

COMMUNITY STEWARDSHIP TOOLKIT



CREDITS

Toolkit Design: Pranab Ranjan Choudhury, Anjali Aggarwal, Pentile Thong, Sutanuka Deb, Naveen Isarapu, Jayasri Gajula

Toolkit Piloting: Abhilasha Panda, Abhimanyu Mallik, Anjali Aggarwal, Daiophika Thangkhiew, Dapkmelang Tangsong, Jayasri Gajula, Melanie Passah, Nirajan Sahoo, Pentile Thong, and Ribor Suting

Copy-editing: Nishtha Relan, Anjali Aggarwal

Document Design: Charcoal The Studio

Photo Credits: Abhilasha Panda, Daiophika Thangkhiew, Dawa Sherpa, Durga Soren, Jayasri Gajula, Melanie Passah, Nishtha Relan, Ribor Suting

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WHAT IS STEWARDSHIP



STEWARDSHIP

Environmental stewardship can be defined as the actions taken by individuals, groups or networks of actors, with various motivations and levels of capacity, to protect, care for or responsibly use the environment in pursuit of environmental and/or social outcomes in diverse social-ecological contexts

- Bennett, et al (2018:597)

STEWARDSHIP FRAMEWORK

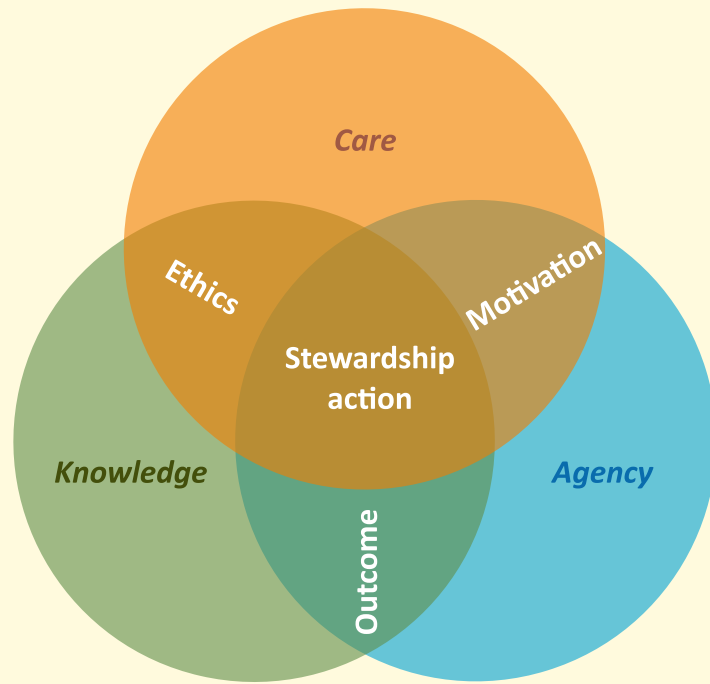


Fig. 4. *Care, knowledge and agency* help relate the different meanings of stewardship observed in reviewed literature, with the bulk of articles focusing on specific Actions and activities, and to various extents also on Ethic, Motivation, and Outcome - which lie in the interface between the different dimensions.

- Enqvist et. al. (2018)



The stewardship study is grounded in the Stewardship Framework, initially presented by West et al. (2018) and further elaborated by Enqvist et al. (2018). Stewardship can be defined as the wise and responsible use of natural resources by Indigenous and local communities. The framework identifies three key attributes of stewardship: Care, Knowledge, and Agency.

STEWARDSHIP ATTRIBUTES

CARE

- Care can be understood as the embrace by farmers and community members of attitudes and values that motivate them to apply sustainable land use practices.
- Care is the ethical core of stewardship. It is a sense of duty, shared widely, that compels people to “look after” the natural environment on which they depend.

** After West, et al (2018)*

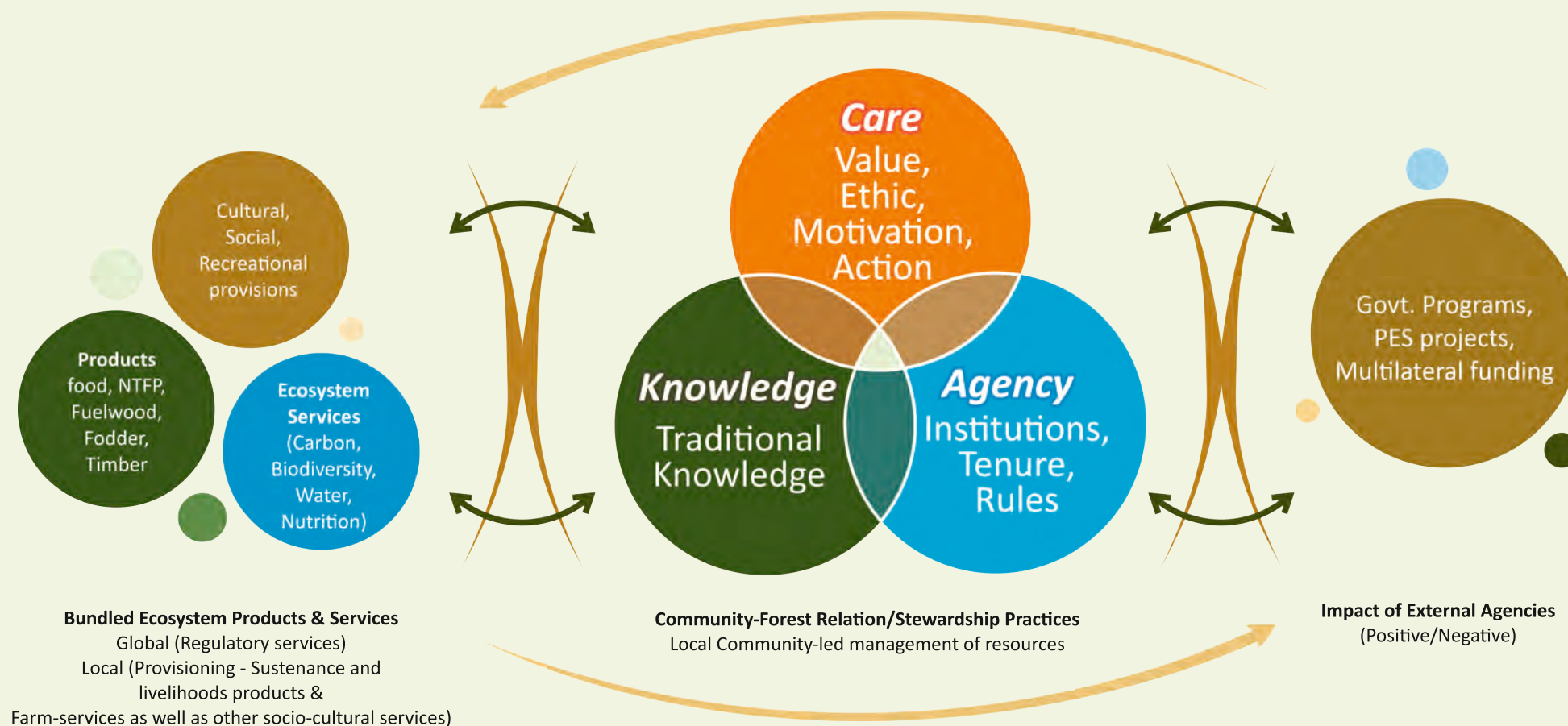
KNOWLEDGE

- Knowledge is the information and know-how that informs stewardship action, and includes knowledge about ecological, social and governance processes.
- Care emerges from directly managing social-ecological relations and requires an understanding of inter-species interdependencies.
- Care is embedded and practical, and this kind of experiential knowledge is not, by definition, easily achievable by non-residents.

AGENCY

- Agency denotes the abilities and capacities of individuals and groups to take action. Exercising agency largely depends upon possessing rights to land and other natural resources.
- Stewardship for Aldo Leopold is a form of democratic action in support of sustainable land use outcomes; outcomes that are mutually beneficial to human society and natural systems (Leopold, 1942).
- Without agency, democratic action is not possible.

THE GUIDING FRAMEWORK



Community stewardship lies at the core of the framework, anchored on the left by the diverse benefits of community-preserved forests, including both products and a bundle of ecosystem services which are of local as well as global significance. On the right, external projects and organizations interact with communities, shaping their relationship with forests, with potential impacts that may range from supportive and reinforcing to adverse and disruptive.

HYPOTHESIS

Community Stewardship leads to better socio-ecological outcomes

Research Questions

How can stewardship be understood and how does it manifest?

Does stewardship lead to better socio-ecological outcomes?

What is the impact of external influence on community stewardship?

STEWARDSHIP TOOLKIT



Participatory Forest Intervention Assessment (7 Tools)

Purpose:

To understand various aspects of community stewardship

Methods used:

Appreciative and visual inquiry through Participatory Forest Intervention Assessment

Data Collection Tools:

GIS-based resource mapping, transect walks, care economy mapping, knowledge mapping, Institutional mapping

1



Forest Health Assessment (3 Tools)

Purpose:

To assess ecological health of the community-managed forest vis a vis a control plot

Methods used:

Quadrat method

Data Collection Tools:

Transect walk, Forest classroom, biodiversity biomass survey

2



Household Forest Interface Assessment

Purpose:

To understand household level forest people interactions

Methods used:

Household level Survey

Data Collection Tools:

Biodiversity & biomass survey in Kobo/ODK Toolbox

3



Participatory Forest Intervention Assessment

Purpose:

To understand various aspects of community stewardship

Methods used:

Appreciative and visual inquiry through Participatory Forest Intervention Assessment

Data Collection Tools:

GIS-based resource mapping, transect walks, care economy mapping, knowledge mapping, Institutional mapping

Forest PRA Tools

This set of seven qualitative tools is designed to explore the intricacies of forest stewardship practices within communities. By engaging members in participatory exercises, the tools help reveal how people care for, tend to, sustain and manage their forests.

1. Participatory GIS-based Resource Mapping
2. Service Flows
3. Care & Knowledge Mapping
4. Care Economy
5. Village History
6. Time Trend
7. Institutional Mapping

These tools uncover nuanced dimensions of stewardship—value systems, world views, religious/spiritual beliefs, traditional ecological knowledge systems, norms, institutions, etc. Through open-ended discussions and interactive activities, communities and researchers together build insights into the diverse perspectives and lived experiences shaping forest stewardship on the ground.





Household Forest Interface Assessment

Purpose:

To collect household level information about forest dependency and interaction

Methods used:

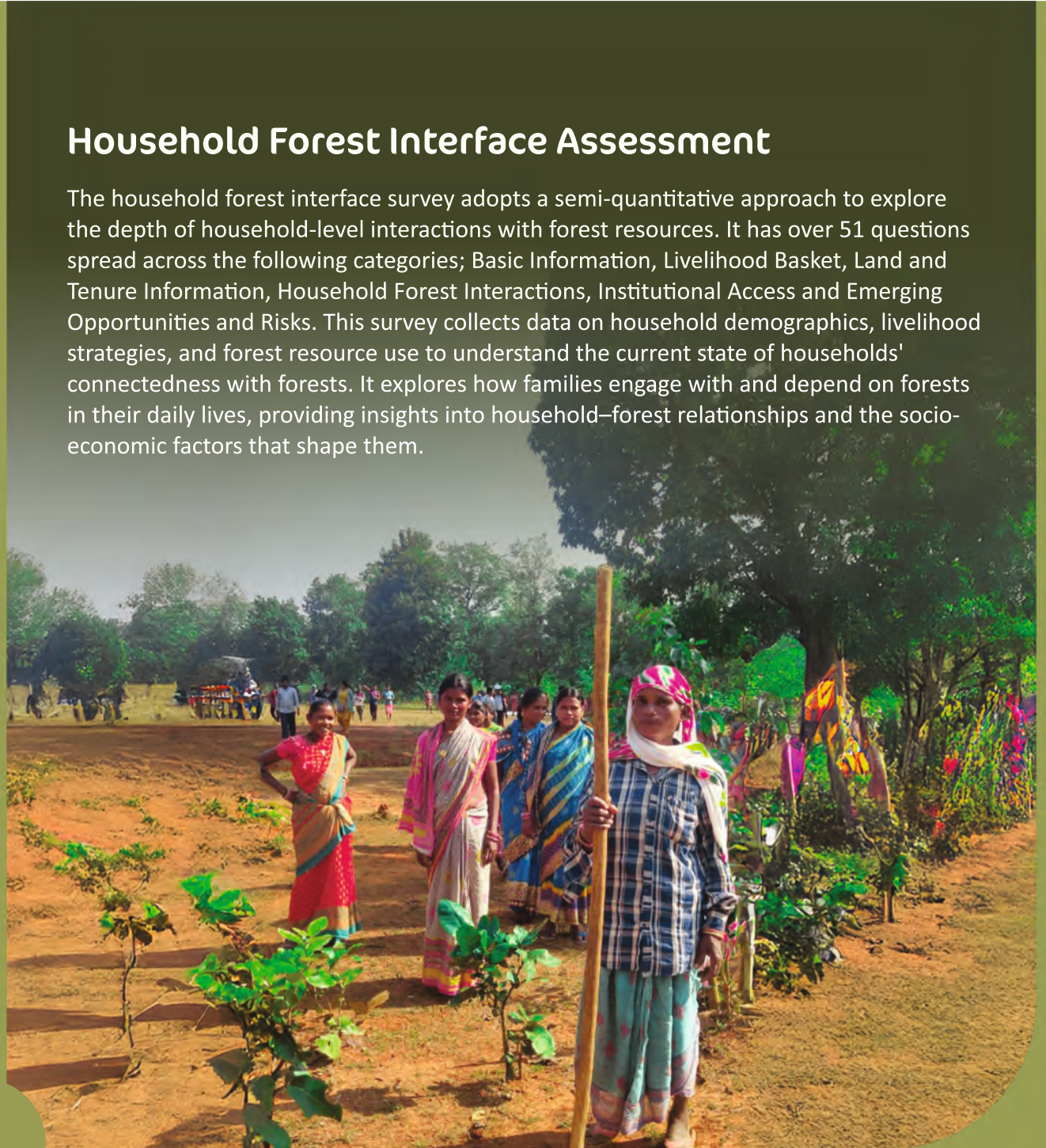
Household level Survey

Data Collection Tools:

Biodiversity & biomass survey in Kobo/ODK toolbox

Household Forest Interface Assessment

The household forest interface survey adopts a semi-quantitative approach to explore the depth of household-level interactions with forest resources. It has over 51 questions spread across the following categories; Basic Information, Livelihood Basket, Land and Tenure Information, Household Forest Interactions, Institutional Access and Emerging Opportunities and Risks. This survey collects data on household demographics, livelihood strategies, and forest resource use to understand the current state of households' connectedness with forests. It explores how families engage with and depend on forests in their daily lives, providing insights into household–forest relationships and the socio-economic factors that shape them.





Forest Health Assessment (3 tools)

Purpose:

To assess ecological health of the community-managed forest vis a vis a control plot.

Methods used:

Quadrant Method

Data Collection Tools:

Transect walk, Forest Classroom, Biodiversity & Biomass Survey

Forest Health Assessment

A crucial element of the toolkit is the qualitative and quantitative assessment of forest health within the study area. This assessment contains 3 tools, which are:

- Transect Walk
- Forest Classroom
- Biodiversity & Biomass

Sampling sites fall into two categories—stewarded or community-managed plots and control plots. In the Northeastern region, stewarded forests are community-managed or lands under governance of village collective (Council). In mainland India, stewarded sites include areas under Community Forest Rights (CFR), Joint Forest Management (JFM), or both. Control (non-stewarded) sites include state or privately managed forests, such as reserve forests, high-value species and timber plantations and open-access forest tracts with no formal regulation or management.

The Biomass-Biodiversity survey employs rigorous method to quantify ecological indicators such as species diversity, vegetation structure, biomass accumulation and carbon stock using the quadrat sampling technique. By systematically sampling forest plots and conducting detailed vegetation surveys, the team aims to evaluate the ecological outcomes of community stewardship efforts. Through statistical analysis and comparison with control plot forest sites, this survey provides empirical evidence of the ecological benefits associated with community-led conservation initiatives and experiences shaping stewardship dynamics on the ground.

Collectively, these three sets of tools constitute a comprehensive toolkit designed to holistically assess the multifaceted dimensions of stewardship within forest ecosystems. By integrating qualitative insights with semi-quantitative and quantitative data, researchers can gain a nuanced understanding of stewardship dynamics and their implications for both human well-being and ecological integrity.

1 PARTICIPATORY FOREST INTERACTION ASSESSMENT





**1.1
FOREST FLOWS
TO COMMUNITY**

**1.2
CARE FLOWS FROM
PEOPLE TO FORESTS**

**1.3
UNDERSTANDING
AGENCY AND CONTEXT**

A photograph of a forest path covered in fallen brown leaves, with several tree trunks visible on the left side. The scene is dimly lit, suggesting a shaded forest environment.

1.1 FOREST FLOWS TO COMMUNITY

These tools capture the -communities interactions
and dependencies on forest products and services

1.1. (A) PARTICIPATORY GIS-BASED RESOURCE MAPPING (CURRENT)

 The objective is to document and spatially represent the village's natural resource systems, and capture the nuances of forest access, use, interactions, and governance practices.



RESOURCE LAYERS

- 1. Land Use**
Forest, Pasture, cultivation
- 2. Land Tenure Linking**
Community land
Private land
Government/FD control
- 3. Site Characteristics**
Type of soil
Type of vegetation
Species iversity



INTERACTION LAYERS

- 4. Local Name**
Meaning, significance
- 5. Care Attributes**
Type of care activity
- 6. Functional Use**
Chief use of patch - fuelwood, NTFP, etc.
Food items collected
Freq. of visit to forest



GOVERNANCE LAYERS

- 7. Access Regimes**
Who can collect, when, seasons
- 8. Governance Rules**
What is allowed, not allowed, fines in the village
- 9. Project Activity Undertaken**
Plantation, soil moisture conservation, water harvesting, fire line

Pre-Process

Obtain the KML file of the village with traditional resource boundaries, if available

Materials

Projector, Plain wall (the reverse side of a flex sheet works) for projecting, Printed Google Earth map showing traditional village boundaries (in case of no electricity), White board markers, chalks of different colours

Participants

10-12 community members including elderly, women and youth

Time

180 minutes

Outputs

- Resource map
- Resource mapping table
- Narrative write-up

PARTICIPATORY GIS-BASED RESOURCE MAPPING (CURRENT) PROCESS

1. Initiate visual mapping Set up the base map

- » With power: Project the Google Earth image (with traditional boundaries) onto the back of a flex sheet or a clean white wall.
- » Without power: Use a printed image for identifying and tracing locally known patches.

2. Facilitate the mapping/tracing

- » Ask community members to trace/mark patches/landmarks on the projected/printed image.
- » Start with the main road, then add paths, forests, farms/fields, water bodies, settlements, the village boundary, and a north arrow.
- » Ask participants to mark all locally known land-use patches: forest, cultivation, pasture/grazing, settlements, etc.
- » If traced on the projected image, the laptop operator simultaneously digitizes the same patches in Google Earth Pro (offline). Save and back up.

3. Fill the attribute table

- » After completing the visual mapping and identifying all locally recognized patches, begin filling in the attribute table with patch-wise details on interactions, access, use, and governance/tenure.

4. Capture stories, anecdotes, quotes

- » Nominate a note-taker to record key stories, anecdotes, and quotes during mapping.

5. Digitize the Final Map

- » Projector method: While participants trace on the projection, the laptop operator digitizes the same patches in Google Earth Pro (offline) and saves the polygon folder via Save Place As → KML (then back up).
- » Printed map method: Photo/scan the finished map, load it in QGIS, geo-reference if needed, trace polygons to a layer, and export KML (then back up).





Step 1

Base map for starting.
This needs to be
prepared before hand.

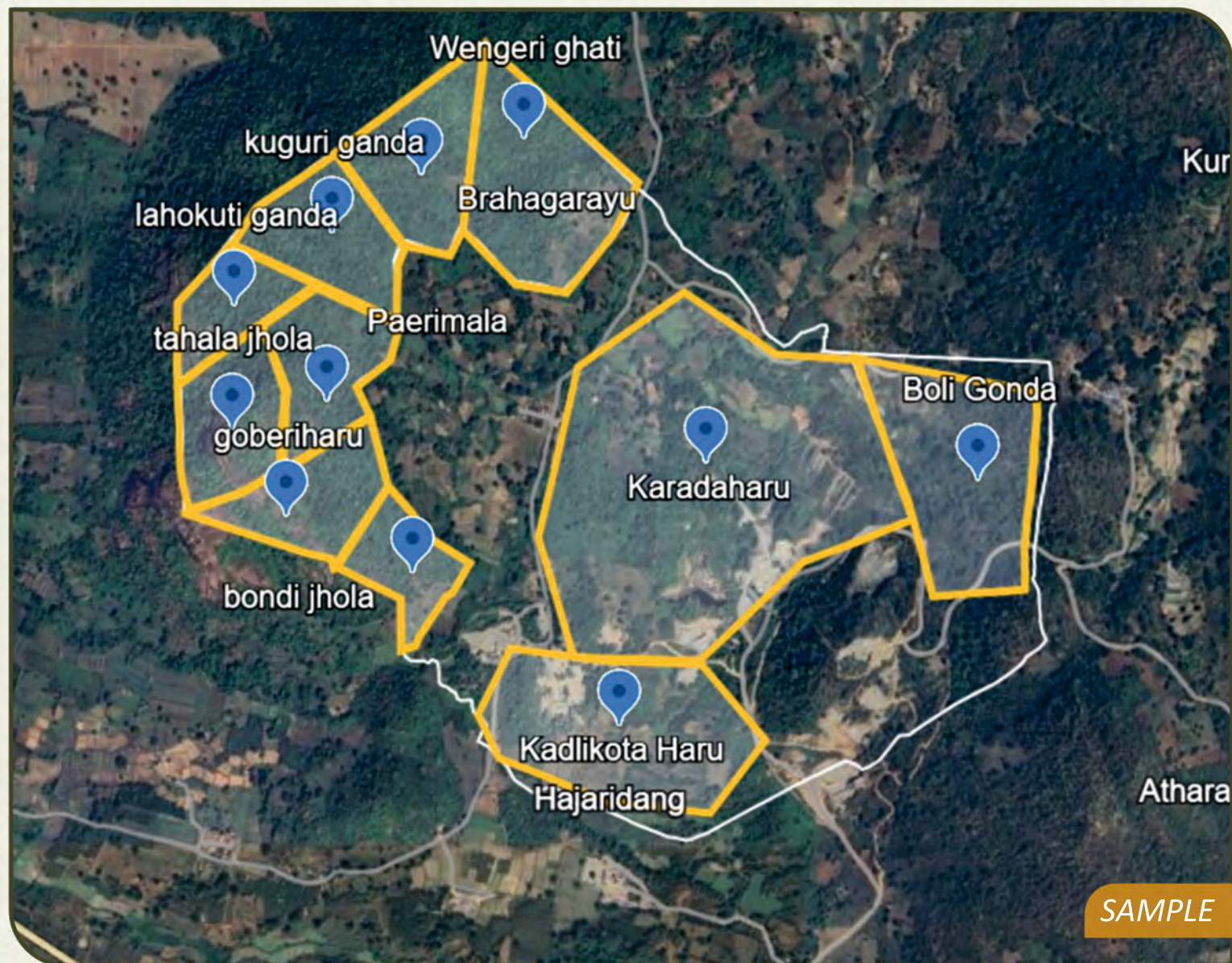
The image is of a village
boundary and CFR
boundary overlaid onto
google earth.

SAMPLE



PROCESS

BASIC INFORMATION FOR VISUAL PARTICIPATORY GIS-BASED RESOURCE (CURRENT) MAP



Step 2

The community maps all locally known/understood patches with their village

SAMPLE



PARTICIPATORY GIS-BASED RESOURCE MAPPING (CURRENT)

Resource Map Layers	Meaning of Patch	Land Use	Land tenure	Functional use – food items
Guiding questions	What is the story behind the local name/its significance, meaning	What is the main land use/uses?	Who controls land, who manages?	How is the patch used? Who uses, Which food items, and freq. of use?
Sample	Patch name (meaning) (story behind name)	Grazing land, forest land, habitation area, jhum area	Community land, clan land, private land, reserve forest, JFM	Mainly fuelwood, twice a week by women Bushmeat, honey, occasionally by men Likewise for fodder, timber, leaves, flowers, medicine
 Patch 1 (Local Name)				
 Patch 2 (Local Name)				
 Patch 3 (Local Name)				

Village:
Date:
Participants:

Site characteristics	Access Regimes	Governance rules	Project activity
How is the patch: in terms of vegetation, soil quality, species diversity	Who can access? village/outside? seasonal access regimes?	What is allowed, what is not allowed, fines, allowance for other villages	What project activity, when, and by whom?
Moderate humus, young saplings, high undergrowth, dominant species	All village can access, For grazing in 'x' season For fuelwood in 'x' season Outside village access - yes/no?	NTPF all year, fuelwood quantity allowed during 'x' season, timber/tree cutting Harvest limits, grazing rules, fines	JICA plantation by FD in 'year' Cashew Plantation by horticulture dept. in 'year'

Step 3

For each distinct locally known patch identified in the Participatory GIS visual map (a shown in sample above) fill the attribute table.

Local name of the patch is the identifier connecting the visual map with the attribute table.

PARTICIPATORY GIS-BASED RESOURCE MAPPING (CURRENT)

Village:

Date:

Participants:

NARRATIVE PROMPTS

1. **Local Name** - Meaning, significance or story behind the local name of the land use patch.
2. **Land use and tenure** - Capture the differences among forest patches, for instance, patch 'xxx' is a community conservation reserve, while patch 'yyy' is a community access forest, patch 'zzz' is for communal vegetable cultivation.
3. **Site characteristics** - Gather insights on the Vegetation by noting the 3-4 most dominant species. Try to understand soil quality by quering about humus presence and ask about any sightings of wild animals in the patch.
4. **Care activities** - Quotes around how they care, for instance quotes around regeneration, seed dispersal, plantation drive, etc.
5. **Functional use** - Understand how the patch is used. Capture any quotes on cultural significance or special uses of products if these emerge during discussion.
6. **Access regimes** - Document who can access the land and under what conditions. Note anecdotes about seasonal restrictions, grazing rights, and other seasonality-linked practices.
7. **Governance rules** - Identify who makes the rules and what happens if they are broken. Record examples, such as fines or penalties imposed in the last 12 months.

1.1. (B) STEWARDSHIP FUTURES PARTICIPATORY MAPPING (PROPOSED)

 The objective is to build a shared, community-led action plan for forest and Commons stewardship, using the existing resource map to envision future care activities.



EXISTING LAYERS

1. Local names

2. Land use

Forest, Pasture, cultivation

3. Land Tenure

- JFM
- CFR
- Reserve forest
- Revenue land
- Clan Forest
- Private owned
- Community Forest



PROPOSED ACTIVITIES

4. Status of Patch

- Degraded/poor
- Good

5. Key activity needed

- Restoration
- Conservation
- Both



PROPOSED ACTIVITY DETAILING

6. Regeneration

- Planting wildlings
- Seedballs

7. Tending

- Weeding/Thinning
- Coppicing/pollarding

8. Harvesting

- Pre-Processing practices
- Processing practices

9. Ecosystem maintenance

- Grazing management
- Fire management
- Soil and Water conservation

Materials

Current resource map, Chart papers, sketch pens, pencil, eraser, chalks of different colours

Participants

10-12 community members including elderly, women and youth

Time

60 minutes

Outputs

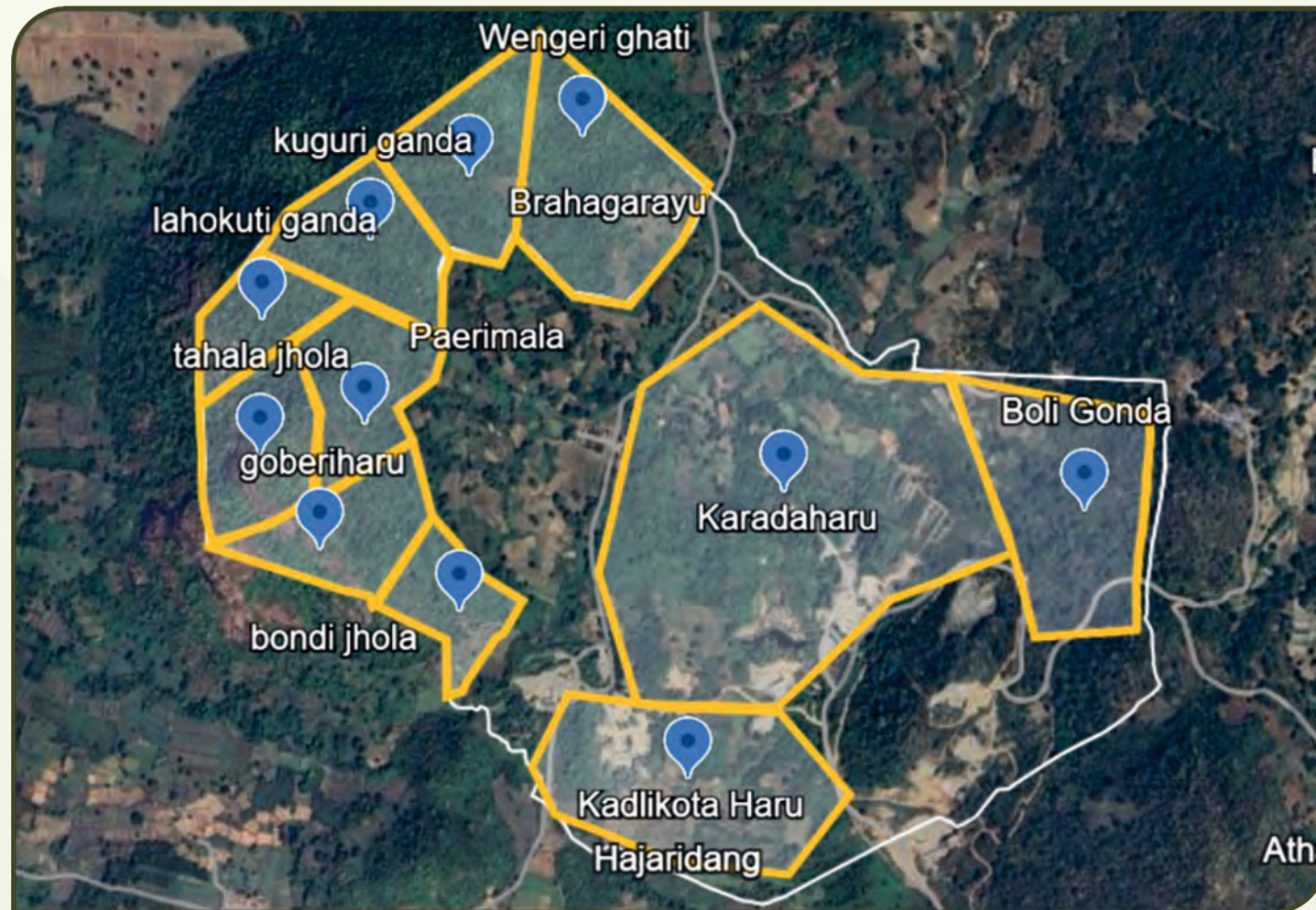
1. Resource map (Proposed)
2. Resource mapping table
3. Narrative write-up

STEWARDSHIP FUTURES PARTICIPATORY MAPPING (PROPOSED)

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed
3. Start with displaying the current resource map prepared.
4. Ask community members to reflect on what actions are needed in each patch to maintain or improve forest condition — e.g., regeneration, protection, water conservation, or resource harvesting improvements.
5. For each patch and activity, fill out the attribute table collectively. Capture details such as the type of activity, who will do it, how often, and support required. This will help formalize the action plan.
6. Capture stories, anecdotes, quotes
 - » Assign someone to document key narratives, stories, quotes emerging from discussions.

STEWARDSHIP FUTURES PARTICIPATORY MAPPING (PROPOSED)



Step 1

We start with the current resource map created by the community (1.1A) as the base.

Show the current participatory GIS-based resource map that was created in the earlier to reignite their memory.

SAMPLE

PROPOSED RESOURCE MAPPING TABLE

Resource Map Info	Current land use	Status of patch	Regeneration	Tending
Guiding questions	What is the main land use/uses? (shall be prefilled)	Patch status and key activity needed- Conservation or restoration	Is regeneration activity req. if yes what? ? How? Enter species name with activity)	What tending activities will you do to care for the patch? Species name
sample	Grazing land, forest land, habitation area, jhum area	Good condition Conservation Poor degraded condition Restoration	Planting of wildlings of 'x' species Seed collection and preservation for 'y' species Seed ball propagation for 'x', 'y' species	Weeding, pruning, thinning, pollarding, coppicing
 Patch 1 (Local Name)				
 Patch 2 (Local Name)				
 Patch 3 (Local Name)				

Village:
Date:
Participants:

Sustainable Harvesting

How do you plan to ensure sustainable harvesting?

Fire mgmt.

What actions will you take to prevent and control fire?

Grazing

Will grazing be allowed?
When and how?

Soil and water conservation

What will you do to conserve soil and water?

Leaving some tuber roots while harvesting

Harvesting limits

Fire lines, cleanliness drives, collection of dead wood, shifting cultivation fires

Dousing fire with branches of (species name)

Grazing allowed in 'x' season

Plantation in stream catchment

Step 2

Ask the communities to identify what activities are required and which patches.. fill the attribute table to capture proposed activities for each locally identified patch.

1.1 (C) MATRIX RANKING

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed
3. Start with listing important species as identified during the proposed resource mapping process.
4. Use criteria setting
 - » Identify and agree upon use criteria (e.g., fuelwood, food, fodder, medicine, income, etc.)
5. Scoring
 - » For each species-use pair, give a score from 1 to 5, with 1 being least useful and 5 being most useful, based on relative importance.
6. Tallying
 - » Count the total scores for each species across all uses and enter in the “Tally” column.
7. Ranking
 - » Rank the species from highest to lowest based on tally scores.
8. Capture stories, anecdotes, quotes
 - » Assign someone to document key narratives, stories, quotes.

Materials

Chart papers, sketch pens, pencil, eraser, chalks of different colours

Participants

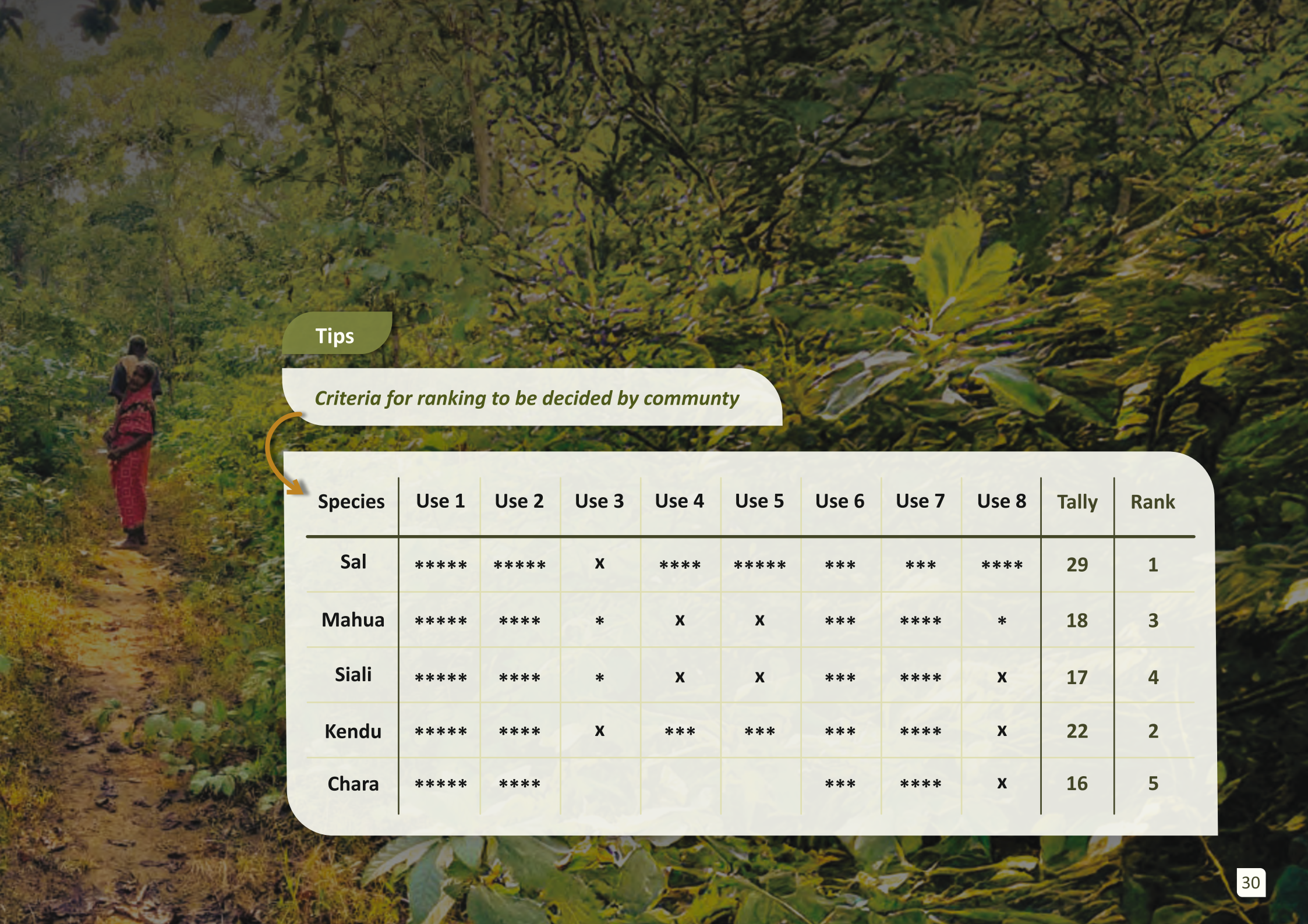
5-8 community members including elderly, women and youth

Time

40 minutes

Outputs

1. Matrix Ranking table
2. Narrative write-up



Tips

Criteria for ranking to be decided by community

Species	Use 1	Use 2	Use 3	Use 4	Use 5	Use 6	Use 7	Use 8	Tally	Rank
Sal	*****	*****	X	****	*****	***	***	****	29	1
Mahua	*****	****	*	X	X	***	****	*	18	3
Siali	*****	****	*	X	X	***	****	X	17	4
Kendu	*****	****	X	***	***	***	****	X	22	2
Chara	*****	****				***	****	X	16	5

1.1 (D) FLOW OF ECOSYSTEM SERVICES FROM THE FOREST

 Understanding the flow of ecosystem services from forests and Commons, both within and beyond the village.

Attributes to capture

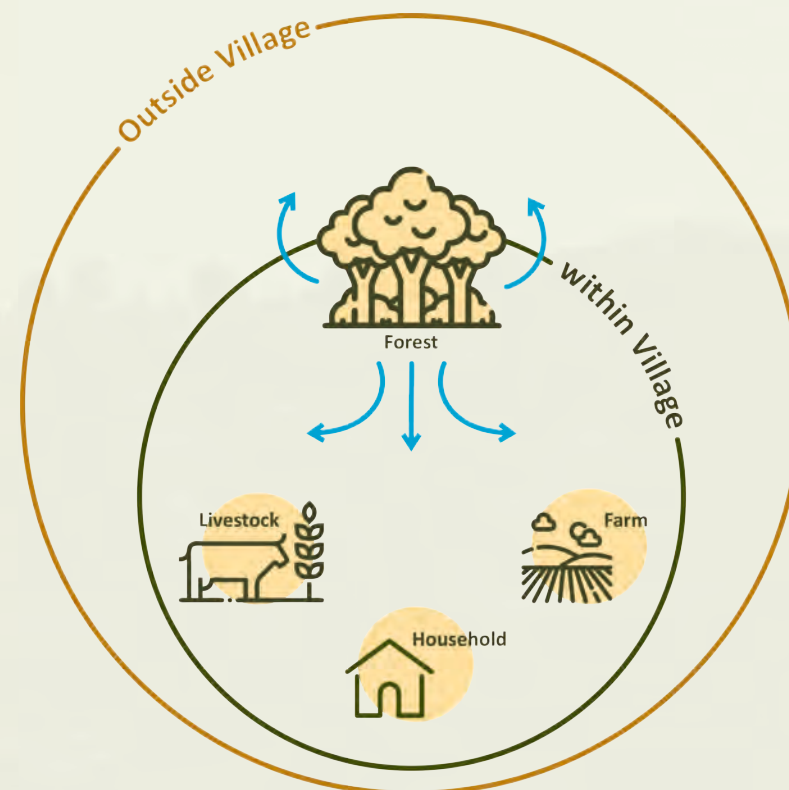
What are the benefits:

From the forest for the farm?

From the forest to Livestock?

From forest to household?

What are the benefits flowing outside village?



Flow of Services

FLOW OF ECOSYSTEM SERVICES FROM THE FOREST

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Ask guiding questions to cover
 - » The benefits that flow from the forest to farms, livestock, households, and outside?
4. Map or tabulate the flows.
5. Parallely document narratives and perspectives of 'ecosystem services' as shared by participants.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

6-8 community members including elderly, women and youth

Time

90-150 minutes

Outputs

1. Ecosystem service flows diagram
2. Ecosystem service flows table
3. Narrative write-up

Example of service flows from the forest in Dollang village, Manipur

To Livestock	To household	To farm	Outside village
Source of water to fisheries	Source of water to household	Source of water to terraces below the forest	Gives fresh air
Maintains good health of the livestock (cattle and cows)	Waterfall near Vangrep pang serves as an ideal spot for recreational activities (picnic, swimming)	Nutrient flow from forest to terraces	Maintains the water quality of Tupan river which flows to Shangi village and Oinupangba stream which flows to Lungleban village
Seed dispersal/ pollination from the droppings	Nutrient/ manure flow to homestead & flowers	Protects terraces from landslides	Protects from storm from damaging the crops/paddy of Longsai and Jaojangtek villages
Provides shed and shelter to the livestock	Forest protects the house from storm	Protects from storm which damages the crops/ paddy	Nutrient flow from forest to Longsai and Jaojangtek villages
	Big trees protect vehicles & people from falling down the cliff in case of accidents		Absorbs carbon dioxide/ cleanse the air
	Protect from the heat, rain and storm while foraging in the forest		Occasional grazing habitat for livestock from Longsai and Jaojangtek villages
	Absorbs carbon dioxide/ cleans the air		Improves health condition of forest product buyers in Bishnupur and Imphal markets

SAMPLE

GUIDING QUESTIONS

Some suggestive pointers are mentioned below for each of the flow points:

1. Forest to Household

- A. What are the key products collected from the forest for household use (e.g., fuelwood, food, medicine)?
- B. How does the forest support your household during lean or crisis seasons?

2. Forest to Farm

- A. How does the forest contribute to farming activities (e.g., irrigation, soil fertility, pollination)?
- B. Are any specific plants or products you collect from the forest to enhance farm productivity?
- C. Can you describe any community practices that link forest and farm management?

3. Forest to Livestock

- A. What resources from the forest are used for livestock (e.g., fodder, grazing, water)?
- B. How do you manage grazing patterns within or outside the forest?

4. Benefits Flowing Outside the Village

- A. Which services (grazing, water flows) flowing from your forest benefit outside villages?





1.2

CARE FLOWS FROM PEOPLE TO FORESTS

These tools capture the care narratives of communities on their resources and traditional knowledge they are carrying from generations.

1.2 (A) CARE & KNOWLEDGE MAPPING

 The purpose of this tool is to discover, recognize and appreciate the valuable knowledge held by communities about their forests and Commons.

DIFFERENT ASPECTS OF TRADITIONAL ECOLOGICAL KNOWLEDGE

A transect walk with community members to their forests will reveal deeper and richer understanding of the ecological knowledge held by them.



Regeneration



Tending



Sustainable harvesting



Soil and water conservation



Forest farm linkage



Fire management

Tips

A transect walk with community members to their forests will reveal deeper and richer understanding of the ecological knowledge held by them.

CARE AND KNOWLEDGE MAPPING

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Initiate the discussion by posing the question, "In your opinion, what is good about the forest or what do you like about the forest?"
4. Ask guiding questions to cover various dimensions of Traditional ecological knowledge (TEK).
5. Capture the TEK as per to different dimensions.
6. Parallely document narratives, stories and quotes emerging from the discussion.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

8-10 community members including elderly, women and youth

Time

90-150 minutes

Outputs

1. TEK mapping as per different dimensions of knowledge
2. Accompanying narratives

CARE AND KNOWLEDGE MAPPING

GUIDING QUESTIONS, CONVERSATION TRIGGERS



Regeneration

1. Do you collect and preserve seeds from forest? For which species? Why?
2. How do you propagate seeds?
3. Do you plant wildlings, for which species? Why?
4. Which other regeneration methods used? Grafting?



Soil and water conservation

1. Understand practices around Composting, Fallow periods in Jhum, planting particular species for soil fertility, manuring.
2. Traditional method of water harvesting?
3. Water harvesting structures developed ?
4. How is soil moisture managed in dry period?



Tending

1. Firewood collected from which species, how, and when?
2. Which species coppice well?
3. Fodder from which species, how and which season?
4. What tending operations are carried out in shifting cultivation? At what height are trees cut so that they coppice? What species are retained? Why?
5. Other operations



Forest farm linkage

1. Do you use forest products for pest control? Which ones and for which pests?
2. Do you use forest medicines for animals? For which ailments and which plants work best?
3. How is grazing connected to the forest?
4. Does the nearby forest affect crop health? How?
5. Are some trees retained during shifting cultivation? Why?



Sustainable harvesting

1. Do you celebrate planting and/or harvesting festivals, which ones, when and why?
2. How do you harvest different parts of the plant to allow regeneration?
3. Rules and mechanisms around harvesting - harvest limits?



Fire management Control and prevention

1. What traditional methods of fire prevention are used?
2. Do logs of certain species help in dousing fire? Which ones?
3. How are controlled fires done? in which season?
4. Do you know when fire risk is high in forest? how?
5. Rules around fire control

1.2 (B) CARE ECONOMY

 The objective is to understand and appreciate the different types of care activities undertaken by the communities while interacting with their forests.



Identify
care activity



Map
seasonality



Regeneration

Wildling planting
Seed preservation
Plantation drives



Tending

Weeding and mulching
Coppicing, pollarding
Pruning, lopping



Harvesting

Leafy vegetables, fruits
Mushrooms, Tubers
Flowers, shoots



**Ecosystem
Maintenance**

Soil and moisture
conservation
Fire management
(control and prevention)
Grazing
Group patrolling

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Season identification
 - » Identify key seasons as per communities' local calendars.
4. Identify and map according to season,
 - » Regeneration activities
 - » Who is chiefly responsible?
5. Similarly identify and map different tending operations, harvesting as well as Ecosystem maintenance activities.
6. Parallely document narratives, stories, quotes focusing on gendered perspectives.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

6-8 community members including elderly, women and youth

Time

90-150 minutes

Outputs

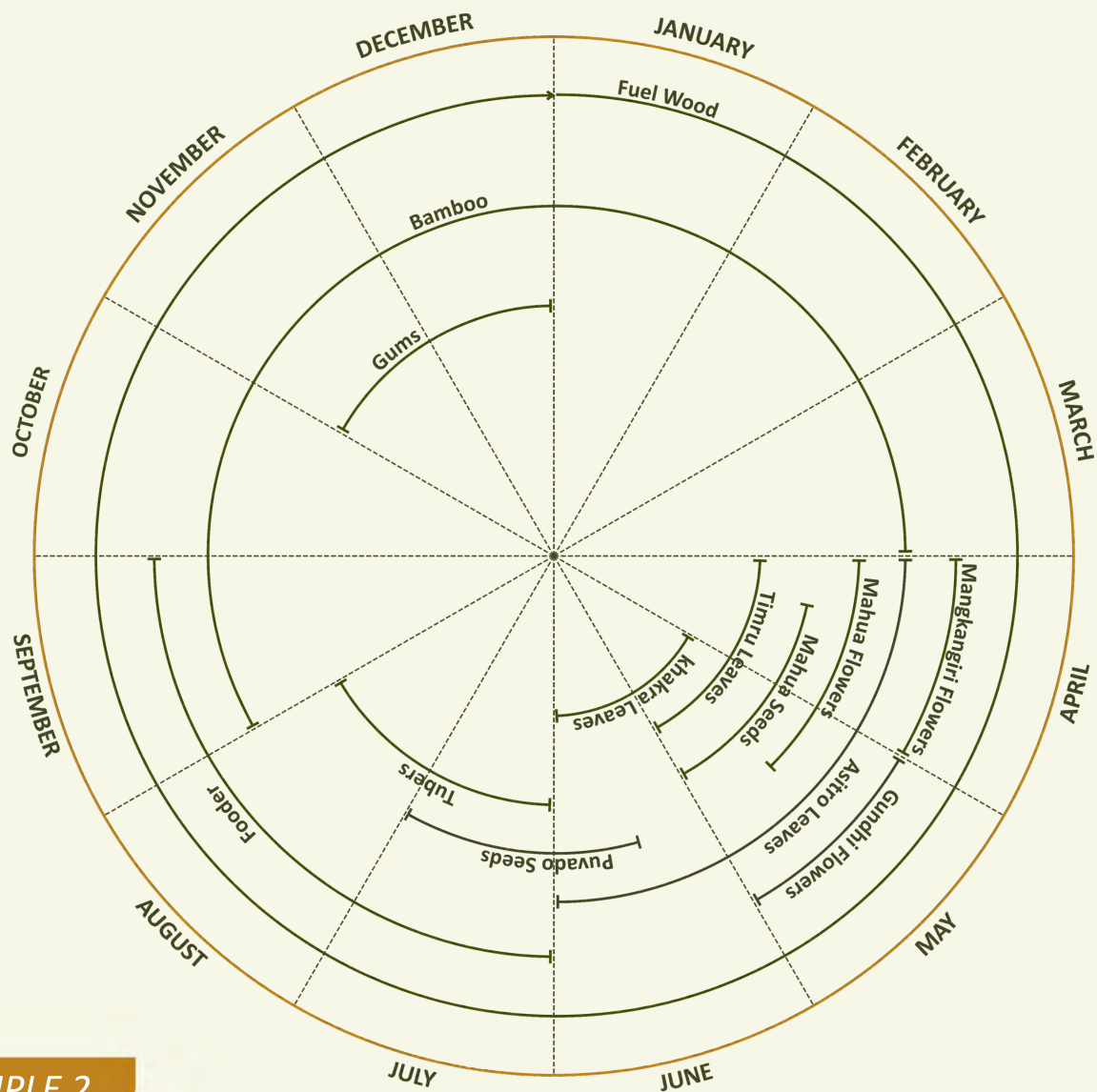
- Care Economy mapping
- Narrative writeup

CARE ECONOMY MAPPING

S.No	Care Category	Care Activity	Season 1	Season 2	Season 3	Season 4	Women	Men
1	Regeneration	Wildling, Sapling planting	**	***		*	***	**
2	Regeneration	Seed preservation			**	**		
3	Tending	Coppicing/fuel wood collection	***	***	*	*	***	
4	Tending	Climber cutting	*	*	*	*	*	**
5	Tending	Lopping, fodder collection	**	**	***	***	***	
6	Harvesting	Leaves collection	***	***	***	**	***	
7	Harvesting	Tubers, roots	**	**			***	
8	Ecosystem main.	Fireline			**		*	**
9	Ecosystem main.	Seasonal grazing	**	**			*	***

SAMPLE 1

SAMPLE 2



In place of the products mentioned here map the activities undertaken by communities in different seasons here.

Also map who does more, men or women – by scoring from 1 to 5

CARE ECONOMY MAPPING

GUIDING QUESTIONS

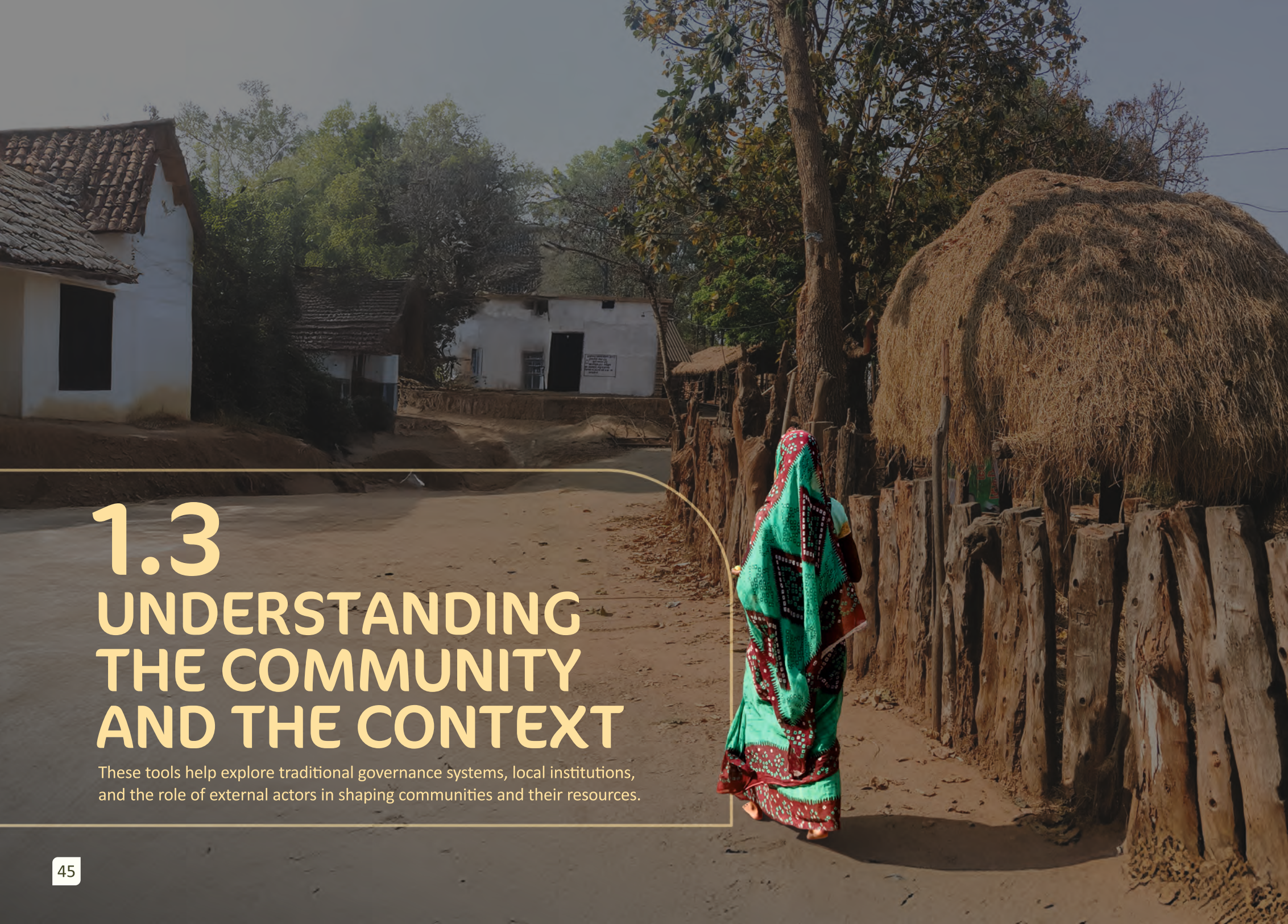
1. Identify key seasons

- A. Which are key seasons observed here?
- B. Identify the approximate duration, including its start and end months, for better understanding.

2. Identify and Map care activities

- A. Regeneration
 - i. Do you collect wildings from the forest, why, in which season, for which species, who collects?
 - ii. Do you preserve seeds, what are the methods, why, in which season, which species, who does?
 - iii. Does village community undertake plantation drives, when, for which species, who does?
- B. Tending operations
 - i. Do you collect fuelwood, how (coppicing, cutting branches, dead wood), in which season, who does?
 - ii. Do you collect fodder, how (lopping, cutting), in which season and who does?
- C. Harvesting
 - i. What products are harvested?
 - ii. For each product, ask in which season, and who does?
 - iii. Do you celebrate any harvest festivals, in which season, why and who does?
- D. Ecosystem maintenance - how do you do fire control, soil and water conservation, grazing, invasive sp. mgmt. , in which season, and who does?



A woman wearing a vibrant green and red patterned sari is walking away from the camera on a dirt path in a rural village. To her right is a large, round, thatched-roof structure, possibly a granary or a traditional oven, surrounded by a rustic fence made of vertical wooden posts. In the background, there are several white-washed buildings with dark doorways and windows, some with tiled roofs. A large, leafy tree stands near the center of the path. The overall scene depicts a traditional rural setting.

1.3

UNDERSTANDING THE COMMUNITY AND THE CONTEXT

These tools help explore traditional governance systems, local institutions, and the role of external actors in shaping communities and their resources.

1.3 (A) VILLAGE HISTORY

 The aim of this exercise is to construct the history of the forest and the village.

HISTORICAL TIMELINE

Year	Description of Event
xxxx	<i>Establishment of Village</i>
xxxx	Bifurcation of village
xxxx	<i>NGO 'X' entry with 'y' project</i>
xxxx	Government plantation
xxxx	Conservation reserve declared by community covering area

Tips

Only events related to forests, pasture lands and other common resources are to be captured here.

VILLAGE HISTORY

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Identify a starting point for the timeline by establishing key milestones (e.g. village establishment).
4. Chronological mapping
 - » Organize events year-wise or by significant periods (e.g., decades)
5. Specifically, document events related to forests, pastures, water bodies, and other commons.
6. Parallely document narratives, stories, quotes such as story of village establishment, meaning of village name.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

6-8 community members including elderly, women and youth

Time

30 minutes

Outputs

1. Historical timeline
2. Narrative writeup

VILLAGE HISTORY

Before 1950	1950	1968	1978
Settled in the village since many years back	Shifted Bwanruangh to Taudaizaeng	Shifted Taudaizaeng to Sukuangluang area of 25 household	Settled to Diamchangluang or Bwanruangh Taudaizaeng (present village)

Year/Period	Event
1970	Primary school established
1993-1995	Sand quarry developed at Irang River. Introduction of orange, lemon, pineapple in horticulture farm to large scale
1997-2000	Plantation of lemon grass, sandal wood
2003	Banana plantation to large scale and upgraded junior high school to High school
2018	Hunting banned completely till date, RNBA initiated agroforestry. Activity called FORLIS (Forest Restoration of Locally Important Species).
2018-2024	Spring shed based water shed program undertaken under NABARD.
2019-2021	Identified as one of the model villages under HADP.
2020-2024	Increase in access to entitlement: Ration, revival of school, community Hall construction, Swachh Bharat, Anganwadi, Housing scheme, health insurance. Main crop of livelihood is banana.

SAMPLE 1

VILLAGE HISTORY

GUIDING QUESTIONS

1. Identifying Key Historical Events

- When was the village established?
- Have there been any major changes in land use or boundaries (e.g., bifurcation, expansion)?
- Have there been any natural disasters (floods, droughts, forest fires) that affected the village and its resources?

2. Forest and resource management

- Since when has community been conserving forest and natural resources?
- Has jhum been practiced, since when?
- Has any major plantations taken place, when? why?
- Have there been efforts to conserve specific species or declare conservation areas/reserves? If so, when and why?
- Are there any festivals tied to history of the village
- When were invasive species first observed?

3. Mapping Significant Interventions

- When did any outside organizations (NGOs, government) start intervening in forest or natural resource management?
- What projects or programs were introduced, and by whom, in which period/year

4. Narrative aspects - story of village formation, festivals around significant events, conservation areas, etc.

1.2 (B) TIME TREND MAPPING

🎯 The aim of this exercise is to understand how land use, resource conditions, and the accessibility and utilization of these resources have changed over two to three time periods.

ASPECTS THAT CAN BE COVERED IN TIME TREND

Land use change



Forest Resource change



Land access and use change



TIME TREND MAPPING

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Identifying Time Periods
 - » Define three key time periods based on significant events.
4. Land Use Change
 - » List dominant land uses (forest, agriculture, settlements) for each period.
 - » Use stones/stars to mark proportional land area, where the total land area under all uses for any one period = 10
5. Forest Resource Change
 - » SCORE out of 5 STARS for biodiversity, species density, age gradation, fire intensity, and soil/humus stars) for each period.
6. Land Access & Use Change
 - » Rate access changes on a scale of 1 to 5, where 1 means least access and 5 means full access.
7. Document changes in land use, resource conditions (forest, fish) and access (e.g., forest food, medicinal plants) in a structured table for clarity and analysis.
8. Parallely document narratives, stories, quotes around change in forest over time, availability of forest food, etc.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

6-8 community members including elderly, women and youth

Time

45 minutes

Outputs

1. Time trend mapping
2. Narrative writeup

TIME TREND MAPPING

Land use change

Period	1947	1985	2023	Remarks
FOREST	7.5	6	4	
SHIFTING CULTIVATION	2	2	1	
HABITATION	0.5	1	1	
HORTICULTURE	0	0	1	
USED TERRACE	0	1	0	
UNUSED TERRACE	0	0	1	
FOREST TO HIGHWAYS	0	0	2	
Total	10	10	10	

SAMPLE 1 - LAND USE CHANGE

Tips

The total of land uses listed for each of the time periods should be equal to 10.

Forest Resource change

Period	1947	1985	2023	Remarks
PLANT BIODIVERSITY	*****	****	***	
ANIMAL BIODIVERSITY	*****	****	***	
AGE GRADATION (multiple age trees)	****	****	***	
FOREST DENSITY	****	***	***	
FOREST FIRE	**	***	***	
HUMUS/LEAF LITTER	****	***	**	

Tips

SAMPLE 2 - RESOURCE AVAILABILITY CHANGE

A score of 1 means the lowest level of the attribute, while a score of 5 means the highest.



Land access and use change

Period	1947	1985	2023	Remarks
FOREST FOOD ACCESS	*****	*****	***	
FIREWOOD ACCESS	*****	*****	***	
MEDICINE ACCESS	*****	***	**	
GRAZING ACCESS	***	**	**	
LIVELIHOOD ACCES	*****	**	*	

Tips

Also capture the ‘why’ behind the change in resource change and land access and use change.

TIME TREND MAPPING

GUIDING QUESTIONS

Past

1. What stories have elders shared about the forest and land use in the past?
2. Were there specific customs, rituals, or beliefs associated with land and forests?
3. How were community decisions about land use made? Who had authority?
4. How did people experience the availability of forest products (was there abundance or scarcity)?
5. What were the traditional rules for accessing and using forest resources?

Middle

1. What were the biggest events or changes that affected forests and land use? (e.g., government policies, migration, development projects, natural disasters)
2. How did the community react to these changes? Did they resist or adapt?
3. Did new groups (e.g., government, private companies) get involved in land decisions?
4. What kind of new opportunities or challenges arose in this period?

Present

1. What are people most concerned about regarding forests today?
2. How has climate change affected forests and resource availability?
3. What conservation or restoration efforts are happening, and who is leading them?
4. Have younger generations' interactions with the forest changed compared to older generations?
5. Are there any new conflicts over access and use of land and forest resources?
6. What are the key aspirations of the community regarding forests and land in the future?
7. If they could change one thing about forest governance today, what would it be?
8. In which season, and who does?

1.3 (C) INSTITUTIONAL MAPPING

 The aim is to map out and understand the roles of different traditional and external institutions/agencies functional in the village.



Traditional Institution



Carved Institutions



External Agencies

INSTITUTIONAL MAPPING

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Institution listing
 - » List out all traditional institutions who play a key role in decision making and governance of natural resources
 - » List out all carved institutions related to natural resources. These are the institutions which have been created due to external agencies and their associated projects.
 - » Link the carved institutions to the external agency and project which led to the creation of the institution
4. For each of the identified institutions, map out the roles and responsibilities, regulations they create, benefit sharing arrangements, dispute redressal mechanisms.
5. Ask the community to rank the institution's power and influence on a scale of 1 to 5, with 1 being the least powerful and 5 the most.
6. Gather community perspectives on each institution—whether they see it as good or bad and why.
7. Capture narratives, quotes and insights about the workings of the institutions.

Materials

Chart papers, sketch pens, pencil, eraser

Participants

6-8 community members including elderly and youth

Time

45 minutes

Facilitators

2 persons

Outputs

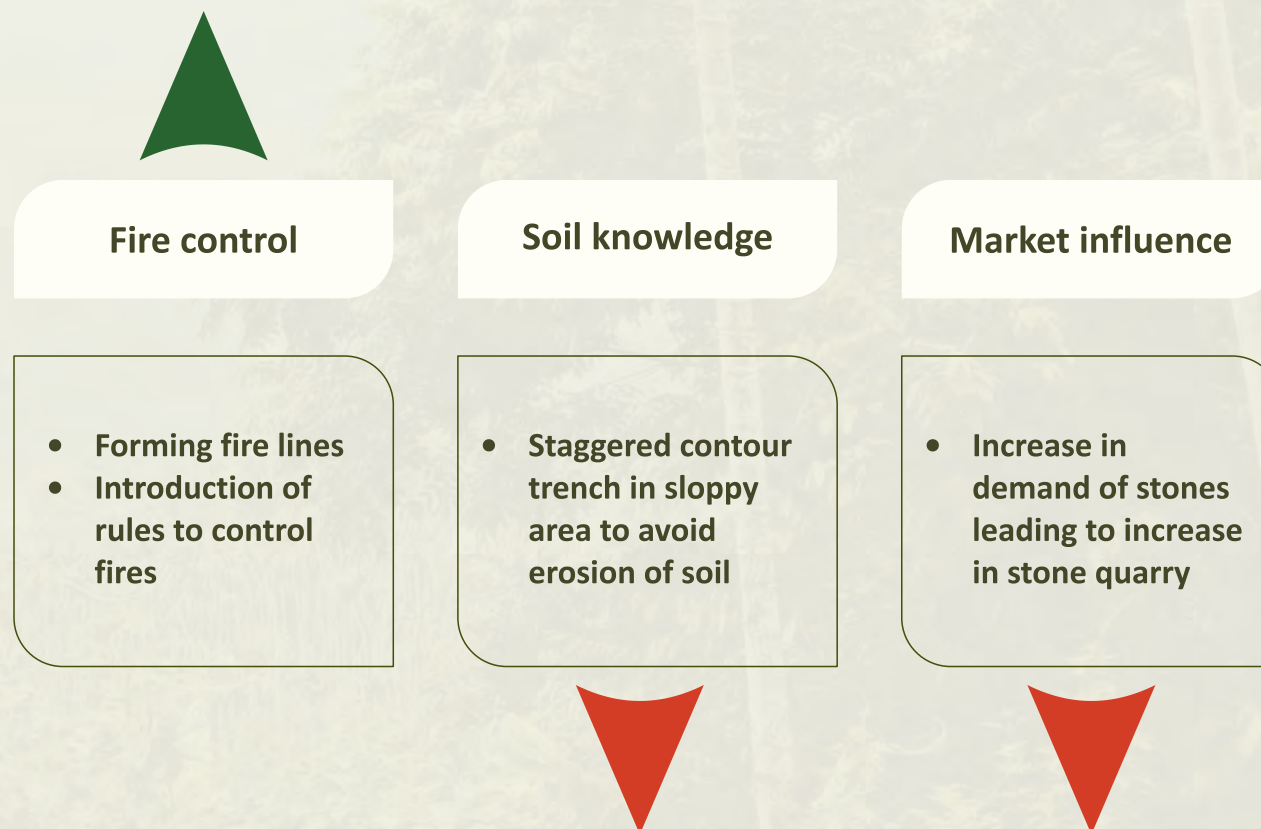
1. Institutional mapping table
2. Narrative writeup

INSTITUTIONAL MAPPING

Traditional Institution		Intervention list	Regulations/ Rules	Benefit sharing arrangements	Good or bad or mixed
Gram Sabha					
Carved Institutions	Associated agency				
VSS	JICA				
Committee name	PRADAN				
Committee name	NABARD				
Self Help Groups	Livelihood mission				
Watershed Committee	Soil and Moisture conservation department (SMCD)				

IMPACT OF EXTERNAL AGENCY POSITIVE OR NEGATIVE

 The aim of this additional tool is to understand whether the actions by external agencies have a positive or negative impact on Community Stewardship.



SAMPLE

IMPACT OF EXTERNAL AGENCY

Quantum of external investment

 The aim of this exercise is to understand the quantum of investment from external agency into the village.

S. no.	Description of Event	Activity	Investment
1	JICA	1. <i>Plantation</i> 2. <i>Nursery</i>	1. <i>Rs. XXXXX</i> 2. <i>Rs. XXXX</i>
2	WATERSHED DEPARTMENT	1. <i>Check dam</i> 2. <i>Plantation</i> 3. <i>contour trenches</i>	1. <i>Rs. XXXXX</i> 2. <i>Rs. XXXXX</i> 3. <i>Rs. XXXXX</i>
3	MGNREGA	1. <i>Check dam labour component</i> 2. <i>CC road labour component</i>	1. <i>Rs. XXXXX</i> 2. <i>Rs. XXXXX</i>
4	Forest Department	1. <i>Plantation</i>	1. <i>Rs. XXXX</i>
5	Livelihood mission	1. <i>Loan to SHG members</i> 2. <i>Enterprise development fund</i>	1. <i>Rs. XXXXX</i> 2. <i>Rs. XXXXX</i>
	TOTAL		Rs. XXXXXX

SAMPLE

INSITUTIONAL MAPPING

GUIDING QUESTIONS

1. Understanding Institutional Roles & Responsibilities

- What are the key responsibilities of this institution?
- How are decisions related to natural resources made within this institution?
- Who participates in decision-making, and how are decisions enforced?
- How has the role of this institution changed over time?

2. Governance Mechanisms & Regulations

- What rules or regulations has this institution established for managing natural resources?
- How are these rules enforced? What happens when someone violates them?
- Have there been changes in these rules over time? If so, what led to the changes?

3. Benefit Sharing & Resource Distribution

- How are benefits (e.g., forest produce, plantations, soil and water conservation, project funds) distributed by this institution?
- Are there specific eligibility criteria for benefit distribution?
- Do some groups benefit more than others? Why?

4. Traditional vs. Carved Institutions

- How do traditional institutions differ from externally created (carved) institutions in their approach to governance?
- Do carved institutions work in coordination with traditional ones, or do they operate separately?
- Has the introduction of carved institutions changed power dynamics in the village? How?

2 HOUSEHOLD FOREST INTERFACE ASSESSMENT





2.1 Evaluating household level connectedness to forest and Commons

2.1

EVALUATING HOUSEHOLD LEVEL CONNECTEDNESS TO FOREST AND COMMONS



HOUSEHOLD FOREST INTERFACE

 The aim is to understand the household level interactions with the forest.

1 Livelihood Basket

Understand the activities undertaken for sustenance, such as collection of products from forest, jhum, etc.

2 Land Details

Identify the different levels of land access-such as possession, lease, ownership, and use-across various land types.

3 Forest People Interactions

What is a good forest, knowledge of forest routes, frequency of visiting forest, purpose of visiting forest, reason for protecting forest

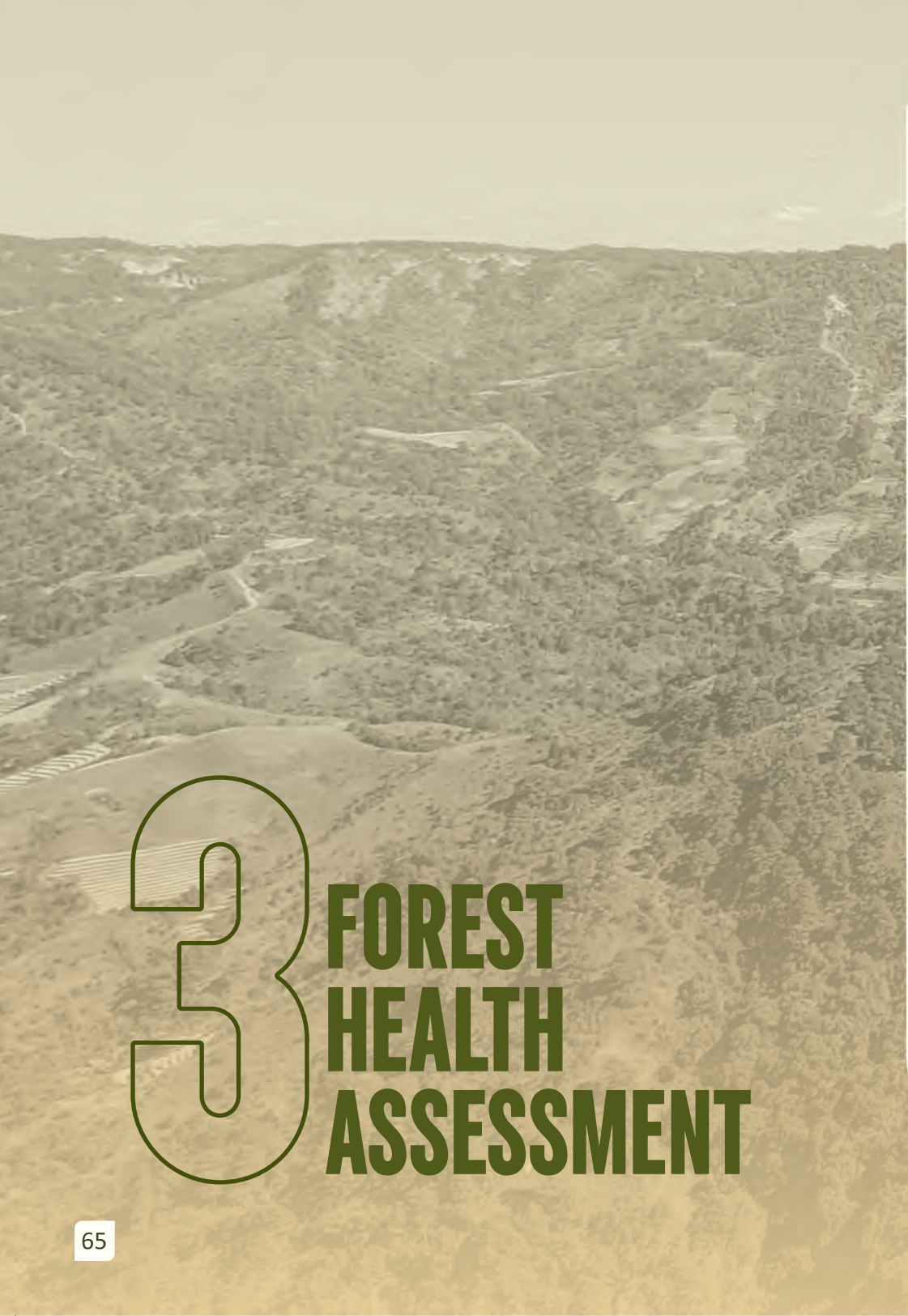
Understanding the time invested in forest activities through a 7-day recall

4 Institutional access and participation

Understand the level of participation of the household in forestry-related institutions.

5 Emerging Opportunities /Risks

Understanding the household's view of the various opportunities and risk present.

An aerial photograph of a vast, hilly landscape covered in dense forest. The terrain is undulating with various ridges and valleys. A large, dark green outline of the number '3' is superimposed on the lower-left portion of the image, partially overlapping the forest. To the right of the '3', the words 'FOREST HEALTH ASSESSMENT' are written in a bold, dark green, sans-serif font.

3 FOREST HEALTH ASSESSMENT





**3.1
TRANSECT WALK**

**3.2
FOREST CLASSROOM**

**3.3
BIODIVERSITY &
BIOMASS ASSESSMENT**

3.1 TRANSECT WALK

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. A 250-meter transect with a 2+2 m belt for dense forests and 5+5 m for open forests will be followed .
4. Start the Transect
 - A. Take the initial GPS reading to mark the starting point of the transect start (walk few meters inside the forest).
5. Data Collection
 - A. Observe within the defined belt.
 - B. Team splits: Left side observes site indicators (droppings, humus, deadwood, etc.), Right side does the same.
 - C. Count steps (around 400) as you walk along.
6. End the transect
 - A. End the transect at 250 meters and record the GPS endpoint.
7. Collation & Entry
 - A. Sit together, compile observations.
 - B. Enter data into Kobo Collect/ODK app.

Materials

Field note book, andriod phone installed with kobo Collect/ODK app

Participants

5-6 community members including women, elderly, and youth

Time

60 minutes

Facilitators

2 persons

Outputs

1. List out community indicators of forest health
2. Narrative writeup

Forest health and community forest engagement indicators to be observed

No. of lopped trees/ cut stump

No. of dead standing trees

No. of ant/ termite mound

Thickness of humus (in inch)

Signs of edible mushroom

Sign of poisonous mushroom

Well-defined stand age gradation

Presence of water bodies

Sign of dead dying wood/ debris

Sign of diseased plant/ leaf discoloration

Sign of pollinators (Bees, wasps, butterflies, moths, birds, beetles)



Sign of wildlife droppings

Sign of livestock droppings

Sign of fire instances

Sign of regeneration after fire

Sign of soil erosion (landslides)

Sign of coppice shoots

Sign of logging

Sign of climber cutting

Sign of pollarding/ lopping

Sign of girdling

Sign of lichen/ mosses on the tree barks/ rocks/ ground

3.2 FOREST CLASSROOM

Materials

Field note-book

Participants

5-6 community members including women, elderly and youth

Time

60 minutes

Facilitators

2 persons

Outputs

1. Understand "why" are these considered as indicators
2. Their impact on the structure & function of forest

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Sit together with the community members like that of a classroom environment.
4. Brainstorm on the observations made during the transect walk.
5. Identify community's indicators for defining the health of the forest based on their intrinsic knowledge.
6. Understand the reasoning behind recognizing certain community-defined indicators (eg: nature of land, water, flora and fauna, productivity etc) as valid indicators of the forest health.
7. Also explore how specific indicators or activities such as FOOD COLLECTION, FIRE, GRAZING and HUMUS influence the structure and function of the forest.
8. Simultaneously take notes/ narratives of the conversations.



STRUCTURE

- Reduce weeds
- Regeneration of new species
- Increase/ decrease regeneration based on tending operations
- Increase/ decrease seed germination
- Maintain plant diversity
- Maintain habitat diversity

IMPACT



IMPACT



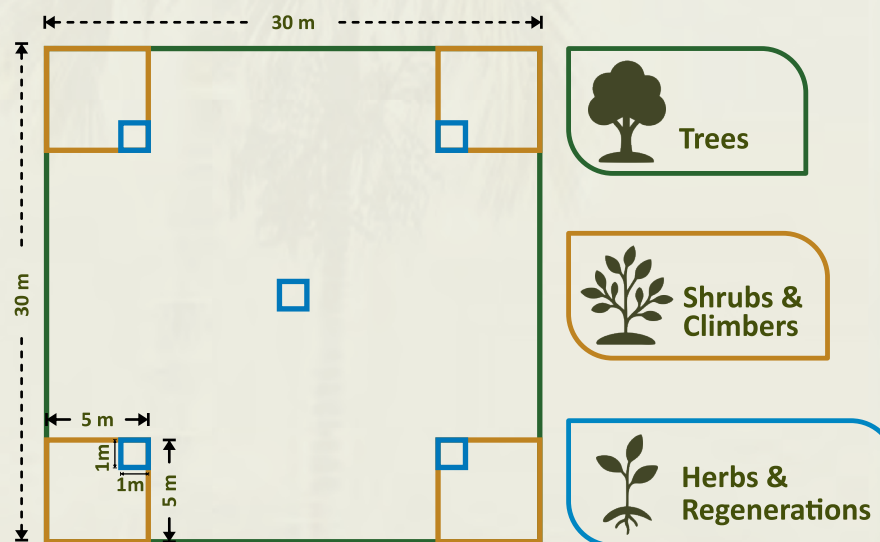
FUNCTION

- Control pest & diseases
- Provide nutrition & livelihood
- Maintain food sovereignty
- Enhance soil fertility
- Water retention & infiltration
- Soil carbon sink
- Produce meat, milk, dung
- Maintains grassland habitat

3.3 BIODIVERSITY & BIOMASS SURVEY

Process

1. Ice-Breaking & Introduction
2. Explaining the Tool & why it is being deployed.
3. Start laying quadrat with the participants.
4. Within 30X30 m :
 - » Identify all unique tree species within the plot and count the number of individuals for each species.
 - » Measure the girth of the tree at 1.37 m from the ground (Diameter at Breast Height) and a rough estimate of the tree height.
5. Within 5X5 m:
 - » Identify & count the number of shrubs, climbers & Lianas.
6. Within 1x1m:
 - » Identify & count the number of herbs, creepers, tubers & regeneration sp.



Materials

Field note book, andriod phone installed with Kobo Collect/ODK app

Participants

8-10 community members including women, elderly, and youth

Time

120 minutes

Facilitators

3-4 persons

Outputs

Data collection/entered in the kobocollect app

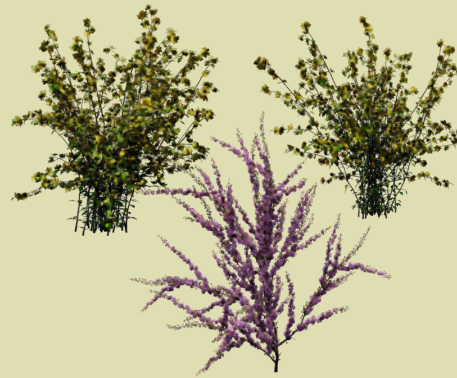
Stratification in a forest

Trees



- Single trunk/stem with branches
- Pole: Height 2-10 m
- Adult tree: Height > 10 m

Shrubs & Climbers



- Lack a trunk, rather have many woody stems
- Height < 10 m

Herbs & Regenerations



- Soft, green, delicate stems without woody tissues

UNFCCC RECOGNIZES FOLLOWING 5 POOLS

Living Biomass

1. Above ground
2. Below ground

Dead Organic Matter

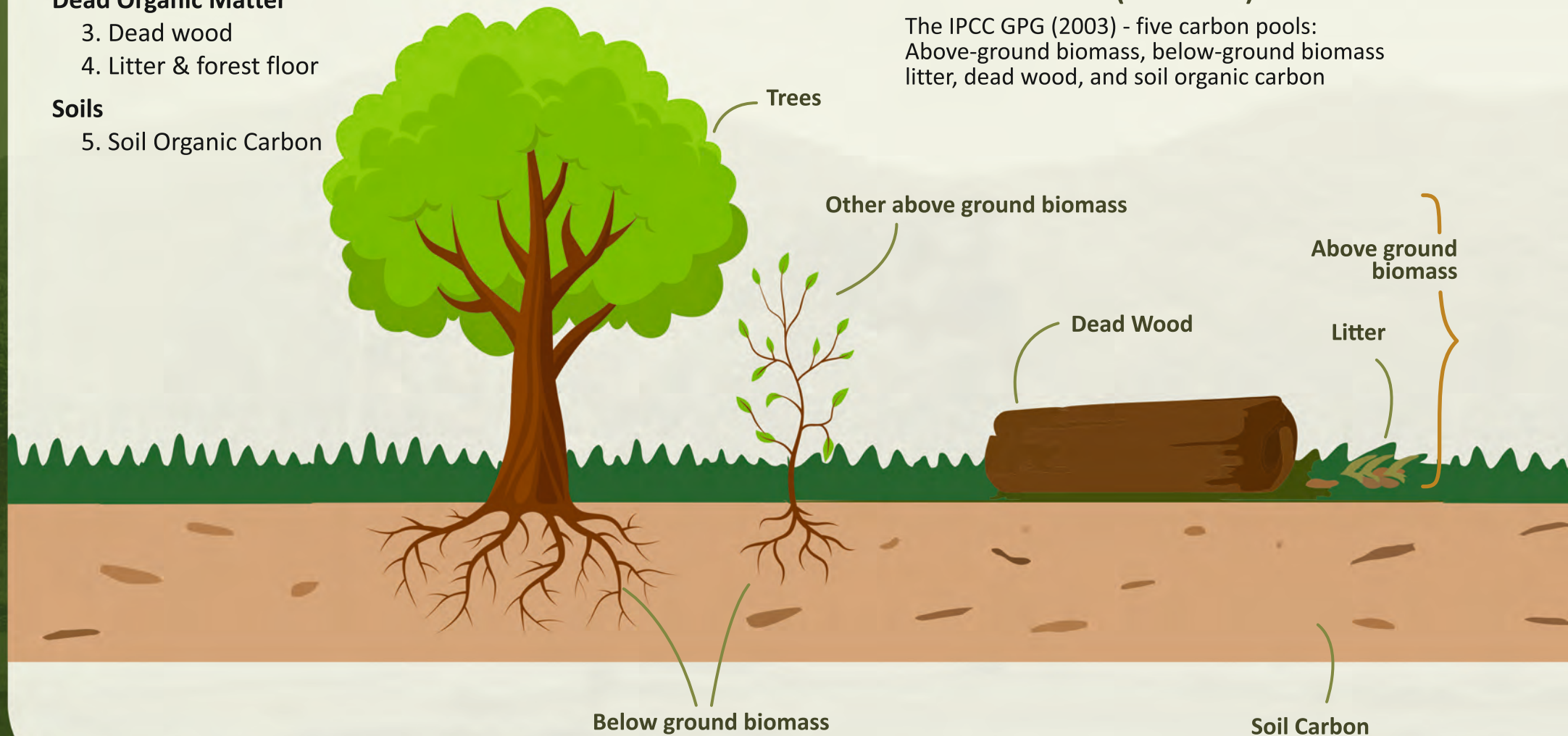
3. Dead wood
4. Litter & forest floor

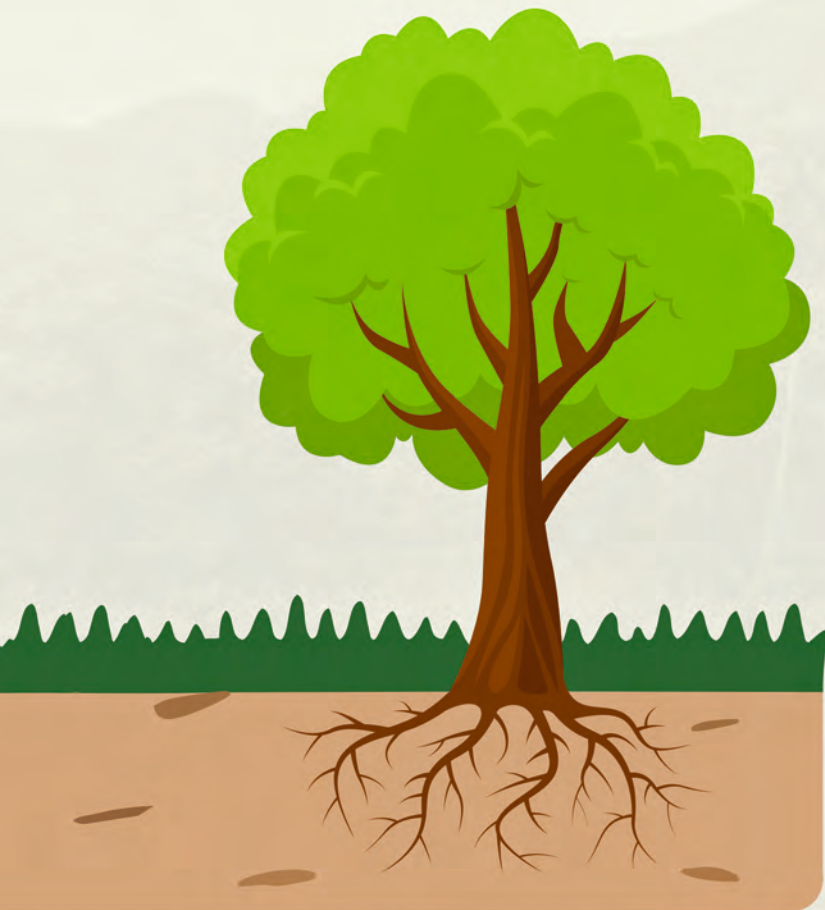
Soils

5. Soil Organic Carbon

CARBON POOLS (IPCC GPG)

The IPCC GPG (2003) - five carbon pools:
Above-ground biomass, below-ground biomass
litter, dead wood, and soil organic carbon





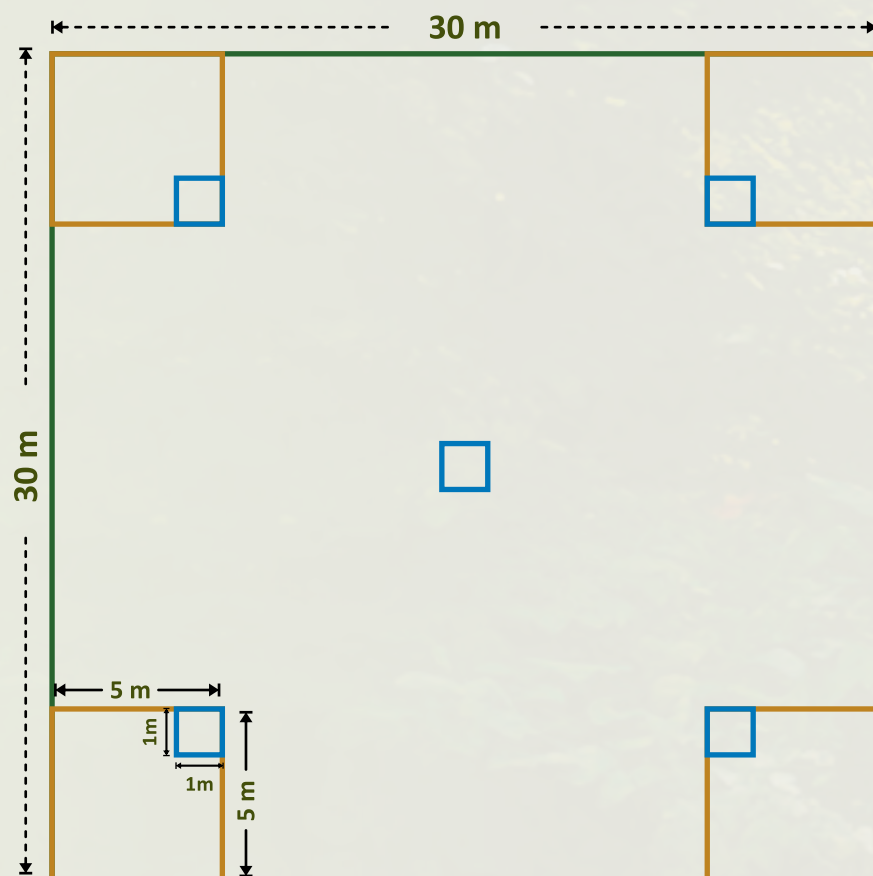
Methods for estimation of Above Ground Biomass (AGB):

- Destructive method
- Species-specific volume equation (FSI 1996)
- Allometric equation
- Remote Sensing & Geographical Information System

Methods for estimation of Below Ground Biomass (BGB):

- Root-to-shoot Ratio (IPCC 2003, Mokany et al., 2006)
- The conversion factor depends on the value of AGB

QUADRAT METHOD



Trees



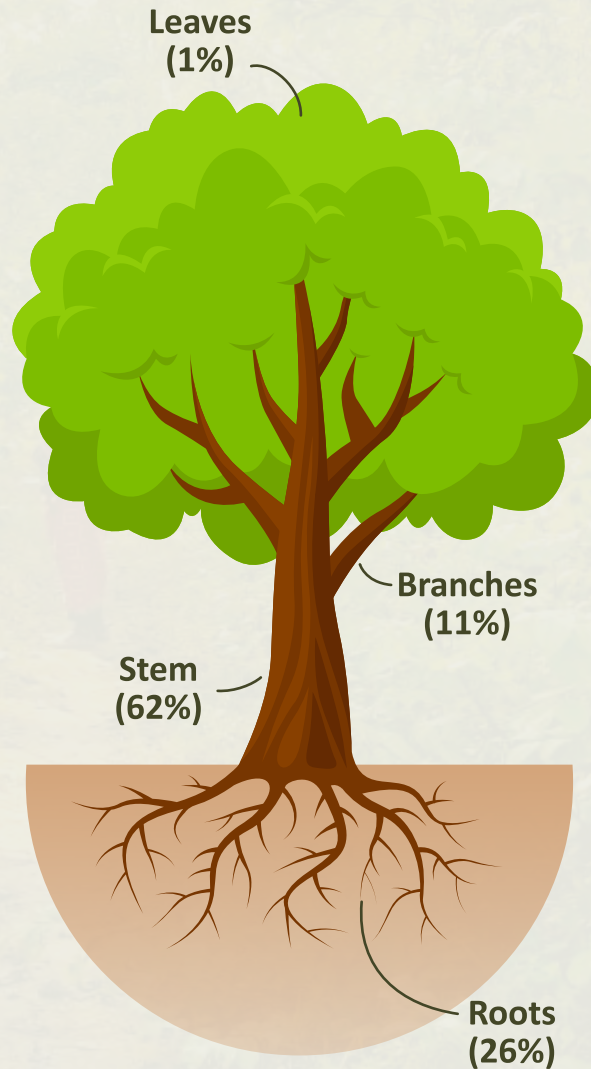
Shrubs &
Climbers



Herbs &
Regenerations

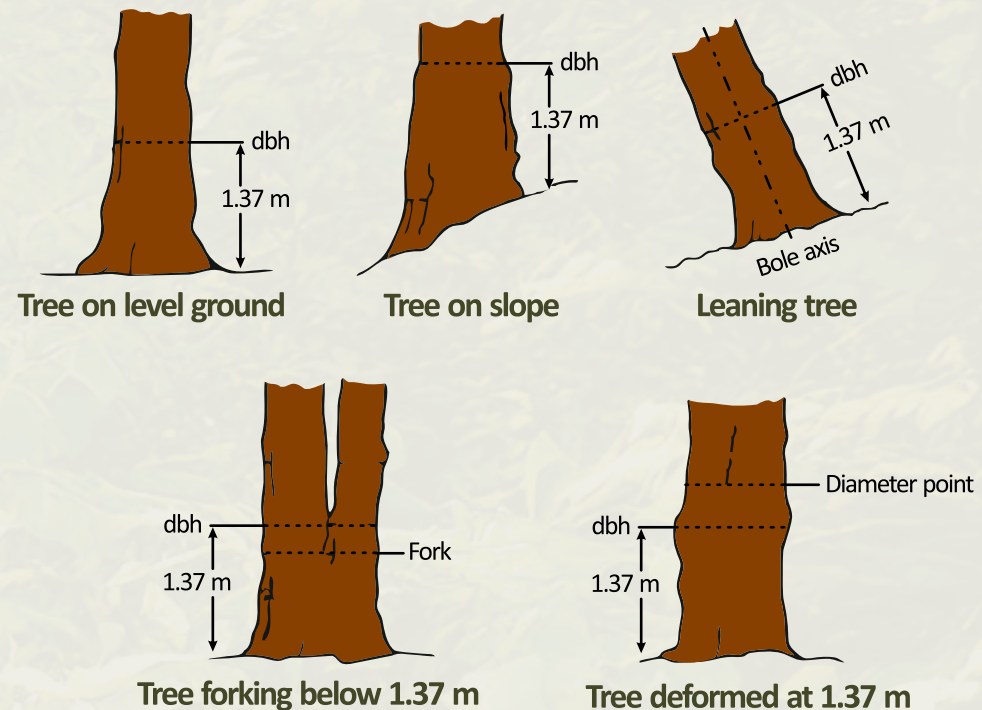
The tool will be deployed using quadrat method and data will be simultaneously collected in Kobo/ODK Toolbox.

Tree biomass percentage



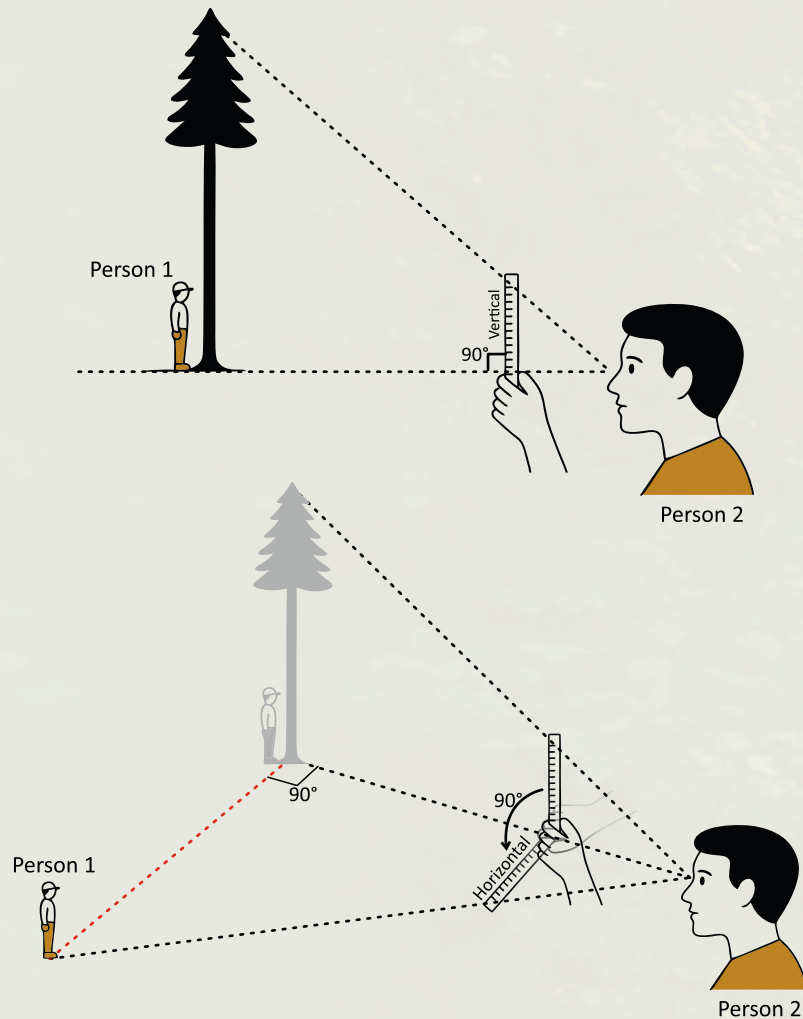
How to measure the DBH (at 1.37 m from ground)

- On a plain forest floor, DBH will be measured at 1.37 m from the ground
- On a slope, diameter will be measured on the uphill side of the tree
- If trees have a lean, diameter will be measured along the bole axis, starting from the uphill side
- When the tree is forked below 1.37 m, it will be considered as two separate trees and diameter will be measured separately.
- When irregularities occur at DBH, including swellings, bumps, depressions, or branches, diameter will be measured immediately above the irregularity where the stem takes on a normal form



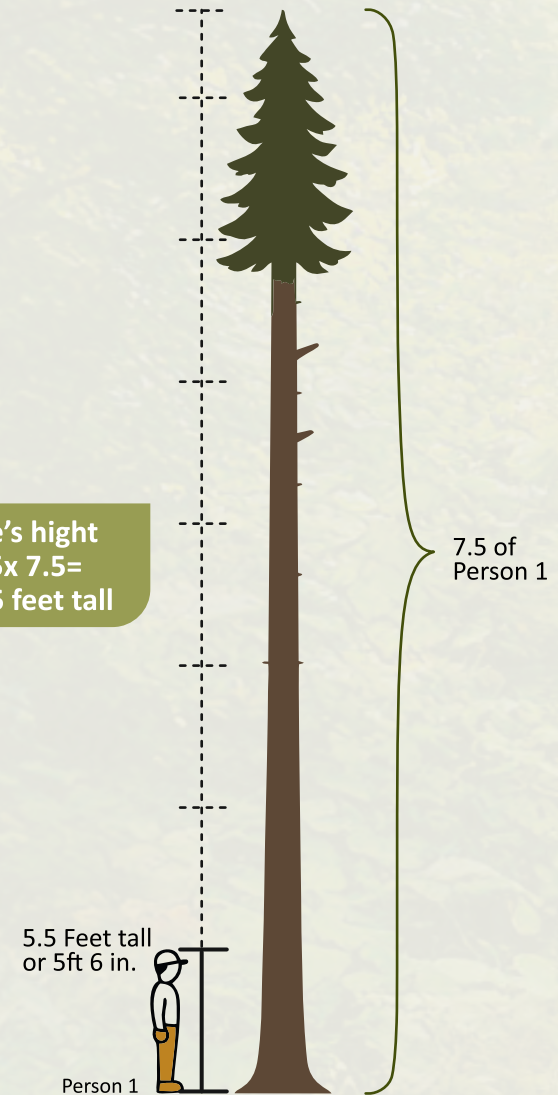
HOW TO ESTIMATE TREE HEIGHT ?

1. With a pencil/scale and an assistant



2. With a stick/ person of known height

Tree's hight
 $5.5 \times 7.5 =$
41.25 feet tall



HOW TO ROUGHLY ESTIMATE TREE HEIGHT:

Step 1 - Stand far enough from the tree so you can view the whole tree—top to bottom—without moving your head.

For the most accurate measurement, you should stand so that you are on a piece of ground that is about level with the ground at the tree's base, not higher or lower. Your view of the tree should be as unobstructed as possible.

Step 2 - Hold a pencil at arm's length.

You can use any small, straight object, such as a paint stick or ruler. Hold it in one hand and stretch your arm out so that the pencil is at arm's length in front of you (between you and the tree).

Step 3 - Close one eye and adjust the pencil up or down so that you can sight the very top of the tree at the top of the pencil.

This is easiest if you turn the pencil so that the sharpened point is pointing straight up. The tip of the pencil should thus just cover the top of the tree in your line of sight as you look at the tree "through" the pencil.

Step 4 - Move your thumb up or down the pencil so that the tip of your thumbnail is aligned with the tree's base.

While holding the pencil in position so that the tip is aligned with the tree's top (as in step 3), move your thumb to the point on the pencil that covers the point (again, as you look "through" the pencil with one eye) where the tree meets the ground. Now the pencil is "covering" the entire height of the tree, from the base to the tip.

Step 5 - Rotate your arm so that the pencil is horizontal (parallel to the ground).

Keep your arm held straight out at the same distance, and make sure your thumbnail is still aligned with the tree's base. The thumb should be even with the center of the bottom of the tree.

Step 6 - Have your friend move so that you can sight him or her "through" the point of your pencil.

That is, your friend's feet should be aligned with the pencil's tip. He or she should be about the same distance from you as the tree is, not further away or closer toward you.

Step 7 - Measure the distance between your friend and the tree. Then use a measuring tape to measure the distance between that spot and the base of the tree. The distance between your friend and the tree is the height of the tree.





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Philanthropy

PB No. 29, Anand 388 001, Gujarat, India.
Landline: 9687606949, 9099798454
Email: ed@fes.org.in
www.fes.org.in