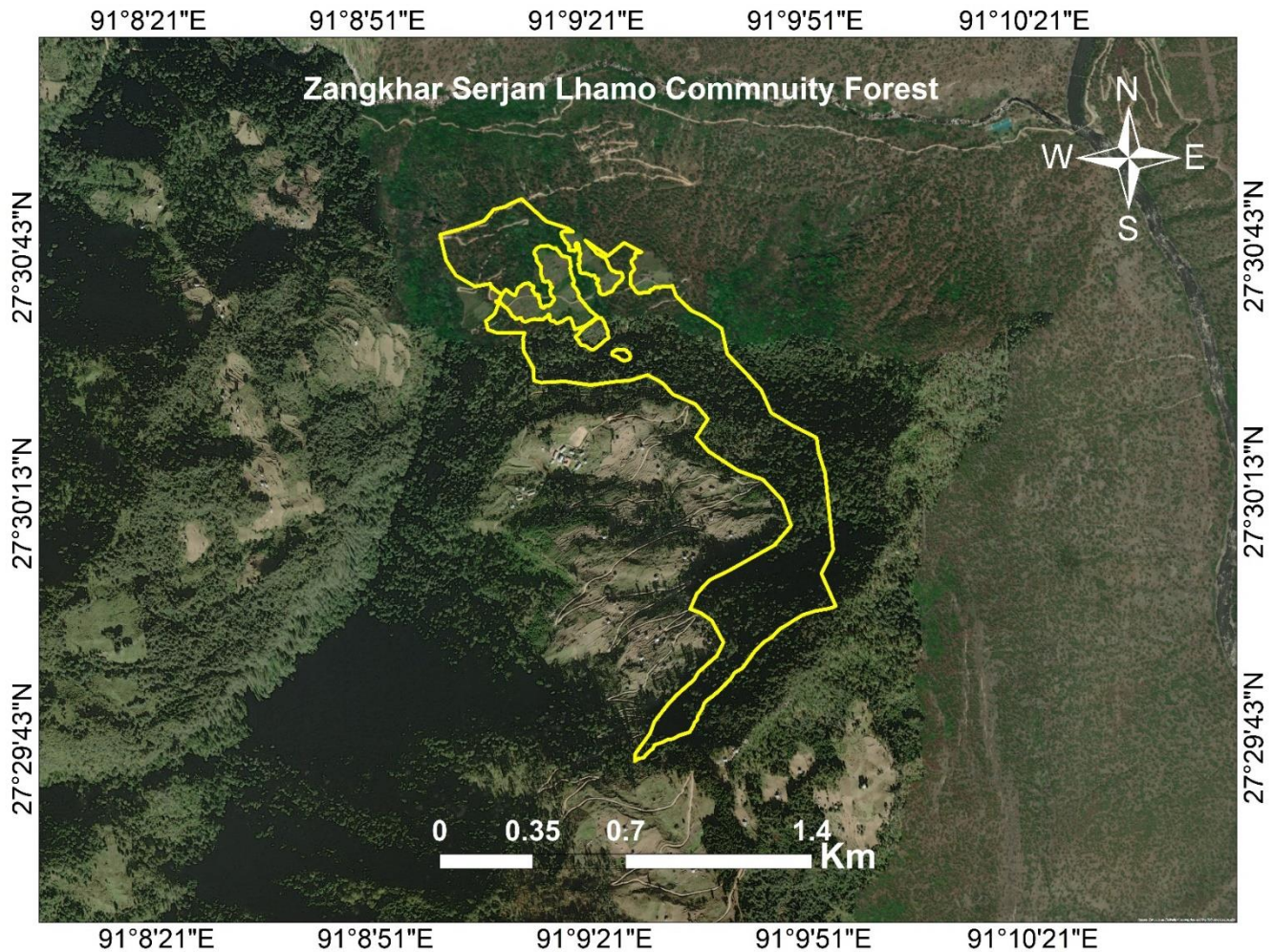


# Zangkar Serjan Lhamo Community Forest Management Plan

(1<sup>st</sup> Revision)



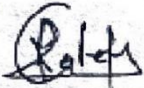

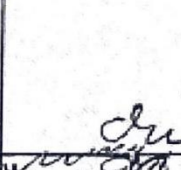

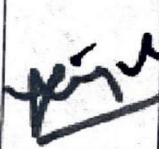
Plan period: April 2023-March 2033

Jaray Gewog  
Lhuentse Dzongkhag  
Phrumsengla National Park

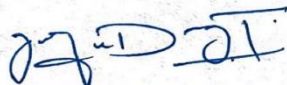
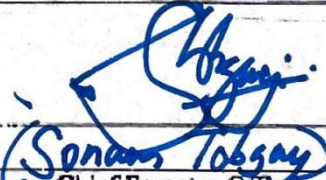
# **APPROVAL SHEET FOR COMMUNITY FOREST MANAGEMENT PLAN**

Name of Community Forest:	Zangkhar Serjan Lhamo CF
Chiwog:	Zangkhar
Gewog:	Jaray
Dzongkhag:	Lhuentse
Production area (Hectare):	70.25
Total CFMG members (No. of HF):	31

## **Prepared and Submitted for Approval**

	Community Forest Management Group	Forestry Representative	Geog Administration	Social Forestry Section	Division/ Park Office
Signature					
Name	Rinchan Galey	Ugyen Tsewang	Kingzang Migdure	Bala Ram Mafchan	Yonten Norbu
Title	Chairperson	Forestry Ranger	Chief Forestry Officer	Head	CFO

## **REVIEW and RECOMMENDED FOR APPROVAL**

Signature		
Name	Tsekhain Dorji	Sonam Tobgay
Title	Focal Officer	Chief Forestry Officer
Division	Forest Resources Planning and Management Division	Forest Resources Planning and Management Division

APPROVED By:



**DIRECTOR  
DEPARTMENT OF FORESTS AND PARK SERVICES**

*Approved vide Notesheet No.DoFPS/FRPMD/FRPIS/CF\_1(b)/2022-2023/1184 on dated June*

*13, 2023*



## **TABLE OF CONTENTS**

ACRONYMS .....	iii
EXECUTIVE SUMMARY .....	iv
PART I: MANAGEMENT PLAN.....	1
1. INTRODUCTION .....	1
2. TRADITIONAL RIGHTS AND RESPONSIBILITIES .....	2
3. COMMUNITY FOREST BOUNDARIES .....	3
4. RECORD OF PLANNING PROCESS .....	5
5. SOCIAL INFORMATION .....	5
6. FOREST INFORMATION (WHOLE FOREST).....	6
7. ANNUAL ALLOWABLE CUT (AAC).....	10
8. FOREST MANAGEMENT.....	10
a. Overall objective of the CF.....	10
b. Forest management Objectives .....	10
c. Demand assessment .....	11
d. Annual Allowable Cut and Demand .....	11
e. Forest management matrix.....	12
f. Silviculture options and systems.....	13
g. Participatory environmental assessment .....	13
h. Climate hazard assessment .....	14
9. FOREST PRODUCES RANKING MATRIX.....	14
10. MONITORING PLAN .....	15
1. ANNUAL PLAN OF OPERATION FOR 10 YEARS.....	16
PART II: COMMUNITY FOREST BY-LAWS .....	17
Membership arrangements.....	17
Management Committee formation .....	17
Terms of Reference for CFMG Management Committee .....	18
TOR of Chairperson.....	18
TOR of Secretary .....	19
TOR of Treasurer .....	19
Roles and Responsibilities of CFMG and CFMG members.....	19

Fees .....	20
Managing CFMG fund and credit.....	21
Benefit Sharing Mechanism.....	22
Meetings.....	23
Conflict Management.....	23
Amendment of CFMP and by-laws .....	23
Powers of the Department.....	24
ANNEXURE.....	25
Annex 1: Approval sheet (last plan) .....	25
Annex 2: CFMG member list .....	26
Annex 3: Forest resource assessment compilation sheet .....	28
Annex 4: Stand & stock table: Number of Trees .....	32
Annex 5: Stand & stock table: Basal area.....	34
Annex 6: Stand & stock table: Volume .....	35
Annex 7: CF sample plot coordinates .....	36

#### List of Figures

Figure 1: Map showing the location of CF .....	3
Figure 2: Land use/ Land cover map of CF .....	4

## ACRONYMS

Ac:	Acre
AAC:	Annual Allowable Cut
Ba:	Basal area
CFO:	Chief Forestry Officer
CF:	Community Forest
CFMG:	Community Forest Management Group
CFMP:	Community Forest Management Plan
DoFPS:	Department of Forestry and Park Services
FNCA:	Forest and Nature Conservation Act
FNCRR:	Forest and Nature Conservation Rules and Regulations
Ha:	Hectare
Hh:	Household
NWFP:	Non-Wood Forest Product
PNP:	Phrumsengla National Park
SRFL:	State Reserved Forest Land
ToR:	Terms of Reference
TL:	Truck load
PR:	Phawan Range

## EXECUTIVE SUMMARY

Zangkar Serjan Lhamo Community Forest was established in the year 2013 which was initiated by only twenty-eight households. At its later year four more households joined the community forest management group. The community forest covering an area of 70.25 hectares was successfully managed by 32 household for the last ten years (2013-2023). With expiry of Community Forest Management Plan for last 10 years, a revised Community Forest Management Plan is drawn for another 10 years (2023-2033).

All the 70.25 ha of the CF is production area. The community will manage the forest with objective; *To manage the community forest sustainably to meet ecological and social goals, and reduce poverty through income generation.*

The Community Forest consist a single block of good condition cool broadleaved and few patches of Chirpine. Canopy density is dense ( $> 70\%$ ) however with moderate spread of mother trees (10- 50 seed trees per ha). Natural regeneration is scattered. Soil in the forest is non erosive and stable ( $>50\%$ ) of soil covered by vegetation with moderate slope (10-30 degree). The forest is exposed to limited biotic pressures (forest fire, grazing, fodder collection, non-wood forest product collection and grazing etc.). Average basal area is estimated at  $17.94 \text{ m}^2/\text{ha}$  with average volume of  $144.76 \text{ m}^3/\text{ha}$ . Annual Allowable Cut is calculated at  $88 \text{ m}^3$  while annual demand is estimated at  $162.09 \text{ m}^3$ .

Timber harvesting, firewood extraction, thinning, and cleaning are prescribed activities inside CF to improve forest condition and meet local requirements. Retention of mother tree, forest plantation and promotion of natural regeneration are priority. Thinning and cleaning of forest floors are of medium and low priority in the CF.

The Community Forest Management Plan and Community Forest By-laws are written in accordance to the Community Forestry Field Manual for Bhutan, Third Edition, 2018, provisions of the Forest and Nature Conservation Act of Bhutan, 1995, Forest and Nature Conservation Rules and Regulations of Bhutan, 2017, and Forest and Nature Conservation (Amendment) Rules and Regulations of Bhutan, 2020.

## **PART I: MANAGEMENT PLAN**

### **1. INTRODUCTION**

The Yabee-Zangkar village of Jaray Gewog, Lhuentse Dzongkhag is located at an elevation of 2200m above sea level, and it's approximately one hour drive from Gorgan, Lhuentse Dzongkhag. It is connected by farm road which is about 20kms from the Mongar-Lhuentse high way. At present the community consists of 32 households, out of which 31 households are member of the Zangkar Serjan Lhamo Community Forest. It falls under Phawan range of Phrumsengla National Park (PNP).

The Zangkar Serjan Lhamo Community Forest was established in the year 2013. It covers a total area of 70.25 hectares (ha) of State Reserved Forest (SRF) land. It was initially managed by 28 households but now with addition of 3 more households, 31 households are managing the CF. First Community Forest Management plan was drawn for 10 years (2013-2023). The Community Forest Management Plan (CFMP) was approved vide Approval Sheet SFD/SFS/2-2 (A)/2013/656 dated 4/4/13.

Members of Community Forest Management Group (CFMG) implemented range of activities in the last 10 years. CFMG and committee meetings, boundary demarcation, forest cleaning, trainings, harvesting, and monitoring are some major activities carried out. The CFMG contributed about 120 days to CF activities. Total of 1004 trees of different size classes were harvested from the CF for various propose (new house construction, house renovation, fencing posts, flag poles and firewood) in the last plan period. The CFMG fund balance stands at Nu. 490358.77/- (Four hundred ninety thousand three hundred fifty-eight & Chh. Seven seven).

This revised CFMP is being drawn for next 10 years (April, 2023–April 2033) with close of CFMP for last 10 years (2012–2022). The current CFMP and CF by-laws are written in accordance to the provisions of the Forest and Nature Conservation Act of Bhutan, 1995 (FNCA 1995), Forest and Nature Conservation Rules and Regulations of Bhutan, 2017 (FNCRR 2017) and Forest and Nature Conservation (Amendment) Rules and Regulations of Bhutan, 2020.

The CF consists a single block due to uniformity of the forest stand. Average basal area (Ba.) is estimated at 17.94 m<sup>2</sup>/ ha with average volume of 144.76 m<sup>3</sup>/ ha. Annual Allowable Cut (AAC) is calculated at 88 m<sup>3</sup> while annual demand is estimated at 162.09 m<sup>3</sup>.

The 31 households (Hh) of Yabee-Zangkar village will manage the CF for sustainable production and supply of timber, firewood, and other forest produces. This will enable CFMG the protection, ownership rights and grant easy access to forest produces as well as aid income generation over the next 10 years.

## 2. TRADITIONAL RIGHTS AND RESPONSIBILITIES

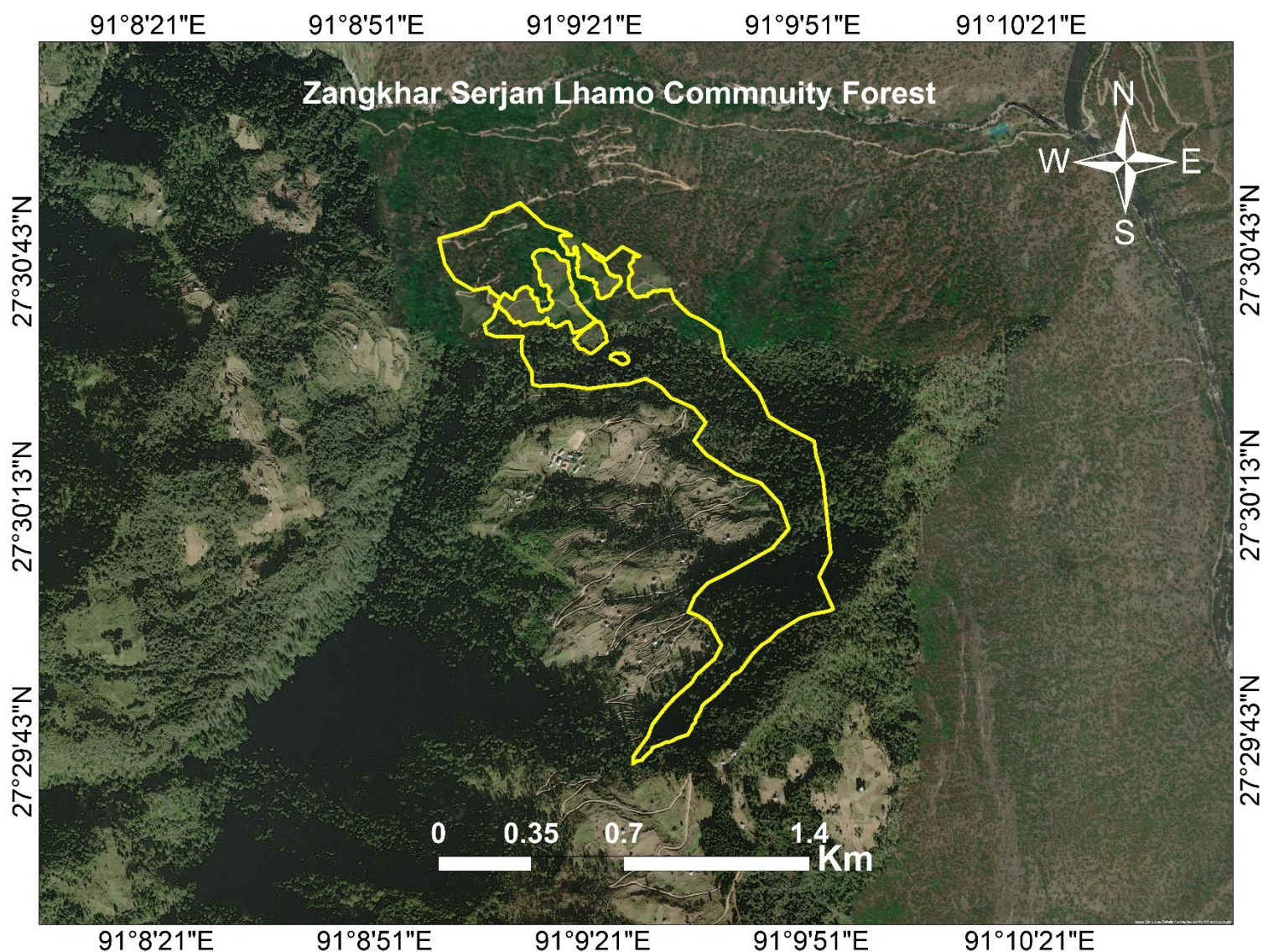
<b>Product/ Service</b>	<b>Rights</b>	<b>Responsibilities</b>	<b>Traditional Management System</b>
<i>Any forest products including NWFPs and services</i>	<i>Who has current rights and what are the rights?</i>	<i>Who and what are the responsibilities?</i>	<i>Past or current practice of traditional management system</i>
Timber	All the CFMG members with a valid permit have equal access to timber resources.	CFMG executive members and DoFPS to issue permit & marking tree. All CFMG members to protect and enhance resources.	Harvest timber sustainably.
Firewood	All the CFMG members with a valid permit have equal access to timber resources	CFMG executive members and DoFPS to issue permit & marking tree.  All CFMG members to protect and enhance resources.	Collect when needed through permit system.
Flag poles	Everyone with valid permit in the community has right to collect.	DoFPs issue permits and carry out marking.	No management systems followed.
NWFPs	All CFMG members have right to collect.	DoFPs issue permits if it needs to be traded.	Collections carried without permit.
Leaf letter collection	Everyone has right to collect.	CFMG executive members to control over collection	Collections carried without permit.
Grazing	All CFMG members have equal right for grazing their cattle	All CFMG members to protect plantation are and saplings	Abide by the by-laws of the CFMP



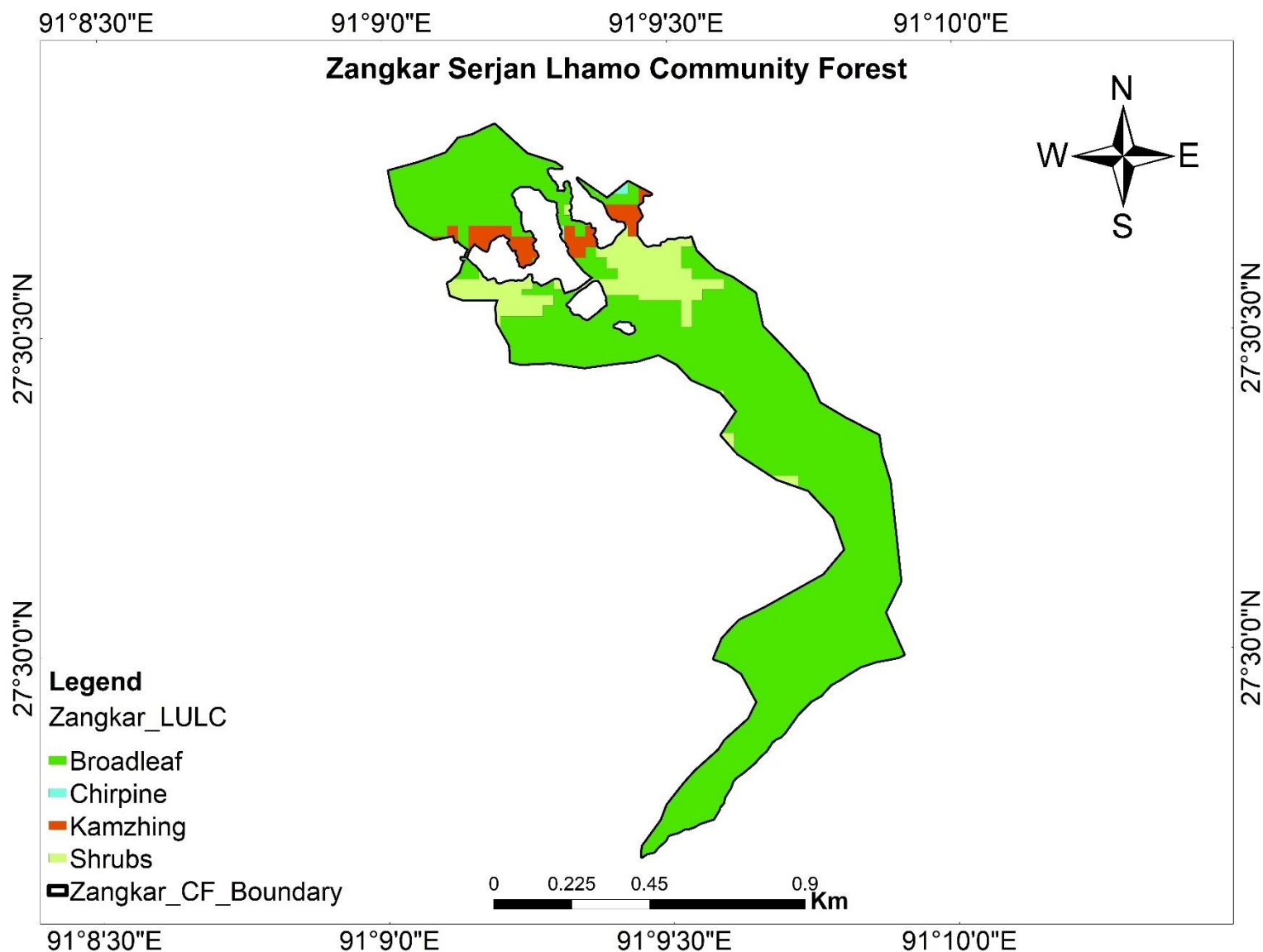
### 3. COMMUNITY FOREST BOUNDARIES

Total community forest area: 70.25ha

Boundaries	Description of the permanent features
West	Langadar
East	Deolingphu
South	Zangkhar
North	Gaychhu



**Figure 1:** Map showing the location of CF



**Figure 2:** Maps showing the forest types of CF

#### 4. RECORD OF PLANNING PROCESS

- I. CF awareness and CFMG formation – February, 2013
- II. Submission of CF application for establishment – February, 2013
- III. CF management plan writing and drafting of CF By-laws – February, 2013
- IV. Submission of CFMP for approval – March, 2013
- V. Approval of CFMP by Department of Forests and Park Services (DoFPS) – April, 2013
- VI. Handover of the ownership certificate to CFMG- May, 2013
- VII. Implementation of CF management plan- May, 2013
- VIII. Revision of CFMP- April, 2023

#### 5. SOCIAL INFORMATION

	Description
Name of the Villages	Yabee-Zangkar
Ethnic groups with CFMG	The are re-settler, came from Jaray Nagtshang. They were once Therpa and Zapa working under powerful Landlord of Jaray Nagtshang (Zhelngo Chojay). They came to this village when serfdom system was abolished in 1958 by third king. They were granted land kidu by third King.
Infrastructure:	Primary School, Basic Health Unit (BHU), farm road, Electricity and Drinking water.
Total household (HH) number of CFMG	31
% Male and % Female	30 and 70
Main source of income	On-farm activities
Cattle population of the CF area	64 (Approx.)
Main Crops	Maize, Cabbage, Chilli and Beans
Cropping pattern	Seasonal cropping
Any other information	-



## 6. FOREST INFORMATION (WHOLE FOREST)

Format 1. Forest Resource Assessment	
Name of Community Forest	Zangkar Serjan Lhamo
Date of Assessment	11-03-2023 to 13-03-2023
Name of block	Zangkar
Block area	70.25 hectares
Name of recorder	Bala Ram Mafchan, Cheten Gyeltshen and Phuntsho Namgay

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

Definitions	
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 re-growth 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

Forest Condition (complete if the block is mainly forest)	
Write the names of main tree species	
Local name	Scientific name
Dongbu shing	<i>Pinus roxburghii</i>
Sisi shing	<i>Qucurs grafithii</i>
Jansang shing	<i>Schima wallichii</i>
Karshing	<i>Megnolia spp.</i>

Plantation				
Is there any plantation?	Yes	<input type="checkbox"/>	Approximate height of planted trees (m)	
	No	<input checked="" type="checkbox"/>		
Year planted		Is the plantation?	Under stocked	<input type="checkbox"/>
			Stocked	<input type="checkbox"/>
			Overstocked	<input type="checkbox"/>

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

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

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

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

Block Condition – Summary (Use the forest condition class box below to get an average condition for the block)			
Poor <input type="checkbox"/>	Average <input checked="" type="checkbox"/>	Good <input type="checkbox"/>	Very Good <input type="checkbox"/>
Does the main forest canopy consist of large, mature trees?		Yes <input checked="" 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
<b>Open spaces (complete if there are significant open spaces in the block)</b>				
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 checked="" type="checkbox"/>	Man-made	<input type="checkbox"/>	Mixture
			<input type="checkbox"/>	Predominantly forest
			<input type="checkbox"/>	

Main fodder species being used (list 3 only)	
Local name	Scientific name
Redang shing	<i>Ficus semicordata</i>
Sisi shing	<i>Quercus griffithii</i>
-	-

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

Use pattern	Seasonal	<input checked="" type="checkbox"/>	All year	<input type="checkbox"/>
Type of user	Migratory	<input type="checkbox"/>	Local	<input checked="" type="checkbox"/>
			Both	<input type="checkbox"/>

Catchment Condition (use catchment condition class box below)	
(i) Catchment condition – soil cover	
Soil cover	Soil cover class
> 50% of the soils are covered by vegetation	high <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/>	Moderately critical	<input type="checkbox"/>
Highly critical	<input type="checkbox"/>		

Catchment Condition Class Box			
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

Fauna (List any animal or bird species seen or which are known from the block)	
Local Name	Scientific name
Ri-Phag	<i>Sus scrofa</i>
Dom	<i>Ursus thibetanus</i>
Shauwa	<i>Cervus unicolor</i>
Kasha	<i>Muntiacus mutjack</i>
Pra	<i>Macaca assamensis</i>
Raksha	<i>Trachypithecus pileatus</i>
Zee	<i>Panthera pardus</i>
Rufous-necked hornbil	<i>Aceros nipalensis</i>
Rekawa	<i>Kalij pheasant</i>
Prazela	<i>Prionodon pardiclor</i>

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

<b>Potential Management Options (list any potential management options for the CF/block)</b>	
1	Thinning and selective felling of mature trees to enhance regeneration of seedlings
2	Cleaning and clearing of under growth bushes
3	Promote natural regeneration
4	Need plantation in some open areas

## 7. ANNUAL ALLOWABLE CUT (AAC)

<b>Annual Allowable Cut Table (in M<sup>3</sup>)</b>							
AAC	Drashing	Cham	Tshim	Dangchung	Firewood	Flag Poles	Fencing posts
Block I	47.443	7.86	4.43	1.19	18.09		
<b>Total AAC</b>	<b>47.443</b>	<b>7.86</b>	<b>4.43</b>	<b>1.19</b>	<b>18.09</b>		

## 8. FOREST MANAGEMENT

### a. Overall objective of the CF

- i. To manage the community forest sustainably to meet ecological and social goals, and reduce poverty through income generation.

### b. Forest management Objectives

- i. To enhance forest condition through thinning, pruning and cleaning.
- ii. To protect forest resources from depletion and extraction by outsider and forest fire.

- iii. To maintain and manage sustainable utilization of resources to meet CFMG's requirements of timber, firewood and other resources.

c. Demand assessment

Forest Produce Demand Assessment (Summary)			
Produce	Annual household requirement (estimated)		Number of households using the produce
	No. of Trees	Volume (m <sup>3</sup> )	
Drashing	45	65.36	5
Cham	60	17.1	5
Tshim	60	7.23	5
Dangchung	0		0
Firewood	31	27.85	All
Fencing Posts	160	36.19	4
Flag poles	150	8.36	3
Shingle	0	0.00	0
NWFPs	0	0.00	0

d. Annual Allowable Cut and Demand

AAC and Demand							
Produce	Total AAC		Total Annual Demand		Difference		Comments
	No. of Trees	Volume (m <sup>3</sup> )	No. of Trees	Volume (m <sup>3</sup> )	No. of Trees	Volume (m <sup>3</sup> )	
Drashing	23	47.3	45	65.36	-22	-17.93	Shortage, meet from SRF
Cham	13	7.86	60	17.1	-47	-9.24	Shortage, meet from SRF
Tshim	19	4.43	60	7.23	-41	-2.8	Shortage, meet from SRF
Dangchung	6	1.19	0		6	1.19	Excess
Firewood	14	18.09	31	27.85	-17	-9.76	Shortage, meet from SRF
Fencing post	32	11.59	160	36.19	-128	-24.6	Shortage, meet from SRF
Flag poles	0	0.00	150	8.36	-150	-8.36	Shortage, meet from SRF

e. Forest management matrix

<b>Management procedures</b>						
<b>Products</b>	<b>Drashing</b>	<b>Cham</b>	<b>Tsim</b>	<b>Dangchung</b>	<b>Firewood</b>	<b>Posts</b>
Main Species	Chirpine & Champak	Chirpine	Chirpine	Chirpine	Quarcus	Quarcus
Problems	Shortage	Shortage	Shortage	Adequate	Shortage	Shortage
Opportunities	Improve stands	Improve stands	Improve stands	Improve stands	Improve stands	Improve stands
	Retain mother trees and met shortage from SRF	Met shortage from SRF	Met shortage from SRF	Use in other purpose	Met shortage from SRF	Use trees unfit for timber And meet shortage from SRF
	Protect other young timber species	Protect other young timber species	Protect other young timber species			
Management Objectives	<ul style="list-style-type: none"> <li>✓ To enhance forest condition through thinning, pruning and cleaning.</li> <li>✓ To protect resources from illegal activities and forest fire.</li> <li>✓ Income generation in long term (revenue/ permit fees).</li> </ul>					
Activities	Fire line Construction at forest covered with Chirpine Clearing/ cleaning forest floor Pruning Retention of mother trees Thinning Promote natural regeneration					
Procedures	<ul style="list-style-type: none"> <li>- Seek support from relevant stakeholders</li> <li>- CFMG to contribute labour,</li> <li>- Concern forest office to support technically</li> </ul>					
Responsibility	CFMG, Concerned Forest Office & FRPMD/ DoFPS					



f. Silviculture options and systems

Utilization	Improvement	Protection	Silviculture system
As the resources in the CF is deficit, requirement of all categories of timber more than ACC shall met from the SRF/LFMA.	Any form of timber shall harvest as per the provision of ACC reflected in the management plan. Lops and tops shall remove to enhance the under growth of stands Pruning and thinning must carry out the growth of clean bole stands.	The CFMG shall carry out the ad-hock and planned patrolling to control and avoid the illegal activities inside the CF. The fire line at fire prone area must construct to avoid the outbreak of forest fire. Plantation and any saplings must be protected.	Single tree selection system must follow to minimize the damage to surrounding.

g. Participatory environmental assessment

Participatory Environmental Assessment Chart								
Proposed activity in CF	Potential environment effect			Potential socio-economic effects				
	Soil	Water	Wild animals	Plants	Traditional forest use	Cultural and religious	Local employment	Local benefits from forest produce
Timber extraction	--	--	--	+++	0	0	0	+++
Firewood extraction	--	--	--	+++	0	0	0	+++
Water sources protection	+++	+++	+++	+++	0	0	+++	+++
Patrolling	+++	+++	+++	+++	+++	+++	0	+++
Grazing control	+++	+++	+++	+++	0	0	0	---
Plantation	+++	+++	---	---	0	0	0	+++
Clearing	---	---	---	+++	0	0	0	+++
Retention of mother trees	+++	+++	+++	+++	0	+++	0	0
Positive effects shown by +++, Negative effects shown by ---, No effect (or not relevant) shown by 0								
Procedure to address potential negative environmental effects								
Activity	Procedure							

Timber harvesting	- Restrict timber harvesting from locations where the slope is greater than 45°. - Restrict felling of trees within 100m radius of any water bodies. - Follow single tree fell system to minimize the damage to surrounding.
Firewood extraction	- Restrict harvesting from places where the slope is greater than 45°. - Restrict felling of trees within 100m radius of any water bodies. - Extraction limited to meet the CFMG demands.
Grazing control	- Follow seasonal grazing with monitor looking after cattle. - Restrict free grazing to reduce damage of saplings.
Thinning	- Remove only dead, diseased and dying trees on gradual basis.
Clearing	- Restrict clearing to genuine needs only.

#### h. Climate hazard assessment

	Windstorm	Flashflood	Anima disease	Reduced crop yield	Forest fire
Windstorm	X	Windstorm	Animal disease	Reduced crop yield	Windstorm
Flashflood		X	Flashflood	Reduced crop yield	Flashflood
Anima disease			X	Reduced crop yield	Forest fire
Reduced crop yield				X	Reduced crop yield
Forest fire					X
Results: 1 <sup>st</sup> = Reduced crop yield; 2 <sup>nd</sup> = Windstorm and flashflood; 3 <sup>rd</sup> = Forest fire and animal diseases					

#### 9. FOREST PRODUCES RANKING MATRIX

Species local name ↓	Uses →	Drashing	Cham	Tsim/ dangchung	Fuel wood	Flag poles/ fencing posts	Leaf litter
Kar shing	Preference	xxx	xxx	xxx	x	x	0
	Availability	y	y	y	y	y	yy
Sisi shing	Preference	0	0	0	xxx	xxx	x
	Availability	z	z	z	y	y	yy
Tongphu shing	Preference	xxx	xxx	xxx	x	xxx	0
	Availability	yy	yy	yy	yy	yyy	z
Guma shing	Preference	0	0	0	xxx	xx	x
	Availability	y	y	y	y	yy	yy
Tago shing	Preference	xxx	xxx	xxx	x	0	0
	Availability	y	y	y	y	y	y
Yae shing	Preference	xx	xx	xx	x	0	0
	Availability	yy	yy	y	y	y	yy
Jan shing	Preference	xx	x	x	x	x	x

*Revised Community Forest Management Plan (April, 2023 – March, 2033)*

	Availability	y	y	y	y	y	y
Meham shing	Preference	0	0	0	xxx	xx	x
	Availability	y	y	y	y	y	yy
xxx – high preference, xx – moderate preference, x – least preferred, 0 – not at all preferred. yy – abundant, yy – moderately available, y – scarce, z-not available at all							

## 10. MONITORING PLAN

<b>Forest Resources Monitoring Plan</b>				
<b>Objective</b>	<b>Indicator</b>	<b>How it will be monitored</b>	<b>Responsibility</b>	<b>Comments</b>
Sustainable management of timber species	Timber harvested as per prescribed AAC in the CF management plan	Monitor from CFMG record of forest product utilization.	CFMG committee members	Marking to be done by LRO staff, as per AAC.
To enhance water sources of the CF	Protected and improved existing water source	Assess quality and quantity of water	CFMG members	Technical support form DoFPS
To protect forest resources from outsiders' intervention, illegal activities	No. of illegal case compounded	From the record of fines and compensation	CFMG executive members	LRO staff will support
<b>Social and institutional Monitoring Plan</b>				
<b>Objective</b>	<b>Indicator</b>	<b>How it will be monitored</b>	<b>Responsibility</b>	<b>Comments</b>
To enhance level of income at household level	Cash inflow into CF accounts	From the record CF budget maintained by treasurer	CFMG executive members	LRO staff should look after it during CF monitoring and evaluation.
Enhanced CFMG governance	No. of meeting conducted and level of participation of CFMG members in meetings, study tour and training	From the records maintained of CF activities	CFMG executive members and CFMG members	
Equitable distribution of CF benefits	Proportion of income and products from CF distributed to each household	From the record of maintained for benefit sharing.	CFMG executive members and CFMG members	
<b>Environmental Monitoring Plan</b>				
<b>Objective</b>	<b>Indicator</b>	<b>How it will be monitored</b>	<b>Responsibility</b>	<b>Comments</b>

*Revised Community Forest Management Plan (April, 2023 – March, 2033)*

Minimized loss of biodiversity	Presence of wild life	Report sighting of wild animals	CFMG members to report	LR Office to compile
Minimize forest degradation	Availability of forest produce	Adequate supply of forest products from CF	CFMG members report	
	No. of Forest fire incident	Forest fire record	CFMG members to monitor and report	

1. ANNUAL PLAN OF OPERATION FOR 10 YEARS

Location	Activity	Year										Responsibility
		1	2	3	4	5	6	7	8	9	10	
Zangkar	Boundary demarcation											CFMG and the Phawan Range staff
Zangkar	Clearing bushes nearby water sources											CF executive members to lead the work and all CFMG to participate
Zangkar	CFMG Meeting											All CFMG chaired by the chair person
Zangkar	Timber harvesting											Chair person, applicant and forestry in-charge
Zangkar	Book and record keeping training											Concern Ranger/ CF focal
Zangkar	Silviculture Training											

## **PART II: COMMUNITY FOREST BY-LAWS**

### **Membership arrangements**

1. Zangkar Serjan Lhamo Community Forest consist of 31 households who are now permanent resident of Yabe-Zangkar village, Jaray Geog under Lhuentse Dzongkhag.
2. Extension of Gung and Thram from the current members shall be allowed to join the CF after payment of Nu. 1500/-, however the benefit shall be entitled as usual irrespective of the number of the year he/she has join as CFMG member.
3. New settlement shall be allowed to join after payment of Nu. 10,000/- per member, however the benefit shall be as entitled as usual irrespective of the number of the year he/she has join as CFMG member.
4. Any member willing to discontinue the membership with or without genuine case shall be allowed without imposition of any fine and shall receive equal benefit sharing of each individual.
5. Any member who has once resigned from the group and willing to re-join the CFMG shall allowed only after payment of Nu. 50,000/-.
6. Only the legal members of the Yabee-Zangkar communities will be entitles to join as CFMG member.

### **Management Committee formation**

1. The CFMG management committee constitutes of three key members; Chairman, Secretary, Treasurer.
2. The CFMG management committee members will be elected from within the CFMG members during CF annual meeting through votes of majority.
3. The CFMG management committee members are not allowed to leave the post until the maturity of their term unless unavoidable.
4. The CFMG management committee members will be terminated from the management committee if he/she is found indulged in corruption.
5. The CFMG management committee members need to change every three years.



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

1. Every member has right to become a management committee member unless he or she meets the following criteria:
  - He/she should be a legal member of the CFMG.
  - He/she should be able to read and write.
  - He/she should be above 18 and below 60 years of age.
2. The chairman, secretary and treasurer shall serve for a period of 3 years.
3. The CFMG may re-elect a member for 2<sup>nd</sup> term if he/she is found effective and efficient.
4. The CFMG management committee shall only be allowed to withdraw due to unavoidable circumstances but will remain as CFMG member.
5. If any executive member found indulging in corruption practices (miss use of CF fund, miss use of power & negligence of responsibilities), he/she shall immediately terminate from his/her post.
6. The amount he/she have embezzled should refund in the CF account within the period of two months from the date of embezzlement and continuation of membership shall decide by CF members. If terminated from the CF member, no benefit shall be entitled.

### **TOR of Chairperson**

1. Ensure CF activities are implemented on time as prescribed in CF management plan.
2. Liaise between Government and CFMG.
3. Corresponds with various stakeholders and offices.
4. Accord approval or sanction the forest products to CFMG members.
5. Initiate, conduct and attend meetings representing the CF.
6. Resolve conflict, if any within community level.
7. Impose fines and penalties to defaulters as per by-laws.
8. Attend guests and visitors from outside who visit the community forest.
9. Shall countersign on forms for withdrawal of group fund from bank.
10. Identify and select the CF representatives/ nominations with other committee members for study tours, trainings and any other related to CF.

### **TOR of Secretary**

1. Maintain updated and valid records of all activities of the CF and both timber and NWFP products.
2. Officiate as chairperson and conduct meeting in absence of chairperson. He can also sign cheques and withdraw CF fund on behalf of the Chairperson.
3. Submit periodical progress and other CF related reports.
4. Minute all meetings related to CF management.
5. Identify and select CF representatives/ nominations with other committee members for study tours, trainings and any other related to CF.

### **TOR of Treasurer**

1. Maintain all financial records.
2. Officiate as Chairman and Secretary in absence of the two.
3. Present financial statement/ report during CF annual meeting.
4. Collect and deposit the fees, fines and royalties in CF bank account.
5. Issue forest product collection permit.
6. All cheques regarding the financial transaction of CF have to be signed by the Chairman, Secretary and Accountant.
7. Identify and select CF representatives/ nominations with other committee members for study tours, trainings and any other related to CF.
8. Report financial obligations and statues to CFMG members.

### **Roles and Responsibilities of CFMG and CFMG members**

1. Every member shall participate in every activity related to CF management.
2. Co-operate with CFMG management committee members in managing the CF.
3. Shoulder equal responsibilities in protecting CF area.
4. Attend CF meetings both annual and ad-hoc.
5. Maintain the concept of sustainability, equity and justice.

6. Accept or reject any CFMG management committee members.
7. Report any illegal activities inside CF either to CFMG committee member or concern forest official.
8. Proceed auditing of CF fund if necessary.
9. Render all necessary support to CFMG management committee at all time.

### **Fees**

Sl. No	Forest products/ Membership fees	Procedures	Fees (Nu.)
1	Membership	Membership fee for initial establishment	200/- per Hh.
2	Re-joining CF member	Re-joining CF membership	50,000/- per Hh
3	Multifaction of members	Joining of CF membership due to multiplication of Gung and tharm	1,500/- per Hh
4	New membership	New membership for new settlement	10,000/- per Hh
5	Drashing	Allotment shall made as per the entitlement and ACC Shortage will meet from SRF	40/- per tree
6	Cham		30/- per tree
7	Tsim		10/- per tree
8	Dangchung		4/- per Dangchung
9	Fencing Poles	Restricted to non-timber trees and shortage will meet from SRF	10/- per post
10	Firewood	Not more than 1 truckloads per hh. Only dead diseased and malformed tree. And shortage will meet from SRF	20/- per TL
11	Flagpoles	Should follow Forest and Nature Conservation Rule and Regulation of Bhutan rural allotment procedures for availing the resources	12/- per flagpole
15	Sale of timber	At latest market rate of NRDCL to outsiders and 10% below the latest market rate of NRDCL to the CF members	At market rate of NRDCL to outsider and 10% below to CF members
Note: Any provisions left out or uncovered in here shall be dealt according to the provisions of the existing Forest and Nature Conservation Act of Bhutan, Rules and Regulations and other guidelines provided under this Act from time to time.			

## Fines and Penalties

Timber Products	CFMG Members		Non CFMG members	
	Fees/penalties	Products	Fees/ penalties	Products
Drashing	5,000/- per tree	Seized	25,000/- per tree	Seized
Cham	3,000/- per tree	Seized	5,000/- per tree	Seized
Tsim	1500/- per tree	Seized	3000/- per tree	Seized
Dangchung	100/- per tree	Seized	500/- per tree	Seized
Fencing Poles	10/- per tree	Seized	20/- per tree	Seized
Firewood	250/- per tree	Seized	500/- per tree	Seized
Flagpoles	100/- per tree	Seized	500/- per tree	Seized
NWFPs (Any)	100/- per load	Seized	150/- per load	Seized
Hunting	500/- pre instance		1000/- pre instance	
Forest Fire	Nu. 5000/acre	Not applicable	As per the FNCRR 2017	Not applicable
Waste disposal in CF	150/ per instance	Not applicable	250/- per instance	Not applicable
Damage to plantation by cattle grazing	Nu. 10/seedlings Shall be made to replant the damaged sapling/seedlings.	Not applicable	Nu. 50/seedlings Shall be made to replan the damaged sapling/seedlings	Not applicable
Absent in meetings and labour contribution/ work	250/- per day. Any rights on forest produce will not be entertained unless the due is cleared.			
Note: Any provisions left out or uncovered in here shall be dealt according to the provisions of the existing Forest and Nature Conservation Act of Bhutan, Rules and Regulations and other guidelines provided under this Act from time to time.				

## Managing CFMG fund and credit

1. Initial contribution of Nu. 200/- per member as membership fee for initial establishment.
2. Fund generated from CF must deposited in the bank account (BDBL) operated for Zangkar Serjan Lhamo Community Forest
3. For community development activities only 20% of CF fund can be used.
4. Accountant shall keep record of detail fund information of CF fund and share to the CFMG members in CF meetings.

5. Any CF member attaining training, workshop, meeting and other works related to the CF, shall paid Nu. 300/ day as Dailly Allowance (DA) within CF area and Nu. 500/day outside CF area as TA and DA only if the organizer agency doesn't pay them.
6. The CF members can avail loan amount not more than 50,000/- at interest of 5% annually for the term of one year only.
7. If loan lender fails to liquidate the loan amount on due date, even a single day delay will be penalised the additional one more year's interest rate (5%) in addition to the principal amount and the earlier 5% annual interest.
8. Any member miss using the CF fund shall refund double the amount miss used and his/her CF membership shall decide by the CFMG members.
9. If any issue that requires court involvement, the expenditure incurred during the court proceeding shall bear by the concern member who is responsible of cause of the issue.

### **Benefit Sharing Mechanism**

1. All CF member has the rights to any forest product from CF. However, they need to obtain valid permits from Chairman and trees have to be marked before felling.
2. All forest products shall be shared among CFMG members as per needs and requirements.
3. The individual allotment shall be strictly for rural use and sale of such products are strictly prohibited. If any member found guilty of such offence, the timbe will be seized and auctioned thereby the money will be deposited in the CF account.
4. Timbers for renovation of community Lhakhangs, schools, and outreach clinic will be free of royalty provided that it falls inside the community and is the responsibility of community.
5. Excess timbers from the CF members will be sold in the name of CF but with appropriate compensation to the beneficiary.
6. The timbers for victims of natural disaster shall be provided free of royalty.
7. Any CF members who require more than what is prescribed in the CF management plan, selling price prescribed in the by-laws will be charged.
8. Outsiders and Non-members are not allowed to collect any types of forest resources from the designated CF.



9. All CFMG members have traditional grazing rights in the CF but are restricted from entering the plantation sites if any.
10. The CFMG members irrespective of all wealth groups will equally contribute the labour for activities related to CF management.
11. CFMG members are liable for prescribed royalty for commercial NWFPs (if any) collection.

### **Meetings**

1. The CFMG will conduct at least two meetings in a year.
2. All issues related to CF planning, implementation and monitoring will be discussed.
3. Discuss and review activities implemented in past one year.
4. No members shall miss any of the meetings or CF related activities.
5. However, unavoidable circumstances such as demise, sick and attending other important works related to legal issues shall be considered.

### **Conflict Management**

1. The CFMG management committee members shall resolve any conflict relating CF at grass root level.
2. The case shall be forward to Gewog Administration if the committee members are not in position to resolve.
3. The conflict still unresolved shall be forwarded to concern Forestry Office for solution.
4. Unresolved shall then be forward to Royal Court of Justice.

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

1. Community Forestry Management Plan (CFMP) period shall be for a period of 10 years.
2. Amendments may be initiated if there arise any important issues that require major changes.
3. The CFMG management committee members shall ensure to inform Forestry Office on any amendment of CFMP.
4. Amendment shall be done any year within the 10 years plan period with prior permission from the Department (DoFPS).

5. CFMG and Forestry Office shall submit detail report about the amendments of CFMP to the Department.

### **Powers of the Department**

1. The department shall provide constant advice, conducive to policy frameworks and technical support.
2. The department shall evaluate performance of the CF and assess in terms of their activity implementation as per prevailing FNCRR and CFMP.
3. The department shall intervene if there are any diversion and negligence by the CFMG.
4. The department may question the CFMG pertaining to CF and ask for reports and data periodically.
5. If CFMG grossly mismanage the CF as a whole, it is in the ultimate power of the Department to terminate and revert back the CF to SRF land.
6. This shall include revoking the CF certificates, Management Plan, Marking, Passing Hammers and all documents of the CF.
7. The influence and control over minerals, endangered flora and fauna species shall lie with the Department inline to the prevailing rules and regulations over times.
8. Any provisions not covered within this CF by-law shall invite the Department to exercise its power in accordance to the prevailing ACT and FNCRR of Bhutan.

## ANNEXURE

### Annex 1: Approval sheet (last plan)

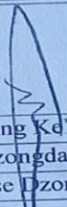
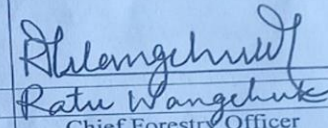
#### Approval Sheet

Name of the CF	Zangkhar Serjan Lhamo Community Forest
Chewogs	Zangkhar
Gewog	Jarey
Dzongkhag	Lhuentse
Total Community Forests Area (Ha)	175 acres (70.8ha)
Total CFMG member (HH)	28 households

#### Prepared and submitted for approval

Agencies	Community Forestry Representative	Gewog Forestry Representative	Territorial/Parks Representative	Gewog Tshogdu	Dzongkhag Forestry Representative
Signature					
Name	Sonam Dorji	Lungten Tshering	Kelzang Drukpa	Kinzang Minjur	Sonam Gyeltshen
Title	CF Chairman	Gewog Forest Ranger	Park Range Office, Phowan, TNP	Gup, Jarey Gewog	Dzongkhag Forestry Officer

#### Administrative and Technical Recommendations

		
Name	Tshering Ke'zang	Ratu Wangchuk
Title	Dzongdag	Chief Forestry Officer
Dzongkhag/Divisions	Lhuentse Dzongkhag	Thrumsingla National Park

Director General  
Department of Forests and Parks Services

SFED/SFS/2-2(A)/2013/656 dated 4/4/13

**Annex 2: CFMG member list**

CFMG member list						
Sl. No	Name	CID No.	Gung	Thram	Chewogs	Signature/Thump impression
1	Karma Rinchen	10602001592	Chha-2-207	290	Zangkar	
2	Karma Yangzom	10602001581	Chha-2-257	187	Zangkar	
3	Kencho Tshering	10602001536	Chha-2-208	273	Zangkar	
4	Kunzang Dema	10602001520	Chha-2-52	173	Zangkar	
5	Chophela	10602001436	Chha-2-46	172	Zangkar	
6	Deki Yangzom	10602001493	Chha-2-50	134	Zangkar	
7	Ugyen Zangmo	10602001530	Chha-2-51	176	Zangkar	
8	Jamyang Mo	10602001410	Chha-2-44	180	Zangkar	
9	Pema Lhamo	10602001550	Chha-2-55	65	Zangkar	
10	Sonam Dolma	10602001393	Chha-2-42	144	Zangkar	
11	Tshering Pelmo	10602001365	Chha-2-206	335	Zangkar	
12	Chophel	10602001405	Chha-2-Nill/10	259	Zangkar	
13	Kencho Mo	10602001355	Chha-2-39	169	Zangkar	
14	Tsewang Dema	10602001412	Chha-2-212	342	Zangkar	
15	Chimi Dema	10602001579	Chha-2-70	187	Zangkar	
16	Yeshey Choden	10602001537	Chha-2-Nill/11	269	Zangkar	
17	Deki Choden	10602001481	Chha-2-49	170	Zangkar	
18	Kezang Yeshey	10602001428	Chha-2-45	181	Zangkar	
19	Jamyang Choden	10602001562	Chha-2-56	178	Zangkar	
20	Chimi Wangmo	10602001539	Chha-2-54	183	Zangkar	
21	Jamyan Dema	10602001377	Chha-2-41	176	Zangkar	
22	Kinley Me	10602001398	Chha-2-42	177	Zangkar	
23	Choden	10602001454	Chha-2-48	182	Zangkar	
24	Yeshy Tshomo	10602001458	Chha-2-48	281	Zangkar	
25	Pema Choden	10602001607	Chha-2-59	185	Zangkar	
26	Nim Derji	10602001590	Chha-2-58	179	Zangkar	



27	Chimi Wangmo	10602001360	Chha-2-39	169	Zangkar	
28	Sherab Tenzin	10602001382	Chha-2-41	176	Zangkar	
29	Rinchen Dorji	10602001527	Chha-2-48 53	182 150	Zangkar	
30	Pelden Dorji	10602001488	Chha-2-N1/15	253	Zangkar	
31	Sangay Wangdi	10602001448	Chha-2-47	171	Zangkar	

**Annex 3: Forest resource assessment compilation sheet**

<b>Format 4: Quantitative Forest Resource Assessment compilation sheet (broad leave, timber)</b>								
Name of CF: Zangkar Serjan Lhamo Community Forest								
Block name: Zangkar					Block area: 70.8 ha (Production area)			
Number of Plots: 48					Compiling date: 20/3/2023			
<i>col1</i>	<i>col2</i>	<i>col3</i> (3 decimals)	<i>col4</i> (3 decimals)	<i>col5</i> (3 decimals)	<i>col6</i> (0 decimals)	<i>col7</i> (2 decimals)	<i>col8</i> (2 decimals)	<i>col9</i> (2 decimals)
dbh class (cm)	basal area (m <sup>2</sup> )	class volume (m <sup>3</sup> )	plot size (ha)	expansion factor	Tally	nrha (stems/ha)	basha (m <sup>2</sup> /ha)	volha (m <sup>3</sup> /ha)
10-19	0.017	0.073	0.05	0.417	1	0.42	0.01	0.03
20-29	0.047	0.265	0.05	0.417	3	1.25	0.06	0.33
30-39	0.093	0.627	0.05	0.417	4	1.67	0.16	1.05
40-49	0.156	1.202	0.05	0.417	15	6.25	0.98	7.51
50-59	0.233	2.021	0.05	0.417	3	1.25	0.29	2.53
60-69	0.327	3.139	0.05	0.417	5	2.08	0.68	6.54
70-79	0.436	4.518	0.05	0.417	7	2.92	1.27	13.18
80-89	0.561	6.252	0.05	0.417	1	0.42	0.23	2.61
90-99	0.701	8.346	0.05	0.417	1	0.42	0.29	3.48
100-109	0.858	10.824	0.05	0.417	0	0.00	0.00	0.00
110-119	1.030	13.709	0.05	0.417	0	0.00	0.00	0.00
120-129	1.217							
<b>Sum for all dbh classes</b>						<b>16.67</b>	<b>3.97</b>	<b>37.25</b>
Explanation:								
<i>col3</i>	: look up in volume table, for given species group and dbh class				<i>col6</i>	: count and fill in		
<i>col4</i>	: plot size for given dbh class				<i>col7</i>	: col5*col6		
<i>col5</i>	: (1/col4)/ (nr. Of plots)				<i>col8</i>	: col7*col2		
					<i>Col9</i>	: col7*col3		
(When rounding: round to the nearest EVEN digit, e.g., 0.635 to 0.64 but 0.665 to 0.66)								

<b>Format 4: Quantitative Forest Resource Assessment compilation sheet (broad leave, non-timber)</b>								
Name of CF: Zangkar Serjan Lhamo Community Forest								
Block name: Zangkar					Block area: 70.8 ha (Production area)			
Number of Plots: 48					Compiling date: 20/3/2023			
<i>col1</i>	<i>col2</i>	<i>col3</i> (3 decimals)	<i>col4</i> (3 decimals)	<i>col5</i> (3 decimals)	<i>col6</i> (0 decimals)	<i>col7</i> (2 decimals)	<i>col8</i> (2 decimals)	<i>col9</i> (2 decimals)
dbh class (cm)	basal area (m <sup>2</sup> )	class volume (m <sup>3</sup> )	plot size (ha)	expansion factor	Tally	nrha (stems/ha)	basha (m <sup>2</sup> /ha)	volha (m <sup>3</sup> /ha)
10-19	0.017	0.073	0.05	0.417	47	19.58	0.33	1.43
20-29	0.047	0.265	0.05	0.417	62	25.83	1.21	6.85
30-39	0.093	0.627	0.05	0.417	36	15.00	1.40	9.41
40-49	0.156	1.202	0.05	0.417	16	6.67	1.04	8.01
50-59	0.233	2.021	0.05	0.417	9	3.75	0.87	7.58
60-69	0.327	3.139	0.05	0.417	2	0.83	0.27	2.62
70-79	0.436	4.518	0.05	0.417	1	0.42	0.18	1.88
80-89	0.561	6.252	0.05	0.417	1	0.42	0.23	2.61
90-99	0.701	8.346	0.05	0.417	1	0.42	0.29	3.48
100-109	0.858	10.824	0.05	0.417	0	0.00	0.00	0.00
110-119	1.030	13.709	0.05	0.417	0	0.00	0.00	0.00
120-129	1.217							
<b>Sum for all dbh classes</b>						<b>72.92</b>	<b>5.84</b>	<b>43.85</b>
Explanation:								
<i>col3</i>	: look up in volume table, for given species group and dbh class				<i>col6</i>	: count and fill in		
<i>col4</i>	: plot size for given dbh class				<i>col7</i>	: col5*col6		
<i>col5</i>	: (1/col4)/ (nr. Of plots)				<i>col8</i>	: col7*col2		
					<i>Col9</i>	: col7*col3		
(When rounding: round to the nearest EVEN digit, e.g., 0.635 to 0.64 but 0.665 to 0.66)								



<b>Format 4: Quantitative Forest Resource Assessment compilation sheet (Chirpine, timber)</b>								
Name of CF: Zangkar Serjan Lhamo Community Forest								
Block name: Zangkar					Block area: 70.8 ha (Production area)			
Number of Plots: 48					Compiling date: 20/3/2023			
<i>col1</i>	<i>col2</i>	<i>col3</i> (3 decimals)	<i>col4</i> (3 decimals)	<i>col5</i> (3 decimals)	<i>col6</i> (0 decimals)	<i>col7</i> (2 decimals)	<i>col8</i> (2 decimals)	<i>col9</i> (2 decimals)
dbh class (cm)	basal area (m <sup>2</sup> )	class volume (m <sup>3</sup> )	plot size (ha)	expansion factor	Tally	nrha (stems/ha)	basha (m <sup>2</sup> /ha)	volha (m <sup>3</sup> /ha)
10-19	0.017	0.055	0.05	0.417	20	8.33	0.14	0.46
20-29	0.047	0.233	0.05	0.417	72	30.00	1.41	6.99
30-39	0.093	0.609	0.05	0.417	48	20.00	1.86	12.18
40-49	0.156	1.256	0.05	0.417	29	12.08	1.89	15.18
50-59	0.233	2.251	0.05	0.417	16	6.67	1.55	15.01
60-69	0.327	3.631	0.05	0.417	2	0.83	0.27	3.03
70-79	0.436	5.494	0.05	0.417	2	0.83	0.36	4.58
80-89	0.561	7.892	0.05	0.417	1	0.42	0.23	3.29
90-99	0.701	10.891	0.05	0.417	0	0.00	0.00	0.00
100-109	0.858							
110-119	1.030							
120-129	1.217							
<b>Sum for all dbh classes</b>						<b>79.17</b>	<b>7.72</b>	<b>60.70</b>
Explanation:								
<i>col3</i>	: look up in volume table, for given species group and dbh class				<i>col6</i>	: count and fill in		
<i>col4</i>	: plot size for given dbh class				<i>col7</i>	: col5*col6		
<i>col5</i>	: (1/col4)/ (nr. Of plots)				<i>col8</i>	: col7*col2		
					<i>Col9</i>	: col7*col3		
(When rounding: round to the nearest EVEN digit, e.g., 0.635 to 0.64 but 0.665 to 0.66)								

<b>Format 4: Quantitative Forest Resource Assessment compilation sheet (Chirpine, non-timber)</b>								
Name of CF: Zangkar Serjan Lhamo Community Forest								
Block name: Zangkar					Block area: 70.8 ha (Production area)			
Number of Plots: 48					Compiling date: 20/3/2023			
<i>col1</i>	<i>col2</i>	<i>col3</i> (3 decimals)	<i>col4</i> (3 decimals)	<i>col5</i> (3 decimals)	<i>col6</i> (0 decimals)	<i>col7</i> (2 decimals)	<i>col8</i> (2 decimals)	<i>col9</i> (2 decimals)
dbh class (cm)	basal area (m <sup>2</sup> )	class volume (m <sup>3</sup> )	plot size (ha)	expansion factor	Tally	nrha (stems/ha)	basha (m <sup>2</sup> /ha)	volha (m <sup>3</sup> /ha)
10-19	0.017	0.055	0.05	0.417	3	1.25	0.02	0.07
20-29	0.047	0.233	0.05	0.417	3	1.25	0.06	0.29
30-39	0.093	0.609	0.05	0.417	2	0.83	0.08	0.51
40-49	0.156	1.256	0.05	0.417	4	1.67	0.26	2.09
50-59	0.233	2.251	0.05	0.417	0	0.00	0.00	0.00
60-69	0.327	3.631	0.05	0.417	0	0.00	0.00	0.00
70-79	0.436	5.494	0.05	0.417	0	0.00	0.00	0.00
80-89	0.561	7.892	0.05	0.417	0	0.00	0.00	0.00
90-99	0.701	10.891	0.05	0.417	0	0.00	0.00	0.00
100-109	0.858							
110-119	1.030							
120-129	1.217							
<b>Sum for all dbh classes</b>						<b>5.00</b>	<b>0.42</b>	<b>2.96</b>
Explanation:								
<i>col3</i>	: look up in volume table, for given species group and dbh class				<i>col6</i>	: count and fill in		
<i>col4</i>	: plot size for given dbh class				<i>col7</i>	: col5*col6		
<i>col5</i>	: (1/col4)/ (nr. Of plots)				<i>col8</i>	: col7*col2		
					<i>Col9</i>	: col7*col3		
(When rounding: round to the nearest EVEN digit, e.g., 0.635 to 0.64 but 0.665 to 0.66)								

Annex 4: Stand & stock table: Number of Trees

FORMAT 5: STAND & STOCK TABLE SHEET 1 - NUMBER OF TREES (Timber)													
1. Name of CF: Zangkar Serjan Lhamo													
2. Species Group: Chirpine and broad leave													
3. No of Plot: 48													
4. Block Name: Zangkar								(Report all values to 2 decimals)					
5. Estimated parameter: Average Number of Trees per Ha													
Dbh class (cm)													
Species group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	total	%
Chirpine	8.33	30.00	20.00	12.08	6.67	0.83	0.83	0.42	0.00			79.17	
<b>Total conifer</b>	<b>8.33</b>	<b>30.00</b>	<b>20.00</b>	<b>12.08</b>	<b>6.67</b>	<b>0.83</b>	<b>0.83</b>	<b>0.42</b>	<b>0.00</b>				
Broadleaf	0.42	1.25	1.67	6.25	1.25	2.08	2.92	0.42	0.42			16.67	
<b>Total broadleaf</b>	<b>0.42</b>	<b>1.25</b>	<b>1.67</b>	<b>6.25</b>	<b>1.25</b>	<b>2.08</b>	<b>2.92</b>	<b>0.42</b>	<b>0.42</b>				
<b>total all species</b>	<b>8.75</b>	<b>31.25</b>	<b>21.67</b>	<b>18.33</b>	<b>7.92</b>	<b>2.92</b>	<b>3.75</b>	<b>0.83</b>	<b>0.42</b>			<b>95.83</b>	
<b>%</b>	<b>9.13</b>	<b>32.61</b>	<b>22.61</b>	<b>19.13</b>	<b>8.26</b>	<b>3.04</b>	<b>3.91</b>	<b>0.87</b>	<b>0.43</b>			<b>100</b>	<b>100%</b>

FORMAT 5: STAND & STOCK TABLE SHEET 1 - NUMBER OF TREES (Non-timber)													
1. Name of CF: DrangZangkar Serjan Lhamo													
2. Species Group: Chirpine and broad leave													
3. No of Plot: 48													
4. Block Name: Zangkar						(Report all values to 2 decimals)							
5. Estimated parameter: Average Number of Trees per Ha													
	Dbh class (cm)												
Species group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	total	%
Chirpine	1.25	1.25	0.83	1.67	0.00	0.00	0.00	0.00	0.00				
Total conifer	1.25	1.25	0.83	1.67	0.00	0.00	0.00	0.00	0.00				
Broad leave	19.58	25.83	15.00	6.67	3.75	0.83	0.42	0.42	0.42				
Total broadleaf	19.58	25.83	15.00	6.67	3.75	0.83	0.42	0.42	0.42				
Total all species	22.08	28.33	16.67	10.00	3.75	0.83	0.42	0.42	0.42			82.92	
%	26.63	34.17	20.10	12.06	4.52	1.01	0.50	0.50	0.50			100	100%

Annex 5: Stand & stock table: Basal area

FORMAT 6: STAND & STOCK TABLE SHEET 2 - BASAL AREA												
1. Name of CF: Zangkar Serjan Lhamo												
2. Species Group: Chirpine and broad leave												
3. No of plots: 48												
3. Name of Block: Zangkar												
4. estimated parameter: Average Basal Area per Ha (m2/ha)									(Report all values to 2 decimals)			
Dbh class (cm)												
Species group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	total	%
Chirpine (timber)	0.14	1.41	1.86	1.89	1.55	0.27	0.36	0.23	0.00			
Chirpine (non-timber)	0.02	0.06	0.08	0.26	0.00	0.00	0.00	0.00	0.00			
total conifer	0.16	1.47	1.94	2.15	1.55	0.27	0.36	0.23	0.00			
Broadleaved (timber)	0.01	0.06	0.16	0.98	0.29	0.68	1.27	0.23	0.29			
Broadleaved (non-timber)	0.33	1.21	1.40	1.04	0.87	0.27	0.18	0.23	0.29			
Total broadleaf	0.34	1.27	1.55	2.02	1.17	0.95	1.45	0.47	0.58			
total all species	0.50	2.74	3.49	4.16	2.72	1.23	1.82	0.70	0.58		17.94	
%	2.80	15.28	19.44	23.19	15.15	6.84	10.13	3.91	3.26			100

Annex 6: Stand & stock table: Volume

FORMAT 7: STAND & STOCK TABLE SHEET 3 - VOLUME												
1. Name of CF: Zangkar Serjan Lhamo												
2. Species Group: Chirpine and broad leave												
3. No of plots: 48												
3. Name of Block: Zangkar												
4. Estimated parameter: Average Volume per Ha (m3/ha)										(Report all values to 2 decimals)		
Dbh class (cm)												
Species group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	total	%
Chirpine (timber)	0.46	6.99	12.18	15.18	15.01	3.03	4.58	3.29	0.00			
Chirpine (non-timber)	0.07	0.29	0.51	2.09	0.00	0.00	0.00	0.00	0.00			
Total conifer	0.53	7.28	12.69	17.27	15.01	3.03	4.58	3.29	0.00			
Broad leave (timber)	0.03	0.33	1.05	7.51	2.53	6.54	13.18	2.61	3.48			
Broad leave (non-timber)	1.43	6.85	9.41	8.01	7.58	2.62	1.88	2.61	3.48			
Total broadleaf	1.46	7.18	10.45	15.53	10.11	9.16	15.06	5.21	6.96			
total all species	1.99	14.46	23.14	32.80	25.11	12.18	19.64	8.50	6.96		144.76	
%	1.37	9.99	15.98	22.65	17.35	8.41	13.57	5.87	4.80			100



**Annex 7: CF sample plot coordinates**

<b>Plot Id</b>	<b>Latitude E</b>	<b>Longitude N</b>	<b>Plot Id</b>	<b>Latitude E</b>	<b>Longitude N</b>
1	91.15761566	27.49515343	26	91.15775299	27.50814629
2	91.15884399	27.49622536	27	91.15896606	27.50813484
3	91.1600647	27.49729919	28	91.16017914	27.50812531
4	91.16129303	27.49837112	29	91.16139221	27.50811577
5	91.16130829	27.4994545	30	91.15290833	27.50926971
6	91.16252136	27.49944305	31	91.1541214	27.50925827
7	91.16010284	27.50054741	32	91.15533447	27.50924873
8	91.16131592	27.50053596	33	91.15654755	27.5092392
9	91.16252899	27.50052643	34	91.15776062	27.50922775
10	91.16374207	27.50051689	35	91.15898132	27.50921822
11	91.16254425	27.5016098	36	91.1601944	27.50920868
12	91.16375732	27.50159836	37	91.15412903	27.51034164
13	91.16376495	27.50268173	38	91.15656281	27.51032066
14	91.16378021	27.50376511	39	91.15777588	27.51031113
15	91.16136169	27.50486755	40	91.15898895	27.51030159
16	91.16257477	27.50485802	41	91.15171814	27.51144409
17	91.16378784	27.50484657	42	91.15293121	27.51143456
18	91.16015625	27.50596046	43	91.15535736	27.51141357
19	91.16136932	27.50595093	44	91.1505127	27.512537
20	91.16259003	27.50593948	41	91.15172577	27.51252747
21	91.16017151	27.50704384	46	91.15293884	27.51251793
22	91.16138458	27.50703239	46	91.15415192	27.51250648
23	91.15411377	27.5081768	48	91.1529541	27.5135994
24	91.15532684	27.50816536			
25	91.15653992	27.50815582			