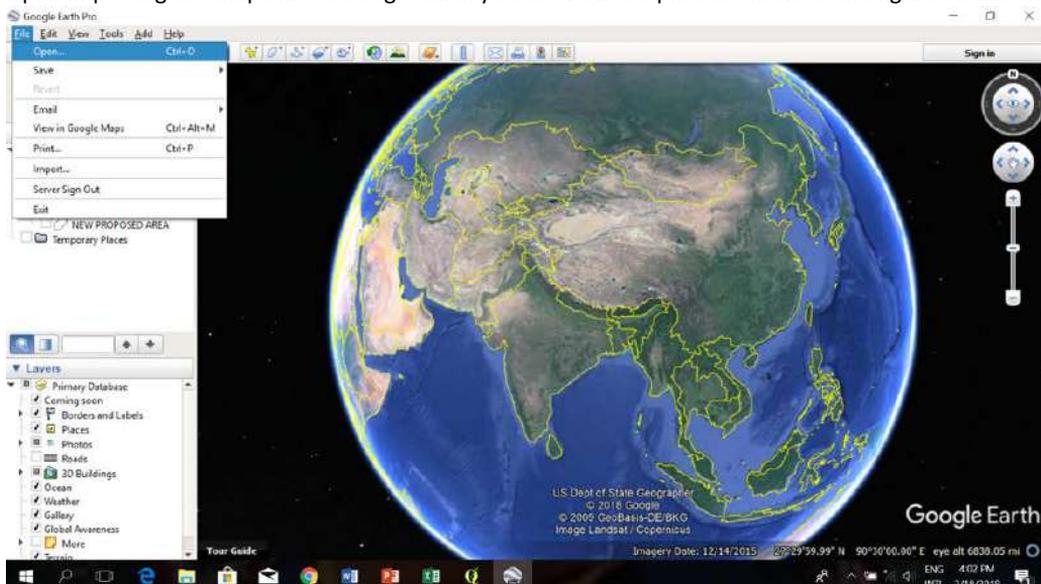


Figure 9a



Figure 9b

**2) Allocation of plot ID and determining geographical coordinates for individual plot**

Allocation of plot ID and determining geographical coordinates for individual plot must be carried out in GIS.

How to do:

- Open the attribute table of the Gird CF final shape file.
- Create three new fields named L2L (line to line), P2P (Point to Point) and Plot ID in the attribute table as shown in the Figure 10a by using add field window.
- Creating new fields in the attribute table.

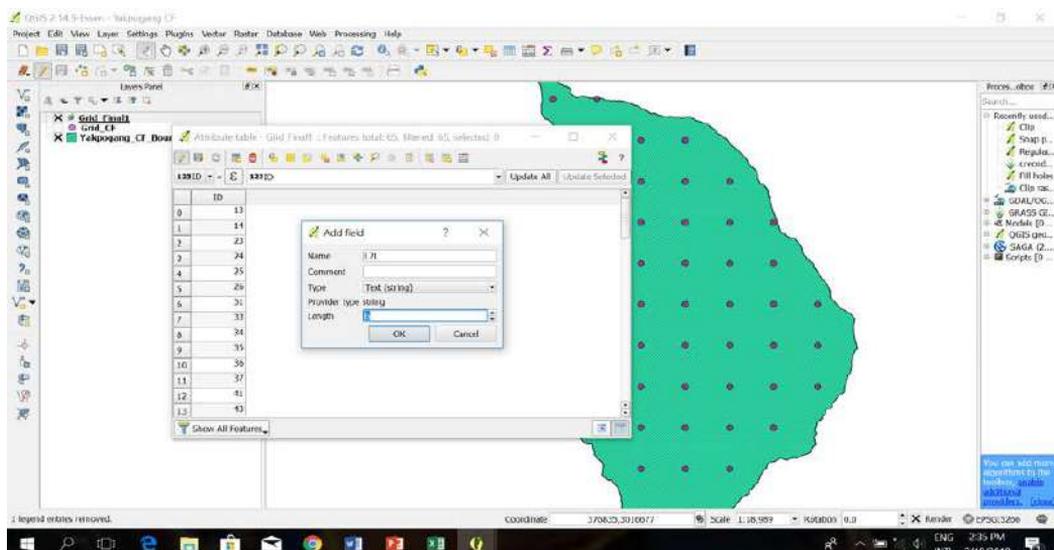


Figure 10a

- Three new fields L2L, P2P and Plot ID created.

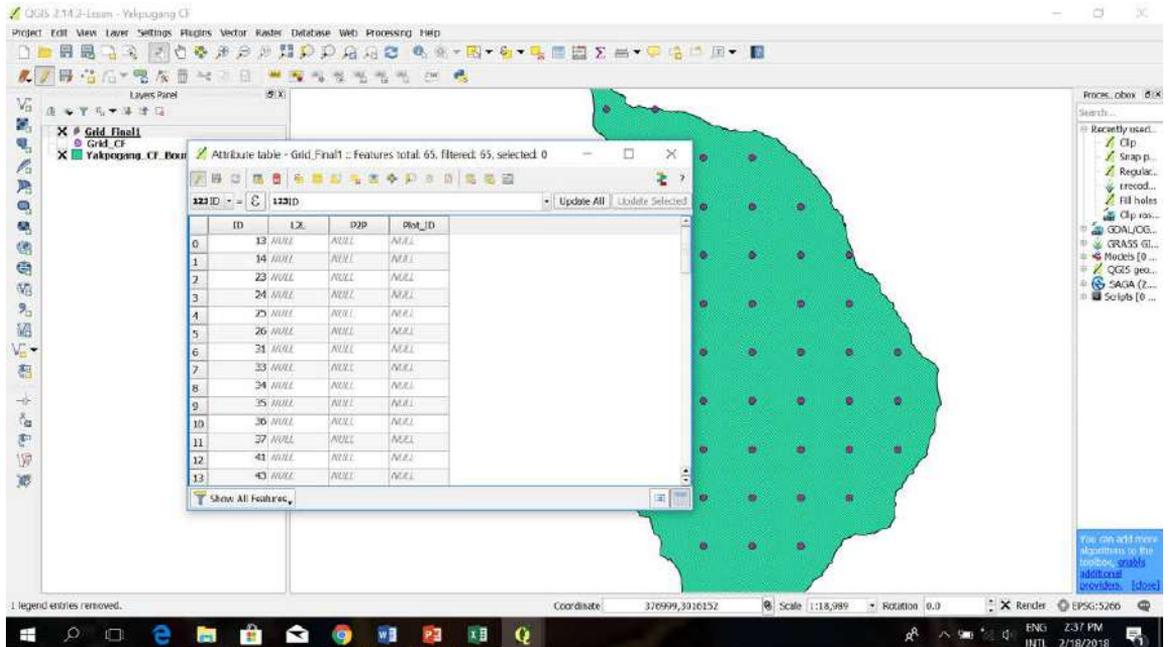


Figure 10b

- Assign the values for L2L as AA, AB, AC, AD..... along the points vertically and P2P as 00, 01, 02, 03, 04 ... along the points horizontally. And finally generate the Plot ID by combining L2L and P2P as shown in the figures below.

- Assigning values for L2L as AA, AB, AC...as shown in Figure 10c.

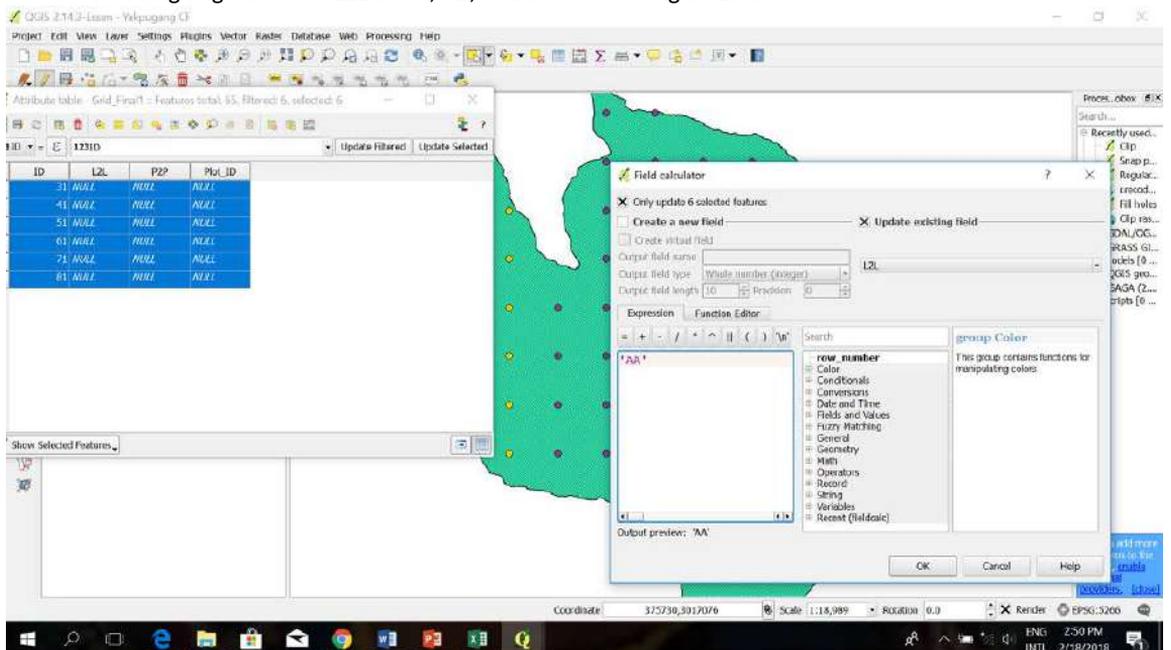


Figure 10c

- Assigning values for P2P as 00, 01, 02, 03, 04.....as shown in the Figure 10d

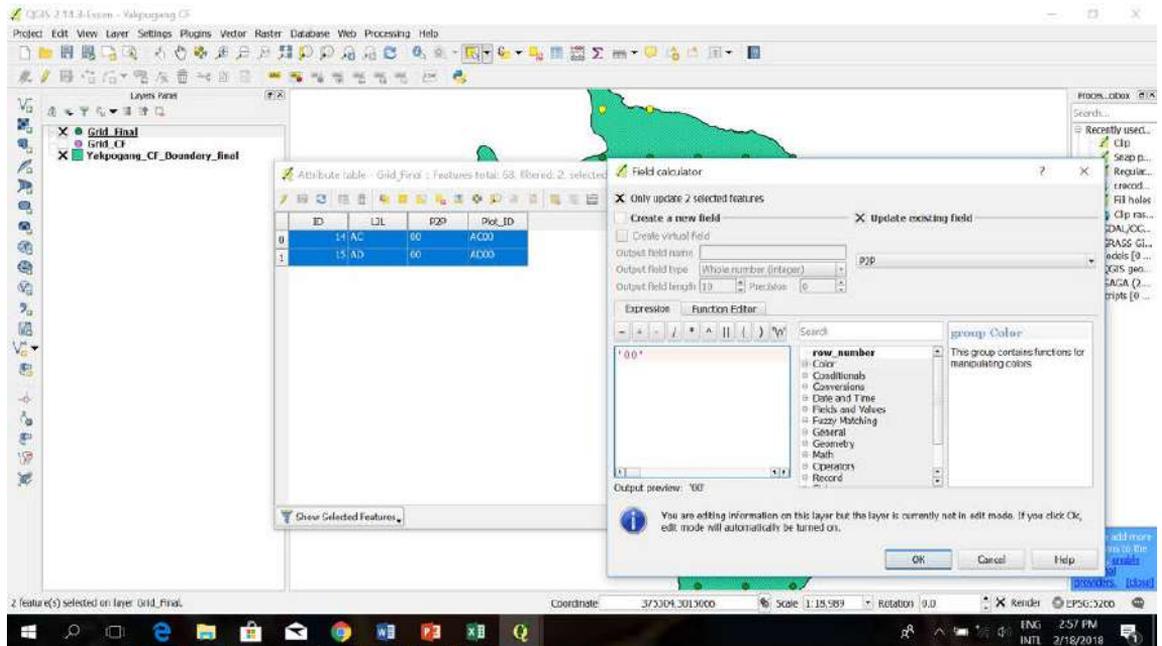


Figure 10d

- Generating plot ID by combining L2L and P2P as shown in the Figure 10e

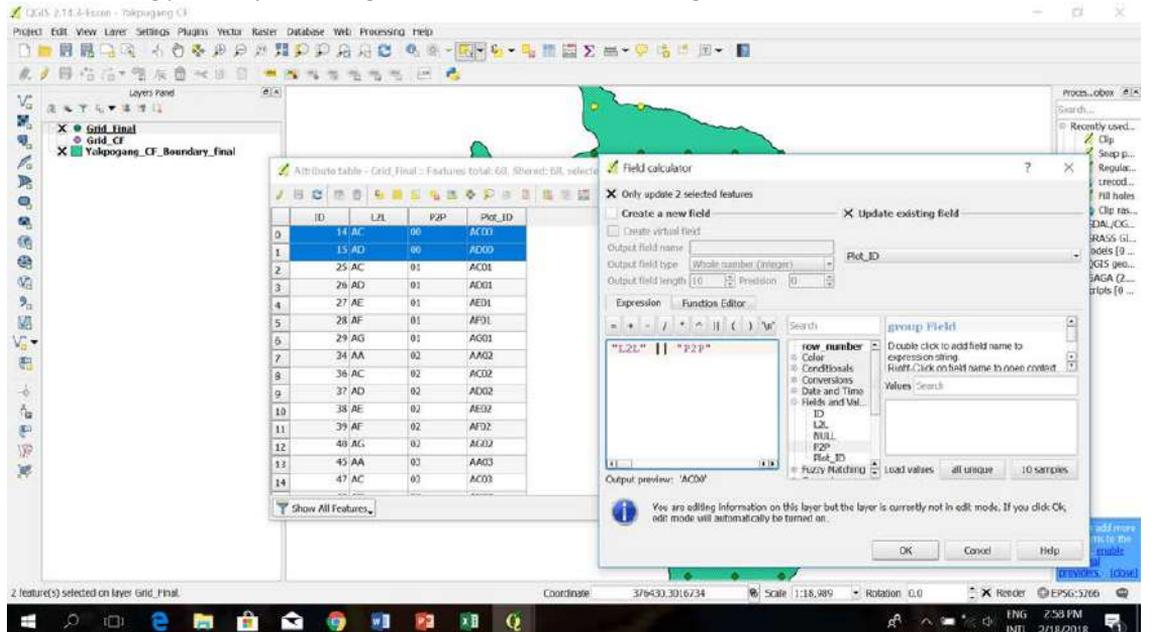


Figure 10e

- The Plot IDs for individual plots generated as shown in Figure 10f.

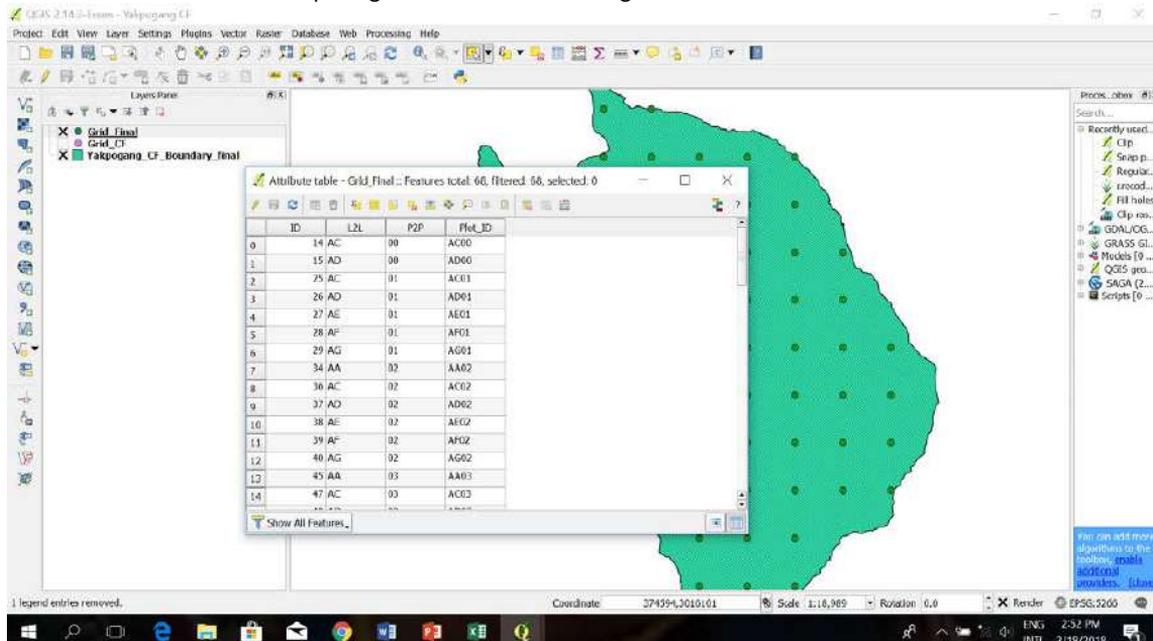


Figure 10f

- Generate the Geo-coordinates for the plots by uploading the Plots in the DNR GPS (a software for generating the plot geo-coordinates)
  - Upload the Grid CF Final in the DNR GPS as shown in the Figure 10g below.

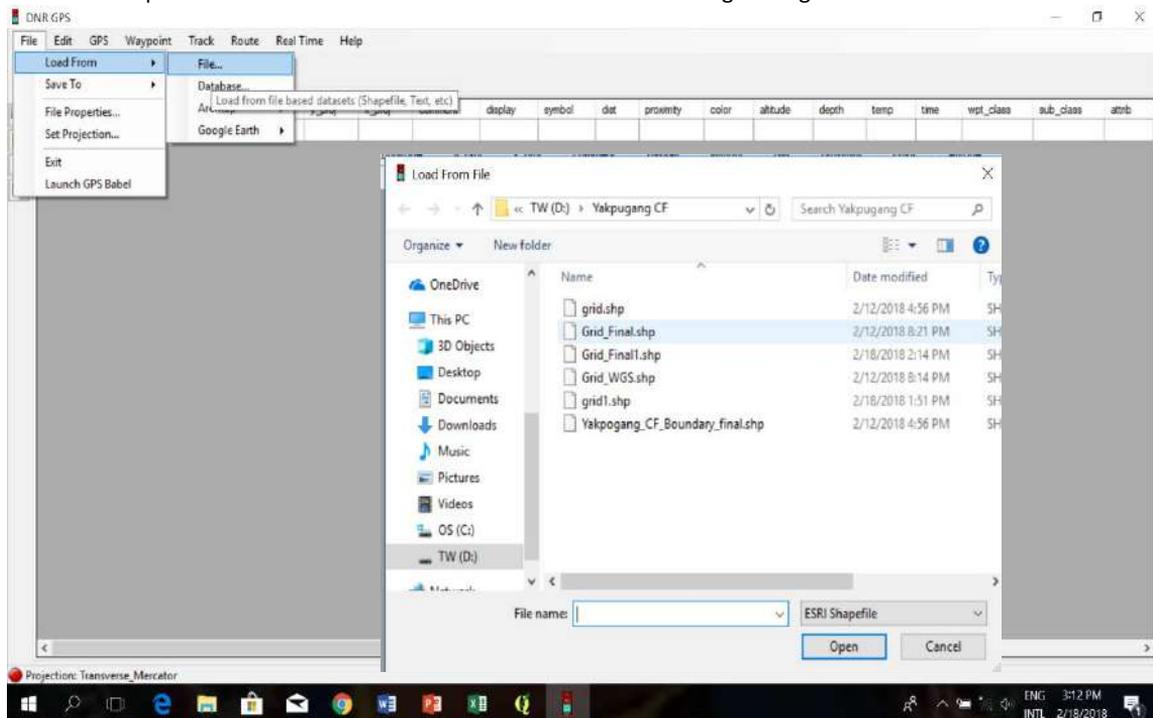


Figure 10g

- o A window will pop up where Plot ID needs to be selected and then click **OK** (Figure 10h).

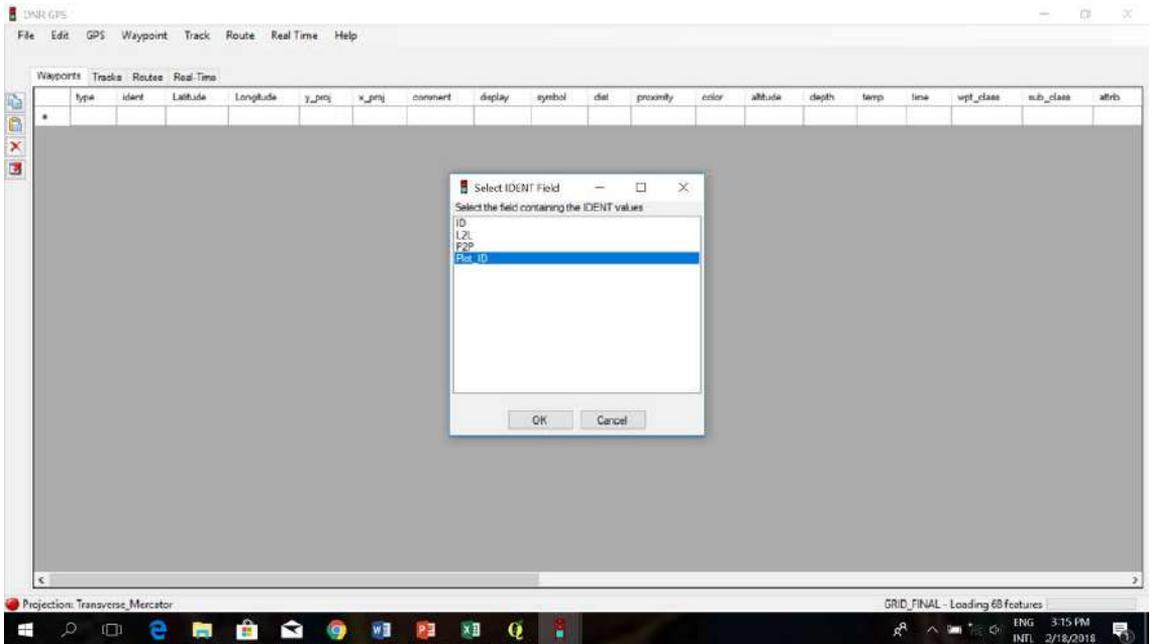


Figure 10h

- o Plot geo-coordinates are generated as shown in the figure below (Figure 10i).

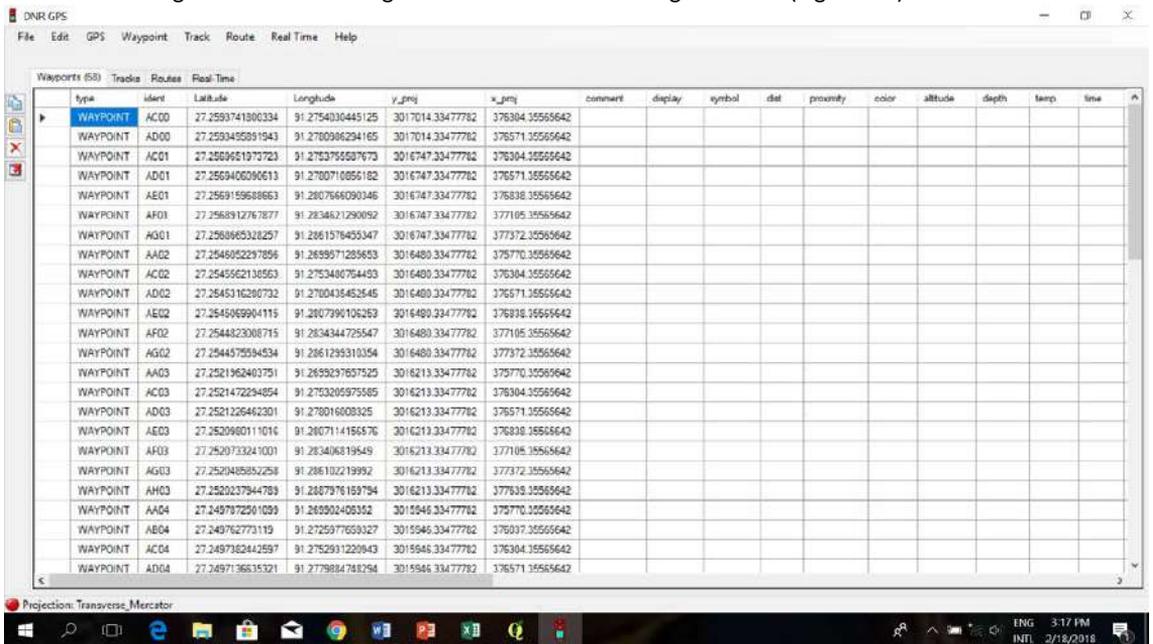


Figure 10i

- o Load the Plots along with its geo-coordinates in GPS as shown in figure 10j below

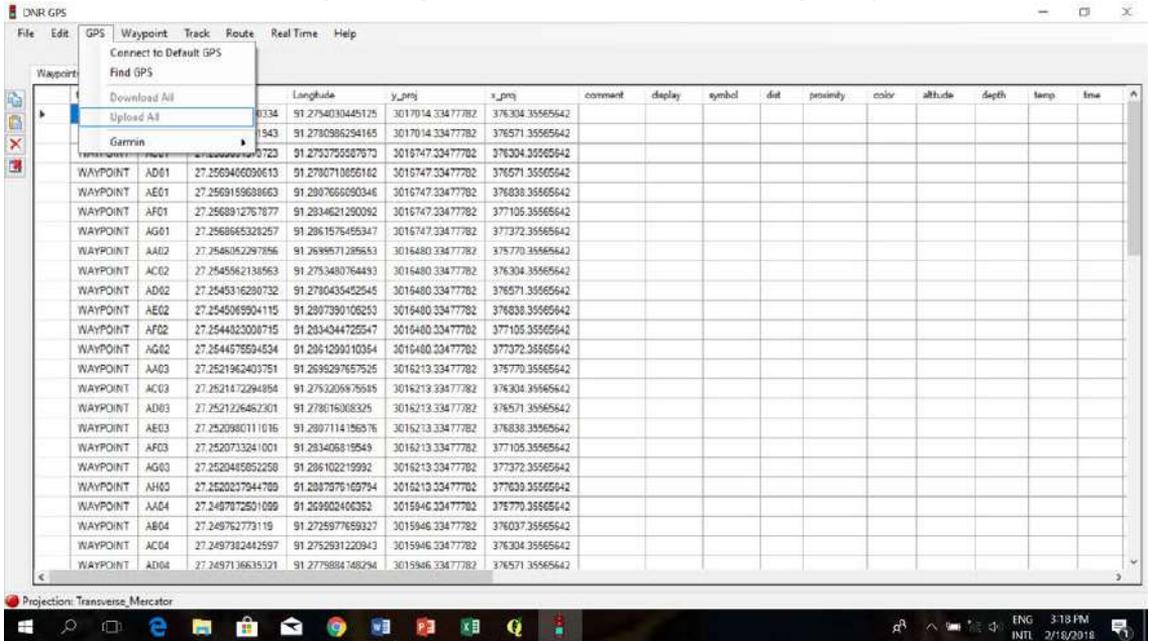


Figure 10j

**3) Navigating to the plot by using the GPS with loaded plot IDs.**

To navigate to the plot, use the GPS which has loaded plot IDs as waypoints. Upon reaching the plot within a distance of less than 10m, the GPS will emit ‘BEEP’ sound indicating that you are approaching the plot center.

**4) Laying out of sample plots**

Mark the centre of the plot with a peg and write the plot number. Each plot will consist of two circular plots. Major plot of 12.62 m radius (0.05 ha) and regeneration plot of 3.57 m radius (0.004 ha) are measured from the plot centre. The major plot will be used for collecting tree data with dbh measuring more than 10 cm. The regeneration plot will be used for regeneration count with dbh less than 10 cm. Trees within the regeneration plot but measuring more than 10 cm dbh will be counted as in major plot. Figure 11 below shows the plot design.

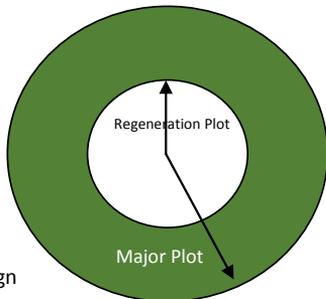


Figure 11: Plot Design

Plots	Radius (m)	Area (m2)	Area (ha)	dbh
Regeneration	3.57	40	0.004	< 5 cm dbh
Major	12.62	500	0.05	≥ 10 cm dbh

## 5) Data collection

All recordings of the plot are entered into the tally sheet (Annex 1, Format 2). Proceeding clockwise, start enumeration of the plot from the north. Record the species and the dbh (to the nearest cm) of any live trees above 10 cm. Mark it by removing a small piece of bark/slashing the bark facing the plot centre. Make sure only trees with dbh above 10 cm is considered for enumeration in major plot and below 10 cm dbh for regeneration plot.

## 6) Compilation

After completion of the resources assessment, all data in the tally sheets must be transferred to compilation sheet (Annex 1, Format 4). The compilation sheet is filled based on the local volume table (Annex 11) and dbh class. Compilation of the resources assessment data will generate results for each species or group of species separately. For example for a CF in temperate region all Broad leaves could be grouped together since they do not occur in sufficient numbers. However, other conifer species like Fir, Blue Pine, Hemlock, Spruce, etc. can be grouped separately as they are found in large numbers. Then start filling the compilation form (Annex 1, Format 4, Format 5, Format 6, and Format 7).

- Col 1, 2 & 3 are the values from selected Local Volume Table.
- Col 4 is the size of the plot in hectares.
- Col 5 is the expansion factor for each dbh class which is calculated by using the expression  $EF = (1/\text{size of the plot}) / \text{number of plots}$ .
- Col 6 is the values for the total number of trees found for each diameter class which can be done by searching through the tally sheet.
- Col 7 is filled by multiplying col 5 and col 6.
- Col 8 is filled by multiplying col 7 and col 2.
- Col 9 is filled by multiplying col 7 and col 3.
- Finally add the values column 7-9. These are the sums for all the dbh classes combined.

## 7) Generation of Results

### Stand and Stock Table Form

Our final results should be given in "Stand and Stock" tables (Annex 1 Format 5, 6 and 7). These are cross-tabular summaries for diameter classes and species groups for our estimates of the 3 main parameters of interest:

- Average number of trees per hectare (Annex 1, Format 5),
- Average basal area per hectare (Annex 1, Format 6) and
- Average volume of trees per hectare (Annex 1, Format 7).

#### Volume Table

Refer volume table for Bhutan in Annex 11.

Fill in the stand and stock table form by copying the results of the compilation sheets for the appropriate diameter classes and species group. The above stand and stock results will be generated automatically in the excel sheet (formulas developed in excel for National Forest Inventory).

## 8) Calculating Annual Allowable Cut (AAC)

Annual allowable cut indicates the harvesting limit of trees including firewood and poles. Normally it is calculated in volume but for better understanding for the CFMG, you can use Format 5 under Annex 1 to convert into number of trees based on diameter.

### How to determine Annual Allowable Cut

The Annual Allowable Cut of the Community Forest is calculated using the formula below: Add these together to get the total AAC for each size class from the CF.

$$\text{AAC (m}^3\text{)} = \frac{\text{Net operable area} \times \text{Average volume per hectare}}{\text{Rotation age}}$$

Where:

**Net operable area (ha)** = net area of the CF meant for timber production.

**Average Vol/ha (m<sup>3</sup>/ha)** = Average volume/ha derived from Stand and Stock Table.

**Rotation age (year)** = Average rotation age in Broadleaf = 110 year and Conifers = 120 year).

Annual Allowable Cut Table								
Annual Allowable Cut (AAC)	Dangchung m <sup>3</sup>	Tsim m <sup>3</sup>	Cham m <sup>3</sup>	Drashing m <sup>3</sup>	Firewood m <sup>3</sup>	Flag Poles	Fencing Posts	
Block I								
Block II								
Block III								
...								
Total AAC								

Notes: for CFMG's understanding, m<sup>3</sup> can be converted into cft. (1 m<sup>3</sup> = 35.32 cft). Volume can also be converted into number of trees by referring Format 5 under Annex 1.

## 9) Non-Wood Forest Product Assessment

The NWFPs assessment should be conducted if there is potential for commercial harvesting. Different resource assessment techniques have been developed for different NWFPs because:

- Each species has a different growth pattern (annual, biennial, perennial)
- Distribution is often heterogeneous (patchy)
- Yield during different seasons (they may be absent during some seasons)
- Different types of plants are involved e.g. trees, shrubs, herbs, grasses, fungi, mosses
- Plant parts used are different for each species e.g. roots, stems, leaves, seeds, fruits, bark, resin, etc.
- Use-patterns vary from domestic to commercial.

### How to Prioritize NWFPs

- Discuss and decide with the CFMG members which NWFPs are available in CF area and commercially important to be included in the CFMP.
- Complete the NWFP Priority Assessment Format (Annex 1, Format 3) and rank according to their priority (commercial or domestic consumption).
- If a NWFP is prioritized as commercially important, assessment needs to be conducted and prescribe sustainable management in the CFMP.
- If NWFPs are used only for domestic purposes, then you may not need to carry out resource assessment. However, it will be useful to develop a set of rules for harvesting that can be included in the CF By-laws.
- When a NWFP becomes commercially important after initiation of the CFMP, you may include in the annual work plan and conduct the assessment or develop harvesting guideline to include in the CFMP.

The following guidelines for NWFP resource assessment and harvesting are available with the SFED, DoFPS. For other NWFPs not yet listed here, guidelines may be prepared later.

Sl. No.	Title	Common name	Dzongkha name	Date
01	Guidelines for Resource Assessment and Management of <i>Borinda grossa</i>	Bamboo	Baa	2008
02	Guidelines for Resource Assessment and Management of <i>Swertia chirayita</i>	Chiretta	Chirata	2008
03	Guidelines for Resource Assessment and Management of <i>Illicium griffithii</i>	Anise tree	Doomleeshing	2008
04	Guidelines for Resource Assessment and Management of <i>Cymbopogon</i> spp.	Lemon grass	Tsa	2008
05	Guidelines for Resource Assessment and Management of <i>Piper pedicellatum</i>	Pepper	Pipla	2008
06	Guidelines for Resource Assessment and Management of <i>Neomicrocalamus andropogonifolius</i>	Climbing bamboo	Yula	2008

Sl. No.	Title	Common name	Dzongkha name	Date
07	Guidelines for Resource Assessment and Management of <i>Daphne</i> spp. and <i>Edgeworthia gardneri</i>	Daphne	Deynap & Deykap	2010
08	Guidelines for Resource Assessment and Management of canes ( <i>Calamus</i> spp. and <i>Pletocomia himalaya</i> )	Canes	Tsim, Patsha	2011
09	Guidelines for Resource Assessment and Management of <i>Paris ployphylla</i>		Satuwa, Thogsampa	2012
10	Guidelines for Resource Assessment and Management of <i>Rubia cordifolia</i>		Laniroo, Tsoe	2012

If there are no guidelines available for important NWFP species use the table below to carry out the resource assessment. For those NWFP species which are not listed in the table below, you may seek assistance from SFED.

Recommended Resource Assessment for different NWFPs					
Sl. No.	NWFP	Local Name / common name	Resource assessment	Participatory resource mapping	Harvesting & management rules
1	<i>Asparagus recemosus</i>	Nyakhachu (Dz)			✓
2	<i>Bambusa</i> spp.	Baa (Dz)	✓		✓
3	<i>Cane</i> spp.	Patsha (Dz)	✓		✓
4	<i>Mushroom</i> spp.	Shamu (Dz)			✓
5	<i>Aconitum</i> spp.	Bongkar (Dz) Bongnak (Dz)		✓	✓
6	<i>Aconogonon tortusum</i>	Ngalacho (Dz)		✓	✓
7	<i>Acorus calamus</i>	Chudala (Dz)		✓	✓
8	<i>Artemisia</i> spp.	Khempa (Dz)		✓	✓
9	<i>Asphalum punjabinum</i>	Drakzhu (Dz), Shilijit (Lh)			✓
10	<i>Casia fistula</i>	Rajbrikshay (Lh) Donkoshing (Sh)		✓	✓
11	<i>Choerospondia axillaris</i>	Lapsi (Lh)		✓	✓
12	<i>Ophiocordyceps sinensis</i>	Yar-tsha guenbub (Dz)			✓
13	<i>Cymbopogon</i> spp.	Lemon grass(Eng) Sorbhang (Sh)	✓		
14	<i>Daphne</i> spp.	Desho(Dz)	✓		✓
15	<i>Edgeworthia gardneri</i>	Dheykap (Dz) Argaylee (Lh)	✓	✓	
16	<i>Diplazium esculentum</i>	Nahey (Dz) Dhawai (Sh)		✓	✓
17	<i>Diploknema butyracea</i>	Yega shi (Dz) Butter tree (Eng)		✓	✓
18	<i>Elastosteme lineolatum</i>	Dham-boor(Dz) Drimom(Sh)			✓
19	<i>Entada eheedii</i>	Pangri (Lh) Kolokpa (Sh)			✓
20	<i>Fritillaria delavayi</i>	Tseka (Dz)		✓	✓
21	<i>Gaultheria fragrantissima</i>	Chamze Kam (Dz) Machino (Lh)			✓
22	<i>Illicium griffithii</i>	Domleeshing (Dz) Khaila chinang (Sh)	✓		
23	<i>Juglans regia</i>	Tago (Dz), Kheseey (Sh) Ohkar (Lh)		✓	✓

Recommended Resource Assessment for different NWFPs					
Sl. No.	NWFP	Local Name / common name	Resource assessment	Participatory resource mapping	Harvesting & management rules
24	<i>Litsea cubeba</i>	Siltimbur (Lh), Nenshing (Sh)			
25	<i>Meconopsis paniculata</i> <i>Myricaria rosea</i>	Upel serpo (Dz)		✓	✓
26	<i>Nardostachys jatamansi</i>	Wombu(Dz)		✓	✓
27	<i>Neopicrorhiza scrophulariiflora</i>	Pangpoi (Dz), Jatamansi (Lh)		✓	✓
28	<i>Neopicrorhiza acrophulariiflora/ Picrorhiza kurrooa</i>	Putishing (Dz), Kutki (Lh)		✓	✓
29	<i>Paris polyphylla</i>	Satuwa (Lh)		✓	✓
30	<i>Pedicularis longiflora</i>	lugru serpo (Dz)			
31	<i>Pedicularis megalantha</i>	Lugru marpo (Dz)		✓	✓
32	<i>Persia spp.</i>	Gooli (Dz, Sh)		✓	✓
33	<i>Persia gamblei</i>	Kawla or Kathe Kaulo (Lh)		✓	✓
34	<i>Phyllanthus emblica</i>	Churoo (Dz), Amala (Lh), Chorgnsay (Sh)		✓	✓
35	<i>Piper betleoides</i>	Pani or Paney (Dz) Pan (Lh)			✓
36	<i>Piper hamiltonii</i>	Jungali pan (Lh)			✓
37	<i>Piper longum</i>	Pipla/peepla Lh)			✓
38	<i>Piper pedicellatum</i>	Pipla	✓	✓	
39	<i>Podophyllum Hexandrum</i>	Bamarpoo (Dz)			✓
40	Resin	Thangchu (Dz)			✓
41	<i>Rheum australe</i>	Chutsa (Dz)			✓
42	<i>Rheum nobile</i>	Chhukkha metog (Dz)			
43	<i>Rhododendron anthopogon</i>	Balu (Dz), Dali Metog		✓	✓
44	<i>Rhododendron setosum</i>	Soonpati or sunpatey (Lh) Sulu (Dz)		✓	✓
45	<i>Rubia cordifolia</i>	Tsoy (Dz), Majito (Lh), Lanyi-roo (Sh)		✓	✓
46	<i>Sapindus mukorossi</i>	Soap nut (En), Ritha (Lh), Nakapani (Dz)		✓	✓
47	<i>Swertia chirayita</i>	Chirata (Eng), Chiraito (Lh)	✓	✓	✓
48	<i>Symplocas paniculata</i>	Pangtse (Dz), Zim-shing (Sh), Gunilo (Lh)		✓	✓
49	<i>Taracum eriopodum</i>	Khurmong (Dz)		✓	✓
50	<i>Terminalia bellirica</i>	Baru, Baroo (Dz, Sh)		✓	✓
51	<i>Terminalia chebula</i>	Aru, aroo (Dz, Sh), Har-ra or Ha ro (Lh)		✓	✓
52	<i>Thysanolaena latifolia</i>	Tsakusha (Dz, Sh), Kusho or amlisa (Lh)		✓	✓
53	<i>Zanthoxylum armatum</i>	Thinngey (Dz), Timbur or Timur (Lh), Gi (Sh)		✓	✓
54	<i>Zizyphus mauritiana</i>	Bayer (Lh), Tshoshing (Dz)		✓	✓
55	<i>Viscum nepalensis</i>	Nyashingjormo (Sh)		✓	✓

## Step 5. Forest Produce Prioritization and Species Preference Ranking

These PRA exercises are carried out to identify which product and species are important for the CFMG members through product prioritization and species preference ranking. It is encouraged to be conducted separately in male and female group.

### How to conduct forest product prioritization

- List the forest products on the chart as shown in figure 12.
- Pairwise ranking is used to find out which forest products are most important. Figure 12 is an example which indicates water (6), as most important followed by timber (4), grazing (4), fodder (4), leaf litter (2) and firewood (1). In this case, the CFMP should contain more emphasis on water.
- When a timber product is ranked as first priority, you should then do a species preferences and availability ranking as shown in table below.

	Timber	Firewood	Mushrooms	Fodder	Leaf litter	Water	Grazing
Timber	X						
Firewood		X					
Mushrooms			X				
Fodder				X			
Leaf litter					X		
Water						X	
Grazing							X

Figure 12: Forest Produce Prioritization Matrix

### How to conduct species preference and availability exercise

- If a particular species is not available in the CF, do not include in the prioritization table, even if that species is highly preferred by the CFMG.
- Write the list of species down the left side of the table and products on top of the table. You can also include shrubs and herbs if these are important.
- Ask participants to decide which species are the most important for each product.
- For each species give a value (between 1 and 5 symbols) showing how important the species is for that particular product – this is the species preference. For example if oak is the most highly preferred species for fodder then give a value of 5. Put symbol (X) to show the preference.
- Assign a value to each species to show how scarce or abundant it is in the CF – this is availability e.g. if oak for fodder is scarce then give it a value of 1. Put symbol (\* ) to show the availability.
- Some species can be used for more than one product e.g. oak can be used for timber, fodder and fuelwood. In this case record all information but values in preference and availability may differ.
- Mention which species are preferred most and which species are available in the CF. Write them in the CFMP.
- Use both local name and scientific names in the CFMP for the species recorded in this table.

Species Preference and Availability table						
Species/Local name ↓	Uses →	Drashing	Cham	Fencing Posts	Firewood	Flag poles/Dangchung
	Preference					
	Availability					
	Preference					
	Availability					
	Preference					
	Availability					
	Preference					
	Availability					

Mark with symbols to show rating e.g. XXXXX = high preference, \*\*\*\*\* = highly available and X = low preference, \* for less available.

**Note:** When preparing the CFMP ensure that all produces with high priority are covered. Where there is a big gap between preference and availability, measures to address these gaps should be included in the management plan.

## Step 6. Forest Produce Demand Assessment

This is to quantify the annual forest produce requirement of the CFMG members. It is recommended to do the assessment annually during annual work plan preparation. This will give more accurate information.

### How to carry out Forest Produce Demand Assessment

- Divide participants into small groups. If possible have separate groups for men and women.
- Each group should prepare a list of forest products they use. This should be as detailed as possible and include all forest produce – not just those that come from the proposed CF area. For example, don't just write "timber" but try to have sub-categories such as drashing, cham, tsim, dangchung/flag poles, fencing posts, firewood, etc.
- Ask each group to estimate their annual household requirement for each produce. You may use local measurements e.g. timber should be estimated in terms of numbers of trees, poles, etc. Or if possible in cft or m<sup>3</sup>. Firewood could be measured in back loads or truck loads, or if possible in cft or m<sup>3</sup>.
- Collect the individual household requirements during annual meetings and compile them in the table below

### Forest Produce Demand Assessment Format

Produce	Annual requirement (estimated)		Number of HH that require produce annually (C)	Total requirement of the produce (Annually)		Total requirement of produce in 10 years	
	Number (A)	Volume (in cft or m <sup>3</sup> ) (B)		Number (A*C) = D	Volume (in cft. or m <sup>3</sup> ) (B*C) = E	Number (D*10)	Volume (in cft. or m <sup>3</sup> ) (E*10)
For new Construction							
e.g. Drashing	5	200 cft.	10	50	2000 cft.	500	20,000 cft.
For renovation/extension							
e.g. Drashing	2	150 cft.	15	30	2250 cft	300	22500 cft.
For other construction (toilet, cowshed, etc.).							
e.g. Cham	2	100 cft.	8	16	800 cft	160	8000 cft.
For other produce							
Firewood	2	150 cft.	25	50	3750 cft.	500	37500 cft.
Bamboo	1200	-	10	12000	-	120000	-

- For sustainable management of the CF, encourage CFMG members to write down their actual forest produce requirements.
- When you have covered all the households, estimate the total CFMG annual requirement for different produces.
- If all households are not present, ask participants to estimate how many households in the CFMG will actually use the produce. For example if out of 60 households, only 55 actually require fodder this should be noted. If all households use the produce, then write "all".
- Calculate the forest product requirements for the whole CFMG by multiplying household use by the number of households. Record this information in the summary format provided below.

**Example of Forest Produce Demand Assessment (Summary)**

Produce	Annual household requirement (estimated)		Number of households using the produce (if all then write "all")
	No. of trees	Volume (cft. or m <sup>3</sup> )	
Drashing	80	4250 cft.	25
Cham	16	800 cft.	8
Tsim			
Dangchung			
Firewood	50	3750 cft.	25
Flag Poles			
Fencing Posts			
NWFPs (bamboo)	12000		10

- Mention annual requirement of timber and number of households requiring the timber and calculate total annual in ten year plan period.
- Facilitate in calculating the requirements of timber and firewood in Cft or cubic meters, except for fencing posts and flag poles.
- Refer Annex 1, Format 5 to calculate number of trees.
- Refer Annex 1, Format 7 to calculate volume in m<sup>3</sup>.

**Comparison of AAC and Demand**

The table below compares the AAC (supply) from the CF and demand of the CFMG. In the comments column, write whether the AAC is sufficient to meet the demand. If not, then mention how and from where the demand will be met e.g. it may be met from state reserved forests.

Annual Allowable Cut and Demand Format							
Produce	Total AAC		Total Annual Demand		Difference		Comments
	No. of trees	Volume (either in cft or m <sup>3</sup> )	No. of trees	Volume (either in cft or m <sup>3</sup> )	No. of trees	Volume (either in cft or m <sup>3</sup> )	
Drashing							
Cham							
Tsim							
Dangchung							
Firewood							
Fencing Posts							
Flag Poles							
NWFPs ( <i>list all NWFPs</i> )							

## Step 7. Calculating Carbon Stock

### Why is this required?

An estimate of forest carbon stock is increasingly becoming important. Knowing how much carbon is stored in the forest helps to show how much the forest is contributing to climate change mitigation. If forest biomass is increasing it will be capturing carbon from the atmosphere. If forest biomass is decreasing (or if the forest is being harvested) it will lower the carbon sequestration capacity of the forests. It may also release carbon back into the atmosphere and is thus contributing to increased levels of atmospheric CO<sub>2</sub>.

With proper management, CFs have huge potential to enhance the carbon capture and storage. This will require proper and regular measurement for monitoring of forest carbon stock. It becomes necessary to include it in the CFMP. Based on the forest resource assessment that has already been done it is possible to get an estimate of carbon stock.

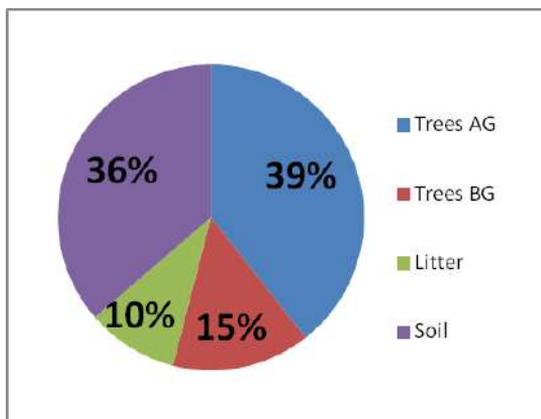


Figure 13: % of total carbon in different forest components

### How to measure carbon stock

1. There is a close relationship between carbon stock and biomass. Therefore, the first step is to calculate forest or tree biomass.
2. On a large scale, forest biomass is estimated by finding out the total area of each forest type and using published figures for biomass (or carbon) per ha for each type.
3. At local level it is possible to calculate the biomass of each individual tree using published biomass tables or equations (usually based on tree diameter and/or height). Volume equations or tables based on dbh are more common. From these it is possible to estimate the stem volume of a tree of given dbh. Knowing this volume and other parameters such as timber density and branch/foilage/root proportions it is possible to estimate the tree biomass. Usually this is expressed in the form of dry weight (kg).
4. From the sample plots from the forest resource assessment you will know the number of trees per ha in different dbh classes for each block. Using volume or biomass tables you can then calculate the mean biomass of a tree of a particular dbh. Biomass tables show the relationship between dbh and total tree biomass (usually dry biomass). You can use these tables to calculate the biomass for each forest block. This is called above ground biomass (AGB).
5. There is additional biomass in tree roots – this is called below ground biomass (BGB). For a given tree, about 30% of the biomass is BGB. Use this to calculate the total tree biomass.
6. Roughly 50% of tree biomass consists of carbon. Therefore, calculate the total tree carbon as 50% of AGB+BGB.
7. As a rough approximation Bhutanese forests have about 140-150 tC per ha (if well stocked) not including litter and soil carbon and depending on forest type and age.
8. Additional carbon is stored in litter and soil. Figure 13 above shows the % of total carbon in all 4 components of the forest.
9. This method will enable you to estimate the approximate carbon stock of a CF. However, to measure it more accurately and to monitor changes in carbon stock is very complex and beyond the scope of this manual. We may have to develop a separate manual for carbon measurement in future.

## Step 8. Socio-economic Survey

This is an important PRA because its outputs form part of the social information in the CFMP and it will trigger discussion on benefit sharing mechanism (equity) when framing the CF By-laws. It is important that all information from this PRA tool is recorded on chart paper for later use. The exercise deals with socially sensitive information and the format may be handled as a confidential report.

The CFMG members are interviewed and the member household(s) are earmarked so that during the time of benefit sharing discussion under the By-laws chapter, equity will be taken care. The survey ensures first-hand

information from the CFMG member households and facilitates a discussion within the CFMG about measures to reduce poverty and address equity.

### How to conduct Socio-economic Survey

- The exercise is carried out after the member registration and the CF management committee election but before writing the by-laws and preparation of the CFMP
- Explain the purpose and procedures of the survey to the CFMG.
- Interview the individual CFMG member to gather information
- Compile and analyze the data after completion of the survey. You may have to discuss with your colleagues and group the member households into different well-being category (e.g. rich, medium and poor).
- The CFMG is asked to come up with measures to reduce poverty and address equity; measures are written down on a chart paper and discussed; this part of the exercise can also be combined with the writing of the by-laws, climate vulnerability assessment.

<b>Socio-economic Survey Sheet</b>			
Name and age of the respondent:		House No.:	Thram No.:
No. of resident members in the HH:		Male:	Female:
No. of civil servants from the HH:		No. of Monks/Nuns from the HH:	
No. of students from the HH:		No. of members in armed forces:	
No. of HH members (others - specify):			
Total No. of HH members:			
Wetland (ac):		Dryland (ac):	Orchards:
Kitchen garden ac/dc:		Khimsa ac:	No. of HH members using cell phones:
House type (tick)		Three storey	Two storey
			One storey
No. of cattle:		No. of horses:	No. of pigs:
			No. of poultry:
No. of Goat:		No. of Sheep:	No. of Yak:
No. of farm machineries:		Tick and list the machineries (e.g. vehicles, Power chainsaw, Power tiller, Rice mill, Flour mill, Paddy trans-planter, sawmills, others)	
Specify availability of any Livestock Farm (Poultry, Piggery, fisheries, etc.)			
Specify availability of any Agricultural Farm (Mushroom, vegetable, etc.)			
Source of income – specify:			Average annual income (Nu.):

## Step 9. Climate Hazard and Vulnerability Assessment

People living in rural areas are increasingly becoming aware of climate changes and the effects these are having on their livelihoods. Mountainous countries like Bhutan tend to be experiencing particularly strong climate change effects. This exercise tries to find out what the impacts of climate change are (and might be in the future) and tries to identify which groups in the community will be most affected. By doing this, resources and activities can be provided to enable those who are most vulnerable to climate change to adapt to the changing conditions. These adaptation ideas can be included in the CF Management Plan. Remember that both forests and people are affected by climate change!

### Objectives

- To find out in what way climate is changing locally
- To find out which people/households and which parts of the forest are most vulnerable to climate change
- To suggest activities for coping with and adapting to climate change for inclusion in the CF Management Plan

### Outputs

- A participatory map showing climate hazards
- A ranked list of climate hazards showing which are most serious
- A list of the groups most vulnerable to climate change
- A suggested list of activities for coping with and adapting to climate change

## Equipment

Flip-chart paper, colored pens, participatory map (prepared in the previous PRA exercise), well-being assessment matrix (prepared during the previous PRA exercise)

## How to do Climate Vulnerability Assessment

1. Start by explaining the purpose of the exercise. Explain that climate seems to be changing worldwide and that different places are affected in different ways
2. Ask participants to give examples about how they experience climate change and its effects in their village. With some facilitation many examples of these will arise. Note them down on a piece of chart paper. The table gives some examples.
3. Next show the participants the participatory resource map you prepared with them earlier. Ask them to show on the map where particular climate change effects seem to be taking place (this is called climate hazard mapping). Examples might include places that are liable to flood, drought, fire, landslides (due to heavy rain), springs that might be drying up etc. Mark these locations on the map (map the hazards)
4. On a different piece of chart paper list all the climate hazards that have been identified and write them across the top and also down the left-hand side (see example #1)
5. Ask participants to consider each pair of hazards in turn and decide which is most critical. Enter the most critical one in the box. After covering all the boxes, count the number of times each hazard was written down. The higher the number, the greater the hazard ranking.
6. On a second piece of chart paper, list the climate hazards identified along the top of the paper in order of ranking (see example #2).
7. Down the left -hand side of the paper list the social groups identified from the socio-economic survey and also list the major sectors in the community such as forest, agriculture, livestock horticulture, health, infrastructure, etc.
8. For each social group and each sector ask participants to rate the vulnerability to each hazard identified along the top of the matrix (e.g. 0 = not vulnerable, 1 = low vulnerability, 2 = medium vulnerability, 3 = high vulnerability, 4 = very high vulnerability)
9. At the end you will have a matrix that shows which groups and which sectors are most vulnerable to different climate hazards.
10. Selecting those that are most vulnerable – ask participants what activities they think can be carried out to reduce the vulnerability. List these activities.

### Climate Hazard Matrix (example #1)

	Landslide	Flood	Drought	Forest fire	Animal disease	Reduced crop yields
Landslide	x	Flood	Drought	Forest Fire	Landslide	Reduced crop yields
Flood		x	Flood	Forest Fire	Flood	Flood
Drought			x	Forest Fire	Drought	Reduced crop yields
Forest Fire				x	Forest Fire	Forest Fire
Animal disease					x	Reduced crop yields
Reduced crop yields						x

Result: 1<sup>st</sup> = Forest Fire (5); 2<sup>nd</sup> = Flood (4); 3<sup>rd</sup> = Reduced crop yields (2); 4<sup>th</sup> = Drought (2); 5<sup>th</sup> = Landslide (1); 6<sup>th</sup> = Animal Disease (0)

### Climate Vulnerability Assessment (example #2) (list of climate hazard based on ranking done in earlier exercise)

Social group /sectors	Forest fire	Flood	Reduced crop yields	Drought	Landslide	Animal diseases
List the social group based on socio-economic survey, e.g. rich medium and poor member.						
e.g. of sector: Forest, Agriculture, livestock, etc.						

## Step 10. Waste Management in CFs

Waste management in the community forest areas are of great concern. Waste management particularly the non-degradable waste in the CFs shall be addressed in consultation with the CFMGs. You can facilitate the CFMG to incorporate waste prevention and management procedures in the CFMP.

Chapter VI, Section 119 of the Waste Prevention and Management Regulation 2012 empowers the CFOs as the implementing agencies where they get support from concerned Dzongkhag, Gewog and Royal Bhutan Police. Relevant sections are hereunder:

### **Responsibilities of Implementing Agency**

*Section 120. Within respective jurisdiction, the Office of the Divisional Forestry Office and/or Park Manager shall ensure that:*

*Section 120.1 an individual, organization, institution or a community conducting activities like camping, trekking, picnicking, timber extraction, firewood collection, stone bathing, religious or cultural performance, cattle herding, dumping of saw dust, quarrying and mining, research, survey, inventory development, census, infrastructural construction, Non wood forest product collection, educational or recreational visit or running small commercial activities within a government reserve forest are prohibited from littering any nature of inorganic waste and responsible for their collection and disposal to designated site;*

*Section 120.2 the garbage is collected and disposed off at a designated site;*

*Section 120.3 littering or disposal of urban, construction and industrial waste along the national highway, feeder road, farm road, private road within Government Reserve Forest is prohibited, in collaboration with relevant agencies;*

*Section 120.4 dumping of hazardous, non-hazardous, medical, electronic, organic or inorganic waste on the land surface, underneath land or into any water bodies is prohibited within the protected areas or Government Reserve Forest;*

*Section 120.5 washing of vehicles or machineries in a river, stream, lake, pond, wetland or at a drinking water source is prohibited;*

*Section 120.6 adequate awareness and outreach programs are initiated, in coordination with the Nature Clubs of educational institutions and other conservation related organizations;*

*Section 120.7 cleaning campaign to collect and dispose of inorganic wastes lying within respective jurisdictions is initiated, in coordination with the Nature Clubs of educational institutions and other conservation related organizations; and*

*Section 120.8 collected inorganic waste are transported when the volume of waste collected is sizable for transportation to its designated disposal site, in coordination with other line organizations.*

### **Waste disposal coordination**

*Section 121. For the purpose of disposal of inorganic waste collected within a Government Reserve Forest, the Office of the Divisional Forestry Officer and Park Manager shall coordinate with the concerned Dzongkhag for proper disposal.*

### **Waste management in Dzongkhag Communities**

*Section 122. This shall apply to the waste management within Gewog, Chiwog and Institutions.*

*Section 123. The Dzongkhag Environment Committee in consultation with Gup and Mangmi shall develop guidelines and codes of best practices for waste management within the Gewog and Chiwog level and Institutions.*

## Step 11. Forest Management Matrix

The forest management matrix brings together information and ideas from other steps to identify problems, opportunities and objectives for the block and/or whole CF. CFMG members will identify activities to be included in the CFMP to achieve the CF management objectives (see box to differentiate between the objective and activities).

### How to carry out Forest Management Matrix

1. Prepare a separate forest management matrix for each block. Write the block name clearly at the top of this.
2. Row 1. Write the main forest produce for the block. This information will come from the Forest Product Prioritisation Matrix and the Forest Resource Assessment.
3. Row 2. List the tree, shrub or other plant species which are particularly important for these produce.
4. Row 3. Describe any problems i.e. shortages in availability of different forest produce or mismatch between the supply (AAC) and demand. Refer the Annual Allowable Cut and Demand Format (Chapter III, Step 6). Also write down any biotic problems that were identified in the block during the Forest Resource Assessment and during PRAs such as fire, grazing, erosion, etc.
5. Row 4. Identify any opportunities e.g. if there is a surplus of forest products that can be harvested to meet the demand or if useful NWFP species could be introduced by planting.
6. Row 5. Based on the problems and opportunities, discuss and agree on management objectives (see box). It is helpful to think of management objectives in terms of the causes of problems rather than their solutions.
7. Row 6. List the activities that need to be done to achieve the management objectives. Be as detailed as possible. Different activities will be needed in different blocks. For each activity decide if it is high (H), medium (M) or low (L) priority and write this down. Check that all the activities are really needed by asking: If we carry out all these activities, then will the objective be achieved? Several activities will be needed to achieve each objective. Will all the problems be addressed?
8. Row 7. Write down the detail procedures for each activity on how to carry out the activities.
9. Row 8. Write down responsibilities for carrying out each activity. Responsibilities can be for individual, in group or for an agency.

### Management Objectives

Objectives are commonly confused with activities,

e.g. "thinning" or "planting" are activities not objectives. The real objectives may be "to improve the timber crop in the future" or "to restore degraded forest areas".

If timber shortage is a problem, then the management objective might be "to increase the sustainable production of timber from the block".

Think of management objectives in terms of addressing the causes of any problems rather than their solutions. The solutions tend to relate to activities.

Block-wise CF Management Procedures – e.g. Block I					
1	Produce/services	Drashing	Firewood	NWFPs	
2	Main species	Blue Pine	Oak	Mushroom	Yula
3	Problems	Forest fire	Over lopping for fodder		Over harvesting
4	Opportunities	1. Surplus quantity 2. Enterprise dev. 3. Employment generation		Excess resource	
5	Management objectives (reflecting problems and/or opportunities)	1. Income generation 2. Reduce forest fire	1. Reduce over lopping	Income generation	
6	Activities to achieve the objective (mark as H, M or L)	1. Sale of surplus timber (M) 2. Value addition (H) 3. Awareness (M) 4. Creation of fire line (L)	1. Support pasture dev. (L) 2. Supply fodder seedlings (M) 3. Restrict collection from CF (H)	Sale of mushrooms	

Block-wise CF Management Procedures – e.g. Block I					
7	Procedures	1. Follow timber marketing guidelines 2. Seek support for fund, training on product design and dev. 3. Seek support from relevant office for awareness before onset of the fire season 4. Members to contribute labour, technical support from forest office	1. Seek support from livestock department. 2. Fodder seedling procurement from forest nurseries 3. Regulate fodder collection from CF area	...	
8	Responsibilities	CFMG, concerned Forest office...			
Definitions					
Problem		An issue which needs to be addressed in the management plan			
Opportunity		A potential benefit which could be utilised in the management plan			
Objective		The aim of carrying out certain management activities			
Activity		The detailed tasks that have to be done to achieve an objective i.e. <b>What?</b>			
Procedure		The way in which the activity will be carried out i.e. <b>How?</b>			
Responsibilities		The person(s) responsible for carrying out the activity i.e. <b>Who?</b>			

## Step 12. Participatory Environmental Assessment

Participatory Environmental Assessment is needed for the CFMP because:

- a) CFs are covered by the Environmental Assessment Sector Guidelines for Forestry (1999) meaning that environmental assessment is required before a CF management plan can be approved
- b) To identify and avoid any negative environmental impacts of CF management activities.

Environmental assessment should be carried out by the “proponent”. In community forestry the CFMG is the proponent and should carry out the environmental assessment (Participatory Environmental Assessment).

### What is Environmental Assessment?

Environmental assessment is a tool to examine the activities proposed and to identify the effects (either positive or negative) these might have on the environment. It helps to ensure that as far as possible negative effects are avoided during implementation. It is usual to take a broad view of environmental assessment to also include socio-economic impacts.

Environmental assessment should be carried out at the end of the CF management planning process but before the plan is finalised for approval so that all activities proposed for the CF can be included and assessed.

### How to carry out participatory environmental assessment

1. Prepare a chart as shown in the example e.g. below. In the boxes across the top, write down the potential impacts as shown here.
2. List the activities proposed for the CFMP down the left hand side of the paper. This information on activities should come from the Forest Management Matrix (Chapter III Step 11).
3. For each activity consider the potential environmental and socio-economic factors listed along the top row. For each of these discuss whether the proposed activity will have a positive effect, negative effect, or no effect. Show positive impacts by (+), negative impacts by (-), and no impacts by (0). The number of plusses or minuses should show how strong the potential effect is e.g. if timber harvesting is thought to have a strong

negative effect on soils (if it might cause erosion), then get the group to put ----- in the relevant box (see example shown)

4. In a separate table drawn on a large sheet of paper, list each activity which has one or more minus sign in the participatory environmental assessment chart taking particular note of:
  - Areas close to public roads and forest roads
  - Steep slopes
  - Areas lying near streams, rivers and water bodies
  - Blocks with highly critical catchment condition, etc.
5. For each activity describe in a separate box any procedures that will be taken to avoid or reduce negative impacts. These procedures must then become part of the CF Management Plan (see examples given below).

Example of a Completed Participatory Environmental Assessment Chart								
Activity proposed in CFMP	Potential Environmental Effects				Potential Socio-Economic Effects			
	Soil	Water	Wild animals	Plants	Traditional forest use	Cultural and religious values	Local employment	Local benefits from forest produce
Plantation establishment	+	+++	0	+	--	0	--	0
Fuelwood harvesting	-	-	-	-	0	0	0	++
Flag pole harvesting	0	0	0	-	+	++++	0	++
Timber harvesting	---	---	--	---	+	+	++	++
Grazing control	++	++	+	++	-	0	0	--
Fire control	+	+	++	+++	0	0	0	0
NWFP collection	0	0	0	-	+	++	+	+
Forest protection	0	0	++	+++	++	+	0	--
Soil and water conservation activities	++	++	+	++	0	0	+	0

POSITIVE EFFECT SHOWN BY + + + NEGATIVE EFFECT SHOWN BY - - - NO EFFECT (OR NOT RELEVANT) SHOWN BY 0

Example of Procedures to address potential negative effects	
Activity	Procedure
Plantation establishment	Local graziers will be provided with alternative grazing areas. Grass will be available for cut and carry from plantation areas Native or local species will be planted
Fuelwood harvesting	Quantities will be controlled No felling on steep slopes will be allowed
Timber harvesting	Felling will be regulated according to sustainable harvest levels. No felling on slopes > 50% No log rolling down slopes No felling within 20 m of water courses Timber will be distributed within the CFMG according to priority of needs
Grazing control	As for plantation establishment
NWFP collection	The following rare species will not be collected (list of species)
Forest protection	All CFMG members will take part in protection Wherever possible, forest products will be utilised from the CF providing this can be done sustainably.

## Step 13. Preparation of CFMG By-laws

### Why are CFMG By-Laws Needed?

(a) For legal reasons

In accordance with Section 78 (3) of the FNCRR 2017, *“CFMG shall adopt by-laws with clear management objective, rights and responsibility, allocation and utilization of forest resources, fund management addressing the issues of sustainability”*. That is why we have fund management section in this manual.

In accordance with Section 78 (4), *“The management plan shall have separate section for the by-laws prepared by the CFMG in accordance with the relevant policy and laws”*.

In accordance with Section 79, *“CFMG shall prepare and adopt by-laws observing good governance principles such as participation, transparency, accountability, equity and inclusiveness”*.

(b) For good governance of the CFMG:

- So that disadvantaged households can be identified and targeted
- So that all CFMG members have their say and are listened to
- So that CFMG decisions are transparent and fair
- So that the CFMG committee represents all the interest groups in the village
- So that women participation in decision making body is emphasized and encouraged
- So that illegal activities in the CFs are reduced or alleviated

### How to frame CFMG By-laws

All the members of the CFMG shall be present during framing of the by-laws. The CFMG should not include anything in their by-laws that contravenes the FNCRR 2017. All the topics in the table below can be included – as well as any additional items e.g. covering CFMG governance, equity and benefit sharing, fund management, etc. it is important that everyone in the CFMG should understand the by-laws and agree with it. Refer specific Chapter and Steps of this manual when framing the by-laws. Specific steps are as follows:

1. By the time you reach this step you may already have prepared the CFMP. Bring all the materials you have from this. Ensure that you also have a copy of the FNCRR 2017.
2. Organise a meeting with all members of the CFMG. You might expect this meeting to last for a full day, so plan with this in mind.
3. Start the meeting by explaining what the By-laws are and how these differ from the CFMP.
4. Go through the list of items for the By-laws. As you go through each item first check to see whether anything has already been agreed in earlier planning stages (the forest management matrix will probably be the useful sources of information). If anything has already been discussed and agreed, then read it out and record it.
5. Ask participants what can be written in the By-laws in addition to what has already been agreed during earlier planning steps. For each of the items in the By-laws, some questions have been provided in the table for you to ask and discuss.
6. It is extremely important to record all the answers (once they have been agreed). Write them down on a large sheet of paper.
7. Finally, read everything that has been written down to the whole group.
8. It may be helpful to divide into sub-groups of different stakeholders e.g. women, youth, etc. and get each subgroup to go through everything that has been written down. At the end let them give their comments or agreement/disagreement to the whole group.
9. This written material can only become the formal by-laws if everyone agrees.
10. Back in the office the by-laws need to be typed out.

Content of By-laws	Checklist for facilitator(s)
CFMG Name	What is the name of the CF and the CFMG? (It can be same)
1. Membership arrangements	<p>How is membership defined?                      Who is eligible for membership of the CFMG?                      What are the procedures for becoming a new member?                      What are the procedures for leaving the CFMG?                      For both new members joining use Annex 12 and for members leaving the CFMG, use Annex 13 as an application form.</p>
2. CF Management Committee formation	<ul style="list-style-type: none"> <li>• It is recommended to have three posts in the CFMGs to make it standard and uniform. They are Chairperson, Secretary and Treasurer.</li> <li>• These posts are highly recommended to be elected through secret voting procedures and each and every CFMG members should vote.</li> <li>• You should facilitate and ensure that at least one of the CF Management Committee member is women.</li> <li>• Let the CFMG decide the term for the management committee and the procedures for leaving or appointment of the committee</li> <li>• Ensure formal handing/taking between the new and old post holders as per Annex 16.</li> </ul>
3. ToRs for CF Management Committee	There are suggested ToRs for CF Management Committee (Chairperson, Secretary and Treasurer), refer Chapter V Step 1.3) However, you can ask the CFMG members to add on.
4. Roles and Responsibilities of the CFMG	<ul style="list-style-type: none"> <li>• Add general roles and responsibilities of the CFMG.</li> <li>• Refer Section 86 of FNCRR 2017 and see what are they empowered with?</li> </ul>
4. Benefit sharing mechanism	<ul style="list-style-type: none"> <li>• What procedures will be put in place to ensure equity?</li> <li>• What procedures must be followed for harvesting forest produce (both timber and NWFPs) from the CF e.g. timing, marking, etc.?</li> <li>• What are the rules about collecting different forest produce? E.g. what produce, quantities, collection times, seasons, etc.</li> <li>• What provisions will be made for particular household e.g. disadvantaged, single woman-headed household, etc.?</li> </ul>
5. Fees (products/services fees, membership fees, etc.)	<ul style="list-style-type: none"> <li>• Nominal membership fees has to be collected but the amount and frequency shall be decided by the CFMG.</li> <li>• Fees (royalty) for CF produce including NWFPs, sand, boulders and other services shall be decided by the CFMG. However, the royalty rate shall not exceed the existing rural subsidized rates.</li> </ul>
6. Managing CFMG Fund	<ul style="list-style-type: none"> <li>• What are the possible sources of funds for the CFMG? E.g. sale of surplus products, fees, fines, etc.</li> <li>• How CFMG fund should be managed?</li> <li>• Details on fund management is given in Chapter V, Step 8.4 of this manual.</li> </ul>
7. Timber marketing (and marketing of other forest products)	<ul style="list-style-type: none"> <li>• Check whether the CF have potential in marketing of the timber or other forest produce.</li> <li>• What products can be marketed?</li> <li>• How value addition can be done to enhance the income for the CFMGs?</li> <li>• Refer “Marketing Guidelines for Wood-based Products from Community Forest 2017” and for NWFPs, refer the “Framework for Management and Marketing of Non-Wood Forest Products”.</li> </ul>
8. Record Keeping	<ul style="list-style-type: none"> <li>• What records will the CFMG keep?</li> <li>• Who is responsible for keeping them?</li> <li>• How it will be shared among the CFMG members and with concerned forestry offices?</li> </ul>

Content of By-laws	Checklist for facilitator(s)
9. Meetings	<ul style="list-style-type: none"> <li>• It is recommended to have at least one CFMG general meeting/assembly in a year.</li> <li>• The frequency of CF Management Committee meetings can be decided by the CFMG, based on need. But ask the following questions to the CFMG.</li> <li>• How often will the CF Management Committee meet and for what purpose?</li> <li>• How the minutes of the meetings are maintained and shared?</li> </ul>
10. Offences and Penalties	<ul style="list-style-type: none"> <li>• The amount of fines and penalties for both CFMG members and outsiders related to natural resources shall be based on the provisions mentioned in Section 416 of the FNCRR 2017.</li> <li>• The fines and penalties collected from both CFMG members and outsiders can be deposited in the CF account as per the fund management section in this manual.</li> <li>• Fines and penalties collected from other offences related to wildlife, birds, hunting/poaching, forest fire, etc. shall be collected by the concerned forestry offices based on existing systems.</li> <li>• CFMGs can decide on the amount of fines and penalties and impose if their member(s) are absent from CF developmental activities, meetings, etc.</li> <li>• CFMG may also frame fines and penalties if the CF Management Committee members are misusing their powers and not performing their duties as per the ToRs.</li> <li>• The concerned forestry offices shall assist the CFMGs in collecting the fines and penalties with regard to CF and its resources/services.</li> </ul>
11. Conflict management	<ul style="list-style-type: none"> <li>• How will conflict be resolved/managed?</li> <li>• If not resolved, where it will be forwarded?</li> </ul>
12. Amendments of the CFMG By-laws	<ul style="list-style-type: none"> <li>• CFMGs can amend their CFMG By-laws with prior approval from the Department.</li> </ul>

## Step 14. Writing the CF Management Plan

The Community Forest Management Plan (CFMP) needs to be written, if possible in national language. A standard format/template has been prepared for this (Annex 4). This section refers to this format and explains where the information to complete each section comes from. If all the steps have been completed all the necessary information to complete the CFMP will already be available. All the PRA tools need not be written in the CFMP. However, the results or the outputs of the PRA tools may be included in the CFMP.

*It is unacceptable to simply copy texts from previous or other CFMPs and pasting without reviewing its usefulness and relevancy.*

## Step 15. Monitoring and Evaluation Arrangements

The arrangements for monitoring and evaluation are extremely important and must be included in the CFMP from the beginning. The different stages of monitoring and evaluation that can be used for these are described fully in Chapter VI of this manual.

## CHAPTER IV

### Approval Process of the Community Forest

After preparing the CF Management Plan and By-laws the CFMG shall submit the plan through the CFO to the Social Forestry & Extension Division (SFED) for review and approval by the Department. This involves following steps:

#### Step 1. Submission of the CFMP to the Department

After final review of the draft CFMP by the CFO, the CFMP shall be submitted to the Department through SFED.

#### Step 2. Review by SFED

SFED shall review the CFMPs in detail. Upon review, SFED shall return the management plan to the Divisions/Parks for any necessary changes. If there are any pertinent issues that warrants a visit, SFED may make a field visit. After incorporating the necessary changes, SFED shall seek approval of the plan from the Department and notify the Division/Park.

#### Step 3. Issuance of the CF Ownership Certificate

Following approval of the CFMP by the Department, the CFO of the concerned Division/Park and the Gup of the concerned Gewog shall co-sign the Community Forest Ownership Certificate (Annex VII of the FNCRR 2017) and formally hand over to the concerned CFMG along with the a copy of approved plan.

After the Community Forest Ownership Certificate has been awarded, the CFMG can start to implement its CF Management Plan and By-laws with the technical support from forestry staff for:

- Participating in CFMG meetings
- Conflict management
- Skills development and training
- Monitoring, reporting and planning
- Helping to solve specific problems
- Developing linkages with other CFMGs
- Developing commercial linkages for forest product development and marketing
- Others

## CHAPTER V

### Implementation

This part of the manual covers the implementation of the planned activities. After the CF ownership certificate has been issued, all forest produce are the property of CFMG and administrative responsibilities and powers are given to CFMG.

The FNCRR 2017 describe the responsibilities for the CFMG to implement the CFMP and By-laws. These include both administrative and forest management tasks. They can be found under the Sections 86 to 89 of FNCRR 2017. Support for implementation of all activities can be provided by forestry staff and also by other organisations where feasible.

#### The main implementation responsibilities of CFMGs (according to FNCRR 2017)

1. Marking of forest produce (90)
2. Issuing permits (90)
3. Harvesting (93-95)
4. Royalties and permits (101)
5. Sale of forest produce (98-100)
6. Transportation of produce (96-97)
7. Formation of CF Networks and Association (108-109)

#### The Role of Forestry staff

CFMG and management committee members often lack basic technical and administrative skills and self-confidence to implement their CFMP from the start. To help them to become more self-reliant and to keep them motivated, capacity building will be needed. This could be in the form of training events covering different topics or simply on-the-job training and support. The support role of the Forestry staff includes:

- Technical assistance for implementing the CF management plan
- Tree marking e.g. for thinning or harvesting
- Seedling raising, distributing and planting
- Encouraging the committee to meet regularly and facilitating the meetings
- Helping to get good participation including gender during meetings
- Communicating between the CFMG and the CFO
- Training and developing new skills amongst CFMG members
- Helping to resolve conflicts
- Providing information to the CFMG about the FNCRR and other legal matters
- Helping the committee to keep records and accounts
- Monitoring CFMG activities and helping with self-monitoring

#### Some of the key components to support and facilitate the implementation of the CFMP

### Step 1. CFMG Governance

CFMGs good governance is critical ensuring its effectiveness and sustainability. A number of weaknesses in CFMG governance have been identified and support is required to address these. Some of these weaker areas include transparent decision-making, equity (including pro-poor decision-making and benefit sharing); record keeping; fund management and monitoring.

#### What is Governance?

Governance is about how the CFMG operates as an institution. It focuses especially on the processes and relationships within the CFMG and the extent to which they follow certain principles of 'good governance':

Transparent	Are decisions made in an open and easily understood manner?
Accountable	Are decision makers accountable to the wider group (CFMG members) and can sanctions be effectively imposed in case of infringement or poor decisions?
Responsive	Are decisions and activities responsive to the needs of the wider group – especially poorer and disadvantaged members?
Equitable	Are benefits distributed fairly and in favour of disadvantaged members?
Participatory	Are decisions and all processes made in a way that involves a range of different stakeholders?
Legal	Does the group and its members and representatives operate in compliance with the law?
Efficient (cost effective)	Are decisions and activities those which will give the best or greatest results at the least possible cost?

### CFMG Meetings and Decision-Making

CFMGs should function as democratic and accountable institutions. This means that decisions taken by CFMGs need to be made during meetings where CFMG members have an opportunity to discuss and give ideas. Normally there are 2 kinds of meeting (i) CFMG meetings (sometimes called general assemblies) which are held more infrequently (perhaps annually) and (ii) CF Management Committee meetings which are held more often depending on the need. An important aspect of CFMG governance concerns the way such meetings are organised.

#### Why are CFMG meetings needed?

- For information sharing and communicating within the CFMG members.
- For decision making and planning by the CFMG.
- For building the capacity of CFMG members.
- For addressing problems and issues as they arise.
- For fund management and transparency.

#### How to conduct CFMG meetings

There are 4 steps for conducting an effective CFMG meeting (this applies to both CFMG meetings and to CF Management Committee meetings):

(a) Preparing for the meeting; (b) Conducting the meeting; (c) Recording the meeting; (d) Evaluating the meeting

##### (a) Preparing for a meeting

1. Plan the meeting and prepare an agenda beforehand listing the topics to be covered. An example of a meeting schedule is given below.
2. Ensure that each session of the meeting has a clear objective
3. Decide how each session will be conducted (it is often better if different sessions are facilitated by different people)
4. Make sure that a copy of the CFMP and the FNCRR 2017) is available during the meeting.
5. Decide who should attend the meeting and issue invitations – especially to anyone from outside the CFMG e.g. the concerned Gewog Forestry Officer, other Local Government officials.
6. Issue invitations in good time and mention the purpose of the meeting, the date, time and venue.
7. When about two-thirds of the expected participants have assembled you can start the meeting. If not, wait for half an hour for the full or required number of participants to assemble.
8. Arrange the seating in such a way that all the participants and facilitators can see each other. Seat them in a circle to ensure full participation.
9. Avoid a situation where some people sit on chairs and others on the floor. This is to maintain a feeling of equality and a non-domineering atmosphere. If there aren't enough chairs then everyone should sit on the floor.

**(b) Conducting a meeting**

1. Welcome all the participants to the meeting. Stress that their participation is vital for the meeting's success.
2. If some participants are sick or drunk (and therefore unable to fully participate) ask them politely to leave and rest in their houses.
3. Tell participants that they should ask questions for clarification during the presentations. Whoever wants to do so should raise their hands first.
4. Follow the planned schedule. Present each session clearly, slowly and loud enough for everyone to hear.
5. After discussions and when decisions have been reached, summarize the important points for participants. Repeat all-important points several times so that participants will remember them.
6. Control persons who speak for too long. This is to give others a chance to speak.
7. Encourage shy participants to speak by politely asking them questions about the point being discussed.
8. Use jokes but don't embarrass any of the other participants.
9. Keep the duration of the meetings in mind. As far as possible stick to the schedule. If necessary you can postpone some points until the next meeting.
10. If some participants sleep or cannot concentrate fully call a short break. You may have to change your style of presentation to make it more interesting.
11. If somebody talks endlessly and is affecting the time allotted politely ask them to allow other participants to give their views.
12. If someone becomes angry or argumentative give the person's points to the whole group to make their suggestions about how to deal with the issues.
13. If everybody starts talking simultaneously raise your hands or clap your hands to get attention. Say that it is difficult to hear anything if everybody speaks at a same time. Those wishing to speak should raise their hands for them to be given the opportunity to speak one at a time.

**(c) Recording the meeting**

1. During every meeting keep notes. After the meeting the Secretary prepares the minutes so that a record of the agenda, issues discussed, actions decided and CFMG member attendance is kept. A format for recording meetings is given in Annex 2 Format 9.
2. The minutes are read out at the start of the next meeting to remind participants what was agreed and discussed.
3. Minutes should be filed in a separate folder and kept in a safe place.

**(d) Evaluating the meeting**

- After the meeting, consider the following questions:
- Were the objectives of the meeting met
- How well was the meeting conducted?
- What lessons can be learnt from this meeting that are useful for conducting future meetings more effectively?

**1.2 Equity and Benefit Sharing**

Equity is a particularly important aspect of CFMG governance because Bhutan's policy on community forestry now emphasises that community forestry should specifically benefit poorer people. This means that benefits from CFs should be targeted at poor people. Equity concerns the distribution of benefits as well as CFMG decision-making and contributions of labour and other resources by CFMG member households.

The first step is to understand who the poorest and most disadvantaged households in the CFMG are and then to find out the causes of their situation. Finally it requires action by the CFMG to try to address the issues of poverty. Under Chapter III of the CFMP preparation you will have already carried out socio-economic survey. This will indicate which households require most support and will give some ideas about the kind of assistance they may need.

The following table indicates the types of questions that need to be discussed by the CFMG in order to improve their equity and benefit sharing systems to become more pro-poor. Some of these may already have been discussed during preparation of the CFMG by-laws but they will need to be reinforced through regular discussion.

Area of question	Type of questions
Social capital	About representation of disadvantaged households in the CFMG and their effective participation. Is this sufficient? Are there problems?
Human capital	About trainings that are provided for CFMG members? Who normally benefits? Are the most disadvantaged households involved?
Natural capital	About arrangements for forest product distribution for disadvantaged households. What are the arrangements?
Financial capital	About use of CFMG funds, credit, subsidies and interest rates and how these affect disadvantaged households. Who benefits? Who loses?
Physical capital	About the any infrastructure activities carried out by the CFMG. Do these have any benefits/costs for disadvantaged households?
Rule of law	About provision for disadvantaged groups in the CFMG By-laws and management plan. Are these provisions effective? Are they being followed?
Identification of disadvantaged households	About the well-being assessment. How was it was done? What were the results? Are they being used to target poorer households?

### Key aspects of equity in CFMG benefit distribution

- All CFMG members are eligible to use forest products from the CF.
- Produce should be equitably distributed among CFMG members – this means according to their requirements rather than their ability to pay.
- If there is high demand for forest products from both CFMG members and outsiders, CFMG members must have priorities.
- If there is high demand for forest products within CFMG members, those CFMG members who are socio-economically disadvantaged have priority over others.
- Particular attention needs to be given to ensuring that all CFMG members are involved in making decisions – especially those which concern distribution of forest products e.g. rates, quantities, timing etc.
- Contributions of labor e.g. during planting activities, should also be equitable – this means that disadvantaged households should not be expected to contribute more labor than others.

### 1.3 CF Management Committee

Committee members should be elected bearing in mind that there is considerable responsibility involved. They are expected to attend meetings and implement tasks on a regular basis. Only individuals who are prepared to take on these responsibilities should be elected. CFMG members elect their own representatives for the CF Management Committee through secret ballot. The CF management committee should genuinely represent all the CFMG members including women.

#### Composition of the CF Management Committee

To be standard and uniform throughout the country, three posts: Chairperson, Secretary and Treasurer are suggested in all the CFs. Their term shall be decided by the concerned CFMG facilitated by the concerned Forestry Officials. Suggested roles and responsibilities for Chairperson, Secretary and Treasurer are described below to make it standard. However, additional tasks and responsibilities can also be added. Other members like Resoop, Messenger, etc. can also be nominated based on need decided by the CFMG. The CF Management Committee must have good representation of men and women.

#### Suggested Roles of the CF Management Committee

1. Represents the CFMG in its interactions with other agencies including the forestry staff
2. Represents CFMG members during preparation and implementation of the CFMP.
3. Coordinates and organizes the administration of CF activities and operations and ensures that CFMG members fulfill their management responsibilities.
4. Responsible for the equitable distribution of benefits amongst CFMG members.
5. Responsible for management of forest resources.
6. Responsible for enforcing the by-laws of the CFMG and for collecting fines and penalties.
7. Responsible for ensuring that all the legal requirements for CF are met (including all types of records that need to be kept).

8. Responsible for establishing and maintaining the CFMG fund using monies collected from various sources.
9. Responsible for organizing and conducting CFMG meetings when required.

Add if any other responsibilities are identified by the CFMG.

Within the CF Management Committee, three suggested standard post bearers have specific roles and responsibilities. They are as follows:

#### **Suggested ToRs of the Chairperson**

1. Heads the CFMG.
2. Calls meetings whenever necessary and informs concerned persons about date, time and place and the reasons for the meeting.
3. Chairs and facilitates meetings and makes sure each person is allowed to speak, thereby giving everyone a fair chance to speak and raise issues
4. Approves applications for forest products (with Secretary).
5. Countersigns financial transaction and authorization to draw cash from the bank account (with Treasurer).

Add if any other responsibilities are identified by the CFMG members.

#### **Suggested ToRs of the Secretary**

1. Assists the Chairperson and officiate him/her during his/her absence.
2. Manages the correspondence (writing of letters and minutes of meetings) for the CFMG.
3. Maintain the files of the CFMG.
4. Maintains the list of CFMG members.
5. Approves applications for forest products (with Chairperson).
6. Keeps minutes of CFMG meetings.
7. Prepares Annual Progress Report (with other CF Management Committee members).

Add if any other responsibilities are identified by the CFMG members.

#### **Suggested ToRs of the Treasurer**

1. Looks after any financial transactions on behalf of the CFMG.
2. Keeps records of expenditure and labor contribution during CF activities
3. Gives a detailed account of how much money or labor has been contributed, how much has been spent and how much is still left, at every CFMG meeting (or as required)
4. Prepares the Annual Financial Report for the CFO (with the assistance of other CF Management Committee members).
5. Countersigns financial transaction and authorization to draw cash from the bank account (with Chairperson).

Add if any other responsibilities are identified by the CFMG members.

### **1.4 Roles and Responsibilities of CFMG**

All individuals and households with traditional claim to forest produce from the CF can seek membership of the CFMG. It is particularly important that disadvantaged households are identified and encouraged to become CFMG members since these can sometimes be missed out but of those who are eligible to become members they all have the choice as to whether they wish to join the CFMG or not. CFMG members must be made aware of their obligations, roles and responsibilities before they decide to register as members.

#### **Suggested Roles of CFMG**

1. To follow the procedures and rules of the CFMG as outlined in the CFMP and By-laws.
2. Participation in CFMG planning and decision-making.
3. Election of CF Management Committee members.
4. Participation in drafting of the CF management plan and CFMG by-laws.
5. Participation in CFMG meetings.

6. Co-operation with the CF Management Committee in carrying forest management and other management operations especially by contributing labor if required.
7. Co-operation with the CF Management Committee regulating forest use by other CFMG members and by outsiders
8. Become involved in other CFMG activities as planned

Add if other roles are identified by the CFMG members

## 1.5 Conflict Management

Conflict resolution is another area which CFMG needs to develop their capacity and skills. Conflict management is a complex process. Identifying and categorizing types of conflict is essential before attempting to resolve. Some conflicts require different strategies to resolve while some can be resolved by CFMG themselves.

### How to resolve conflicts

The approach to conflict resolution is based on consensus building. This involves identifying common ground and working voluntarily towards finding a mutually acceptable solution to the problem. Conflicts are initially solved by the CF Management Committee. However, when the CFMG calls on the concerned forestry official(s) to resolve the conflict he/she can act as the mediator. The followings are the suggested procedures to help in resolving the conflicts:

1. The mediator calls the conflicting parties together to discuss the problem.
2. The parties define the problem as they experience it and agree that it needs to be resolved (this is important).
3. The mediator presents the formulated and defined problem on a chart and asks both parties if it is correctly defined.
4. The mediator then asks the parties to work separately and propose solutions to the problem. Chart paper is given and they are asked to note their proposed solutions.
5. The parties present their proposed solutions in turn.
6. After the first solution is presented the mediator asks the other party if the solution proposed is acceptable to them. If yes, then the problem is solved. If no then the mediator asks for amendments to the proposed solution (more discussion may be needed for this). If the second party out rightly rejects the proposed solution then they are asked present their proposed solution.
7. If all the solutions are exhausted and there is no agreement, then the session is adjourned for further reflection by both parties.
8. A time is fixed for another meeting and they are asked to return with ideas for further discussion.
9. This process may take several meetings to resolve. The mediator must stay neutral at all times and cannot propose a solution – this must come from the 2 parties involved.

## Step 2. CFMG Capacity Building

### What is capacity building?

Capacity building for CFMGs shall be a continuous process from the initiation of CF till monitoring and evaluation of CF. However, this section focuses on capacity building of CFMGs mostly after establishment of CF. CFMGs are expected to manage their affairs independently, efficiently and equitably. As new and inexperienced institutions they may not be able to do this immediately and they will need capacity building to provide them with the systems, skills and information they need. Normally, this is a part of the support role of concerned Forestry staff and it is often done through training. Capacity building cannot be achieved overnight – it will take time and effort to support CFMGs to become self-sustaining local institutions.

Before starting to do any capacity building it is necessary to find out what capacity gaps hinder the CFMG in implementation of their activities and what existing skills and capacity there are within the CFMG. Job and Jobholder Analysis is used to identify which activities CFMG members are required to undertake and whether they can actually carry them out.

## 2.1 Job and Jobholder Analysis

1. Discuss with CF Management Committee members about their jobs and prepare a list of tasks (things they are expected to do). Lists the responsibilities of the CF Management Committee.
2. Discuss with the CF Management Committee about this list of tasks. For each task let them first decide whether it is a high (H), medium (M) or low (L) priority for them. Fill the Job Analysis column indicating the agreed priority.
3. Next, categorise each task according to whether CFMG Management Committee members are already able to do it. Put an X in the appropriate column for “can do”, “partly do” or “can’t do” according to the CFMG Management Committee’s own assessment and that of the concerned Forestry staff.
4. The completed table is the basis for a capacity building plan. You could prepare a similar table for other aspects e.g. forest management, or monitoring

Example of Job and Jobholder Analysis					
	Tasks	Can do	Partly do	Can't do	Priority
GENERAL ADMINISTRATION					
1	Write letters		X		M
2	Dispatch letters (send)	X			L
3	Record letters (receive)	X			L
2	File correspondence			X	H
3	Prepare work plans		X		M
4	Prepare Progress Reports			X	H
5	Conduct meetings		X		M
6	Draft meeting minutes		X		M
7	Record penalties and compensation	X			L
8	Use the CFMG seal	x			H
9	Keep inventory of CFMG property			x	H
10	Enforce Bylaws	x			H

## 2.2 Preparing a Capacity Building Plan

A capacity building plan will be useful to guide the concerned Forestry staff in organizing support to CFMGs.

### Objective

To prepare a capacity building plan based on identified capacity gaps.

### Output

A simple plan prepared by the concerned Forestry staff to guide their support for CFMG capacity building.

### How to Prepare the Capacity Building Plan

1. Using the Job and Job Analysis table list all the tasks which are ‘high priority’ but which are also categorised as ‘can’t do’. These are the most important tasks for capacity building.
2. Next, look for high priority tasks which are categorised as ‘partly do’ and also medium priority tasks which are categorised ‘can’t do’. These are the next most important for the capacity building plan.
3. Finally list all the other tasks and complete the table (example below)
4. For each activity decide on the objectives i.e. what the CFMG would like to achieve after the capacity building activities have been done.
5. Next, set the dates or months during which you plan to carry out capacity building activities. Record this in the period column but remember that some capacity building activities will be continuous.
6. Under the Inputs column identify any inputs (financial, physical, administrative, and technical) that will be required to carry out capacity building. An example is shown below
7. Finally, include all the planned capacity building activities into the Annual Work Plan for the year.

<b>Example of a capacity building plan</b>				
<b>Task</b>	<b>Objective</b>	<b>Activity</b>	<b>Period</b>	<b>Input</b>
Operate a bank account	CF Management Committee members are able to deposit and withdraw money, issue cheques, use the passbook and keep records of transactions.	Prepare materials.	April 2020	Funds for purchase of material. Assistance of staff in material preparation
		Make arrangements with financial institution		Letter of CFO to Bank
		Conduct a Banking & Book keeping Training for three CFMGs.		Venue at Dzongkhag. Funds for refreshments for CFMG members. Concerned Forestry staff facilitation inputs
Manage forest product utilisation	CF Management Committee members are able to select, measure, and mark trees for thinning and harvesting.	Silviculture training	January 2020	Funds Forest site for practical exercise Technical resource person
		Hands on training in the forest	February 2021	Concerned Forestry staff to spend time with CF management committee during tree marking
		Post-harvesting inspection	May 2021	CF management committee and concerned Forestry staff inspect site after harvesting and discuss any problems

### Step 3. Silviculture and Forest Management

A major role for the CFMG is to implement the forest management activities specified in the CFMP. These aspects are covered by a separate forestry field manual for Bhutan "Silviculture and Other Forestry Operations" Second Edition 2016.

### Step 4. Community Development

Beyond CF management the CFMG can carry out a range of other non-forestry activities for community development. It is often these activities that can bring more immediate benefit to CFMG members in the short term – especially disadvantaged members. The level of these activities that can be carried out depends on local needs and on the resources available within the CFMG. This manual does not describe in detail how these activities can be carried out - but there is a general requirement for them to meet the principles of good governance as listed in Chapter V Step 1. In particular it is important that such activities benefit poorer members. Suggested community development activities can include:

- Activities for creating local employment
- Water supply and sanitation activities
- Agriculture and irrigation development
- Health related activities e.g. support for health facilities, awareness and capacities
- Education including infrastructure, resources and awareness
- Infrastructure such as village roads, footpaths, culverts, footbridges and community buildings etc.
- Soil conservation

## Step 5. Addressing Poverty and Disadvantaged Members

One of the aims of community forestry is to contribute in reducing poverty amongst CFMG members. The simple socio-economic survey will have (i) identified who are the most disadvantaged members of the CFMG and (ii) given some ideas for activities that the CFMG can carry out that will specifically assist the disadvantaged households. Activities that aim to address poverty are different from those that have wider social development aims because they are specifically targeted at identified households rather than the community as a whole.

During the preparation of the CFMG by-laws, a discussion should take place about what activities or special provisions can be included for addressing poverty. Chapter V Step 8 (Managing CFMG Fund) specifies that not more than 50% of their CF fund should be allocated for loan and CFMG enhancement which includes targeted actions for poverty reduction.

The best ideas for tackling poverty will come from the target households themselves. Suggested poverty activities can include the following:

1. Subsidized rates for forest produce.
2. Special provisions for collecting certain forest produce e.g. NWFPs.
3. Support for disadvantaged households to set up small scale income generation activities
4. Lower interest rates or interest free loans for disadvantaged households.
5. Creation of employment opportunities for disadvantaged households in CF management and other CFMG activities.
6. Encourage to include disadvantaged households in the CF Management Committee.
7. Establishment of emergency funds to help disadvantaged households in times of need.
8. Provision of support for disadvantaged households for medical treatment, education, agricultural inputs and other social services.

Those components, wherever applicable should be given importance and considered as crucial part of CF management. The success of the enterprise development will have direct impacts on addressing poverty.

## Step 6. Adapting to Climate Change

Chapter III, Step 8 (Socio-economic Survey) might identify certain households that are most vulnerable to climate change and will suggest actions that will help them to adapt. Often the most vulnerable households are also those that are ranked lowest in the well-being assessment. Disadvantaged households are usually less resilient to climate change. Some adaptation activities will have wider community benefits – others will be targeted at particular households. Some climate change adaptation actions aim to ensure the forest is more resilient to climate change too. The best ideas will come from the discussions with the households themselves. Some ideas that can be put into the CFMP might include:

1. Provision of water storage facilities (household level and community level)
2. Spring protection
3. Soil conservation and land management activities
4. Agricultural support activities such as new horticulture and crop varieties, irrigation facilities, and pest control measures
5. Forest fire control measures
6. Crop and livestock produce storage facilities

## Step 7. Enterprise Development and Employment

Community Forestry program has shown ways for sustainable management of forest resources by communities as well as benefiting them to improve livelihoods. Now, CF has reached at the point to give more emphasis on enterprise development. It is the time to assist CFMG to establish small-scale forest-based enterprises and employment opportunities at community level. This will be based on forest produce from their CF that are surplus to CFMG. Some potential community-based enterprise development within CF are listed below:

- Ecotourism (*Menchu*/hot stone bath, home stay, trekking, recreational centres, picnic spots, bird watching, handicrafts production, camping sites, horse riding, safari, rafting, etc.)

- Payment for Environmental Services
- Marketing of surplus sand and stones
- Potential NWFPs (production, product diversification, value addition, marketing, etc.)
- Marketing of surplus timber (value addition, product diversification, wood-based industries)
- Firewood/Wood chips
- Bottling plants for mineral water/package from *Drupchus, Menchus*, etc. available within the CF area.

### Step 8. CFMG Administration

In accordance with Sections 93, 94, 98, 99 and 108 of the FNCRR 2017 the CFMGs are vested with the following roles and responsibilities:

- (1) *The CFMG shall harvest the forest produce from their CF in accordance with the CFMP*
- (2) *The CFMG shall obtain permit from the Chairperson of the CFMG for harvesting of any forest produce from their CF.*
- (3) *The CFMG shall be allowed to sell the surplus produce to any buyers within the country provided the timber is not sold in standing form.*
- (4) *The prices for the sale of surplus forest produce shall be as per the rates decided by the CFMG.*
- (5) *The CFMG shall be allowed to form CF network and association to strengthen good governance, sustainable utilization of resources, equity and common market access.*

To fulfil the above roles and responsibilities, CFMGs need to carry out a number of administrative tasks.

#### 8.1 Filing Systems

Correspondence e.g. letters and other documents should be properly maintained. Correspondence, letters and documents are first sorted according to specified subjects and dates and kept in labelled files for easy identification and retrieval. Files are kept in this way so that letters and documents can be easily located later on.

#### 8.2 The CFMG Hammers

Marking and Passing hammer contains Dzongkhag Code (DC) and Serial Number (SL.NO.) These Codes and Numbers will be given later by the Department through office order or notification.

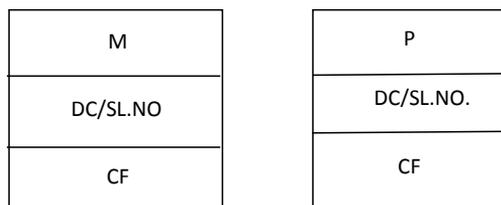
1. In accordance with Section 90 of the FNCRR 2017 *“Marking of trees shall be carried out by concerned Forest Officer as per management plan. The Forest Officer shall use the marking hammer issued by the Department and registered with the CFO”.*
2. In accordance with Section 91 of the FNCRR 2017, *“The registered CF marking hammer and passing hammer shall be under the custody of CFO/Forest Officer for proper safety”.*

There are two hammers for CFMGs:

1. The ‘marking’ hammer
2. The ‘passing’ hammer

Figure 20 shows the 2 hammers. ‘CF’ indicates that the hammer is for Community Forests. ‘DC’ is for Dzongkhag Code and then serial number for the CF. ‘M’ indicates that the hammer is used for marking timber for felling while on the other hammer the ‘P’ for passing refers to timber marked for sale. Note that hammers may change from time to time as regulations for community forestry evolve. Ensure that you are fully updated with the current system for timber marking.

**Figure 20: CF hammers**



CF Marking

CF Passing

The CFMG marking hammer is used to mark trees that have been approved for felling by the CF Management Committee and for felled and cut logs on the ground. The passing hammer is used to mark timber that are sold and for transportation.

### **CFMG Record Keeping**

In accordance with Section 97(3) and Section 153 of FRCRR 2017, *“the CFMG/NWFMG shall maintain record of all management activity and financial transaction as per the approved management plan and make these records available for inspection by members and other relevant agency”*.

A set of standard formats has been developed to simplify record keeping. The concerned Forestry Office shall provide these formats to the CFMG after approval of the CF for the initial plan period. The CFMG is obliged to maintain these records, which should be made available to the CFMG members and to the forestry staff on demand.

Format 1.	Annual Work Plan and Progress Report
Format 2.	Seedling and Plantation Record
Format 3.	Attendance Register (Annual Labour Register)
Format 4.	Record of Penalty and Compensation
Format 5.	Collection Permit
Format 6.	Records of Forest Produce Utilisation
Format 7.	Money Receipt
Format 8.	Cash Book
Format 9:	Meeting Minutes
Format 10:	Loan Record
Format 11:	Stock Register
Format 12:	Calculation of payables to group members from forest sales
Format 13:	Calculation of payables to individual group members from the forest sales based on collection
Format 14:	Calculation of payables to individual group members from the sale based on labour contribution
Format 15:	Payable Form
Format 16:	Receivable Form

### **8.4 Managing CFMG Fund**

In accordance with Section 78 (3) of the FNCRR 2017, *“CFMG shall adopt by-laws with clear management objective, right and responsibility; allocation and utilization of forests resource; fund management addressing the issues of sustainability”*.

CFMG by-laws should address the fund management. Based on the provisions in their respective by-laws, CF fund can be utilized either in group or by the individuals who are the member of CFMG.

Management of CFMG fund is mainly the responsibility of the CF Management Committee. The Treasurer shall maintain all transaction records. Training on record keeping may be required to assist the CFMG in managing their fund. New Treasurer should be backstopped by the CF Management Committee mainly by the former Treasurer and/or the concerned Forestry Officer in order to transfer the knowledge.

Since all CFMG members contribute to the fund they have the right to know how much money is generated and what it is being used for. The CF Management Committee especially the Treasurer needs to keep CFMG members informed about the fund status during CFMG and Committee meetings.

The Department of Forests and Park Services shall appraise the Ministry to initiate “Community Forestry Trust Fund” or “National Community Forestry Fund” to address equity issues amongst various CFs within the country. The concerned forestry offices may also start discussing on it with the CFMGs.

#### **Sources of Fund**

The fund sources are included in the CFMG’s by-laws. The probable sources of CF fund are:

- Membership fees
- Contributions from CFMG members and outsiders
- Fines paid by CFMG members and outsiders

- Forest product fees
- Sale of forest products (timber, NWFPs, sand and boulders)
- Sale of services (ecotourism and ecosystem services)
- Donations
- Interest returns.

### 8.4.1 How to Manage the CF Fund

CF fund should support in fulfilling the activities for CF development as reflected in respective CFMP (i.e. CF development activities like plantation, thinning, cleaning, fire line creation, etc.).

CFMG should emphasize on poverty targeted activities: Support to poorer/disadvantaged households based on need rather than the ability to pay. It is important that the CFMG integrates the principles of sustainability (i.e. long term benefits), Equity in benefit sharing (fair rather than equal) and pro-poor provisions.

#### Box 1: Equity versus Equality

Equity often means that all members receive an equal share of benefits. A better way to think of equity is in terms of fairness – what is fair under the prevailing circumstances? Regarding income generation and fund management an important aspect is equity in benefit sharing which should ensure that the poor or disadvantaged people are not made absolutely or relatively worse off.

Example: a poor household is waived off with membership fees and labor contribution. A single and elderly woman headed household is waived off the loan interests, etc.

It is the responsibility of the CFMG to decide how much fees should be contributed by each member. It is important to make certain consideration for those members who cannot pay (i.e. disadvantaged members). Fixing fee rates should therefore take into account equity (rather than equality).

#### Box 2: Some examples for pro-poor provisions

- Provide support for disadvantaged households for medical expenses, education, agricultural inputs, food and others.
- Emergency fund to poor households in times of dire need, e.g. in case of death, sickness, natural disasters.
- Give loans for poorer households (at interest-free or lower interest rates).
- Give incentives to committee members of poorer background in order to reduce their transaction costs (see Box 3).

The concerned Forestry Officer shall attend the CFMG meetings/assemblies, whenever possible. He/she shall be providing guidance on fund management as per this guidelines.

#### Box 3: Transaction Costs

Transaction costs refers to the costs (financial and others) involved in transacting the business associated with CF. this include things such as the time spent in meetings and in negotiations, as well as direct costs such as contributing labor in tree planting and other CF developmental activities. There are economic consequences associated with transaction costs that are often quite severe, particularly for poor people who might have to forego livelihood or income generating activities in order to participate in CF related activities.

All CFMG members have the right to know about the status of their fund. All documents related to CF fund should be available for inspection by CFMG members to ensure transparency and accountability.

The CFMG shall produce all documents for review, inspection, auditing, monitoring by concerned Forestry Officer at any time. All documents related to CF fund shall be maintained properly by the CF Management Committee.

#### Box 4: Pro-poor Loan Scheme

Smaller loans first: the CFMG shall decide to distribute first the smaller amounts and then the bigger amounts.

Interests Rates: the CFMG may decide to give loans to disadvantaged members at lower interest rates or even interest-free loans).

Purpose: the CFMG may decide and prioritize loan disbursement based on the purpose (e.g. activities to reduce poverty, education, health, emergency cases).

### 8.4.2 Procedures in CF Fund Management

- All CFs should open a bank account within one month from the day of award of CF Ownership Certificate
- The account shall be operated under the joint signatory of the CF Chairperson and the Treasurer or as reflected in the respective By-laws
- Money receipts should be issued for all payments received
- Contingency fund of Nu. 5,000 may be kept with the Treasurer.
- Amount upto over Nu. 5,000 (five thousand only) should be deposited within 10 days. Failure to deposit on time, the Treasurer shall be liable to pay the interest rate and deposit in the CF account.
- All money received should be recorded in the Cash Book by the Treasurer
- The Treasurer collects all contributions, fees, fines, donations and maintain records
- The Treasurer shall present the schedule of collections to the CFMG at least annually.
- There should not be any over-writing, use of correction of fluid, tearing of pages, etc. in the record keeping books and money receipts including permit books.
- All financial records should be made available to authorized auditing team/inspection team anytime.

### Suggested CF Fund Utilization Areas

The followings are some of the areas where CFMG can utilize their CF fund. Based on the table below, the CFMG shall allocate the CF fund on different priority areas. The CFMG shall discuss and decide on fund utilization during the preparation of the CF Management Plan and shall be reflected in the by-laws.

Areas of fund Use	Limit (%)
CF development activities (CF review, nursery creation, plantation, thinning, cleaning, salvage operation, sanitation, boundary demarcation, fire line creation, etc.)	Not less than 25
CFMG enhancement (Loan, capacity building, study visits, meeting, workshops, networking, visitors in CF, income generation and enterprises development, etc.).	Not more than 50
Reserve fund in the Bank (security)	Not less than 5
Others (to be decided by the CFMG members on e.g. incentives to victims of natural calamities, incentives to disadvantaged members/households, contribution to community <i>Lhakhangs</i> , water supply, farm road, etc.)	Not more than 20

### 8.4.3 Disbursement Procedures

- Any expenditure up to Nu. 10,000 shall be decided by the CF Management Committee and beyond that amount the decision shall be made by the 2/3<sup>rd</sup> majority of the CFMG members.
- The Treasurer shall maintain all detail expenditure records (receipts, vouchers, bills, including minutes of meetings, etc.). All such expenses shall be immediately recorded in the cash book.
- The Treasurer shall present the details of expenditure to the CFMG members and concerned inspection team(s).
- The concerned Forestry Officer shall ensure the compliance of above provisions.

## Payable and Receivables

Refer and complete the Payables and Receivable Forms. This is mainly for NWFPs.

### 8.4.4 CFMG Fund for Loans and its Procedures

Once the particular CF generates income, they can allocate not more than 50% of the total fund for loan. The CF by-laws should have provisions to facilitate CFMG fund for loan. The borrower shall submit an application as per Annex 9.

#### Eligibility Criteria for Loan

Every CFMG member shall be given opportunity to avail loan from their respective CFMG fund.

- Loan from CFMG fund shall not be given to non CFMG members.
- The borrower must be of 18 years and above.
- Only one member from the household is eligible for loan at a time.
- Should not have any outstanding loan in the CFMG.
- The borrower should have his/her census in a household who is member of the CF.
- Need of mortgage or guarantor shall be decided by the CFMG.

#### Interest Rates

CFMG members shall decide on the interest rate during general meeting/assemblies with 2/3<sup>rd</sup> majority following the provisions mentioned in the CF by-laws. The interest rate shall be on annual basis. However, the interest rate should not exceed 15 % per annum in accordance with Section 17 (1) of the Movable and Immovable Property Act of Bhutan 1999.

CFMG may apply different interest rate e.g. lower interest or interest-free loan for members of disadvantaged and single woman headed households.

#### Loan Term

The loan term shall be decided by the CFMG depending on the repayment capability of the borrower. However, all loans and other dues must be cleared before the expiry of the CFMP.

#### Repayment Schedule and Process

The borrower shall pay the principal amount including the interest on instalment basis annually or upon completion of the loan term. It is the duty of the CF Management Committee (Treasurer) to maintain proper records of all financial transactions. Fresh loan can be availed only after repayment of the previous loan.

#### Penalties

The CFMG shall decide penalties in case of non-repayment of the loan and it should be reflected in the loan agreement and the respective CF by-laws. Refer Annex 10 for loan agreement. However, the penalties charge shall not exceed 24% per annum as per financial rules.

If the borrower has serious financial trouble but assures the CF Management Committee that the loan will be repaid, the CF Management Committee can exceptionally decide to reschedule the loan after an evaluation of the repayment problems. However, the CF Management Committee shall ensure that the borrower repays loan and other dues before the expiry of the CFMP period.

#### Mortgage and Guarantor

Requirement of mortgage and guarantor shall be decided by the CFMG. In case they decide to have mortgage, the minimum mortgage value shall be 150% of the loan amount. Mortgage value shall be assessed by the CF Management Committee prior to loan approval as follows:

- Detailed description of the collateralized goods.
- Valuation of the goods on the basis of their market value.
- Collateral agreement signed during the loan request.

- The applicant shall produce “No Objection Certificate” from household members in the event of mortgaging the collateral.

**Allowable collateral:**

- House, buildings and land with legal property documents.
- Cars, vehicles with the official government certificate of the property.
- Livestock (Cattle/horses/pigs).
- Poultry/dairy farms.
- Agriculture machineries (power tiller, rice mill, etc., decided by the CFMG).

**Loan Approval and Disbursement Process**

Upon fulfilling the eligibility criteria, the CFMG shall approve the loan based on general consensus or with 2/3<sup>rd</sup> majority. The borrower and the lender shall sign the loan agreement before the loan disbursement. The loan agreement is prepared in two copies, one for CF Management Committee and one for the borrower. The CF Management Committee shall withdraw/transfer the amount from their respective bank account and disburse to the borrower.

**Loan Review**

At the end of each year, the CF Management Committee shall review all the loans and repayments. The information shall be shared during the CFMG general meetings/assemblies.

**Step 9. Annual Work Plan Preparation**

An annual work plan (AWP) should be prepared every year during the Community Forest Management Group general meeting based on the Forest Management Matrix (Chapter III Step 11) prepared and approved in the Community Forest Management Plan (CFMP). It may be helpful to start this process (during the first year) by doing a seasonal calendar (PRA tool) attached in Annex 17.

## CHAPTER VI

### Monitoring, Evaluation and Reporting

#### What are monitoring and evaluation?

Monitoring and evaluation are parts of the action learning cycle (figure 14). Actions are implemented and information about their effects is collected and discussed. The reflection on what has happened leads to improvement and revision of future actions. Monitoring and evaluation are important to ensure the achievement of objectives, implementation of actions and the accountability of stakeholders. The action learning cycle happens on many levels in community forestry. Different stakeholders are involved at different stages.

**Monitoring** means collection of information as indication for the achievement of objectives.

**Evaluation** means assessment of information in order to review the achievement of objectives and to decide about how to go on.

**Indicators** are things that can be measured to monitor an objective.

**Activities** are actions like harvesting, thinning or patrolling taken to produce specific outputs.

**Outputs** are products and services like timber or income which directly result from activities.

**Outcomes and impacts** are the bigger medium-and long-term effects like sustainable forest management or poverty reduction which result from the combination of different outputs and which are influenced by multiple other factors.

The objectives, the responsibilities and the processes (including their timing) need to be clearly defined to facilitate monitoring and evaluation. Answering the following questions can help to do so:

- What do we want to monitor and evaluate?
- Who does the monitoring and evaluation?
- How is the monitoring and evaluation carried out?

#### Step 1. Self-Monitoring and Evaluation by the CFMG

CFMG shall conduct self-monitoring to check its own progress against the CF management objectives by using various indicators. The CFMG shall monitor the followings:

- Achievement of the overall CF management objectives.
- Achievement of block-wise management objectives.
- Implementation of planned activities (in the CF management plan and AWP).
- Implementation of the CFMG By-laws.

#### Checklist to conduct Self-Monitoring and Evaluation

There are various aspects to this:

1. Preparation of the CFMP (10 years) and annual work plan (every year). This includes:
  - 1.1 Defining overall management objectives.
  - 1.2 Defining block management objectives.
2. Preparation of a participatory monitoring plan and monitoring of the activities and indicators in it (Chapter VI, Step 1). This includes:

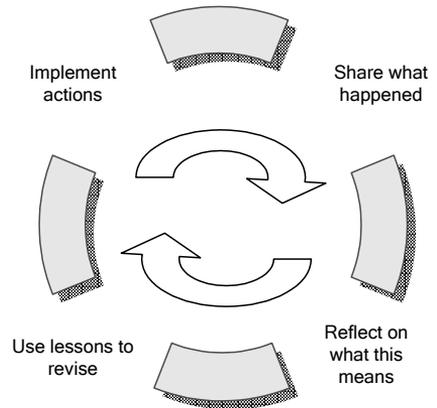


Figure 14: Action learning cycle

- 2.1 Indicators for overall CF objectives/activities.
- 2.2 Indicators for block objectives/activities (participatory resource monitoring – Chapter VI, Step 2.1).
- 2.3 Indicators for social and institutional objectives (Chapter VI, Step 2.2).
- 2.4 Indicators of potential negative environmental impacts (Step 2.3).
- 2.5 Regular record keeping using the various formats in Chapter VI and Annex 2.
- 2.6 Exchanging information during regular CFMG meetings and public audits and hearings in a transparent and accountable manner.
3. Mid-term review of the CFMP by completing the mid-term review format (Annex 6, Format 2)
4. Evaluation and review of the CFMP and preparation of a new CFMP after 10 years.
5. Providing information to concerned forest office.

## Step 2. Participatory Monitoring

Participatory monitoring by the CFMG needs to cover all 3 aspects i.e. (i) participatory forest resource monitoring, (ii) social and institutional monitoring and (iii) environmental impact monitoring (Chapter VI, Step 2, 2.1, 2.2 and 2.3).

Monitoring of all these should be carried out in a participatory way so that all CFMG members understand the system, take responsibility for monitoring and for ensuring that as a group they are achieving their planned and agreed objectives.

### Step 2.1 Participatory Forest Resource Monitoring

During implementation of the CFMP the CFMG needs to continuously check that the management objectives for each block are being achieved. This is done by monitoring against a set of agreed indicators for each activity.

1. Make a list of all the management activities that have been included in the CF management plan (from the Forest Management Matrices in Chapter III, Step 11).
2. Discuss each activity with the CFMG and try to identify 2 or 3 indicators that could be used to monitor the achievement of the activity.
3. For example: If the activity is “establish plantation in degraded forest”, then possible indicators might include survival rate/percentage; etc. in the block. If the activity is “patrolling, to stop illegal activities”, then indicators might include the numbers of culprits apprehended, fines and penalties levied.
4. Out of this list, discuss with the CFMG whether it will be possible for them to measure them. Remember that the measuring system needs to be simple, practical and understandable.
5. Finalise a short-list of indicators which will be monitored by the CFMG over the period of the CF management plan (3 or 4 key indicators will be sufficient).
6. For each indicator, discuss with the CFMG about the procedure for measuring and recording it e.g. How? Who? How often? How will it be recorded etc.?

#### Indicators to monitor forest resources

- Regeneration
- Numbers and diameters of trees of different species
- Canopy density
- Grass cover
- Vegetation cover
- Soil cover
- Level of soil erosion
- Quantity of leaf litter
- Water quantity e.g. from a source
- Level of grazing pressure
- Frequency of fires
- Evidence of illicit cutting of trees
- Availability of various forest products e.g. fuel wood, fodder, NWFPs
- Survival and growth of planted seedlings

<b>A. Example of a Participatory Forest Resource Impact Monitoring Table</b>				
<b>Activity</b>	<b>Indicator</b>	<b>How it will be monitored</b>	<b>Responsibility</b>	<b>Comments</b>
Establishment of plantation in degraded areas	Survival percentage, numbers of seedlings growing	Survival of planted seedlings measured in the plantation area	CF Management Committee to organise	TD/PO staff will support
Patrolling within CF to stop illegal activities	No. of patrolling conducted and culprits apprehended	Regular patrolling and monitoring of the CF area	CF Secretary will record the information	Resoop may submit patrolling report to the CF Chairperson/Secretary
Construction of fire lines	Length of fire line constructed	Labour contribution made for fire line construction and physical verification	CF Management Committee and all other members	TD/PO staff will give support for fire line width and length

7. Various possible monitoring indicators are described here and an example of a completed participatory forest resource assessment table is also shown.

### Step 2.2 Participatory Social and Institutional Monitoring

- Other activities carried out by the CFMG aim to achieve socio-economic and institutional objectives such as contributing to poverty reduction amongst CFMG members or improving CFMG governance. These aspects also need to be monitored by the CFMG by monitoring against agreed indicators.
- Although there are not necessarily any explicit social and institutional objectives in the CFMP, the national strategy for community forestry requires CFMGs to contribute to addressing poverty and ensuring their own good governance. Therefore, social and institutional objectives for community forestry (all groups) can be described as:
  - To contribute to poverty reduction amongst CFMG member households.
  - To enhance CFMG governance.
- Discuss these poverty and good governance activities with the CFMG members to identify possible indicators (examples are given in the table below). Indicators can also be developed to cover Climate Hazard and Vulnerability Assessment (Chapter III, Step 9).

<b>B. Example of a Participatory Social and Institutional Impact Monitoring Table</b>				
<b>Activity</b>	<b>Indicator</b>	<b>How it will be monitored</b>	<b>Responsibility</b>	<b>Comments</b>
Providing loan for CFMG member HH income generation	Number of households provided with loan	Records in Fund Management	CFMG with TD/PO staff facilitation	Carried out during loan repayment
Resource allocation based on equity	No. of single woman headed household, no. of disadvantaged households, etc.	Record books	CF Management committee	
Review of socio-economic survey	No. of single woman headed household, no. of disadvantaged households, etc.	Participatory review	CF management committee with TD/PO staff facilitation	
CFMG General meeting	No. of participation of CFMG members in meetings	Meeting records	CF management committee	Collect names of participants during every meeting
CF Management Committee meeting	No. of women attended the committee meetings	CFMG records	CFMG	Overall aim is 1 woman out of three committee

### Step 2.3 Participatory Environmental Impact Monitoring

Since an environmental impact assessment has been prepared for inclusion in the CFMP in Chapter III, Step 12, the indicators from this also need to be monitored to ensure that negative environmental impacts are not being created.

1. A participatory environmental impact assessment is carried out during CF management plan preparation. This identifies a number of potential negative environmental and social impacts.
2. List the areas where there major potential environmental risks identified. For each of these develop one or more indicators (see example).
3. Complete the participatory environmental impact monitoring table also showing monitoring methods (how) and responsibility.
4. Finally, having completed table for forest resource, social and institutional and environmental monitoring, bring them together in one place and include in the monitoring section of the CFMP.

C. Example of a Participatory Environmental Impact Monitoring Table				
Possible negative impact	Indicator	How it will be monitored	Responsibility	Comments
Reduced water flow in springs	Quantity of discharge during driest month	Time to fill a bucket of known volume	CF management committee	Records to be kept by CFMG
Damage to natural regeneration	No. of seedlings damaged	Counting in a sample plot	CF management committee and forestry staff	Participatory assessment
Loss native species	Occurrence of invasive species sighted.	Anecdotal evidence. Growing sites of invasive species	All CFMG members to report	Will give qualitative data only

### Step 3. Monitoring of CF and CFMG

Annual monitoring should be carried out by the concerned forestry office jointly with the CF Management Committee. Regular information is needed to update in the CF database.

Monitoring and evaluation of the CF and CFMG shall be carried out as per the “Guidelines for Monitoring & Evaluation of community Forestry, 2016”.

### Step 4. Mid-term and Final Evaluation

The CFMP is prepared for a 10 year period. Mid-term evaluation of CFMP shall be carried out at the **last quarter of the 5<sup>th</sup> year** of the plan period. Final evaluation and revision of the CFMP shall be done at the **last quarter of the 9<sup>th</sup> year** of the plan period. The mid-term evaluation will enable to identify issues which can be incorporated in the AWP. The final evaluation will be an important input for preparation of the next 10-year CFMP (Chapter VII - Revision).

It is not expected that the mid-term or final evaluations should be very extensive. However, there is a minimum data set that needs to be included in both. This is given in Annex 6, Format 2.

Key questions for the mid-term and final evaluations include:

- What was planned and how much was actually carried out?
- What were the main impacts (on the forest, on the socio-economic status of households and on the wider environment)?
- What problems occurred? How were they addressed?
- What are the main outstanding issues?

## Step 5. Reporting

### 5.1 Annual Reporting by the CFMG

The CFMG shall prepare and submit a financial report of its activities to the Beat/Range Office with a copy to the CFO within one month of the end of the fiscal year. The report shall contain the following information:

- a. Activities completed as prescribed under the Management Plan;
- b. Quantity of each type of forest produce harvested;
- c. Quantity of forest produce sold to persons and entities other than the CFMG and its members, and the amount of proceeds of those transactions;
- d. Summary of financial accounts for the year (income, expenditure, and the disbursement of profits);
- e. Other information concerning the operations, activities and management of the CF as the Department or the Royal Government may require.

Since the CFMG will have already collected all information in the regular CFMG record keeping books, the CFMG report can simply be a photocopy of the following formats from Annex 2:

- Format 1: Annual Work Plan and Progress Report
- Format 2: Seedling Plantation Record
- Format 5: Collection Permit
- Format 6: Records of Forest Produce Utilisation
- Format 8: Cash Book

### 5.2 Annual Reporting by the Forestry Offices

The Territorial Divisions/Parks staff must submit an annual status report as per the “Guidelines for Monitoring & Evaluation of community Forestry, 2016”. The TD/PO staff should provide information on CFs in their respective jurisdiction for the national CF database that is maintained by FRMD. This needs to be based on reports prepared for each CF and on the CFMG annual financial reports.

## CHAPTER VII

### Revision

#### Revision of Community Forest Management Plan and By-laws

The Community Forest Management Plan follows a 10 year cycle plan. Upon completion of the 10 years plan period, the plan will have to be revised. Revision of the CFMP shall be done at the **last quarter of the 9<sup>th</sup> year** of the plan period. It is likely that the CFMG will require some help in preparing a new management plan, but the same (or similar) methodology can be used as for the initial plan with the following considerations:

- The renewal and approval of the revised CF plan shall be subject to findings of the final evaluation of the CF implementation for the past 10 years.
- The revised CFMP should be built on experiences from the previous plan.
- Summary of key findings of the previous plan should be mentioned in the introduction part of the revised plan.

## **ANNEX 1: FOREST RESOURCE ASSESSMENT FORMATS**

This annex contains the formats needed for forest resource assessment

Format 1: Forest Resource Assessment Format

Format 2: Forest Resource Assessment – tally Sheet

Format 3: NWFP Priority Assessment

Format 4: Forest Resource Assessment Compilation Sheet

Format 5: Stand and Stock Table: Number of Trees

Format 6: Stand and Stock Table: Basal Area

Format 7: Stand and Stock Table: volume

Format 8: Participatory Environmental Assessment

<b>Format 1. Forest Resource Assessment Format (Complete this format for each block)</b>	
Name of Community Forest	
Date of Assessment	
Name of block	
Block area	
Name of recorder	

<b>Forest &amp; Habitat Type (tick all those present, Refer definition below)</b>					
Forest <input type="checkbox"/>	Thicket/pole stage <input type="checkbox"/>	Shrubland <input type="checkbox"/>			
Grassland <input type="checkbox"/>	Plantation <input type="checkbox"/>	Other <input type="checkbox"/>			
Vegetation type					
Subtropical forest <input type="checkbox"/>	Chir pine forest <input type="checkbox"/>	Warm broadleaved forest <input type="checkbox"/>	Blue pine forest <input type="checkbox"/>		
Cool broadleaved forest <input type="checkbox"/>	Mixed conifer forest <input type="checkbox"/>	Fir forest <input type="checkbox"/>	Other <input type="checkbox"/>		

<b>Definitions</b>	
Broadleaf forest	75% or more of the tree species present are hardwoods
Conifer forest	75% or more of the tree species present are coniferous
Mixed forest	All other combinations of tree species
Mature Forest	Vegetation dominated by mature trees (trees > 40 cm dbh)
Thicket/pole stage	Vegetation > 3m in height consisting of young trees usually < 40cm dbh
Shrubs	Non-tree species > 2m in height (often thorny and multi-stemmed)
Shrub-land	Vegetation dominated by woody multi-stemmed plants or single stemmed plants and regeneration mostly < 3 m tall
Grassland	Vegetation dominated by grass species and where only a small part of the area is covered by trees or shrubs.
Crown cover	The percentage of the area covered by the crowns of trees forming the main canopy (usually mature trees)
Regeneration	Seedlings, saplings and coppice regrowth of naturally occurring tree species that are less than 1.3 metres tall but greater than 30cm tall
Seed trees	Mature trees with healthy crowns capable of producing flowers and seed
Soil Cover	The percentage of the area with soil surface covered either by live vegetation or a layer of other plant vegetation

<b>Forest Condition (complete if the block is mainly forest)</b>	
Write the names of main tree species	
Local name	Scientific name
<b>Plantation</b>	
Is there any plantation? Yes <input type="checkbox"/> No <input type="checkbox"/>	Approximate height of planted trees (m)
Year planted	Is the plantation? Under stocked <input type="checkbox"/> Stocked <input type="checkbox"/> Overstocked <input type="checkbox"/>

Forest Condition - Age			
Mature <input type="checkbox"/>	Pole stage <input type="checkbox"/>	Shrubland <input type="checkbox"/>	Any <input type="checkbox"/>
Main canopy of mature trees	Main canopy of pole-stage trees	Main canopy of shrubs, young trees or regeneration	No continuous canopy. Isolated trees only

Forest Condition - Canopy density ( <i>tick main canopy</i> )		
Dense <input type="checkbox"/>	Open <input type="checkbox"/>	Very open <input type="checkbox"/>
Canopy density > 70%	Canopy density < 70%	No real canopy. Isolated trees only

Forest Condition – Regeneration ( <i>including coppice regrowth</i> )		
Abundant <input type="checkbox"/>	Scattered/few <input type="checkbox"/>	None <input type="checkbox"/>
Regeneration easy to find in most places	Regeneration only in some places and hard to find	No regeneration
Write the names of the 3 main tree species in the regeneration		
1)	2)	3)
Regeneration: Seedlings > 30cm and < 1.3m height		

Forest Condition – Approximate density of seed trees		
High <input type="checkbox"/>	Moderate <input type="checkbox"/>	Low <input type="checkbox"/>
> 50 seed trees per ha	10 – 50 seed trees per ha	< 10 seed trees per ha

Block Condition – Summary			
<i>(Use the forest condition class box below to get an average condition for the block)</i>			
Poor <input type="checkbox"/>	Average <input type="checkbox"/>	Good <input type="checkbox"/>	Very Good <input type="checkbox"/>
Does the main forest canopy consist of large, mature trees?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Forest Condition Class Box				
Age	Canopy density	Regeneration & coppice	Seed tree class	Condition
Mature forest	Dense	Abundant		Very good
		Scattered/few		Good
	Open	Abundant		Good
		Scattered/few		Average
Pole stage forest	Dense	Abundant		Good
		Scattered/few		Average
	Open	Abundant		Average
		Scattered/few		Poor
Shrubland and young growth	Dense		Moderate or High	Average
	Dense		Low	Average
	Open		Low	Poor
Any	Very open	None		Poor

Open spaces (complete if there are significant open spaces in the block)	
Approximate total open space area (ha)	
Dominant vegetation type in the open space	
Cause of open space e.g. grazing, fire, harvesting, etc.	

Grazing and fodder (complete if the forest block is used for grazing or fodder)			
Grassland type			
Natural <input type="checkbox"/>	Man-made <input type="checkbox"/>	Mixture <input type="checkbox"/>	Predominantly forest <input type="checkbox"/>

Main fodder species being used ( <i>list 3 only</i> )	
Local name	Scientific name

Pasture quality (list the 3 dominant species in the grassland)		
Local name	Scientific name	Palatable/unpalatable

Use pattern	Seasonal <input type="checkbox"/>	All year <input type="checkbox"/>
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Type of user	Migratory <input type="checkbox"/>	Local <input type="checkbox"/>	Both <input type="checkbox"/>
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<b>Catchment Condition (<i>use catchment condition class box below</i>)</b>		
(i) Catchment condition – soil cover		
Soil cover	Soil cover class	
> 50% of the soils are covered by vegetation	high	<input type="checkbox"/>
25 - 50% of the soils are covered by vegetation	moderate	<input type="checkbox"/>
< 25% of the soils are covered by vegetation	low	<input type="checkbox"/>
(ii) Catchment Condition - Soil type and erosivity		
<b>Soil type</b> (colour, texture and type)		
Erosive <input type="checkbox"/>	Non-erosive <input type="checkbox"/>	
disperses and/or breaks up in water easily	stable to water flow	
(iii) Catchment Condition - Slope		
Slope (degrees)	Slope steepness class	
<10°	Gentle	<input type="checkbox"/>
10° – 30°	Moderate	<input type="checkbox"/>
> 30°	Steep	<input type="checkbox"/>
Catchment Condition – Summary (Use the catchment condition class box below to get the average condition for the block)		
Less critical <input type="checkbox"/>	Moderately critical <input type="checkbox"/>	Highly critical <input type="checkbox"/>

<b>Catchment Condition Class Box</b>			
Slope category	Soil erosivity	Cover class	Condition class
Flat	Erosive	Moderate or high	Moderately critical
		Low	Highly critical
	Non erosive	any	Less critical
Moderate	Erosive	Moderate or high	Moderately critical
		Low	Highly critical
	Non erosive	Moderate or high	Less critical
		Low	Moderately critical
Steep	Erosive	Moderate or high	Moderately critical
		Low	Highly critical
	Non erosive	Moderate or high	Moderately critical
		Low	Highly critical

<b>Fauna (List any animal or bird species seen or which are known from the block)</b>	
Local Name	Scientific name

<b>Biotic Pressures (tick those present)</b>			
Fire	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Grazing	Heavy <input type="checkbox"/>	Limited <input type="checkbox"/>	Absent <input type="checkbox"/>
Fodder collection (list main species used)	Common <input type="checkbox"/>	Limited <input type="checkbox"/>	Absent <input type="checkbox"/>
NWFP collection (list the main products including bamboo & cane)	Common <input type="checkbox"/>	Limited <input type="checkbox"/>	Absent <input type="checkbox"/>
Leaf litter collection	Common <input type="checkbox"/>	Limited <input type="checkbox"/>	Absent <input type="checkbox"/>
Encroachment	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Pole harvesting	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Fuelwood harvesting	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Timber harvesting	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Hunting	Common <input type="checkbox"/>	Occasional <input type="checkbox"/>	Absent <input type="checkbox"/>
Others (describe)			

<b>Potential Management Options (list any potential management options for the CF/block)</b>	
1	
2	
3	
4	
5	
6	
7	





**Format 4: Forest Resource Assessment: Compilation Sheet**

1. CF Name : ..... 4. Block Area : .....  
 2. Block Name : .....  
 3. Number of plots : ..... 5. Compiling date : .....

<i>col1</i>	<i>col2</i>	<i>col3</i> (3 decimals) class	<i>col4</i> (3 decimals) plot size (ha)	<i>col5</i> (3 decimals) expansion factor	<i>col6</i> (0 decimals) Tally	<i>col7</i> (2 decimals) nrha (stems/ha)	<i>col8</i> (2 decimals) basha (m2/ha)	<i>col9</i> (2 decimals) volha (m3/ha)
10-19	0.017							
20-29	0.047							
30-39	0.093							
40-49	0.156							
50-59	0.233							
60-69	0.327							
70-79	0.436							
80-89	0.561							
90-99	0.701							
100-109	0.858							
110-119	1.030							
120-129	1.217							
130-139	1.421							
140-149	1.640							
150-159	1.875							
160-169	2.125							
170-179	2.392							
180-189	2.674							
190-199	2.971							

sum for all dbh classes

**Explanation:**

*col3* : look up in volume table, for given species group and dbh class  
*col4* : plot size for given dbh class  
*col5* : (1/*col4*) / (nr. of plots)  
 (when rounding: round to the nearest EVEN digit; e.g. 0.635 to 0.64 but 0.665 to 0.66)

*col6* : count and fill in  
*col7* : *col5* \* *col6*  
*col8* : *col7* \* *col2*  
*col9* : *col7* \* *col3*





**Format 7: Stand & Stock Table: Volume**

- 1. Name of CF:
- 2. Block name/No.:
- 3. Number of sample plots:
- 4. Estimated parameter: Average Volume per Ha (m3/ha)

*Dbh class (cm). Write all values in 2 decimals*

Species	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	total	%
Total conifer														
Total broadleaf														
Total all species														
%														



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**ANNEX 2: CFMG ADMINISTRATION AND RECORD KEEPING FORMATS**

- Format 1: Annual Work Plan and Progress Report
- Format 2: Seedling Plantation Record
- Format 3: Attendance Register (Annual Labour and Meeting Register)
- Format 4: Record of Fine and Compensation
- Format 5: Collection Permit
- Format 6: Records of Forest Produce Utilization
- Format 7: Money Receipt
- Format 8: Cash Book
- Format 9: Meeting Minutes
- Format 10: Loan Record
- Format 11: Stock Register
- Format 12: Calculation of payables to group members from forest sales
- Format 13: Calculation of payables to individual group members from the forest sales based on collection
- Format 14: Calculation of payables to individual group members from the forest sales based on labour contribution
- Format 15: Payable Form
- Format 16: Receivable Form













**Format 7. Money Receipt**

**འཕོང་རྒྱལ་ Money Receipt**

ཡང་ No. \_\_\_\_\_ ས་ཁོངས་དང་དུའི་རྫོང་ Place, date: \_\_\_\_\_

སྤྱི་ཚན་གྱི་མིང། Name of CF/NWFP Group: \_\_\_\_\_

སྤྱོད་མིའི་(ངོ་མིང།) Received from (name) \_\_\_\_\_ རྟུལ་ཀུམ་ the amount of Ngultrum  
\_\_\_\_\_ རྟུལ་ཀུམ་ Nu.

རྟུལ་རྒྱང་གི་ཐོག་ལས་ཡང་ན་རྟུལ་འཛིན་ཡང་ By cash/cheque/cash warrant/demand draft No. \_\_\_\_\_

རྟུལ་སྤྱོད་པའི་གཞན་དོན། As a payment for \_\_\_\_\_ རྟུལ་ཀུམ་ Nu.  
1/1 \_\_\_\_\_  
2/2 \_\_\_\_\_  
3/3 \_\_\_\_\_

རྟུལ་ཀུམ་ཡོངས་བསྡེམས། Total Nu. \_\_\_\_\_

མིང་དང་གོ་གནས། Name & designation: \_\_\_\_\_

མཚན་རྒྱལ། Signature: \_\_\_\_\_



<b>Format 9: Meeting Minutes</b>	
འཛུགས་འདུ་ གྲོས་ཚོགས། Meeting Minutes	
སྒྲུབ་མཁེ་མིའི། Name of CFMG/NWFP Group:	_____
འཛུགས་འདུ་ གྲོས་ཚོགས། Date of meeting:	འཛུགས་འདུ་ གྲོས་ཚོགས་འདི་གི། Minutes taker (name):
འཛུགས་འདུ་ གྲོས་ཚོགས། Purpose of meeting:	
འོང་ཡོད་པ་པའི་འཕུས་མི། Total number of members (Member Households) present:	མོ་ཡོངས་བསྟོན། Number of Female participants: ཕྱོད་ངས་བསྟོན། Number of Male participants:
མཚོན་མཁའ་ཡང་ལན་ འགོ་དཔོན་གྱི་མི་དང་གོ་གནས། Names and designation of guests/officials present:	
<p>ཨང། གོ་བསྐྱར་འབད་ནི་གི་གནད་དོན་དང་དགའ་ལལ།</p> <p><b>Sl. Issues/points of discussion</b></p> <p><b>No</b></p>	<p>འཛུགས་འདུ་གྲོས་ཚོགས། འགན་ཁུར་འབག་མི་གསུམ་གྱི་ནམ་འཛུགས་འདུ་ཚུབ་ཅི་? ག་ཉི་ལུ་འབད་ཚུབ་ཅི་? <b>Meeting resolutions</b></p> <p><b>(Describe actions: By whom? When? Where?)</b></p>





Format 12. Calculation of payables to group members from forest sales					
ཇགས་ཚལ་ཐོན་སྐྱོད་ཀྱི་ཚོང་སྤྲོད་ལས་ཚགས་པ་ལུ་སྤྱོད་དགོ་པའི་རུངས།					
Calculation of payables to group members from forest product sales					
ཨང་ SI. No	གནད་དོན་ Particulars	སྡེ་ཕན་ Unit	ལ་ལུངས། Quantity	གོང་ཚད་ Rate (Nu)	དངུལ་ཀྲམ་ཡོངས་བསྡོམས་ Total Amount (Nu)
	ཐོན་སྐྱོད་བཅོང་ལས་འོང་འབབ། Revenues from selling products				
ཀ A	འོང་འབབ་ཡོངས་བསྡོམས། Total revenues				
	ཚོང་འབྲེལ་གྱི་འབྲོ་སོང། Expenses for marketing products				
ཁ B	འབྲོ་སོང་ཡོངས་བསྡོམས། Total expenses				
ག C	ཉལ་མ་དེས་ཉིག། Net Income (A-B)				

**Note:**  
 གསོག་འཛོག་བཞག་མི་ལུ་གཞི་བཞག་གི་ནུབ་ ཚོགས་པའི་འཇུས་མི་ཚེ་དེ་བཞིན་ལུ་སྤྱོད་དགོ་པའི་རུངས། Calculation of rate to be paid to individual group members based on collection,  
 ཚོགས་པའི་འཇུས་མི་ལུ་སྤྱོད་དགོ་པའི་ཡོངས་བསྡོམས། ཚོགས་པ་གིས་གསོག་འཛོག་འབད་མི་འལ་ལུངས། Total payables to group members/ total quantity collected by the group,  
 ཚོགས་པའི་འཇུས་མི་ལུ་ ཉིན་གྲངས་ལས་མི་ལུ་གཞི་བཞག་གི་ནུབ་ སྤྱོད་དགོ་པའི་རུངས། Calculation of rate to be paid to individual group members based on labour days,  
 ཚོགས་པའི་འཇུས་མི་ལུ་སྤྱོད་དགོ་པའི་ཡོངས་བསྡོམས། ཚོགས་པ་གིས་ལུ་འབད་ཡོད་པའི་ཉིན་གྲངས། Total payables to group members/ total labour days invested by the group.









**ANNEX 3: APPROVAL SHEET**

Name of Community Forest	
Village	
Chiwog	
Gewog	
Dzongkhag	
Production area (Hectare/Acre)	
Protection area (Hectare/Acre)	
Total Community Forest Area (Hectare/Acre)	
Total CFMG Member (No. of HH)	

**Prepared and Submitted for Approval**

	Community Forest Management Group	Forestry Representative (CFMP facilitator)	Gewog Administration	Social Forestry Section	Divisional/Park Office
Signature					
Name					
Title	Chairperson		GUP	Head	Chief Forestry Officer

**REVIEWED and RECOMMENDED FOR APPROVAL**

Signature		
Name		
Title	Focal Officer	Chief Forestry Officer
DIVISION	Social Forestry and Extension Division	Social Forestry and Extension Division

**APPROVED BY:**

**DIRECTOR/DIRECTOR GENERAL  
DEPARTMENT OF FORESTS AND PARK SERVICES**

## ANNEX 4: CFMP CONTENT/TEMPLATE

Cover Page/Title

Approval Sheet

Table of Contents

Acronyms

Executive Summary

Part I: Introduction

Total community forestry area \_\_\_\_\_ hectare/acre

Community Forestry Map (2 maps, 1: map with boundary, 2: GIS Land use/land cover map, showing net production area of the CF)

Community Forest boundaries

Boundaries	Permanent Features
West	
East	
South	
North	

Social Information

	Description
Name of the villages	
Ethnic groups with CFMG	
Basic amenities	
Total Household (HH) number of CFMG	
Population of CFMG	
% male and % female	
Main source of income	
Cattle population of the CFMG	
Main crops	
Cropping pattern	
Any other information	

### FOREST INFORMATION (WHOLE FOREST)

Annex 1, Format 1 will be written here! (Format 1 is used for each CF block). Each block with respective AAC

Forest Management (including objectives)

Demand assessment

AAC and demand comparison

Participatory Environmental assessment including procedures to address negative environmental effects

Climate hazard assessment

Forest produce ranking matrix

Monitoring Plans (Forest Resource Monitoring Plan, social & institutional monitoring plan)

AWP

**Part II - By-Laws (refer Annex 5 for the contents/template for By-laws)**

**Annexes under the CFMP**

1. CF application along with CFMG member list signed
2. CF boundary GPS coordinates
3. CF sample plot GPS coordinates
4. Compilation sheet

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## **ANNEX 5: CFMG BY-LAWS CONTENT/TEMPLATE**

### **Membership Arrangements**

#### **Management Committee formation**

#### **Terms of Reference for CF Management Committee**

#### **Terms of Reference for Chairperson**

#### **Terms of Reference for Secretary**

#### **Terms of Reference for Treasurer**

*(Terms of Reference for Other post holder, if you and the CFMG have decided)*

### **Roles and Responsibility of CFMG**

#### **Fees**

**Fines and Penalties** *(fines and penalties for forest products including NWFPs, sand, stones, soils, wildlife, and for general forest and resources related offences, etc. please refer FNCRR, 2017 and need to be specific here.) Fines and penalties here refers to non-compliances to CFMG by-laws like absentees in meetings, CF developmental activities, misuse of power by CF Management Committee like Chairperson, Secretary, Treasurer and others.*

#### **Managing CFMG Fund and Credit**

**Benefit Sharing Mechanism** *(arrangements for benefiting disadvantaged households or members, other benefit sharing arrangements during natural calamities, like fire, earthquake, landslide, flood, etc.)*

**Meetings** *(CFMG general meetings/assemblies, CF Management Committee meetings, frequency, etc.)*

#### **Conflict Management**

#### **Amendment of CFMP and by-laws**

#### **Powers of the Department**

**ANNEX 6: MONITORING AND REPORTING FORMATS**

Format 1: Indicators for CFMG Mid-term Evaluation and Final Evaluation Report		
Indicator description	Unit	Baseline
AAC vs. annual harvest for every timber size-class	Number of logs harvested	
Basal area of each block (only prism sweep for 50% of the total sample plots selected randomly)	m <sup>2</sup> /ha	
Application of harvesting guidelines for NWFPs (are they being applied?)	Yes/no/uncertain	
Number of forest fire incidences in CF	No/area affected	
Total number of member HH in CFMG	No.	
Distribution of HH identified through socio-economic survey	No./% in each category (rich, medium and poor)	
Dependency on SRF for timber	Number of trees/cft allotted from SRF	
Dependency on SRF for NWFPs	Quantity from SRF	
CFMG revenue from different sources & total revenue	Nu for each year by income category	
Expenses for different purposes & total expenses	Nu for each year by expenditure category	
Overall fund of CFMG	Balance Nu	
Number of conflicts in CFMG which were discussed in committee or CFMG meeting	No.	
Number of resigned HH	No.	
Implementation of AWP	Comparison of planned activities with those carried out (for each year)	
Number of illegal activities related to CF by members and non-members	No. and type	
Number of CFMG & committee meetings	No.	
General availability of minutes for CFMG & committee meetings	Yes/no/ uncertain	
Use of record keeping books	Yes/no/uncertain	
Percentage of member HH & sex disaggregated number of people in CFMG meetings	% male; % female	
Sex disaggregated composition of committee	% male; % female	
Availability of measures for disadvantaged members in CF by-laws	Yes/no/uncertain	

Format 2: Reporting Template for Mid-term and Final Evaluation
Name of the CF:
Gewog:
Dzongkhag:
Division/Park:
Executive Summary
Acronym
Table of Contents
Introduction
Key achievement highlights
<i>Mid-term and final evaluation of CFMP/CFMG based on the indicators/criterion set for evaluation in the CF manual (Annex 6, Format 2). Key achievement highlights contributed by the activities.</i>
Constraints
<i>Problems or constraints faced during the implementation of CFMP (difficulties faced, etc.).</i>
Feedback
<i>Feedbacks received (from the implementer) and sought (reporting agency).</i>
Lessons learned
<i>Lessons learned from the implementation of CFMP (experiences, shortcoming and opportunities etc.).</i>
Recommendation
<i>Way forward follow-up actions for improvement (mid-term monitoring and evaluation) and for revision (final evaluation) of the CFMP.</i>
Conclusion
References
Annexure

**ANNEX 7: SLOPE CORRECTION TABLE**

Slope	Degree	Factor	Horizontal distances										Slope
			5	10	15	20	25	30	40	50	125	245	
%	°	$f_s$	5	10	15	20	25	30	40	50	125	245	%
15	9	1.0112	5.1	10.1	15.2	20.2	25.3	30.3	40.4	50.6	126.4	247.7	15
20	11	1.0198	5.1	10.2	15.3	20.4	25.5	30.6	40.8	51.0	127.5	249.9	20
25	14	1.0308	5.2	10.3	15.5	20.6	25.8	30.9	41.2	51.5	128.8	252.5	25
30	17	1.0440	5.2	10.4	15.7	20.9	26.1	31.3	41.8	52.2	130.5	255.8	30
35	19	1.0595	5.3	10.6	15.9	21.2	26.5	31.8	42.4	53.0	132.4	259.6	35
40	22	1.0770	5.4	10.8	16.2	21.5	26.9	32.3	43.1	53.9	134.6	263.9	40
45	24	1.0966	5.5	11.0	16.4	21.9	27.4	32.9	43.9	54.8	137.1	268.7	45
50	27	1.1180	5.6	11.2	16.8	22.4	28.0	33.5	44.7	55.9	139.8	273.9	50
60	31	1.1662	5.8	11.7	17.5	23.3	29.2	35.0	46.6	58.3	145.8	285.7	60
70	35	1.2207	6.1	12.2	18.3	24.4	30.5	36.6	48.8	61.0	152.6	299.1	70
80	39	1.2806	6.4	12.8	19.2	25.6	32.0	38.4	51.2	64.0	160.1	313.8	80
90	42	1.3454	6.7	13.5	20.2	26.9	33.6	40.4	53.8	67.3	168.2	329.6	90
100	45	1.4142	7.1	14.1	21.2	28.3	35.4	42.4	56.6	70.7	176.8	346.5	100
110	48	1.4866	7.4	14.9	22.3	29.7	37.2	44.6	59.5	74.3	185.8	364.2	110
120	50	1.5620	7.8	15.6	23.4	31.2	39.1	46.9	62.5	78.1	195.3	382.7	120
130	52	1.6401	8.2	16.4	24.6	32.8	41.0	49.2	65.6	82.0	205.0	401.8	130
140	54	1.7205	8.6	17.2	25.8	34.4	43.0	51.6	68.8	86.0	215.1	421.5	140
150	56	1.8028	9.0	18.0	27.0	36.1	45.1	54.1	72.1	90.1	225.3	441.7	150

Source: <http://www.fao.org/docrep/008/ae578e/AE578E06.htm> accessed on 28/02/2018

**ANNEX 8: T-TABLE**

<b>df</b>	<b>Probability</b>								
	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>0.05</b>	<b>0.02</b>	<b>0.01</b>	<b>0.001</b>
1	1.000	1.376	1.963	3.078	6.314	12.706	31.821	63.657	636.619
2	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	31.598
3	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	12.941
4	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	8.610
5	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	6.859
6	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.959
7	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	5.405
8	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	5.041
9	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.781
10	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.587
11	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.437
12	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	4.318
13	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	4.221
14	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	4.140
15	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	4.073
16	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	4.015
17	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.965
18	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.922
19	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.883
20	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.850
21	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.819
22	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.792
23	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.767
24	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.745
25	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.725
26	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.707
27	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.690
28	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.674
29	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.659
30	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.646
40	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.551
60	0.679	0.848	1.046	1.296	1.671	2.000	2.390	2.660	3.460
120	0.677	0.845	1.041	1.289	1.658	1.980	2.358	2.617	3.373
∞	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.291

**ANNEX 9: LOANS APPLICATION FOR CFMG MEMBERS**

Loan Application Form **ལྷན་འགྲུལ་ལྷན་ཁོག་གི་མཉམ་འབྲེས་འགན་ཁུར་གྱི་ལག་ཁྱུང་ལེན་པའི་ཁྱེད་ཀྱི་མིང་།**

Date **ལྷན་ཁོག་གི་ཚུན་ཚེས་།**.....

Name **མིང་།** ..... Village **གཞིས་ཀྱི་ཁྱེད་ཀྱི་མིང་།** .....

Gung No. **དགུང་མཇུག་གི་མཇུག་མཇུག་།** ..... Thram No. **ཐར་མཇུག་གི་མཇུག་མཇུག་།** .....

CID No. **རྒྱུ་མཇུག་གི་མཇུག་མཇུག་།** ..... Mobile No. **འགྲུལ་འབྲེན་གྱི་མཇུག་མཇུག་།** .....

Amount Applied Nu: **མ་དངུལ་བསྐྱོན་གྱི་ཚུན་ཚེས་།** ..... (in words **ཧྲིལ་མོག་འཁོར་ལོ།**).....

Purpose **གནས་དོན་།** .....

Mortgage **གྲུ་ལྷན་ཁོག་གི་མཇུག་མཇུག་།** (optional)

a) གྲུ་ལྷན་ཁོག་གི་མཇུག་མཇུག་།	Total value of mortgage (s) གྲུ་ལྷན་ཁོག་གི་མཇུག་མཇུག་གི་ཚུན་ཚེས་།
b) ལེན་པའི་མཇུག་མཇུག་།	
c) གྲུ་ལྷན་ཁོག་གི་མཇུག་མཇུག་།	

Third Party Guaranty (if any): **ལས་ལེན་ལག་འགན་འབག་མི་ཧྲིལ་མོག་ལེན་པའི་མཇུག་མཇུག་།**

Name, CID No. M. No. Thram No. Gung No. <b>མིང་། རྒྱུ་མཇུག་གི་མཇུག་མཇུག་། /འགྲུལ་འབྲེན་གྱི་མཇུག་མཇུག་།/ཐར་མཇུག་གི་མཇུག་མཇུག་།/དགུང་མཇུག་གི་མཇུག་མཇུག་།</b>	Signature and Date <b>མིང་། ལྷན་ཁོག་གི་དང་དུལ་ཚུན་ཚེས་།</b>
---	--

Signature and Date of Applicant with legal stamp:

**ལྷན་ཁོག་གི་མཇུག་མཇུག་གི་མཇུག་མཇུག་། ལྷན་ཁོག་གི་མཇུག་མཇུག་གི་དང་དུལ་ཚུན་ཚེས་།**

Sanctioned by: **གནང་བ་སྐྱོད་མི།**

Treasurer

**བཞུགས་པའི་མཇུག་མཇུག་།**

Secretary

**ལྷན་ཁོག་གི་མཇུག་མཇུག་།**

Chairperson

**ལྷན་ཁོག་གི་མཇུག་མཇུག་།**

**ANNEX 10: LOANS AGREEMENT FOR CFMG MEMBERS****Community Forest Management Group's Loan Agreement** *(translated version is also below this annex)*

This loan agreement is executed between Mr..... CID no..... from ..... Village, ..... Gewog, ..... Dzongkhag, who is a Community Forest User Group Member, hereinafter referred to as the "Borrower" and ..... Community Forest Management Group, located at ..... gewog, .....Dzongkhag, who is duly represented by the Chairperson and Treasurer, hereinafter referred to as "Lender" and jointly referred to as "Parties".

NOW THEREFORE, The Parties have agreed to the following terms and conditions:

That the Lender have promised to pay the Borrower a sum of Nu..... (Ngultrum.....) only at an annual interest rate of ..... % for the period of .....years.

That the loan amount and interest amount payable are as calculated below:

**Details of loan:**

Loan Amount : Nu.  
 Interest rate : ..... %  
 Loan duration : ..... years  
 Interest amount : Nu. ....  
 Total amount payable : Nu. ....  
 (Principal amount plus interest amount)

**Repayment of the loan:**

The Borrower shall repay the loan amount along with the interest amounting to Nu..... per year or upon the completion of loan term.

**Mortgage**

As a security for the repayment of loan and the interest thereon, the "Lender" hereby conveys the ..... as mortgage in favour of the "Borrower". The schedule of property is as described below:

Name: .....

Plot no/Model no/Make: .....

Estimated value on the day of mortgaging: .....

**Guarantor's liability:**

In the event, the borrower for any reason is not able to make payment on time, the liability to repay the unpaid amount of loan along with the interest accrued thereof shall be with the guarantor.

**Penalty on default of payment:**

The "Lender" shall be liable for the penalty of ..... % per year on the failure to repay the loan amount along with the interest as per the terms and conditions specified in this agreement. In the event the "Lender is not able repay the loan amount, the burden shall be on the "Guarantor", if any or the

“Borrower” shall realise the loan amount through the disposal of mortgaged property upon following a due process of law.

Done on .....day of .....month ..... at .....

**For Borrower:**

\_\_\_\_\_  
**Chairperson’s signature**

\_\_\_\_\_  
**Treasurer’s signature**

**For Lender:**

-----  
**Signature**

-----  
**Guarantor’s signature**  
**CID #**  
**Contact #**

Annex 10 (Agreement) translated into Dzongkha

བྱུང་སྐབས་ ༡༠: མི་སྡེ་ནགས་ཚལ་འཛིན་སྐྱོད་ལྷན་ཁྲིའི་འགྲུལ་ལོན་གན་འཛིན།

༣ ད་ལན་ལྷན་པའི་ .....མི་སྡེ་ནགས་ཚལ་ཁྲིའི་འགྲུལ་ལོན་གན་འཛིན་གྱི་ གཞུང་གི་ ..... མཉམ་སྲུབ་ལྷན་པའི་ ..... རྒྱུ་ལྡན་ལྷན་པའི་ ..... མི་སྡེ་ནགས་ཚལ་སྡེ་

ཚན་གྱི་ཁྲིའི་འཛིན་དང་དངུལ་འཛིན་པ་གི་བར་ན་ དངུལ་སྐྱོན་འགྲུལ་གྱི་གན་འཛིན་ འདི་ཡང་ སྐྱོན་འགྲུལ་ལེན་པ་པོ་དོན་ ..... གི་ ..... མི་སྡེ་ནགས་ཚལ་སྡེ་ཚན་ལས་ དངུལ་བསྐྱོམས་ ..... ། ། བཅའ་པ་ ལོ་རེ་ལྷན་སྐྱོད་བརྒྱ་ཚད་ ..... སྡེ་ ལོ་དོ་.....

.....གི་རིང་ལུ་ བསྐྱོད་འབག་ཡོད་པ་དང་ དངུལ་འདི་ཡང་ སྐྱོད་དང་མ་ཚུ་ཅིས་བསྐྱོམས་ཏེ་ ལོ་རེ་ལུ་ དངུལ་ཀྲམ་..... ། ། བཅའ་པ་ ཡང་

ན་ སྐྱོད་རྒྱུང་མ་ཅིག་སྡེ་ ལོ་རེ་ལུ་ དངུལ་ཀྲམ་ ..... ། ། བཅའ་པ་སྐྱོད་དེ་ སྐྱོན་འགྲུལ་གྱི་གནས་ལུན་མཚུགས་བསྐྱུ་ད་ མ་ཚུ་འདི་ལྟེ་ལ་

པོར་སྐྱོད་དགོ་ ཡང་ན་ སྐྱོད་དང་མ་ཚུ་ཅིག་ལར་སྐྱོན་འགྲུལ་གྱི་གནས་ལུན་འདི་མཚུགས་བསྐྱུ་ད་སྐྱོད་དགོ། གལ་སྲིད་ སྐྱོན་འགྲུལ་འདི་གན་འཛིན་འདི་གི་

གནས་ཚུགས་དང་འབྲེལ་སྐྱོད་མ་ཚུགས་པའི་རིམ་པ་རེ་འཛིན་ཚེ་ སྐྱོན་འགྲུལ་ལོག་སྡེ་སྐྱོད་ནིའི་འགན་འཁུན་འདི་ སྐྱོན་འགྲུལ་ལེན་པ་པོས་ལས་ལེན་པ་སྡེ་འཇུག་མི་

རྒྱུ་མི་དོན་..... ལུ་ཕོག་ ཡང་ན་ སྐྱོན་འགྲུལ་ལེན་པའི་སྐབས་ལུ་ གཏུའ་མ་སྡེ་བཅུགས་བཞག་ཡོད་པའི་རྒྱ་དངོས་འདི་བཙོང་སྡེ་ སྐྱོན་

ཚབ་བཅུག་ནི་སྡེ་ ལ་འཚམ་ཡོད་པར་གན་འཛིན་གྲུབ་པོ། ཞེས་གནས་ལོ་.....ལུ་འཇུག་སྡེ་ཚོས་.....ལུ།

གཏུའ་མ་བཅུགས་ཡོད་པའི་རྒྱ་དངོས་ཀྱི་ཐོ་ཁགས་ལ།  
 .....  
 .....  
 .....

སྐྱོན་འགྲུལ་ལེན་མི་གི་རྟགས། སྐྱོན་འགྲུལ་སྐྱོད་མིཿ

འདི་གི་རྒྱུ་མི་གི་རྟགས། ཁྲིའི་འཛིན་གྱི་རྟགས།

དངུལ་འཛིན་པ་གི་རྟགས།

དཔང་པོ་གི་རྟགསཿ

- ༡.....
- ༢.....





**ANNEX 12: CFMG NEW MEMBERSHIP APPLICATION FORM**

To  
**The Chairperson**  
 \_\_\_\_\_ CF

I would like to join your CF starting from \_\_\_\_\_. I hereby furnish my details as mentioned below:

**Part A: Applicant information**

Name of Household representative: ..... CID No: .....

Village/Chiwog: ..... Gewog: .....

Gung No. : ..... Thram No. : .....

Details of timber availed from SRF

Standing form	Quantity (Nos.)	Year of allotment	Purpose for which timber was allotted	Remarks
Drashing				
Cham				
Tsim				
Log form (cft.)				

Date of submission: \_\_\_\_\_ Signature & Name of the Applicant

Affix legal stamp

*The details given above are true to the best of my knowledge. From the date of joining as new member in the CFMG I shall abide with the CFMG by-laws.*

**Part B: Endorsement by CF Management Committee** (The membership shall be accepted and registered after paying the membership fee and compensation, if any)

Signature & Date..... Signature & Date Signature & Date  
 Name ..... Name ..... Name.....

Official seal Official Seal Official Seal  
**Chairperson Secretary Treasurer**

Copy to: Concerned Forestry Officer ..... Date of registration: ..... Serial No. ....

**ANNEX 13: CFMG MEMBERSHIP RESIGNATION APPLICATION FORM**

To

The Chairperson

\_\_\_\_\_ CF

I would like to resign from the CFMG starting from \_\_\_\_\_. I hereby furnish my details as mentioned below:

**Part A: To be filled by the Applicant**

Name of Household representative: ..... CID No: .....

Village/Chiwog: .....Gewog: .....

Gung No: ..... Thram: .....

Reason of withdrawal from CF membership: .....

Details of timber availed from CF during my membership in CFMG is as follows:

Standing form	Quantity (Nos.)	Year of allotment	Purpose for which timber was allotted	Remarks
Drashing				
Cham				
Tsim				
Log form (cft.)				

Date of submission: \_\_\_\_\_

Signature & Name of the Applicant \_\_\_\_\_

**Part B: To be filled up by CFMC members**

Date of application received: .....

The details of the applicant and his/her reason of withdrawal from CFMG have been checked and found genuine and all the information provided is found to be correct.

*We hereby recommend for resignation from CFMG membership of the applicant as per his request after clearing any dues with the CFMG.*

Verified and approved by CF Management Committee:

Signature & Date.....

Signature & Date

Signature & Date

Name .....

Name .....

Name.....

Official seal

Official Seal

Official Seal

Chairperson

Secretary

Treasurer

**Copy to:** Concerned Forestry Officer ..... Date of resignation: ..... Serial No. ....

**ANNEX 14: APPLICATION FORM FOR FOREST PRODUCE FROM CF FOR RURAL USE****Part A – To be filled in by the Applicant/member**

- a. Name of applicant: .....
- b. Citizenship I.D. no: ..... c. Village: .....
- d. Gung No: ..... e. Thram No: .....
- f. Details of timber availed from SRF/CF If yes, please provide details of the timber allotted as follows:

Standing form	Quantity (Nos.)	Year of allotment	Purpose for which timber was allotted	Remarks
Drashing				
Cham				
Tsim				
Log form (cft.)				

- g. Details of following timber applied for the purpose

Products	Quantity (Nos.)	Volume (cft)	Remarks
Drashing			
Cham			
Tsim			
Dangchung/ Flag			
Firewood			
Sand			
Stones			
NWFPS (specify)			
Others			

- h. Purpose.....

**Note:** An applicant can avail timber as per the FNCRR, 2017 once in 25 years for new construction and 12 years for renovation which will be calculated from previous timber allotments from SRF/CF.

- k. Copy of construction approval attached:

*I hereby certify that the details given above are true to the best of my knowledge. In case of any false or wrong information, I am liable to be penalized under the Forest & Nature Conservation Act 1995 and the Rules and Regulations made there under.*

Signature of applicant with legal stamp affixed

Date.....

**PART B: To be filled up by the CF Management Committee**

Construction approval no: ..... Date.....

We hereby certify that:

- i) We have verified the details of the applicant and found to be true and correct
- ii) Timber requirement is genuine
- iii) The details of the applicant and quantity of timber/other forest products applied for rural use have been verified with the records maintained by the CFMG and found to be correct.

We hereby Approve/Reject the application for allotting timber/other forest products to the applicant from CF Reasons for rejection:

.....

.....

.....

- 1. Name & Signature of Chairperson & Date
  
- 2. Name & Signature of Secretary & Date
  
- 3. Name & Signature of Treasurer & Date

### ANNEX 15: HANDING TAKING CHARGE NOTE FOR CFMG

I/we Mr. .... Chairperson/Secretary/Treasurer, of  
 ..... Community Forest Management Group,  
 ..... Gewog, ..... Dzongkhag after rendering ..... years of service is  
 resigning with the permission from CFMG members as decided or approved during the CFMG meeting conducted  
 on ..... Therefore, the undersigned hereby handed over the complete charge of the  
 ..... CF to new CF Management Committee members  
 (Chairperson/Secretary/Treasurer) on dated .....

The charge lists are as attached below:

**I. CFMG fund status on handing taking over day**

1. Cash in hand (Nu.): .....
2. Bank balance (Nu.): .....
3. Loan (Nu.): .....
4. Total CFMG fund (Nu.): .....

**II. Record Keeping Books/Registers and files**

Sl. No.	List of books/register	Quantity	Used for year	Remarks

**III. List of Tools, Equipment & furniture**

Sl. No.	Detail of items	Quantity	Acquired/ from	Transferred	Remarks

**IV. Others (mention if any)**

Handed over by

Taken Over By

In Presence of

**ANNEX 16: BIOMASS (KG) BY DIAMETER CLASS (CM)**

Sl. No.	Species Name	Biomass (kg) by Diameter Class (cm)													
		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100+				
1	<i>Abies densa</i>	54.94	162.84	324.71	540.59	810.50	1134.43	1512.36	1944.28	2430.19	2970.09				
2	<i>Alnus nepalensis</i>	84.38	256.27	514.11	857.92	1287.76	1803.64	2405.54	3093.43	3867.31	4727.17				
3	<i>Castanopsis tribuloides</i>	95.05	211.92	511.36	689.08	1260.90	1439.20	2343.89	2462.23	3760.19	3758.06				
4	<i>Cupressus comeyana</i>	59.26	167.40	329.64	546.01	816.55	1141.27	1520.16	1953.18	2440.32	2981.59				
5	<i>Juniperus recurva</i>	63.27	184.29	365.82	607.91	910.58	1273.86	1697.75	2182.20	2727.21	3332.77				
6	<i>Larix griffithii</i>	63.32	186.85	372.16	619.29	928.29	1299.14	1731.80	2226.28	2782.57	3400.66				
7	<i>Picea spinulosa</i>	86.60	246.68	486.82	807.07	1207.46	1688.01	2248.68	2889.45	3610.31	4411.27				
8	<i>Pinus roxburghii</i>	52.27	153.82	306.15	509.29	763.25	1068.00	1423.54	1829.88	2287.01	2794.93				
9	<i>Pinus wallichiana</i>	71.99	207.01	409.56	679.68	1017.40	1422.74	1895.66	2436.14	3044.19	3719.79				
10	<i>Quercus glauca</i>	86.67	257.42	513.57	855.13	1282.15	1794.64	2392.57	3075.92	3844.69	4698.87				
11	<i>Quercus griffithii</i>	109.72	311.85	615.05	1019.36	1524.81	2131.42	2839.14	3647.98	4557.91	5568.96				
12	<i>Quercus lanata</i>	78.71	220.01	431.97	714.63	1068.02	1492.17	1987.06	2552.65	3188.93	3895.91				
13	<i>Rhododendron arboruem</i>	28.72	80.13	157.25	260.12	388.73	543.07	723.13	928.92	1160.43	1417.67				
14	<i>Tsuga dumosa</i>	57.18	165.67	328.42	545.46	816.83	1142.55	1522.57	1956.87	2445.47	2988.35				
15	Other broadleaf	95.05	211.92	511.36	689.08	1260.90	1439.20	2343.89	2462.23	3760.19	3758.06				
16	Conifer general	45.97	149.56	304.96	512.22	771.38	1082.45	1445.39	1860.18	2326.82	2845.31				

## ANNEX 17: PARTICIPATORY RURAL APPRAISAL

Participatory Rural Appraisal (PRA) is a set of methods and tools for working with communities. PRA is used in the community forestry processes described in this manual and assist in collecting, sharing, and analysing information and to help to make decisions in a participatory way.

### Benefits of PRA

- It ensures a participatory approach to decision-making
- It brings government foresters and community members together and helps them develop better relationships and trust
- It helps to develop a common understanding about the situation of the forest and the people
- It educates outsiders about local history, knowledge, and practices of forest management.
- It helps local people see things in a new light and uses information in a different way. By doing this the community learns more about itself.
- It helps to share information between government foresters and local people.
- It helps to generate common vision of the future
- It results in better planning for community forestry by combining local needs with possible actions.
- It helps to provide information as a baseline for monitoring progress.

### Features of PRA

In PRA exercises, outsiders and local people jointly collect, share and analyse information for joint decision-making and action. PRA is a way of enabling local people to share and analyse their own situation, making decisions and to planning their activities. It is about handing over control to local people whilst outsiders support, watch, observe and facilitate.

### Conducting PRA

PRA needs to be done with a positive attitude towards participation and rapport-building with communities. Some ways of doing this are shown in the Box. Remember that local people have much knowledge about the use of forest and this information is needed for community forestry.

PRA is sometimes done without a genuine “participatory” approach being used and PRA tools are sometimes used to extract information without trying to empower communities. This is a mistake. Without a commitment to mutual learning PRA can become routine and there is a temptation to feel that you have “heard it all before” and “learned enough”. This kind of approach will not succeed.

### Listen and learn

- Ask question that shows you understood and appreciate what has been said. Ask for more information if you need it.
- Use PRA tools that encourage 2-way learning because this enables everyone one to be involved e.g. in drawing a map or diagram and discussing it. Both the facilitator and the community members learn.
- Use visual tools that help to explain the information e.g. maps, matrices and drawings, because it is difficult to write and listen at the same time.
- Work in teams to divide roles.

### Ways of creating a participatory atmosphere

- Be informal
- Use local materials, local language and local symbols
- Sit at the same level as villagers e.g. on the ground
- Be open to new ideas and directions
- Be gender sensitive e.g. include women
- Give everybody a chance to speak
- Be entertaining e.g. use jokes and stories
- Vary the PRA tools being used to add interest
- Be friendly and open
- Listen and learn
- Act – reflect – then act again
- Look for and “zoom in” on important issues
- Probe to find out more
- Don’t lecture
- Learn from errors and mistakes
- Relax. Don’t rush!
- Enjoy learning and interacting - have fun!
- Show interest and enthusiasm
- Stay in the village and meet people socially

**Pass the stick**

- Use PRA tools that are designed to allow villagers to take control of the exercise e.g. let villagers take the pen and draw the map or picture, while you watch.
- Understand that sometimes you will be the learner and sometimes the teacher.
- Hand over the stick/pen/cards and listen to the villagers.

**Be inclusive**

- Ask for inputs from certain specific groups in the village such as women, disadvantaged members or old people. Often these get forgotten.
- Consider the needs of different stakeholder groups (or interest groups) especially those groups who are often excluded because they are socially more vulnerable e.g. old people, young people, women, disabled people, disadvantaged members, recent migrants, specialized users, distant users. Each of these groups uses the CF differently and will be affected in a different way by the proposed Community Forest Management Plan
- Divide into small groups whenever possible and carry out PRA exercises in these smaller groups. Always leave time for a whole group presentation at the end to bring everything together and share ideas.
- Remember that as a forestry staff you are also a stakeholder and you too have an important role to play in the PRA exercises. Other government staff can also be stakeholders and should be involved in PRA processes.

**Respect local literacy levels and knowledge**

- Use PRA tools that make use of visual materials designed to cover a range of literacy levels
- Recognize that although the words villagers use for something may be different, their understanding may be similar. Because they are less educated than you does not mean that they are ignorant.
- Use simple language. Avoid using technical terms that some villagers cannot understand.

**Encourage participation**

- Try to think of who should be included in each exercise. Make efforts to try to involve everyone who wishes to participate and who will be affected by the future activities.
- Recognize that there may be others apart from CFMG members who have an interest or who are affected by the planned activities. Talk to people who live near the forest but are not part of CFMG to understand their concerns also. They may be neutral, opposed, or supportive.
- Chose times for PRA exercises which will allow different groups of people to attend. Remember that people are busy with their own work – you need to fit in to suit them.

**Ensure reliability**

- Make certain that information comes from a number of sources and in a number of different ways.
- Choose your sample of informants carefully to capture a range of views and ideas
- Use different PRA tools to increase the reliability of any information you get.
- Cross-check information from different sources (triangulation). If different sources give similar results then the information is more reliable.
- Validate information which has been gathered during whole group meetings. In this way if there are errors or misunderstandings, they will become apparent and information can be further discussed and revised.

**Facilitating PRA exercises**

- Always start by introducing yourself and the work you plan to do.
- Plan carefully to make best use of time. Staying in the village will help to do this.
- Be aware of your own attitude or behavior. Don't lecture or take over.
- Be flexible and allow PRAs to evolve naturally and be influenced by villagers.
- Build on exercises that have been done earlier.
- Avoid unnecessary exercises and time wasting.
- Be patient and ask questions. Use checklists to make sure that everything is covered.
- Be observant. Ask about things you see and hear
- Follow your own curiosity. Make use of 6 W's (Who? What? Where? When? How? Why?) Don't be satisfied with the first explanation you get.
- Start by covering simple issues. Move gradually onto more complex topics.
- Record everything including the dates and names of participants. Encourage the CFMG to keep its own records from the start.

- Remember that all the materials you produce belong to the CFMG. Return any charts or maps you take away with you (e.g. for copying) back to the CFMG.
- Reflect on things you have done and learnt after the PRAs have finished. Make notes.

### **Planning & working with Communities**

Plan before going to work with the community to avoid time wasting and to make sure that participants feel they are gaining something. Remember that as a civil servant you are getting paid for your time but community members are not.

Try to work in a small team with your colleagues from the forestry offices and make a plan each time you go to work with the community covering:

- What activities you will do?
- Who you will work with?
- Who will do what?
- How you will do the activities?
- Where you will do the activities?
- When you will do the activities? (make a tentative time table and schedule)
- Why you are doing the activities? (the objective)

After planning the activities, present your ideas to the CF management committee for their consensus and for making any modifications that reflect their ideas and needs. Inform the Gup and Tshogpa about the forthcoming exercise, and check to see if any other outside users need to be involved.

Make sure you bring all the necessary materials, equipment and information e.g. maps of the area showing location of FMUs and existing CFs, paper, pens, flipcharts, etc. Also ensure that any information that was collected during earlier steps is also available.

If necessary practice the PRA tools that you plan to use beforehand with your colleagues. This is important if you have not done them before. Discuss and agree your team's approach and behaviour. Agree on your team roles e.g. who will be responsible for facilitating and who will be responsible for listening or recording. Sharing these roles takes the burden off one person and gives each team member a chance to learn how to be both a facilitator and listener.

Arrange the logistics i.e. how you will get to the venue, food, tea, snacks, etc.

After the PRAs or other work has finished, spend some time analysing the information and ideas collected. Make time after the exercise for this (as soon as possible).

When you get to the village start by meeting the CF Management Committee to discuss the activity and to finalise the timetable. Remember that the timing should fit with their requirements.

Explain the purpose of the visit and clarify the details of each step or exercise you are planning. Inform the community in advance that their participation is needed. Request the CF management committee to assist with this and encourage them to select and inform the participants. These should be people who the community trust and who are knowledgeable. They could be committee members but not necessarily. It is important to include both women and men.

### Seasonal Calendar PRA

#### Objectives

- To find out when people have most time available for communal/individual activities
- To identify traditional forest use patterns, systems and pressures by season
- To document a flow of forest products over time

#### Output

A seasonality charts for the village

#### Equipment

Sticks; seeds of different kinds; samples of forest products to indicate time collected. Chalk can be used to mark out months or season on concrete or hard ground.

#### How to do Seasonal Calendar PRA

1. Choose a place flat enough to work on, and large enough for all to see. Explain to the group the purpose of this exercise.
2. With the stick draw a line across the top of the work area to represents one year. Then hand over the stick and ask people to create their forest-based activities over the year.
3. Lay out samples of different types of forest products in a column along one side of the calendar.
4. Ask participants to divide up their year in any way they choose. It may help to start with seasons – possibly the rainy season first, and then moving on to the other seasons, depending on how they divide their year. Work with a calendar that people understand. For example, they may divide the year into 4 seasons: *sokha* (spring); *bja* (summer); *seykha* (autumn); *guen* (winter). Lay out items such as stones or seeds to represent the seasons.
5. Draw lines to complete the grid as shown in the example and mark on the grid which products are collected during each season. For each month, villagers should show whether it is available or not by placing objects in the grid.
6. Discuss one product at a time to avoid confusion. Use seeds, stones or other objects to show the relative availability of each product indicating low and high yield periods
7. After describing availability of products, draw or put other objects in the grid to show the general workload of men and women during different seasons. They can show peak labour demand periods for different types of forest products such as fodder, fuel, food, and raw materials.
8. Finally, facilitate a discussion on the grid which has been produced. Ask questions for more information, bearing in mind the objectives of the exercise.
9. Highlight the times when labour is available, forest use by season, product availability by season, and any conflicts or complementarities between forestry and agriculture activities
10. When it is finished, make a sketch of the seasonality charts (and later make copies). Use pictures rather than words and numbers to make it easier for everyone to understand.

Example of completed seasonal calendar

Products	Spring	Summer	Autumn	Winter
Timber				
Fire Wood				
Leaf Litter				
Fodder				
Ferns				
Mushrooms				
Grazing (local)				
Grazing (migrant)				
Work Load of Men				
Work Load of Women				

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## ANNEX 19: GLOSSARY

**“By-laws”** are rules having legal status. The rules that the CFMG draws up are for running the CFMG and for managing its forest resources. By-laws are first discussed during the preparation stage of the CFMP and form second part of the CFMP.

**“Cashbook”** is a ledger that is maintained by the CFMG Treasurer. The Cashbook shows the income coming into CFMG funds from contributions, fines, donations, and from sale of products. It also shows expenditure made by the CFMG in terms of payments for use of labour and services, purchases, financing of CFMG property and operations etc.

**“CFMG Property”** includes all movable and immovable property such as like buildings, equipment, machinery, tools, etc.

**“Compensation”** is payment made to CFMG members or outsiders for their labour or other services for the CFMG. The CFMG would benefit from these services or labour.

**“Conflict”** is the situation between individuals or groups as a result of disagreement on certain issues. This may be due to divergent interests for furthering individual motives but which are not acceptable to other individuals or the group as a whole.

**“Conflict Management”** is a process in which the opposing parties are brought together to talk and share their opposing views with each other with the objective of settling their differences with a solution acceptable to both parties.

**“Equality”** means distributing benefits or forest products in a way so that everyone receives the same regardless of their need or their ability to pay.

**“Equity”** is similar to fairness or impartiality in the distribution of benefits or forest products. This means that consideration is given to a person’s needs and ability to pay.

**“Fund Management”** is to systematically keep all records involving money transactions in good order for future records and for monitoring CFMG operations.

**“Institution”** is a group of people with a definite organizational structure that is recognized and that is stable. A CFMG when formally registered and functioning according to the CF Management Plan and By-laws is an institution.

**“Job analysis”** is the process of examining the job descriptions of the CFMG Management Committee members or CFMG members by listing all the tasks that have to do.

**“Labour inputs”** is the contribution by CFMG members of their labour to CFMG activities.

**“Payments”** are expenditures made by the CFMG for use of labour and services, purchases, financing of CFMG property and operations etc.

**“Penalties”** are measures taken against defaulters to the CF rules and bylaws. These can be monetary penalties such as a sum paid by people pay for breaking a certain rule or non-monetary penalties such as a number of days a defaulter has to contribute to working on CFMG forest management activities.

**“Permit”** is a document that is issued by the CFMG Management Committee to CFMG members and outsiders for extracting forest products from CFs.

**“Receipts”** are monies received by the CFMG as income coming to the CFMG funds from contributions, fines, donations, and from sale of products.

**“Record keeping”** is the practice of systematically writing down what is planned e.g. Annual Work Plans, what has happened e.g. progress reports and minutes of meetings, or other information e.g. forest utilisation records, contributions and penalties etc.

**“Strengthening”** is increasing the capacity of CFMGs to take on new tasks through the generation, allocation and use of their human, material and financial resources effectively. If they are unable to do this, then a way of increasing their capacity to perform these activities is through training.