Community-based Sustainable Forest Management for Water Resources Conservation in Manipur

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India

Participatory Forest Land Use Planning Guidelines

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Abbreviations

ACTA	Assistant Chief Technical Advisor
APD	Additional Project Director
AsPD	Assistant Project Director
CF	Community Forestry
CFM	Community Forest Management
CF & WCS	Community Forestry and Water Conservation Society
COSFOM	Community-based Sustainable Forest Management for Water Resources Conservation in Manipur
CTA	Chief Technical Advisor
DPD	Deputy Project Director
ESMF	Environmental and Social Management Framework
FGG	Federal Government of Germany
FPIC	Free Prior Informed Consent
FS	Feasibility Study
FUGs	Forest User Groups
GFA	GFA Consulting Group, Germany
GIS	Geographical Information Systems
GoI	Government of India
gm.	Grams
Ha.	Hectares
IHRS	International Human Rights Standards
KfW	Kreditanstalt für Wiederaufbau
LULCCF	Land Use Land Cover Change in Forestry
MFD	Manipur Forest Department
ml	Milliliters
NTFPs	Non-timber Forest Produces
nos.	Numbers
PD	Project Director
PEA	Project Executing Agency
PLUP	Participatory Land Use Planning
PLULC	Participatory Land Use Land Cover Map
SFM	Sustainable Forest Management
SOI	Survey of India
UNDIRP	United Nations Declaration on the Rights of Indigenous Peoples
VC	Village Chief
VAC	Village Authority Chairman
VAS	Village Authority Secretary
VMP	Village Micro Plan
WRCG	Water Resources Conservation Group

1 Background

The Community-based Sustainable Forest Management for Water Resources Conservation in Manipur (COSFOM) project is a development project of the GoI supported by the FGG through KfW within the context of the Indo-German Program on Climate Change Adaptation in the Himalayas. The project aims to improve the climate resilience of the upper watershed ecosystems of three catchment areas, namely, the Imphal and Singda catchments in Kangpokpi District, and the Ukhrul Block of the Thoubal catchment in Ukhrul District of Manpur, and increase the adaptive capacity of forest-dependent communities through sustainable forest management and water resource conservation.

Forests are critical for sustaining perennial flows of ecosystem goods and services. In Manipur, poorly stocked and continuously degrading forests in the headwater catchment areas not only increase the vulnerability against the changing climate but also pose great risks to flows of ecosystem goods and services. Appropriate forest cover is crucial for climate-proofing as well as sustaining perennial water flows for rural and urban areas, and the production of NTFPs, a vital source of local communities' livelihoods. Site-specific interventions to accelerate restoration of degraded forested catchments is cost-effective, and suitable from the perspective of enhancing climate resilience and adaptability.

All the selected catchment areas under the COSFOM project are owned by tribal communities. To achieve the goal of the COSFOM project, ensuring participation of the communities that directly depend on and use the land and other natural resources is absolutely necessary for developing ownership in the planning, decision making, and monitoring processes. Furthermore, the participation of other stakeholders that indirectly depend on these resources is important.

Participatory Land Use Planning (PLUP) integrates the knowledge of local people depended on the land and other resources and converges proven scientific knowledge derived from other sources.

Figure 1: A Typical Tangkhul Tribe, Ukhrul District

Presently field guidance on PLUP for people engaged in community forestry in Manipur is lacking. Keeping this in mind, this field guide is developed to assist community forestry workers (communities, front line forest department staffs, and development professionals) in Manipur to have a clear understanding on participatory land-use planning, its purpose, components, Free Prior and Informed Consent (FPIC), and step by step methodology to be followed for planning in the selected COSFOM project villages. The purpose of this field guide is to assist the community forestry practitioners to facilitate participatory land-use planning simultaneously in all the target villages within the expected timeline. The field guide lists materials required per village, data checklist, list of tools and its purpose, and tentative time required for completing the participatory land-use planning exercise in one village.

2 Land Use Planning

People depend on land for meeting their basic needs. Increase population resulting in unplanned extraction of land resources for meeting their need and aspirations have gradually limited the potential of land resources to meet the ever-increasing demand. The scenario in the developing countries like India is alarming. North-East India, mostly with hilly terrain, majority of agrarian population, dependencies on land resources especially forests and its produces is high. Conditions of the land resources in the upper catchments surrounding the valley areas of Manipur, a state in North East India is more pronounced. Less tree cover, degraded forests in the upper catchments is severely facilitating topsoil erosion, disrupting the perennial flow of water, making land less productive and facilitating migration of able-bodied people. Land use planning is crucial for judicious utilization of limited land resources.

Land Use Planning - It is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land-use options.[1] It is not just planning for farms, it takes into account the interest of the communities of the area. However, it does not guarantee the active participation of landowners and local communities in the decision-making process and critical emphasis on the sustainability of resources. Sustainable Land Management emphasizes food production, integrated planning, economic opportunities, enhanced and diversified rural livelihoods, disaster risk reduction, climate change adaptation, and biodiversity conservation.[2]

Participatory Forest Land Use Planning - Also known as PLUP, it is the systematic assessment of existing forest area with active participation of the concerned communities to assist landowners/users in selecting the best possible options that increase forest land productivity, sustain perennial water flows, and meet their livelihoods needs. [3]

PLUP serves improved land stewardship through systematically analysing these conditions and proposing improved land-use options, taking into consideration different biophysical and socio-economic factors. The implementation of PLUP is ensured through ownership over the process by the community and through reliance on local institutions. Participation by various social-economic groups (including gender) is essential to ensure that the interests and expectations of all factions in the village are considered in the planning process. Mainstreaming gender in the PLUP process ensures that women's very specific knowledge on land-use, along with their interests are reflected.[4]

Purpose of PLUP - To jointly select and put into practice those optimal land uses that will best meet the needs of the people while safeguarding resources for the future.

In COSFOM, PLUP is the key for developing Village Micro Plans (VMP) by the WRCG that will serve as basis for implementing project measures relating to reforestation and sustainable community forestry, stream and spring shed management, biodiversity conservation and livelihood improvements.

For COSFOM purpose, PULP covers forest areas of the village land use and planning for overall watershed management.

1 FAO. (1993). Guidelines for land-use planning.(FAO Development Series No. 1).

2 FAO. (2013). Land and Water Division Working Paper 5. PLUP Workshop Planning Proceedings,

3 FAO. (2013). Land and Water Division Working Paper 5. PLUP Workshop Planning Proceedings,

4 UNDP (2013). Manual on Watershed-based participatory land-use planning for Nagaland.

Characteristic of PLUP for COSFOM

1. It is learning - cum - bottom-up local level land use planning at the project site, led by the tribal landowners and participating villagers and multiple stakeholders, facilitated by DPMU/FSU and consultants, to achieve COSFOM set of goals,
2. Free, Prior and Informed Consent is adopted, to establish bottom up participation and consultation of the local population prior to the beginning of a development on their land or using resources within the village territory,
3. Locally available materials are used by the WRCG members to graphically represent information of the existing land uses for clearly delineating the forest land-use of the village,
4. WRCG members, tribal landowners, villagers, and other stakeholders together assess the forest land uses of their village, and
5. They plan the most appropriate way of managing the forest land-use for sustaining water, soil, forests, and other forest products for their benefit.

☞ **PLUP confirms involvement of WRCG members, villagers, and particularly disadvantaged households in the decision - making process for sustainable utilization of the existing forested land. It facilitates mainstreaming of climate change adaptation in the planning process.**

3 Free, Prior and Informed Consent (FPIC)

FPIC is mandatory prior to the commencement of any project activity and approval of any decision that may affect the land and other natural resources of the COSFOM villages. FPIC protects communities´ preferences and respects the decision-making process. It ensures that the participating villagers are aware of the positive and negative aspects of any activities under the project. This helps them to anticipate results and accordingly plan management interventions for sustaining forest land resources well and also protect their cultural identity and self-determination.

FPIC is a principle protected by IHRS that state, '*all peoples have the right to self-determination´* and - linked to the right to self-determination - *'all peoples have the right to freely pursue their economic, social and cultural development'*.

FPIC is a specific right that pertains to indigenous peoples and is recognized in UNDRIP. It allows them to give or withhold consent to a project that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. FPIC enables them to negotiate the conditions under which the project will be designed, implemented, monitored, and evaluated.

Source: FAO (2016). Free, Prior, and Informed Consent, An Indigenous peoples right and a good practice for local communities – Manual for Project Practitioner, 52 p.

Four components of FPIC:

i) **FREE** - ensure WRCG convey their consent voluntarily, do not force or manipulate. All meeting and decisions take place at the location, language, time, and formats fixed by the WRCG/ villagers. They determine the decision - making structure, process, and timeline.

ii) **PRIOR** - seek consent sufficiently in advance of commencement of any activities in the village. Provide sufficient time to the COSFOM participating village communities to know, go through the project documents, and figure out the information on project activities. Abide by the timeline suggested by the participating villagers.

iii) **INFORMED** - inform sufficiently all villagers about the different COSFOM interventions and the reason for them, social, cultural and environmental impacts, the duration of the measures. The language used must be able to be understood by the people.

iv) **CONSENT** - collective decision made by the right holders and reached through a customary decision-making processes of the communities. WRCG voluntarily and freely convey their decisions either it is **Yes** or **No** or **Yes with conditions** or **Yes with options for reconsidering** based on the changes in the surrounding during the project period.

FPIC components are interlinked. The first three components sets ground for consent, for the decision-making process. The FPIC should be completed before any activity of participatory land use planning starts. Generally FPIC process covers for all COSFOM activities and make sure that the WRCC members are aware of it. There may be gap by some period between the FPIC process and PLU Planning so it will be good to remind villagers on the previous consent and confirm their on-going support and consent to the project before continuing with PLUP.

☞ **WRCGs should be consulted before any activities (prior), without any force, be decided by the project beneficiaries (free) and based on accurate, timely and sufficient information provided in a culturally appropriate way (informed) for it to be considered a valid result or outcome of a collective decision making process (consent).**

4 Methodology for PLUP

Step 1 Introduction to PLUP and Committee formation	a) Introduce COSFOM objectives, aims and goals to WRCG. b) Explain the Purpose and benefits of PLUP and the process. c) Explain the necessity of ESMF and gender aspects. d) Obtain consensus e) Village LUP Committee formation
Step 2 FGD: Land use problem Identification	a) Facilitate focus group discussion (FGD) on strength, weakness, opportunities, and threats (SWOT) of the forested catchment of the village. b) Facilitate listing of issues and probable solutions.
Step 3 Field Work with Reconnaissance Walk	a) Explain the purpose of reconnaissance walk. b) Conduct field walk with key informants across the village landscape. c) Record visual observations on the forest landscape. d) Facilitate key informants to sketch observed information under highland, middle, and low land zones.
Step 4 Forest Land Data Collection & map preparation	a) Confirm village boundary with WRCG showing large printed map. b) Validate secondary information based analysis of LULCM. c) Discuss forest land under different management categories. d) List problems, solutions, and opportunities under each land use category with WRCG and other villagers.

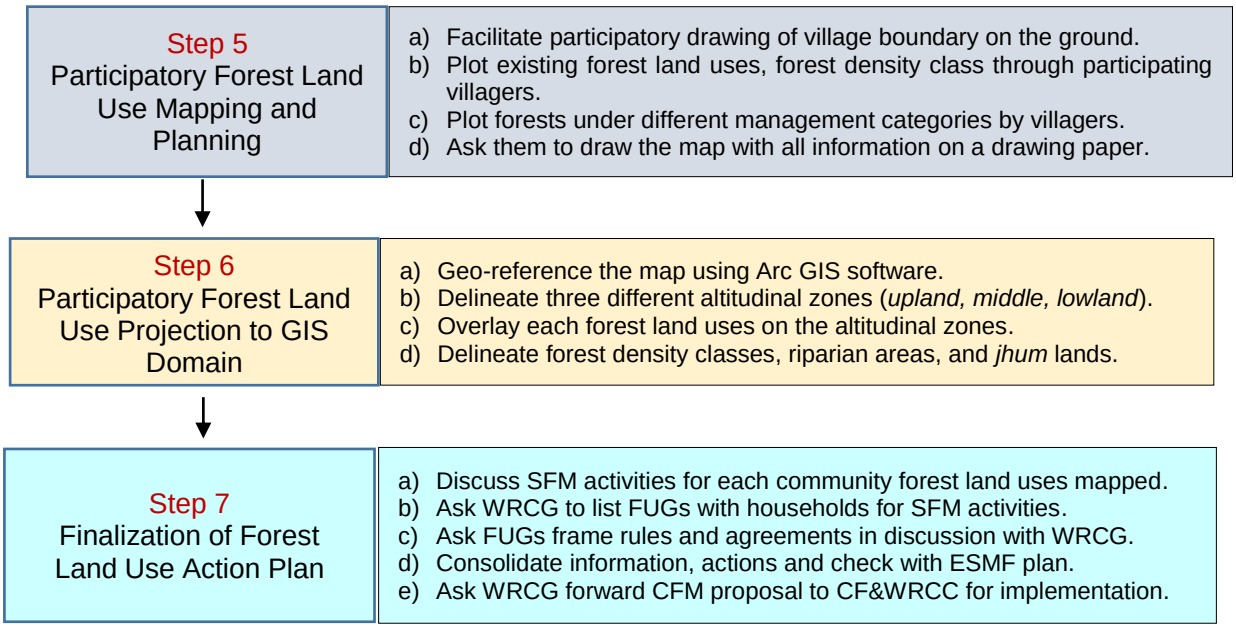

Figure 2: Flow Diagram of the PLUP Process

4.1 PLUP Stages

4.1.1 Introduction to PLUP and formation of Village LUP Committee

Steps:

i) DPMU/FSU prepare schedules of field activities covering the villages for which consents from WRCG is received. Discuss the field schedules with the Project Director and team (CF & WCS), GFA CO team, and finalize it. Share approved work plan with WRCGs for date, time and venue of the meeting. Emphasize the importance of presence of all the village households in the meeting, particularly also women.

Figure 3: PLUP Exercise in Lungphou Village, November 2018

ii) Introduce facilitating team (*DPMU and NGO*). Explain the objectives of the COSFOM project, its goal, and aim. Convey the purpose of carrying out PLUP. Refresh FPIC and ESFM from the FPIC/ESMF introduction previously conducted in the project, its integration in the entire planning process. Ask a representative of the village to motivate villagers' participation by seeking any clarification, suggestion, questions. Allow enough time for villagers to ask questions until they feel well informed and understood the project, its objectives and activities.

iii) After a collective decision was made and the villagers gave their consent (if not you cannot proceed with next steps), ask participating villagers to select 10 representatives including at least 3 women, to form the village land use committee. It should represent village authority, progressive farmers, women's group, ethnic groups, youth group, church group, and any other village group. It should have at least 3 female representatives and be race and status balanced. They should have a good knowledge of the village. The committee should represent the villagers and help to avoid the slow process often faced with a large group. Provide enough time for the village to select their representatives.

iv) Seek dates from the villagers that they are convenient for the next series of exercises covering at least 5 days for completing the PLUP process.

Materials Required - Six chart papers, eight different coloured marker pens, one roll of double-sided tape, one packet of toothpicks/rubber band, and COSFOM Banner.

Tentative Time - 2-3 hours

- **Adhere to FPIC.**
- **Clarify the COSFOM objectives, goal, and aim as well as PLUP purpose.**
- **Ensure village LUP Committee (VLUP Committee) represent the village´s diverse society - gender, race, social status, and responsibilities balance.**

4.1.2 Identification of land-use problems

Steps:

i) Get introduced with the PLUP Committee members. Make sure a list of participants is prepared and signed by all for each meeting. Announce the purpose of the meeting. Do a small game for ice breaking. Tell them their active participation is important.

ii) Explain the PLUP process in a simplified form using charts, villagers should understand the process, time period, and preparation of participatory land-use plan. Ensure they are clear on the following necessary steps for PLUP.

   a) Assess existing land uses (*forest area, riparian area, streams, degraded area, jhum land, wetlands, streams, arable lands, community lands, settlement, etc.*)

b) Identify best possible uses for increasing forest densities (*open, moderately dense and very dense*) to ensure SFM, sustain water flows, improve livelihoods of the local population.

c) Identify optimal land use options - based on the biophysical conditions of the land, people's ability to utilize the land, people's socio-economic conditions, and their expectations.

d) Implementation of PLUP is ensured through ownership over the process by the community and through reliance on local institutions.

Figure 4: Team Formation in Ireng Naga Village (Rongmai Tribe), November 2018

iii) Explain the basic information on forest land uses, different density, community management, existing practices to be collected and its importance for the PLUP. Make a box on the board visible to every participant and ask them to tell the major forest and agricultural produces and their seasonality, water sources, skills, labour in their village. Start listing the information. Similarly, facilitate and ask them to identify the weakness of the village, and list the opportunities and identify all the possible threats. (Strengths and Weakness are internal while Opportunities and Threats are external factors). If necessary, split the group into two groups to have in-depth discussions. There will be more opportunity to participate by the members.

iv) Ask participants the following

a) What are the major problems for each land use type identified for their village forest area (jhum, rice, forest, village area,..) What can be solutions to address the problems that they have identified in their forest areas.

b) What would be further opportunities to enhance existing land uses, even if there are no specific problems to make the better possible sustainable use of it.

c) Ask each key informants on the basis of their preference make one of the multiple dots against the listed items. The option with the greatest number of dots will determine the course of action.

d) List down the activities they carry out in the forest land uses on the whiteboard. Ask them to list down the problems that are associated and rank it. Let them propose probable solutions against the listed problems. Ask them to identify opportunities that are available in the village.

e) Ask one of the PLUP Committee member to present the results. Compile land-use problem and analyse in a tabular format as given in Table 1. For village authority member, additionally, fill the questionnaire given in Annexure III.

Table 1: Land Use Problem Analysis Table

Forest Land Use	Location	Major Problems	Probable Solutions	Identified Opportunities

f) Ask participants to rank their listed options on a scale of 1 (first) to 5 (last), where 1 stands for the best and first choice and 5 represents the last preferred choice of options.

g) Based on the preferences, ask the key informants to frame the vision of the village.

Material Required - Six chart papers, eight different colour marker pens, One double sided tape.

Tentative Time - half a day (at least)

- **Ensure VLUP Committee represents the village society and responsibilities.**
- **Ensure gender, race and social status balance.**
- **Respect each other and do not interrupt and dictate when villagers are providing information.**
- **Ensure clarification of COSFOM objectives, goal, and aim, and PLUP process at all times.**
- **Ask participants to be realistic in listing their strengths, weakness, opportunities and threats.**
- **Ask questions pertaining to the land use the group members depends on.**
- **Ensure to be specific and avoid any complexities.**
- **Make the problem and solution analysis short and simple.**

4.1.3 Field Assessment with Reconnaissance Walk

Steps:

i) Collect the village map (Village GIS map from GIS Cell) for reference during the transect walk. While discussing during the transect walk, discuss the field situation/conditions and reference/mark it in the map. This map would be for field verification and information collection of the existing land use and its patterns.

ii) Look out for 2-3 key informant volunteers to take the facilitating team to the higher ridges of the village. Determine the transect to represent forest areas as much as possible. Walk down across the village to the end of its boundary to cover all the existing land uses of the forest areas of the village. Record geo-coordinates of forest land use/ land cover walked across using a handheld GPS device. Discuss and verify land use types previously identified and associated problems and opportunities.

iii) Record forest cover with spherical densitometer and take the geo-coordinate. Note the soil colour. List number of perennial and number of seasonal streams/gullies. List common names of trees and faunal species encountered. Note indicative area of *jhum* land and take the geo-coordinate. Ensure to walk down the streams to observe the status of the riparian area.

iv) Facilitate the key informants to sketch the information gathered during the transect walk to give a profile of the village and the land use as shown in Figure 5.

v) Triangulate the sketch on the recorded information gathered through the reconnaissance walk with WRCG.

Low land (<1300m)	Middle (1300 m - 1800 m)	Highland (1800 m - 3000m)
Open forest, patches of private forest land, terraced farming	Moderately dense forest, open forest, community land	Dense forest. Degraded forest patches, steel slope, rocks, community lands
Homesteads, few fruit crops around houses, settlements	Jhum fields, firewood collection, riparian areas with terraced fields	Spring sources, grasses, community protected

Figure 5: A sample reconnaissance walk of the area

Material Required - One geotagging enable camera, one handheld GPS device, six note-books, six pencils, four chart papers, eight coloured marker pens, one ruler, and two erasers.

Tentative Time: half day or longer, depending on area

- **Adhere to participatory approaches, let key informants lead the transect walk.**
- **Ask questions to accompanying key informants on forests, water, and other issues.**
- **Record observations on forest cover, density, degradation, riparian areas altitude zone wise.**
- **Try to walk in S or across from the ridge to valley covering all land uses.**

4.1.4 Forest Land Data Collection and map preparation

Steps:

i) At the GIS Cell of COSFOM, CF&WCS, use ArcGIS software and SOI toposheet {*select SOI Toposheets nos. for Kangpokpi (83G16), Singda (83H13), and Ukhrul (83K8)},* to prepare a village boundary map on 1:10,000 scale. Use google earth terrain view as a background for a better understanding. Indicate village name and the main road. Use dark red colour for the village boundary.

ii) Review Manipur Forest Department's publications, working plans, and analyse information on forest types, forest density class, rainfall, temperature, floods, and droughts of the village and prepare a timeline with the above information. Take one coloured print of the village boundary in A0 size paper.

Material Required: SOI Toposheets nos. Kangpokpi (83G16), Singda (83H13), and Ukhrul (83K8), village boundary coloured printout, analysed time line printout, white board, six chart papers, eight colour marker pens, camera, and colour pencils.

Tentative Time: half day

- **Integrate findings from the transect walk in the GIS map.**
- **Show the conflicting boundary clearly and its area in the map.**
- **Ensure to show if any Reserve Forests exist in the village.**

4.1.5 Participatory Forest Land Use Mapping and Planning

Steps:

i) Select a level area on the ground preferably covered (*to protect from rains and strong winds*). VLUP Committee members and other interested WRCG members gather around the paper. Show them the confirmed village boundary on printout GIS map of MFD, that was identified in earlier discussions and confirmed during transect walk.

Figure 6: Liangmai Tribe of Konshakhul Village participating Forest Land Use Planning, April 2019

ii) Place a stone at the well-known reference to participants such as representing their village church building, community hall or others and tell '*now we have to draw the village, who will volunteer*'. This is effective to quickly draw attention and facilitate the active participation of the villagers. Show them the materials and colours, facilitate mixing colours in different proportions to get different colours. Agree on the reference use such as colour, materials such as leaves, stones and others for various land use representation.

iii) Ask them to draw the village boundary. Ask to indicate the north, neighbouring villages. Once it is done ask them to divide the entire village area into three zones namely highland, middle, and lowland. Ask them to draw existing land uses using the available colours. Mix colours in different proportions to get additional colours. Now ask them to draw forest land with different canopy density. Ask them to indicate forest land under community protection, degraded forest area, private forests, community forest area for firewood, timber, bamboo forest, plantations, reserve forests. Ask them to plot springs, streams, gullies, rivers, riparian areas, jhum, and terraced agriculture. Ask them to indicate vulnerable areas (*landslide, fire-prone areas, bogs, encroachment*). Ensure they make a legend of the colours used for plotting different land use categories.

Figure 7: PLU Map Drawing, Choithar Village, November 2019

iv) After the map is completely drawn, ask them to explain the whole map. Allow sufficient time for discussions and proceed to alteration if needed. Take a photograph of the map drawn.

v) Preparation of the map in the chart paper may take some time and it should be shown by colour as well. Present it to the whole village and representative of the PLUP Committee will explain.

Figure 8: Stages of PLUP Exercise, Langdang Village, November 2019

Figure 9: Stages of PLUP Exercise, Choithar Village, November 2019

vi) Understanding the present forest land use, subsequently land use planning should start so that the participants thoroughly understand the process and forest land information. Forest areas should be delineated for the following forest land use. Draw proposed changes on the existing land use map which was prepared earlier.

a. Protection area where the forest is inaccessible/remote. It can also be headwater of the rivers.

b. Depending upon the forest density, identify the forest and estimated forest area that have to be undertaken under forest management for various forestry products. Prioritize the forest to produce the forest products that can guide from the present use of the forest. The forest can be medium to low density where the COSFOM technical interventions can be applied.

c. Riparian forest area delineation with the severity of landslides, springwater source, river conservation and others. Prioritize the stream and its tributaries for the protection and riparian buffer management. If any agricultural land exists, note the area and households involved.

d. Delineate open forest land area for afforestation prioritizing the area of COSFOM intervention. Make sure that the land is available for grazing. Open access for grazing will not be allowed once the afforestation will be carried. Thoroughly discuss for the delineation of such land.

e. Regarding the *jhum* land area, the related households should agree upon to the *jhum* improvements. Area and number of households should be identified and agreed.

f. For overall watershed conservation, soil and water conservation prone areas need to be identified where the technical intervention including a long-term protection from collection of any vegetation, grazing and others need to be restricted. Such areas should be identified and agreed for the protection measures.

g. COSFOM DPMU/FSU staff should continuously support during the planning process clarifying the technical and legal issues if any.

Materials Required – Different coloured powders (*500 gm each*), Pink, White, Blue, coloured chalks (*1 pkt each*), six chart papers, eight colour markers, two packets of sketch pens, sand 1 kg, six pencils, two rulers, three erasers, two pencil sharpeners, camera, six note books, and six ball pens.

Tentative Time: About 4 hours

- **PLUP Committee and WRCG members lead and themselves prepare the land use and land cover map and follow the planning. COSFOM DPMU/FSU staff support to clarify if needed.**
- **Do not interrupt and dictate the mapping process.**
- **Do not go for any exact measurements. Doing so distorts the process.**
- **Ensure to record any information that community initiates during the mapping process.**
- **Draw and mark proposed changes for land use on the existing land use drawing that was prepared at the beginning.**

4.1.6 Participatory Land Use Projection to GIS Domain

Steps:

i) Scan the land use map drawn by the villagers. Place geo-coordinates collected during field walk. Geo-reference the map using ArcGIS software at the GIS Cell of COSFOM, CF&WCS to transfer the hand-drawn participatory land use land cover maps to the GIS domain. Download high-resolution Sentinel, SRTM DEM data in the GIS cell. Use the downloaded data to develop land uses, slope, elevation, channels layers. Validate the existing land uses layer plotted by villagers with the satellite imagery-based layers, correct wherever there are deviations. See land use map of Choithar prepared during Nov 2019.

ii) Develop a thematic layer with three altitude zones namely highland *(1800 m - 3000m)*, middle *(1300 m - 1800m),* and lowland *(<1300m*) for Kangpokpi & Singda and highland (1800m – 300m), middle (1500 m – 1800m), and lowland (<1500 m) for Ukhrul watersheds. Develop different canopy density classes such as <10% scrub, 10-20% open, 40 to 60% moderately dense, and >60% very dense forest layer in each forest land use. Check for overlapping areas of any land and other resource uses e.g. jhum land may come under open forest or on riparian areas, etc. Find out the area in hectares in each of the different classes. Take coloured prints on A0 size sheets. Area should be calculated to plan various forestry activities.

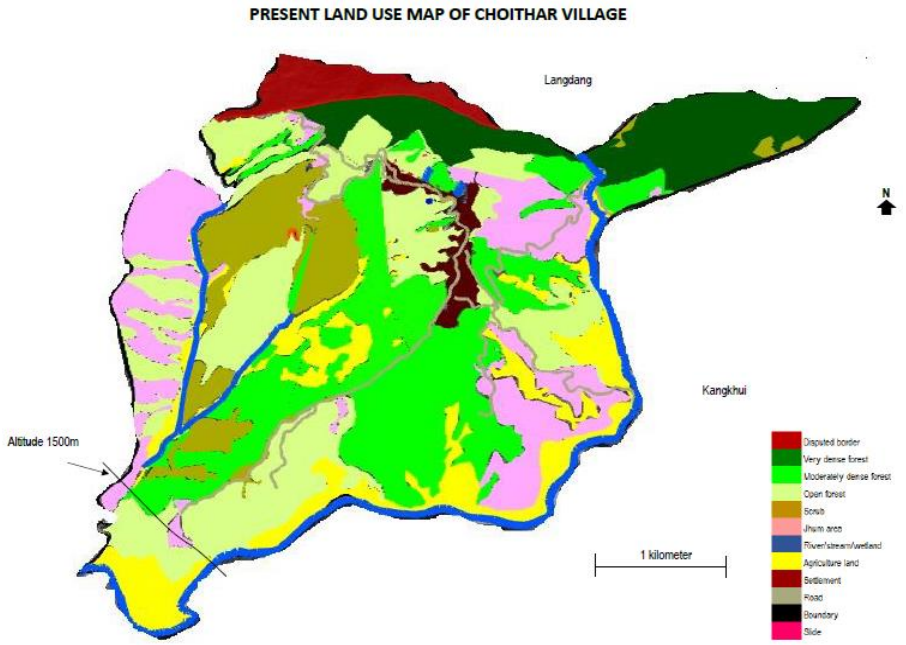

Figure 10: Present Land Use Plan, Choithar Village (2019)

Materials Required – Sentinel imageries, SRTM DEM, ArcGIS software, Plotter, Laptop, Multimedia Projector, Notebook, Pen, Coloured maps printouts, six chart papers, eight colour marker pens.

Tentative Time - About 2 hours

- **Do not dictate land-zoning process but facilitate.**
- **Ensure to address overlap areas to avoid any conflicts over land use.**
- **Respect their suggestions and carry out repeated incorporations for collective finalization of the land zone map.**

4.1.7 Finalization of Land Use Action Plan

Steps:

i) Take two A0 coloured print maps developed at the GIS Cell of COSFOM, CF&WCS. Validate this map again with the WRCG and villagers. Incorporate changes if any.

ii) Check for overlapping of terrace agricultural field, especially in the riparian areas. To avoid conflict do not include such lands for community forestry. Record the households with the cultivation along the riparian zone where they should be supported with livelihood improvement measures.

iii) The forest area by forest density should be tabulated and planned activities should be included (Table 2). Project the agreed forest land use planning to the WRCG using multimedia projector or paste A0 size coloured printouts from GIS Cell. Present them the proposed land use planning with area allocation. It is important to inform that all COSFOM interventions needs to be close-

to-nature. Take actions based on the canopy closure in each of the community forest land under each altitude zone. Proposed COSFOM forest land use actions need to be tabulated as shown in Table 2. Facilitate discussion with WRCG and finalize it.

Table 2: Propose COSFOM forest land use actions

Zone (m)	Canopy Closure of CF land	Total area (Ha.)	Propose Action	Area to be treated (Ha.)
Highland (1800m - 3000m)	**Open forest**		Afforestation	
			Mixed Plantation	
	Moderately dense forest		Afforestation	
			Mixed plantation	
			Aided natural regeneration	
	Close forest		Forest closure	
	Jhum land		3-tier jhum land restoration	
	Riparian areas		Riparian buffer creation	
Middle (1300m – 1800m)	**Open forest**		Afforestation	
			Mixed Plantation	
	Moderately dense forest		Afforestation	
			Mixed plantation	
			Aided natural regeneration	
	Close forest		Forest closure	
	Jhum land		3-tier jhum land restoration	
	Riparian areas		Riparian buffer creation	
Low land (below 1300m)	**Open forest**		Afforestation	
			Mixed Plantation	

Zone (m)	Canopy Closure of CF land	Total area (Ha.)	Propose Action	Area to be treated (Ha.)
	Moderately dense forest		Afforestation	
			Mixed plantation	
			Aided natural regeneration	
	Close forest		Forest closure	
	Jhum land		3 tier jhum land restoration	
	Riparian areas		Riparian buffer creation	

iv) PLUP Committee and supporting team can also draw different scenarios to assist WRCG to plan better. Initiate discussion for any changes based on the associated problems and probable solutions. Once the actions are agreed upon, ask the WRCG to form different FUGs with number of benefiting households as shown in Table 3. The number of FUGs should be manageable (say 5-8 FUGs), there should not be too many FUGs. Explain WRCG that patch of forest (compartments) under each FUG might consists of one or all the five COSFOM interventions or land use actions.

Table 3: Community forest area allocations for each FUGs

Zone (m)	Community Forest land uses	Propose Action	Name of the FUG	Households	Area allocated (Ha.)

The facilitating team to assist WRCG prepare annual physical work plan for each of the proposed COSFOM forest land use actions for each FUGs as shown in Table 4. This will be part of Sustainable Forest Management Plan, subject to approve under VMP.

Table 4: Annual Allocated Working Area to FUGs for COSFOM Forest Land Use Actions

Zone (m)	Propose Action	Name of the FUG	Total allocated area (Ha.)	Name of the compartment	Annual Operational Area (Ha.)				
					Y1	Y2	Y3	Y4	Y5
	Afforestation (Open forest)								

Zone (m)	Propose Action	Name of the FUG	Total allocated area (Ha.)	Name of the compartment	Annual Operational Area (Ha.)				
					Y1	Y2	Y3	Y4	Y5
Highland (1800 - 3000)	Mixed plantation (Open forest)								
	Afforestation (Dense forest)								
	Mixed plantation (Dense forest)								
	Forest closure								
	Three tier jhum land restoration								
	Riparian buffer creation								
Middle (1300 - 1800)	Afforestation (Open forest)								
	Mixed plantation (Open forest)								
	Afforestation (Dense forest)								
	Mixed plantation (Dense forest)								
	Forest closure								
	Three tier jhum land restoration								

Zone (m)	Propose Action	Name of the FUG	Total allocated area (Ha.)	Name of the compartment	Annual Operational Area (Ha.)				
					Y1	Y2	Y3	Y4	Y5
	Riparian buffer creation								
Low land (below 1300)	Afforestation (Open forest)								
	Mixed Plantation (Open forest)								
	Afforestation (Dense forest)								
	Mixed plantation (Dense forest)								
	Forest closure								
	Three tier jhum land restoration								
	Riparian buffer creation								

v) The technical facilitating team to assist WRCG prepare Annual Work Plan involving households under each FUG for the area allocated to the FUGs as shown in Table 5.

Table 5: Annual Work Plan for each FUGs

S. No.	Forestry Activities	Name of the FUG	Number of HHs	Name of the Compartment	Annual Operational Area (Ha.)											
					Year 1				Year 2				Year 3			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1,	Nursery raising of seedling (one in village, assign the responsibility)															
2,	Land preparation for afforestation															
3,	Land preparation for ANR															
4,	Land preparation for mixed plantation															
5,	Land preparation for riparian buffer															
6,	Developing 3-tier model															
7,	Field transplantation															
8,	Watering															
9,	Maintenance															
10,	Gap filling															
11,	Forest watchers															
12,	Fire fighting															
13,	Riparian buffer creation															
14,	Thinning															
15,	Harvesting															

vi) Ask FUGs to prepare a simple rules and agreements in discussion with WRCG. FUGs rules should include conditions and rules for each of the community forest-land use, riparian buffer, jhum land restoratin, forest closure, mixed plantation and ANR. Technical facilitating team to

assist WRCG to describe all the community forest land use actions for the different forest land uses as a single document. To this information on forest, water, and other natural resources, FUGs, households benefitted, annual work plan, expected cost, expected benefits needs to be consolidated as Annexures. Compile all other documents such as WRCG composition, consent, agreement, altitude-based forest land use zone description, maps including map of the final land use plan into a single document to be signed by WRCG and approved by CF&WCS. Compile everything into the Village Micro Plan.

vii) Facilitate to draw the community forest land uses brief description, brief rules, map of the final community forest land use action plan, timeline, monitoring on a 6' x 8' flex PLU map and hang in the meeting hall for reference. Suggested that WRCG hand over the final proposal on community forest management to CF&WCS through a brief ceremony.

Materials Required - Camera, two laptops computer, one projector, one white board, different colour marker pens, fifty A4 size paper, ten ball pens, five pencils, two erasers, two sharpeners.

Tentative Time – About 2-3 hours

- **Ensure participating villagers discussion with WRC for formation of FUGs.**
- **Ensure annual work plan, area allocations are finalised in presence of WRCG.**
- **Adhere to ESMF plan for all interventions**

5 Participatory Monitoring & Evaluation on PLUP

Given to the steps of PLUP, recording of the PLUP steps should be recorded and progress made on the process. Its divided into FSU/DPMU and WRCG levels.

FSU/DPMU

1. Record the progress by each step accomplished for each WRCG.
2. PLUP committee/team should be consistently same over the PLUP preparation period. Record the names and if any replacements, also record replacement date.
3. Collect the number of participants in PLUP from WRCG as it should be same with WRCG record.
4. Number of meetings/exercises conducted with WRCG.
5. Once finalized the mapping and planning, record the forest delineation areas for COSFOM purpose and overall PLUP.
6. Among three signed copy of Land Use Action Plan, keep one with DPMU, one for WRCC and forward one to CF&WC Society.

WRCG

1. Record the members of the PLUP committee/team, record the date if any replacement.
2. Record the number of participants, both male and female, in the exercise and meetings and share with FSU/DPMU technical team.
3. Following the participatory M&E, assess the land use mapping and planning with the participants and record the status (agree, disagree and others such as satisfaction).
4. Record forest delineation areas as exercised with the FSU/DPMU team.
5. Receive from FSU/DPMU and record the signed Land Use Action Plan.

Annex 1: List of materials required per village for PLUP

S. No.	Items	Unit	Quantity
1.	1:10000 village boundary map on google earth background with contour lines	copies	3
2.	Chart papers (white, yellow, pink, blue, green)	sheets	30
3.	Flip charts	roll	2
4.	Permanent Markers (red, blue, black and green colours)	nos.	8
5.	White board with duster	nos.	1
6.	Pin board	nos.	1
7.	Coloured pins	Box	1
8.	White Board Pens (red, blue, black and green colours)	nos.	8
9.	Double sided tapes	roll	2
10.	Cello tape	roll	2
11.	Different coloured pointing pen	set	2
12.	Pencil with sharpner and eraser	box	1
13.	Stickers or different coloured bindies	sheet	1
14.	Different holy/rangoli colours powder (pink, yellow, green, red, blue)	gm	500 each
15.	Note book	nos.	15
16.	Writing Pens	nos.	15
17.	Paints (White, yellow, red, blue) colours	ml	500
18.	Brushes (3'', 1.5', 1")	nos.	4
19.	Knives	nos.	2
20.	Digital camera with geotagging facility	nos.	1
21.	Strings / ropes	roll	1
22.	Measuring Tape 5 m	nos.	1
23.	Measuring tape 100 m	nos.	1
24.	Hand held GPS device	nos.	1
25.	Spherical Densiometer	nos.	1
26.	Laptop computer system	nos.	1
27.	Multimedia Projector	nos.	1
28.	Board Clips	nos.	12
29.	Paper Bags	nos.	10
30.	Thread (red, black, green, yellow, white)	roll	1 each
31.	Needle	nos.	3
32.	Newsprints	issues	10
33.	Coloured Chalk (pink, white, blue, green)	box	1 each

Annex 2: Data checklist for sample Survey

1) Village Details	8) Policies, laws, etc.
Name of the village	Customary laws, rules and regulations
Total area of the village (ha)	Land tenure
Latitude and longitude	**9) Other ongoing projects**
Altitude (m amsl)	Centrally sponsored schemes
Accessibility (roads, distances)	Development projects
Administrative division	Foreign aided projects
2) Weather Details	
Heavy rainy months	
Drier months	
Hot months	
Cold months	
3) Soil Details	
Slope (steep, medium, gentle)	
Soil colour	
Rocky areas (ha)	
Waterlogged area (ha)	
4) Hydrological Details	
Number of perennial channels /streams	
Number of seasonal channels/streams	
Lean water flow months	
Water quality	
5) Land use Details	
Very dense forest (ha)	
Moderately dense forest (ha)	
Open forest (ha)	
Jhum land (ha)	
Wetlands (ha)	
6) Sociology/social Services	
Total number of FUGs	
Total households per FUGs	
Presence & effectiveness of local institutions	
Threats	
Any conflicts	

Annex 3: Summarized village Information Sheet

V1.0 District: _____

V2.0 TD Block:

_____

V3.0 Micro watershed:

_____

V3.1 Latitude: _____North

V3.2 Longitude: _____East

V3.3 Altitude (m): _____ V3.4 Aspect_____

V4.0 Name of the Village:

_____

V4.1 Name of the Village Chief:

_____

V.5.0 Zonation: Upper / Middle / Lower

V6.0 Total Households: _____ V6.1Total Population:

_____

V6.3 ST Households (%): _____ V6.4 SC Households (%):

_____

V7.0 Forest area (Ha.): _____

V7.1 Community forest area (Ha.): _____

V7.2 Degraded forest area (Ha.): _____

V7.3 Area under permanent agriculture (Ha.): _____

V7.4 Area under current jhum (Ha.): _____

V7.5 Area under jhum fallow (Ha.): _____

V7.6 Land (non-agriculture) (Ha.): _____

V8.0 Number of streams: _____

V8.1 Perenniality of streams: _____

V8.2 Users: Primary / Secondary

V9.0 Major uses derived from forest:

_____

_____

V10.0 Major forest tree species:

_____

_____

V11.0 Threatened forest tree species:

_____

_____

V12.0 Vulnerable areas in the village:

_____

_____

Annex 4: Sample Land Use Analysis

Forest Land use with location	Major Problems	Probable Solutions	Identified Opportunities
Dense Forest	Less natural regeneration	Community managed forest protection	Carbon trade
Open Forest	Denuded	Forest trees plantation	Productive and protective sinks
Jhum land	Less production Insect pest attack	Jhum land rehabilitation pilot –Pareng, Gamari with black pepper and aromatic grasses, napier checks on jhum land.	Market linkages for graded aromatic plants based products
Stream	Siltation	Making a riparian buffer on the stream banks with less transpiring trees	Zonation of riparian areas
Moderately Dense Forest	Soil erosion Heavy firewood extraction	ANR, Gap filling with firewood, fodder and NTFP species	Firewood can be sold through