Land Use Options and Approaches in Shifting Cultivation - Research Protocol

Contents

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Background

This research protocol is part of the "Regional Project on Shifting Cultivation (RPSC): Promoting Innovative Policy and Development Options for Improving Shifting Cultivation in the Eastern Himalayas", in Bhutan, Bangladesh, and Nepal with financial support from the International Development Research Centre (IDRC). The project aims to contribute to the livelihood security of the shifting cultivators in the eastern Himalayas by researching policy options that support the improvement of shifting cultivation systems in terms of natural resource management and tenure security. It works through three approaches: (1) Engaging policy and decision makers in dialogue; (2) Regionally comparable interdisciplinary research; and (3) Regional sharing and exchange. The research will focus on the policy as well as the community-level.

The project's specific objectives are:

(i) To assess tenure changes and institutional arrangements in different shifting cultivation areas caused by various policy interventions and evaluate economic, social and ecological impacts, and identify gaps and needs for improving the relevance of policy interventions

(ii) To analyze and compare good practices and options related to shifting cultivation and alternative options adopted to generate new knowledge for appropriate policy recommendation

(iii) To share good policies and practices related to shifting cultivation and alternative options through regional exchange.

This research protocol describes research questions (or hypotheses), their justification, the underlying concepts and theories, and the research methodologies used to answer them. To have a common protocol for research in different countries and situations means to ask the same questions and apply the same methodologies in each of the countries and sites, even though the answers and findings may be very different according to the local situation. The assumption is that there are common issues underlying each of the situations, which need to be studied under different circumstances. The common protocol makes the research findings from each situation comparable with the others, so we can learn common lessons across the region from the different situations. This is especially advantageous for policy research, because the same policies usually apply to the entire country, and it is difficult to change that for the sake of an experiment. By comparing situations in different countries, various policy options can be assessed.

Main Research Questions

1. How is the shifting cultivation changing in terms of structure, functions and processes?
2. How are the changes affecting shifting cultivators' livelihood outcomes?
3. What is the impact of government policy, the private sector and civil society on shifting cultivation and the livelihood outcomes of its practitioners?
4. What are the most constructive options and approaches for improving land use and livelihoods in shifting cultivation areas?

Methods

The method will include both literature review and field surveys. Most of the methods which are relevant for this study are mentioned in the text as well as table on page number 9. Furthermore some of the methods and methodology like stakeholder analysis, institution analysis are discussed in detailed in Tenure and Institution research protocol.

Results

The field data will be treated statistically. The research results will be analyzed and presented.

Discussion

An analytical and logical discussion will be presented along with the findings.

Conclusion and recommendation

Conclusions and recommendation will be made.

Appendices

I. Conceptual framework

Question 1: How is the shifting cultivation changing in terms of structure, functions and processes?

Analysing shifting cultivation as a system is critical for understanding its diverse and changing forms and the impact of development strategies and interventions. Under this question, we will describe the shifting cultivation system in its past and present form, and how it has changed over time. Shifting cultivation was the predominant land use in the recent past in all selected research sites, and all are in a process of change. At present, in some areas it is still the major farming system, whereas in others it is a component of a more diversified farming system. In some areas we will find that the present land use system cannot be classified as shifting cultivation anymore, either because it was distorted beyond recognition, or converted to an entirely different system. In order to analyse and compare land use options for shifting cultivation areas, all these cases are important. To clarify, a farm system is described as: *"...the household, its resources, and the resource flows and interactions at this individual farm level. The biophysical, socio-economic and human elements of a farm are interdependent, and thus farms can be analysed as systems from various points of view. A farming system, by contrast, is defined as a population of individual farm systems that have broadly similar resource bases, enterprise patterns, household livelihoods and constraints, and for which similar development strategies and interventions would be appropriate. Depending on the scale of the analysis, a farming system can encompass a few dozen or many millions of households."* (*FAO* and World Bank 2001)[1]

Shifting cultivation is characterised by a short 'cultivation phase' of a few years followed by a relatively longer 'forestry phase', usually referred to as the 'fallow' (Kerkhoff and Sharma 2006). Fujisaka et al. (1996) define 'traditional' or 'integrated' shifting cultivation as the form in which indigenous communities clear and cultivate secondary forests and leave parcels to regenerate naturally via fallows of medium to long duration. In this study, we understand shifting cultivation to be an integrated farming system, which usually has the following basic components: forest fallows, a rotational cycle and pattern, controlled burning, and customary practices, knowledge and skills. A more elaborate description is given in Annex 1.

The word system is defined as "regularly interacting and interrelated components forming a unified whole."[2] These components and their interrelations change over time, and changes in one element cause change in others. In the same way, if the household or community decides to change one of the elements, it usually involves adjusting several others to keep the system functioning. The main elements within a system, or within a component, are its structure, functions and processes. Structures are the biological, physical and social elements. Processes are the actions and natural processes through which the structures interact. Functions are the purposes of each element within the whole. A system as a whole as one or various functions, and so does each component and each structural element, and each process within it. The function can be an ecological, social, and/or economic purpose. Just as the system is made up of components, structures, processes and functions can be can be placed in a hierarchical

[1] FAO and World Bank 2001 Farming Systems and Poverty: Improving Farmers' Livelihoods In A Changing World John Dixon and Aidan Gulliver with David Gibbon, Rome and Washington D.C.
[2] Merriam-Webster's Collegiate Dictionary, http://www.merriam-webster.com/dictionary/system

order, e.g. larger structures are composed of smaller ones, and the and the functions of and processes within each smaller component ultimately serve the purpose of the whole.

To say that shifting cultivation is a system, means that we should look at all the interacting components, not just the slashing and burning, and to recognise that all is related and all elements are there for a reason, and have a special function. A major component that is often overlooked is the fallow, without which the entire system cannot function properly. Shifting cultivation land is often too steep for annual cropping. That is why farmers decide to have fallows of several years, in which a forest emerges on that land. Allowing one plot to lie fallow requires the rotation among various locations, and because the fallow forests emerge, farmers need to slash-and-burn it is time to reoccupy the plot. Farmers know that a longer fallow reduces the amount of labour they need to put in, and increases the quality of their land, so for each location there is an ideal length of the fallow period compared the length of the cropping period. Based on this knowledge, community leaders and/or individual farmers plan their landscape and rotational pattern, and based on the availability of good plots or patches within plots, they decide on the crops to sow or plant there. In this case, the structural elements are (in order of appearance): the fallow, the land, the farmers, the fallows, the forests that are part of the fallows, the labour, the knowledge, the community leaders, and the crops. Processes are: forest growth, rotation of fields, the slashing and burning, landscape planning and planting and sowing of crops. The function of the fallows is to maintain productivity, the function of the farmer is to manage the system, the function of the crops is to feed the farmer or generate income, etcetera. For example, the community could not just stop the burning, especially if the trees are very thick. They would have to turn the whole system around. If they could remove the trees they would have to compensate for the loss of nutrients, and chopping the trees up would make the labour cost too high.

There is a clear hierarchy in the system. A crop field is made up of various crops, soils of various types, and water sources and flows. A fallow has changing vegetation that may include perennial crops, bamboo, and multipurpose trees and livestock and wildlife as well. Together the crop fields and fallows of various stages make up a rotational pattern at a higher hierarchical level that is managed by the community. Communities are made up of farmers and people with other occupations, they comprise of women and men, adults and children, and leaders and members, and they have resources such as labour, knowledge and skills.

The various methods that will be used to collect the information are: resource map and P3DM, field observation, participant observation, household surveys, interviews with key informants, and review of secondary sources. Information on the structural components of the various land use systems can be collected through field observation (with GPS), interviews and participant observation, where the researcher participates in the land management activities. Schematic drawings and PRA-type resource maps will be useful for documenting the information. Participatory GIS will be used as part of this research, to collect geo-referenced information using high-resolution satellite images, GPS and, where practical, participatory 3-dimensional models (P3DM). Field observation will help to validate the information that documented through resource map and or P3DM.

The findings from the household survey can be verified and further elaborated on in focus group discussions with men and women. Socio-economic data like demography, population, and household numbers can be drawn from available secondary sources.

For the key informant interviews and focus group discussions, it is important to identify those people who know about the subject (purposive sampling). We should ask around who knows a lot about the

particular topic before approaching that individual or group. If there are individuals or groups with different knowledge or perspectives on the same topic, each has to be represented and interviewed separately. If there are very many knowledgeable people we can use random sampling to pick a few representatives. Some examples, for historical data we have to sample among the elderly people. For analysing change processes and trends, we may have to interview people who know about the past situation, others who know the present situation, and if necessary, again others who can tell us what happened in between.

It is a well-established fact that in rural areas women have different knowledge and perspectives than men. On some topics they know more, on other less, and on most it is just different. Therefore, men and women should be equally represented in the focus group discussions. There should be key informant interviews with women as well as men, although the topic may vary according to their expertise, e.g. women often know more about food security, while men may know better about current market prices.

Question 2: How are the changes affecting shifting cultivators' livelihood outcomes?

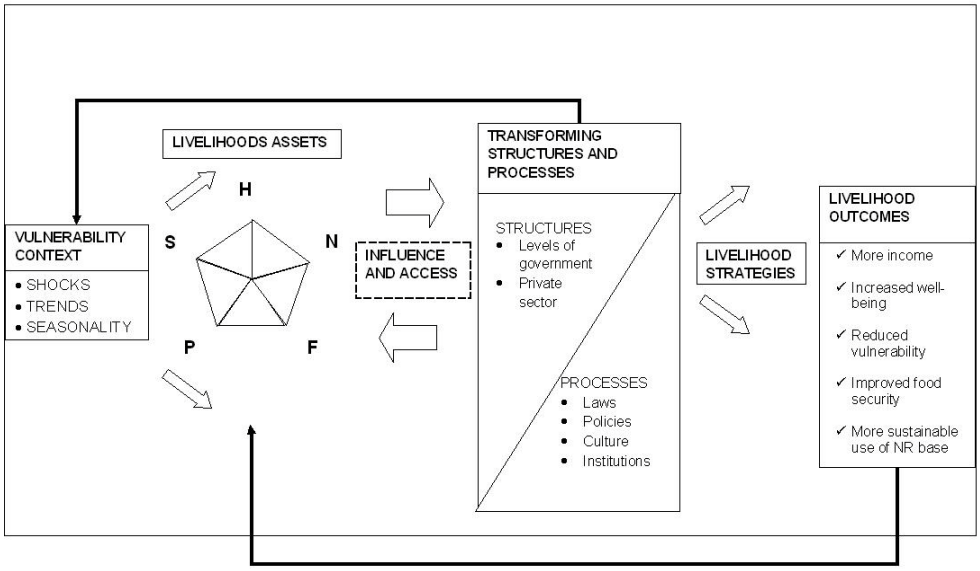
Changes in the land use will affect shifting cultivators in various ways, depending on their available resources and opportunities. It is very important for us to know how such changes affect and impact the livelihood outcomes of the shifting cultivators. To explore this we will use the 'Sustainable Livelihoods Framework' (see Fig 1), as explained in the sustainable livelihoods guidance sheets (DFID, 1999). This framework applies to livelihoods in general, but here we will look at the livelihoods of people depending on shifting cultivation. It shows how shifting cultivators' livelihoods assets link to the livelihood outcomes they are achieving or aspiring to, through various livelihood strategies. In a way, shifting cultivation itself could be considered livelihood strategy, but in this research we consider livelihood strategies to be options for improvement within the shifting cultivation system, as well as other livelihood strategies in agriculture and beyond.

It is pertinent to use this framework in a participatory way, so to ask shifting cultivators themselves what livelihood outcomes they prefer and pursue. The framework is most often used to take a snapshot of the livelihood situation, but in this research we are looking at how changes in the shifting cultivation system are affecting livelihood outcomes, so we have to analyze how all these elements have been changing from the past to the present.

To adopt this framework means that we will look at all components and how they are linked, including the livelihood outcomes, assets, and strategies, as well as the vulnerability context and transforming structures and processes. The resources that were identified under question 1, can be classified as various types of livelihood assets, as shown in the pentagon in Figure 1. They are natural, financial, physical, social or human assets. To what extent shifting cultivators can use their assets to meet their livelihood outcomes, depends to a large extent on what is called transforming structures and processes, such as government policies and market forces. These structures and processes determine people's access to assets, and at the same time people use their assets to influence the policy and the private sector. These will be covered under question 3. Each of these components will be elaborated upon under the respective sub-questions below.

Figure 1: Sustainable Livelihoods Framework (DfID, 1999)[3]

[3] DfID, 1999, Sustainable livelihoods guidance sheets section 2
http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf



Within a community, shifting cultivators' livelihood situations and outcomes vary depending on their well-being, gender and age. The differences among these groups in terms of livelihood outcomes, strategies, and access and control over livelihood assets need to become apparent in the analysis. Therefore, data collection will be differentiated according to well-being, gender and age.

Three methods will be applied to collect the data: questionnaire for household survey, semi-structured key informant interviews, and focus group discussions. In the questionnaires, the individual respondents can indicate their age group, gender and wellbeing status, so that they can be correlated to the results later. If people have difficulty in answering the questions individually, we can ask them to answer it together in small groups of 2-4 people from the same category (eg. 3 elder ladies from medium wellbeing). Semi-structured interviews with selected individuals or small groups may be required before the questionnaires to check the appropriateness of the questions and answers. Afterwards they will be used to cross-check findings, capture unexpected findings, and deepen the understanding on certain interesting issues that come out of the questionnaires. Certain important topics will be discussed further in larger focus groups, which may provide a more general point of view as well as more in-depth information. In the write up it will be important to reflect whether the results came out of the questionnaires, semi-structured interviews and/or group discussions, especially if it concerns a confirmation or contradiction the same information.

The respondents and participants in the research should be representative of the community composition in terms of well-being, gender and age, and preferably proportional. For wellbeing there will be representatives from high, middle and low category as per the information from the situation analysis. There will be 50% men and 50% women respondents. For analysis according to age, there should be men and women from the eldest group as well as from the teenagers among the respondents. In questionnaires, they can give their actual age, and for focus group discussions they can be separated in two categories (under and over 40) or three (under 20, 20-50, and over 50) depending on the expected difference in their interests (based on questions).

Question 3: What is the impact of government policy, the private sector and civil society on shifting cultivation and the livelihood outcomes of its practitioners?

It is the farmers, men and women, who are changing their traditional shifting cultivation land use system into the current land use, depending on various internal and external factors. They are the ones who are always present and who do all the work on the ground, and so ultimately they have their share in the decisions about their land. Therefore, external drivers of land use change usually have an indirect impact.

The main external divers are: public policy, market forces, and civil society. The players behind these drivers can be considered stakeholders in the shifting cultivation dialogue, and should be engaged accordingly in the project. They are government organisations, private sector organisations and civil society organisations. The latter includes (I)NGOs, public media, as well as special interest groups, for example on nature conservation or rights activists. The United Nations organisations are not literally a part of civil society, but they have to be included here, because they are very influential in the shifting cultivation debate, internationally as well as in national policy making (e.g. the UNDP in the CHT of Bangladesh, the ILO in Nepal and FAO in Bhutan). The impact of the external drivers (or transforming structures and processes as they are called in the framework) can be strong or weak, and positive or negative, but it is always the farmers who have to deal with these drivers on the ground and who make the decisions ultimately.

The private sector, in economics, is that part of the economy which is both run for private profit and is not controlled by the state. By contrast, enterprises that are part of the state are part of the public sector; private, non-profit organizations are regarded as part of the voluntary sector." (Wikipedia) In lay terms, we mean companies, traders, local businesses and shops and even the local vegetable market. Most shifting cultivators had a subsistence-based economy until quite recently, which was based on self-reliance for most products. Nowadays, however, the need for integration into the market economy is apparent even in the remotest areas; farmers need cash to meet modern needs, and companies new buyers for products ranging from chemical fertilizers to Pepsi. The market is not an organisation with clearly defined rules and responsibilities, rather it is a force often described as the "invisible hand". Prices of products depend on demand (from consumers) and supply (by traders). Fluctuations in prices cannot be directly controlled, and only partly predicted. Entering the market economy opens new opportunities, but it usually requires farmers to take higher risks and make adjustments to their farming as well as market infrastructure.

The three main drivers /players operate in very different ways, and accordingly, to analyse their functioning and impact requires different strategies and methodologies. Policy making is a political process through which intentions are turned into plans and actions. The market operates like a force of demand and supply, with many actors at each stage of a product's value chain. The media operates in its own way, and its role in raising awareness, forming public opinion, and as a source of information and transparency should analysed and used to the advantage of the project. The role of NGOs, the UN and various donors, and their influence on national and local affairs is another important issue to deal with in this research.

Question 4: What are the most constructive options and approaches for improving land use and livelihoods in shifting cultivation areas?

In this question, we look at practical steps for the future, based on what we have come to understand in question 1, 2 and 3. Under question 2, we identified several livelihood strategies, including improved and new land use options, which are being applied in the project areas. In this part, we will see whether and how such promising options can be exchanged among shifting cultivation areas, so shifting cultivators can learn from each other.

The first step in this process is to identify the livelihood outcomes shifting cultivators want to set for the future, and to see which options and strategies from other shifting cultivation areas are interesting to try out for achieving them. Since the project is about improving shifting cultivation, we will later narrow it down to evaluation those strategies and options that are improvements within the shifting cultivation system. It is important that the farmers themselves identify the main outcomes they aspire to in each particular case. Among the shifting cultivators, there may be different interests; the elder people may give importance to community cohesion and cultural values, whereas younger people are looking for a way out of agriculture. In most traditional households, women are responsible for food security and men for the family income, so they may have different interests too. We should further enquire with various other stakeholders what the livelihood outcomes are that they want for the shifting cultivators, which may be different.

The second step is to have the regional exchange of interesting options. The exchange visits will support this process and give the action researchers, including extension workers, lead farmers and government officials the chance to look for opportunities in shifting cultivation innovation in other countries. The principle idea behind the option or innovation has to be documented, as well as the materials and knowledge required for implementing them, and the frame conditions that made it happen.

The third step is the actual action research. What works in one shifting cultivation area doesn't necessarily work everywhere in the same way. Exchanging land management technologies, economic or even policy options is normally a long process of adaptation through trial-and-error. This is why we will take the action research approach, in which promising options and ideas from one project area, or country, will be tried out in other areas. The judgement whether something is actually a feasible and attractive option should not be the researchers' alone, but should be decided by the shifting cultivators, researchers and other stakeholders together. This is why it is *participatory* action research.

It is important for us to know several factors which need to be taken into consideration while introducing and or developing new options in the traditional shifting cultivation areas like appropriateness, effectiveness and so on. Furthermore, it is important to identify the available options and approaches and find out the most constructive options and approaches and their applicability in local environment. Before identifying the constructive options and approaches, we should have broad criteria. Here, we are proposing some broad criteria which will guide the study team as tips while undertaking this study. However, criteria might vary country to country and also to specific sites.

Socially acceptable: Consistent with local culture, norms and values, respects the rights of shifting cultivators and gender friendly
Environmentally sustainable: Enhances adaptive capacity to changing climatic conditions and local microclimate, ecologically sustainable
Economically sustainable: Low-cost/ affordable, cost effective

Appropriate and useful: Appropriate for shifting cultivation areas, needs-based
Builds on existing local/ indigenous knowledge: Compatible to farmers' knowledge and attitudes, simple and easy to understand, adoptable from generation to generation
Agreeable to relevant stakeholders: Helps bridge the gap between policy and shifting cultivators' reality, based on management objectives.

Sub questions

Question 1: How is the shifting cultivation changing in terms of structure, functions and processes?

1.1 What are the main structures, functions and processes in the shifting cultivation system?

As we are already aware that the shifting cultivation is the system which has structure, functions and processes. Here, we need to understand and documents different elements of the each component and their interrelationship with each other over the time. Furthermore, it is important to know how these changes is happening and what are the consequences in overall system. The table gives an overview of the elements to be studied and in brackets the methods to be used, which have been elaborated above[4] (see p. 4).

	Structures (three levels): • village level • land use level • land use component level	**Functions:** • Production and productivity • Conservation of soil, water, biodiversity • Livelihood (food security & income) • Cultural purposes	**Processes:** • Management activities • Knowledge and skills • Change over time • Cycling
Biophysical	**Village level**		
	• What are the land uses in the VDC? (Secondary sources, FGD, field observation) • How much area is under each land use? (FGD, field observation, resource map and/or P3DM) • How is the spatial pattern? (resource map and/or P3DM)	• How much does each land use contribute to: • Food security? • Income? • Biodiversity conservation? • (FGD and KI, HS)	• Who in the community are responsible and involved in land use planning and management? (FGD, KI incl. village leaders) • What are the activities, knowledge and skills, and decision-making involved in this? (FGD) • How do they manage land use change over time? Conversion? Etc. (P3DM, FGD)
	Land use level		
	• What are the structural	• What are the functions of	• Crop and fallow rotation:

[4] The full forms of the abbreviations are: FGD - focus group discussion, KI - key informant interview, HS - household survey, P3DM – participatory 3 dimensional modelling, and PO – participant observation.

	components of the shifting cultivation? (crop fields, fallows of various ages, crops, trees, and livestock) (resource map and or P3DM, photographs)	each component within and outside the shifting cultivation? (FGD, KI)	What is the minimum and maximum length of cropping and fallow phases? (FGD, KI) • How is the rotational pattern? How is it managed? (FGD, KI)
	• What are the structural components of the other land uses (incl. annually cropped fields, orchards, home gardens, and others)? (resource map and or P3DM,	• What are the functions of each component within and outside the land use? (KI, FGD)	• Nutrient cycling and management • Water cycling and management • Crop, livestock, forest interactions
	Land use component level		
	• Crops in each component • Cropping patterns, rotation, and crop interactions (HS)	• What are the functions of the crops within and outside the system? (KI, HS) • (e.g. Production, Conservation, Cash income, Food security)	• Crop management activities • Related knowledge and skills (KI, HS)
	• Livestock in each component (FGD)	• What are the functions of the livestock within and outside the system?	• Crop management activities • Related knowledge and skills
	• Soils and SWC measures under each component (FGD, KI)	• What are the functions of the soil and the SWC measures within and outside the system?	• Soil improvement and degradation • Soil related traditional knowledge • Soil management activities
	• Water sources, availability and use in each component? (KI)	• Drinking • Crop production • Livestock • Other	• Water management, decision-making, conservation activities?
	• Main species and variety of crops, trees, livestock, and wildlife (KI)	• Main uses and importance • Economic and cultural significance	•
	• Other?	• ...	• ...
Socio Economic	**Village level** (gender-disaggregated)		
	• Demography: population, population density,	• Effect of changes in population on land use	• Demographic trends and processes (Trends

	ethnic community, # household members, etc. (Secondary sources, VDC/ Geog/UP data)	change (FGD)	analysis)
	• Labour: types of labour/ skills available, remuneration, gender division of labour (KI)	• Effect of labour availability on land use and management decisions, and land use change	• Trends in labour availability and remuneration • Processes of labour sharing and exchange, hiring, etc.
	• Education: literacy and school enrolment, level of education (Secondary sources, KI)	• Effect of education on migration, labour availability and land use	• Trends in education and processes involved in enhancing and slowing down enrolment
	• Employment: opportunities within and outside the village, migration (KI)	• How much income is derived from each various types of employment? What is it used for? • Effect of outside employment and remittance on land use	• Decision-making (men/ women) • Employment arrangements?
	• Market: infrastructure, cooperatives, access/ distance to market, prices, supply and demand for main products, access to credit and subsidies (Market force analysis)	• Effect of market access on land use decisions • Effect of market access on livelihood opportunities	• How do communities access the market for inputs and sale of their produce? Who is involved? Who makes the decisions?
	• Village authorities and village-level organisations: customary and government leaders • (Stakeholder analysis)	• Traditional and current role of these leaders in the village and land use, and particularly the shifting cultivation.	• Village level decision making processes: on what? By whom? Enforced how?
	• Well-being ranking	• Role and interest of each category in the shifting cultivation	• Negotiations on land, land use, labour

	• Cultural aspects: traditional knowledge, norms and values on land and natural resources; local customs and their importance; social cohesion (KI, especially the village elders, cultural leaders...)	• Effect of cultural aspects on land use	• How are traditional knowledge, customs, and norms and values passed on to the next generation? (knowledge documentation through KI and PO, trends analysis) • How are customary rules and
	• Organisations and groups in the village (stakeholder analysis)	• Role and effect of these organisations and groups in shifting cultivation (stakeholder analysis)	•
	• **Land use component level**	•	•
	• Financial costs and benefits of each land use (cost benefit analysis)	• Effect of the support on productivity, income, and land use decisions.	•
	• Main activities and workload of men, women and children (gender analysis, role and responsibility analysis	• Effect of the support on productivity, income, and land use decisions.	•
	• Material and technical support from outside (FGD)	• Effect of the support on productivity, income, and land use decisions.	• Processes involved in supply of materials, extension, etc.

1.2 What is the timeline of major developments that have affected shifting cultivation?

In the historic timeline we will record the evolution of the shifting cultivation in each project area, and the major events and shocks that caused it to change. This will help us to analyse causes and effects, trends and drivers of change. In scope, it will go beyond the well-known PRA tool; it will be based on information from various sources, including village elders, available statistical information, as well as newspaper articles and other secondary sources. The time covered in each timeline will depend on each local situation, including the relevance of historic events, when they happened, and how much we can find out about them.

A horizontal line is used to represent a period of time. Key events during that period are then marked on the line with a symbol and a date[5]. Such events can be natural disasters, policy reforms, development activities, and etcetera. The main information about each event is recorded in a box, which is connected to the line.

Under the line, trends will be reflected in a table, including in:

- environmental factors,
- population,
- availability and access to land and natural resources,
- market integration,
- government support and control, and
- agricultural innovation.

Supporting questions that can be elaborated on in the text are:

- What are the main developments and changes that have occurred?
- When did they happen or start happening?
- How did it happen?
- Who made it happen, who started it?
- What was the cause or reason behind each change?
- What have been the effects (advantages and disadvantages, opportunities and problems) of the change for the shifting cultivation system and the farmers?

1.3 How have these developments affected the structures, functions and processes from past till present?

Once we know the major developments in the shifting cultivation and the trends in abovementioned factors (from 1.2), we will describe how they have caused changes in the shifting cultivation system, or any of its structural components, functions and processes. Here is where we reflect how a change to one of the components affects the system as a whole, and its integrity. We will study the overall changes in the system in past and present.

1.4 What are the major changes, and their driving forces?

The major developments in shifting cultivation bring changes in the shifting cultivation system. There are various forces causing land use change in shifting cultivation like population dynamics, national and

[5] http://www.smallstock.info/info/comm/timeline.htm#Procedure

local economic changes, government incentives for land use changes, changes in market structure, changes in tenure arrangements, changes in shifting agriculture practice etc. Here we will identify the major changes in shifting cultivation land use and associated driving forces.

Question 2: How are the changes affecting shifting cultivators' livelihoods outcomes?

In this question, we link the shifting cultivation system to shifting cultivators' livelihoods by going through the sustainable livelihoods framework step by step.

2.1 What are the major livelihoods outcomes shifting cultivators aspire to and how have they changed over time?

The first step is to look at shifting cultivators' livelihood outcomes in each of the project sites. The sustainable livelihoods approach is about supporting people to achieve their own livelihood goals, with the added condition that it is in a sustainable way. Land use systems and options can be judged on whether they contribute to the achievement of the livelihood outcomes that people consider important. We will look at the outcomes shifting cultivators aspire to (the things they want to achieve), as well as what they have actually been achieving in this regard. We will look how the livelihood outcomes (both aspired and actual) have changed from the past till the present, and what effects this may have had on land use and management decisions.

With the communities, or specific groups, we can formulate concrete livelihood outcomes as well as specific indicators, which reflect what aspects they find important. If the outcome is related to food security, for example, there may be indicators about quantity, but also about variety or the availability of certain products. These indicators will help to make the outcome better measurable. What livelihood outcomes shifting cultivators want to achieve reflects their interests, values and motivations behind land use decisions, and will help to gain insight in the value and importance they have given to the shifting cultivation system. It will further help to formulate criteria with which to evaluate various livelihood strategies under question 4.

2.2 What are their assets and how have they changed over time?

The resources shifting cultivators have can be classified as various types of livelihood assets, including natural, financial, physical, social or human assets, which are described in the Sustainable Livelihoods Framework Guidance Sheets (DfID, 1999)[6]. How much of each type of asset the community or group has at a certain point in time is reflected in a pentagon (see Figure 1). Trends over time can be reflected by overlaying the pentagon of various times. To get the complete picture of the natural assets, we will make a separate pentagon that distinguishes between land, forest, water, crops and livestock. In this question we look at the total of their assets, so those that are part of the shifting cultivation system (as analysed under question 1) as well as others. In the pentagon, we can use two colours to reflect the assets used for shifting cultivation, and the additional ones, to reflect the relative importance of the shifting cultivation resources. A household survey will be held, to find out about the livelihood assets and vulnerability context, using the questionnaire in Annex 2 (separate document). The results from the questionnaire can be verified and elaborated on through informant interviews and focus group discussions where necessary.

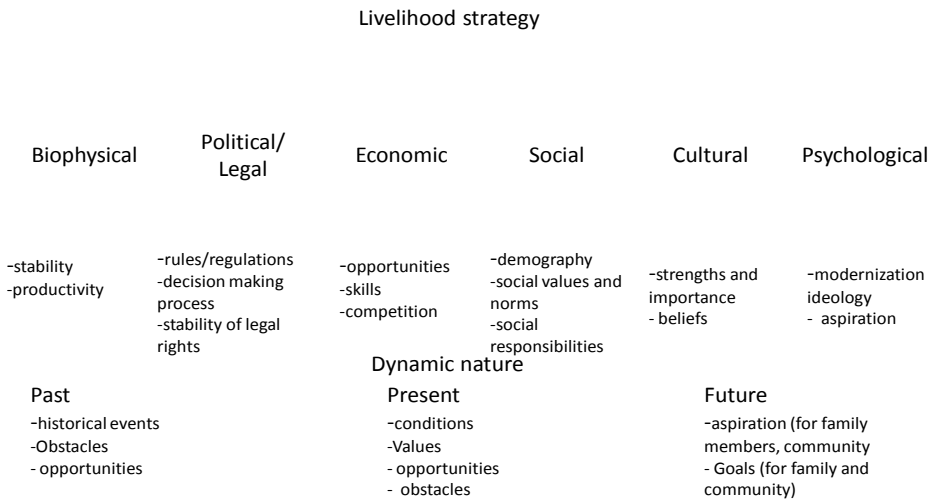
[6] DfID, 1999, Sustainable livelihoods guidance sheets section 2
http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf

2.3 What livelihood strategies are they following and how have they changed over time?

Livelihood strategies is the overarching term used to denote the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals (including productive activities, investment strategies, reproductive choices, etc.) (DfID, 1999). The land use options that are the focus of this research come in here. They can be options, activities and choices within the shifting cultivation system or beyond. Under this question we explore the strategies that farmers have been applying in the <u>past and present</u>, and what their impact was on livelihood outcomes. The possible livelihood strategies for the future, from now on, will be covered under question 4.

According to Walker *et. al* 2001[7], a livelihood strategy is an organized set of lifestyle choices, goals and values, and activities influenced by biophysical, political/legal, economic, social, cultural and psychological components and designed to secure an optimum quality of life for individuals and their families or social groups. To look for the livelihood strategies that the shifting cultivators are following first we have to understand the different conditions that affect them to decide. The figure above gives you the idea what needs to be taken into consideration while analysing the shifting cultivator's livelihood strategy. Furthermore, livelihood strategy is dynamic in nature; it means it keeps changing over the time, so we need to understand the past and present livelihood strategy and the factors and conditions of these changes.

Figure 2: Livelihood strategies (adapted from Walker *et. al* 2001)



2.4 How have the changes in livelihood assets and strategies affected their livelihood outcomes?

[7] J. Walker, B. Mitchell & S. Wismer (2001) Livelihood strategy approach to community based planning and assessment: a case study of Molas, Indonesia. Impact assessment and project appraisal Volumer 19. Pp 297-309. UK

In the sustainable livelihood framework shifting cultivators are at the centre of a web of inter-related influences that affect how these people create a livelihood for themselves and their households. Closest to the people at the centre of the framework are the resources and *livelihood assets* that they have access to and use. These can include natural resources, technologies, their skills, knowledge and capacity, their health, access to education, sources of credit, or their networks of social support. The extent of their access to these assets is strongly influenced by their *vulnerability context*, which takes account of trends (for example, economic, political, and technological), shocks (for example, epidemics, natural disasters, civil strife) and seasonality (for example, prices, production, and employment opportunities). Access is also influenced by the prevailing social, institutional and political environment, which affects the ways in which people combine and use their assets to achieve their goals. These are their *livelihood strategies*. These all will affect their livelihood outcomes.

2.5 What is their socio-economic and environmental vulnerability context?

The vulnerability context also plays an important role in people's livelihoods. This can be socio-economic as well as natural, and recently climate-induced, trends, shocks and seasonality. Important socio-economic elements of the vulnerability context are population trends, the reducing availability of land in most areas, and trends and shocks created by market influences, but also the seasonal trends in labour availability. Important environmental trends are droughts and floods, or rainfall variability, and the occurrence of invasive weeds like *Eupatorium sp.* and *Imperata cylindrica* grass. The transforming structures and processes can positively contribute to people's livelihood improvement by addressing the vulnerability context.

Shifting cultivator's livelihood dependency is highly depends on the socio-economic condition of the family members as well as the available natural resources in the area. It is therefore, important to understand the socio-economic conditions of the shifting cultivators and the factors affecting it. There are various risk factors like shocks, trends and seasonality which though are not common in all the times but are important aspects need to be study to analyse the possible solutions to minimise such risk. These factors are important for our study because they have directly linked with the asset that shifting cultivators are using for their livelihood outcomes.

Question 3: What is the impact of government policy, the private sector and civil society on shifting cultivation and the livelihood outcomes of its practitioners?

3.1 What are the government organisations and policies that affect shifting cultivation and the livelihoods of its practitioners?

Identifying the government organisations and the policies associated with land use and livelihoods of shifting cultivators is part of the livelihood analysis, and an important theme during the overall study. Specific questions are:

- Which government organisations work in the project sites, directly or indirectly, and what policies and programmes, roles and responsibilities do they have?
- How are these policies and programmes being implemented?
- What is their perspective on shifting cultivation and related contentious issues (e.g. indigenous peoples, nature conservation, etc.)?
- Who set policy objectives, and how? And are shifting cultivators consulted during the policy formulation process, and are their interests considered?

3.2 What is the role of the private sector in shifting cultivation and the livelihoods of its practitioners?

Under this question, we assess the existing and potential role of the private sector in the project areas. Relevant questions to address here are:

- Which crop, livestock and forest products are used or promoted for income generation?
- What are the opportunities and constraints for enterprise development in the region, including past experiences in enterprise development in the area, existing service providers, livelihoods strategies in the selected sites, and an inventory of potential resources and products with comparative advantages for the region?
- Who are potential key stakeholders and service delivery organisations for enterprise development in the project area?
- What is the market demand at national or international levels for local products that have existing trade channels?

3.3 What is the role of civil society organisations in shifting cultivation and the livelihoods of its practitioners?

There are number of civil society organisations working in the areas, whose attitude towards shifting cultivation and shifting cultivators may be supportive or obstructive role and as such affect their impact. Some influence the shifting cultivators directly, while others influence public opinion and policy. We will answer the same questions as under sub-question 3.1, but then civil society organisations.

3.4 How do government policy, the private sector and civil society impact shifting cultivation and the livelihood outcomes of its practitioners?

Returning to the Sustainable Livelihoods Framework, here we analyse how the combined public policy, private sector and civil society impacting the shifting cultivation system, their vulnerability context and most importantly the livelihood strategies and outcomes of the shifting cultivators.

Question 4: What are the most constructive options and approaches for improving land use and livelihoods in shifting cultivation areas?

4.1 What are the traditional and introduced land use options that improve the livelihoods of shifting cultivators?

Here, we first identify the traditional and introduced land-use options in the project areas, and describe them including their existing or potential contribution farmers' livelihoods. For this, we evaluate their effectiveness in environmental and social-economic terms, and whether they are technically sound, appropriate and feasible. We can further do cost benefit analysis to see whether the options would be feasible in other areas as well. We will focus on the ways that the practice has been adapted and applied as well as on the way the knowledge is transferred and disseminated.

4.2 What extension approaches are used to improve and promote these options?

An approach is an idea or actions intended to deal with a problem or situation, here the problem being how to get the shifting cultivators to adopt the options identified under sub-question 4.1. Fact is that good options can be promoted though bad approaches, and fail, while farmers can be convinced to take

up bad options through successful approaches. The point of the question, however, is to find useful approaches that work in shifting cultivation areas, and that meet criteria such as appropriateness, suitability, efficiency, economic viability, and environmental suitability within the context of people's needs, preferences and capacity.
Extension approaches (or systems) in the agricultural development process can have one or more of the following major objectives: 1) technology transfer, especially for the staple food crops; 2) human capital development, especially the technical and management skills and knowledge that poorly educated farm-households need to increase farm income; 3) building social capital; and 4) educating farmers to manage natural resources sustainably (Swanson 2001)[8].
9
Approaches can be policy-driven, market-driven, and/or demand-driven or farmer-led (Swanson 2001), and some options may be spread through (traditional) community-based means rather than extension from outside. It will be important to note those approaches which encourage local innovators and those where researchers and policy-makers incorporate indigenous knowledge and practices into their programmes and projects.

Various stakeholders may have different views on the benefits and disadvantages of the approaches, however, so will ask the farmers, extension agents, planners and other stakeholders about the advantages and disadvantages of the various approaches from their perspective. We will further ask them what could be done to improve and promote these options to make them more practical and user friendly.

4.3 To what extent do the options and approaches meet the criteria for constructiveness?

Here we discuss to what extent the options and approaches under 4.1 and 4.2 meet the six criteria for constructiveness, as set by the RPSC team during the research workshop. They are as follows:

1. Socially acceptable (incl. Consistent with local culture, norms and values; Respects the rights of shifting cultivators; and Gender friendly)
2. Environmentally sustainable (incl. Enhances adaptive capacity to changing climatic conditions and local microclimate; and Ecologically sustainable)
3. Economically sustainable (incl. Low-cost/ affordable; and Cost effective)
4. Appropriate and useful (incl. Appropriate for jhum areas; and Needs-based)
5. Builds on existing local/ indigenous knowledge (incl. Compatible to farmers' knowledge and attitudes; Simple and easy to understand; and Adoptable from generation to generation)
6. Agreeable to relevant stakeholders (incl. Helps bridge the gap between policy and shifting cultivators' reality; and Based on management objectives)

4.4 How can we adapt and apply these options and approaches in other shifting cultivation areas?

Some of the innovative options and approaches which look promising in light of the above-mentioned criteria will be tried out in other project areas to see if they can work there too, and if any adaptations and improvements can be made. Exchange visits will be organised to find out the most interesting options and approaches and to facilitate their exchange between areas and countries.

[8] Swanson, B.E. (2008) Global Review of Good Agricultural Extension and Advisory Service Practices. FAO http://www.prolinnova.net/Downloadable_files/Global%20Review%20of%20Good%20Agri%20FAO%202008.pdf

Annex 1

The term shifting cultivation is often used interchangeably with the terms 'slash-and-burn' or 'swidden' agriculture. A wide variety of practices across the globe fall under these terms, but not all can be considered shifting cultivation. In fact, slash-and-burn is a land clearing method, which is used by many for the permanent clearing of land (Kerkhoff and Sharma 2006).

Fallowing is a common practice in many agricultural systems, but specific to shifting cultivation is that there is forest growth on the fallow land. The fallow is called 'lhose' in Nepali. The fallow forests are an integrated part of the shifting cultivation farming system and are essential to recuperate soil fertility and structure after cultivation and to provide a range of products to meet household requirements (e.g. bamboo and wild foods) and socio-cultural functions. In fact, it is these fallow forests that make agricultural production possible on extremely steep slopes in the first place, and it is these that take up most of the space in the shifting cultivation landscape.

Forest fallows require some major adaptations, such as controlled burning for land clearing and the rotation of plots (not necessarily of settlements). If farmers are not able to clear some of the forest when it is no longer needed, they might not allow it to grow so high on their land in the first place. It is a common misunderstanding that slashing and burning would be 'easy' or 'labour extensive' as compared to land preparation in settled agriculture. In fact, it often requires the cooperation of all community members and good organisation to keep the fires under control.

Rotation takes place both in time and in space. A particular plot is cleared and cultivated for one or two years with annual crops. Usually other perennial crops are grown in between or after these, before the land is left for the forest to regenerate and the farmers clear the subsequent plot. After the forest has sufficiently regenerated, or when the land is needed again, it is cleared once again. Farmers usually clear a new plot for annual crops every year, but the other plots are by no means 'abandoned'. They are managed as fallows, because the farmer will be using them again in a couple of years. In space, this results in a patchy landscape of plots with annual crops, perennial crops, bamboo (early fallow species) and forests. Rotation requires access to much larger areas of land than permanent agriculture, which is often not understood by outsiders.

The **rotational cycle** is defined as the cropping phase and the fallow phase combined. Its length and changes therein, are often used as an indicator for the ecological sustainability of the system. There are studies which point to fallow phases of 20-30 years, implying that this length is required for ecological sustainability (e.g. Ramakrishnan 1992), but this is based on the understanding that fallows should grow until primary forest regenerates. From the farmers' perspective, however, secondary forests better serve their purpose, providing enough biomass to maintain soil fertility, and enough forest products to meet their requirements. This would mean a fallow phase of around 10 years is sufficient. This figure can be taken as a 'rule of thumb', although the ideal length of the rotational cycle depends on the quality of the land, which is determined by the type of vegetation, steepness, altitude, and aspect. At higher elevations, more time is needed for forest regeneration, so fallows should be longer and use up more space. Social aspects to determine the ideal fallow length are further: the land holding size, family size and labour availability.

During the slashing and burning, large trees are left on the field for ecological and practical reasons. In practical terms, they are too thick to cut and burn and too heavy to carry off the field. In ecological

terms, they serve as mother trees, helping the fallow forests to regenerate faster and with more of the preferred species. They also help to prevent erosion and landslides during the cropping phase.

In shifting cultivation, **land preparation** usually involves only slashing and burning - no ploughing is undertaken. Maize is sown with the help of a dibbling stick and millet is broadcast on the field. As compared to ploughing, such techniques reduce the risk of soil erosion. Soil fertility is an issue, however, because the soils in these high-rainfall areas are relatively porous and steep and need high levels of organic matter to bind the soil together. Animal manure is only available to those who have livestock, but chemical fertilizers cause a breakdown of organic matter so are used only sparingly. Also, agrochemicals are too expensive for most subsistence farmers.

Traditionally, shifting cultivators form groups to work the land together in a labour sharing system called parma. Since the work is very strenuous, working together in a group makes it more enjoyable and productive. In remote fields, the group further ensures protection in case of accidents or wild animals. For certain activities, like the controlled burning, a group is needed to prevent the fire from spreading to other areas. This is common among shifting cultivators of many different ethnic communities. Unlike permanent farmers who focus on the plot level, shifting cultivators usually manage their land and natural resources at a landscape scale. This planning of the rotational pattern is required to make optimal use of local resources and protect fragile parts such as stream banks. Such management requires organisation and coordination, for which most communities have customarily developed institutions (Kerkhoff and Sharma 2006).

Annex 2: Questionnaire livelihood assets
(attached separately)

Livelihood Survey Form

Modified from: 27.10.2004 B. Flury, M. Kollmair , B. Steimann, UoZ (DSG/Z)

General data

a	Date (DDMMYY):			g	Name of respondent:	
b	Name of investigator:			h	Sex	1☐ male 2☐ female
c	District (VDC)			i	Age:	
d	Village:			j	Caste / tribe:	
e	Ward:			k	Religion:	
f	GPS data:	x:	y:	l	ID (group-letter/ dateDDMM/nbr of interview)*	

IMPORTANT HINTS for and *COMPULSORY ANSWER CATEGORY CODES* to be used by the interviewer - questions marked by a *
* i.e. A03123 (group: A – date: 3.12. – interveiw-number: 3 (third interview conducted on the 3.12. by group A)

Block A: Human Assets

A I: Demographic particulars

No. (HH-member ID)	[1]Relation to interviewee	[2]Age (years)	[3]Sex		[4]Marital status			[5]Can read*		[6]Education (indicate years in school)	Job / Main activiy**		[9]Temporarily absent[1]		[10]Reason for absence***	[11]where
			m	f	single	married	Divorced/ widowed	yes	no		[7]1st	[8]2nd	yes (Years)	no		
0			☐	☐	☐	☐	☐	☐	☐					☐		
1			☐	☐	☐	☐	☐	☐	☐					☐		
2			☐	☐	☐	☐	☐	☐	☐					☐		
3			☐	☐	☐	☐	☐	☐	☐					☐		
4			☐	☐	☐	☐	☐	☐	☐					☐		
5			☐	☐	☐	☐	☐	☐	☐					☐		
6			☐	☐	☐	☐	☐	☐	☐					☐		
7			☐	☐	☐	☐	☐	☐	☐					☐		
8			☐	☐	☐	☐	☐	☐	☐					☐		
9			☐	☐	☐	☐	☐	☐	☐					☐		
10			☐	☐	☐	☐	☐	☐	☐					☐		
11			☐	☐	☐	☐	☐	☐	☐					☐		
12			☐	☐	☐	☐	☐	☐	☐					☐		
13			☐	☐	☐	☐	☐	☐	☐					☐		
14			☐	☐	☐	☐	☐	☐	☐					☐		
15			☐	☐	☐	☐	☐	☐	☐					☐		

* ask, if HH-member is able to read and understand the newspaper

** use the following codes: 1 = farming 2 = household activity 3 = wage labour 4 = petty business (specify) 5 = studying 6 = shopkeeping 7 = other (specify)

*** use the following codes: 1 = labour 2 = studying/school 3 = relatives 4 = sickness 7 = other (specify)

set respondents HH-member-Id = 0 for further questions – for further questions indicate HH-member-ID = 99 for dead members

Block B : Physical Assets

B I : Shelter / Housing

a House tenure: 1☐ owned 2☐ rented 3☐ rent free 4☐ don't know 7☐ other_____

b Type of structure (main): 1☐ concrete 2☐ stone 3☐ brick 4☐ loam/clay 5☐ wood 7☐ other _____

c Roof type: 1☐ thatched/straw 2☐ concrete 3☐ wood 4☐ roof tile 5☐ tin roof 7☐ other _____

d Number of rooms: ___

e Electrification: 1☐ yes 0☐ no

f Latrine facility: 1☐ water flushed 2☐ open pit/temporary 3☐ none 4☐ common 7☐ other _____

g Types of stove 1☐Traditional 2☐ improved 7☐ other_____

h Other household assets: 1☐ radio 2☐ TV 3☐ Video 4☐ Fan 5☐ Fridge 6☐ Washing machine 7☐ telephone m
77☐ other* _____

* other: ask for further (appropriate) items apart from the listed: watch, sewing machine etc.

B II : Water supply

5 1☐ spring 2☐ river 3☐ public handpump 4☐ own handpump 5☐ own tap 6☐ public tap 7☐ dug wells m
77☐ other _____

b Quantity of drinking water: 1☐ no shortage 2☐ seasonal shortages 3☐ permanent shortage

c Quality of drinking water: 1☐ no problem 2☐ seasonal problem 3☐ permanent problem

d Walking distance to next source (both ways, in minutes): _____

e Who within the HH is usually fetching the drinking water? (indicate HH-member-ID) _____

f Do you use irrigation water? 1☐ yes 0☐ no

g Quantity of irrigation water 1☐ no problem 2☐ seasonal problem 3☐ permanent problem

h If problem for what Reason? _____

B III: Energy supply

• What is the commonly used fuel in your HH?

C	Fuel type	Used for				Amount used			
		[1]cooking	[2]heating	[3]lighting	[4]other (specify)	[5]Weight/volume (number)	[6]unit	don't know	[7]Frequency*
a	Wood	☐	☐	☐				☐	
b	Coal	☐	☐	☐				☐	
c	Biogas	☐	☐	☐				☐	
d	Pipegas	☐	☐	☐				☐	
e	Gas (cylinder)	☐	☐	☐				☐	
f	Electricity	☐	☐	☐				☐	
g	Kerosene	☐	☐	☐				☐	
h	Cow dung	☐	☐	☐				☐	
i	Crop residue	☐	☐	☐				☐	
j	Leaf litter	☐	☐	☐				☐	
k	Other: _____	☐	☐	☐				☐	

* use the following codes: 1 = daily 2 = weekly 3 = monthly 4 = per year 5 = once in several years

B IV: Transports

a What is available in your HH: 1☐ bicycle 2☐ motor cycle 3☐ car 4☐ horse 5☐ mule 6☐ tractor 7☐ other: _____

b number: 1___ 2 ___ 3 ___ 4___ 5 ___ 6 ___ 7 ___

Block C: Human assets

C I : Health status

a Have one or more household members been sick during the last 3 months? 1☐ yes 0☐ no

b If yes: Illnesses of household members during the last 3 months

No. (HH ID)*	Type of illness							[8]Overall duration (days)	[9]Ways of Treatment**
	[1]Chronical disease (specify)	[2]Diarrhea episodes	[3]Respiratory illness	[4]Fever	[5]Cold	[6]Accidents (specify)	[7]other (specify)		
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				
		☐	☐	☐	☐				

* No. (HH-ID): household ID's to be filled in – each member at most once.

** use the following codes: 1 = Traditional healer 2 = Community health worker 3 = Govt. dispensary 4 = Govt. hospital 5 = Private medical practitioner 7 = other (specify)
0 = none

Block D : Natural assets

D I : Land tenure & access

a Does your household have access to any agricultural land: 1☐ yes 0☐ no

If yes:

C	Type of land*		[1]Size	[2]Unit	Don't know	[3]Details**
b	Registered self-cultivated agricultural land	irrigated			☐	
c	Unregistered self-cultivated agricultural land	irrigated			☐	
d	Registered self-cultivated agricultural land (annual cropping/ terraced)	rain-fed			☐	
e	Unregistered self-cultivated agricultural land (annual cropping/ terraced)	rain-fed			☐	
f	Registered self-cultivated agricultural land (Fallowed/ non-terraced)	rain-fed			☐	
g	Unregistered self-cultivated agricultural land (Fallowed/ non-terraced)	rain-fed			☐	
h	Registered self-cultivated other land, specify: _____				☐	
i	Unregistered self-cultivated other land, specify: _____				☐	

j	Land share crop in	irrigated			☐	
k	Land share crop in	rain-fed			☐	
l	Land lease in	irrigated			☐	
m	Land lease in	rain-fed			☐	

n	Land mortgage in	irrigated			☐	
o	Land mortgage in	rain-fed			☐	

p	Land share crop out	irrigated			☐	
q	Land share crop out	rain-fed			☐	
r	Land lease out	irrigated			☐	
s	Land lease out	rain-fed			☐	
t	Land mortgage out	irrigated			☐	
u	Land mortgage out	rain-fed			☐	
v	Other, specify: _____					

* explanation for type of land: Annually cropped: cropped every year; Fallowed/ non-terraced: basically shifting cultivation land, usually non- terraced and under fallow for one or several years before retaken under production. Land share crop in: Land taken from others for share cropping / Land share crop out: Land given to others for share cropping / Land lease in: Land taken on contract with a certain amount of money or crop / Land lease out: Land given on contract with a certain amount of money or crop / Land mortgage in: Ownership (document) of the land is taken from a land owner for a certain period of time / Land mortgage out: Ownership (document) of the land is given out for a certain period of time.

** Describe Details about contract.

D II : Land use

a Does your household cultivate **rain-fed/ terraced** land: 1☐ yes 0☐ no

If yes: Which crops do you cultivate?

C	Crop	[1]Area (number)	[2]unit (ha)	don't know	Production			[5]type of irrigation		[6]sold (%)
					[3]Amount (number)	[4]unit (kg/tons)	don't know			
b	Wheat			☐			☐	☐	☐	
c	Rice			☐			☐	☐	☐	
d	Maize			☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Vegetables									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Fruits									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Other(e.g. fodder)									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	

a Does your household cultivate **fallowed/ non-terraced** land: 1☐ yes 0☐ no

If yes: Which crops do you cultivate?

C	Crop	[1]Area (number)	[2]unit (ha)	don't know	Production			[5]seasonal irrigation		[6]Sold (%)
					[3]Amount (number)	[4]unit (kg/tons)	don't know	yes	no	
b	Wheat			☐			☐	☐	☐	
c	Rice			☐			☐	☐	☐	
d	Maize			☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Vegetables									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Fruits									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Other(e.g. fodder)									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	

a Does your household cultivate **irrigated** land: 1☐ yes 0☐ no

If yes: Which crops do you cultivate?

C	Crop	[1]Area (number)	[2]unit (ha)	don't know	Production			[5]seasonal irrigation		[6]Sold (%)
					[3]Amount (number)	[4]unit (kg/tons)	don't know	yes	no	
b	Wheat			☐			☐	☐	☐	
c	Rice			☐			☐	☐	☐	
d	Maize			☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Vegetables									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Fruits									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	
	Other(e.g. fodder)									
				☐			☐	☐	☐	
				☐			☐	☐	☐	
				☐			☐	☐	☐	

D III : Forest tenure, access & use

a Does your household own forest land? 1☐ yes 0☐ no If yes, [1]area (number): _____ [2]unit: _____

• Which forest products does your HH use, and where are they from?

C	Product	[1]Frequency of use*	[2]Amount (number)	[3]unit	don't know	[4]For own use (%)	[5]Source**	[6]involved HH-members (IDs)	Remarks
b	Timber (construction)				☐				
c	Fuel wood				☐				
d	Fodder (leaves)				☐				
e	Fodder (grass)				☐				
f	Fodder (pasture)				☐				
g	NTFP (specify): _____				☐				
h	NTFP (specify): _____				☐				
i	Other (specify): _____				☐				

* use the following codes: 1 = daily 2 = weekly 3 = monthly 4 = seasonal 5 = once a year 6 = once in several years

** use the following codes: 1 = government forest (owned by govt.)
2 = community forest (owned by govt., managed by formal user group)
3 = village forest (owned by govt., management by customary user group)
4 = lease hold forest (owned by govt. leased out for certain time)
5 = private forest (owned by individual)
6 = don't know
7 = other (specify)

D IV : Livestock

a Does your household have any livestock? 1☐ yes 0☐ no

If yes:

C	Type	[1]Present number	[2] Number not self owned *	[3]HH-member mainly involved (HH-member-IDs)	[4]Change in number during the last 5 years		Remarks
					increase	decrease	
b	Sheep				☐	☐	
c	Goat				☐	☐	
d	Cow/Bull				☐	☐	
e	Buffalo				☐	☐	
f	Donkey/Mule				☐	☐	
g	Poultry				☐	☐	
h	Fish				☐	☐	
i	Other Specify: _____				☐	☐	

* e.g. number of animals taken care of by household but are not owned by its members

D V : Use of fertilizers and pesticides/herbicides

a Does your household use any fertilizer? 1☐ yes 0☐ no

If yes:

C	Type	[1]Quantity	[2]unit	don't know	[3]Kind of crops (list crops)	[4]Used since (years)
	Organic fertilizer					
b	Farmyard manure			☐		
c	Green manure			☐		
d	Others (specify)			☐		
	Mineral Fertilizers					
e	Urea (nitrogen)			☐		
f	TSP/ SSP (triple/single super phosphate)			☐		
g	DAP			☐		
h	NPK			☐		
i	Potash			☐		
j	Other: _____					

k Does your household use any chemical pesticides? 1☐ yes 0☐ no l If yes, which_____

m Does your household you use any organic pesticides/herbicides? 1☐ yes 0☐ no n If yes, which: _____

Block E : Financial assets

E I : Income

a Who manages the household budget? (indicate HH-member-IDs) _____

• What are the sources of your household CASH income?

C	Type	[1]Contribution to income		[2]Regularity of income		Place of selling*	
		important	minor	regular	seasonal	[6]code	specify if 7
b	Field crops which: _____	☐	☐	☐	☐		
	Field crops which: _____	☐	☐	☐	☐		
c	Fruits / vegetables which: _____	☐	☐	☐	☐		
	Fruits / vegetables which: _____	☐	☐	☐	☐		
d	Livestock, what products: _____	☐	☐	☐	☐		
	Livestock, what products: _____	☐	☐	☐	☐		
e	Forest products, which: _____	☐	☐	☐	☐		
	Forest products, which: _____	☐	☐	☐	☐		
f	Leased land	☐	☐	☐	☐		
g	Agriculture wage labour	☐	☐	☐	☐		
h	Non-agriculture wage labour, specify: _____	☐	☐	☐	☐		
i	Petty business, specify: _____	☐	☐	☐	☐		
j	National remittances (privat service), specify: _____	☐	☐	☐	☐		
k	National remittances (govt. service), specify: _____	☐	☐	☐	☐		
l	International remittances, specify: _____	☐	☐	☐	☐		
m	Mortage in	☐	☐	☐	☐		
n	Other, specify: _____	☐	☐	☐	☐		
		☐	☐	☐	☐		

* use the following codes: 1 = own village 2 = local market 3 = middleman 4 = Capital 5 = abroad 6 = factory/mill 7 = other (specify)

E II: Expenditures

• How much money does your household normally spend on:

C	Area	Money spent			Remarks
		[1]Amount and currency	don't know	[2]Frequency*	
a	Food		☐		
b	Clothes		☐		
c	Education, specify: _____		☐		
d	Fuel		☐		
e	Construction, specify: _____		☐		
f	Health		☐		
g	Cooking utensils		☐		
h	Livestock, specify: _____		☐		
i	Agricultural equipment, specify: _____		☐		
j	Agricultural labour		☐		
k	Social / religious occasions, which: _____		☐		
l	Dowry		☐		
m	Loan repayment (**interest only!**)		☐		
n	Bribes for officials, Penalties, specify: _____		☐		
o	Transport		☐		
p	Other, specify: _____		☐		
q	Other, specify: _____		☐		
			☐		

** use the following codes: 1 = daily 2 = weekly 3 = monthly 4 = per year 7 = other (season, own calendar system) (specify)

E III: Savings

a Does your household have savings: 1☐ yes 0☐ no 9☐ don't know

b If yes, how does your household organize them: 1☐ on bank 2☐ with saving group 3☐ buy livestock 4☐ buy land
7☐ other:_____

c Did your household use some of the savings during the last 12 months: 1☐ yes 2☐ no
if yes, specify what for*: _____

Tip: Since interviewees might be reluctant to mention that their savings are kept at home, this should be avoided as a direct question.

* you may mention categories in E II (previous block) emergency and labour migration

E IV: Loans

a Does your household have any loans or did a household member borrow money: 1☐ yes 0☐ no 9☐ don't know

If yes: sources

C	Source	[1]since (months)	[2]Used for*	[3]Interest rate (%)	[4]Amount and currency	don't know
b	Commercial money lender					☐
c	Commercial bank					☐
d	Govt. Institution					☐
e	NGO					☐
f	Landlord					☐
g	Shopkeeper					☐
h	Friends / relatives / neighbours					☐
i	Buy goods on credit					☐
j	Other specify: _____					☐

* you may mention categories in E II (previous block) emergency and labour migration

Block F: Social assets

F I: Formal institutions

a Do you know any external projects / organizations which have been active in the village during the last 5 years 1☐ yes 2☐ no
if yes, which: _____

b If yes, did you get any benefit from those projects/ organizations: 1☐ yes 2☐ no
if yes, specify: _____

c Have one or more household members participated in formal institutions during the last 5 years? 1☐ yes 2☐ no

C	Institution	[1]Specify function/position	[2]HH member (ID)	[3]Have you been active? Do you speak up?		Remarks
				yes	no	
	Political					
d	Traditional meetings			☐	☐	
e	Formal political body, which: _____			☐	☐	
f	Political party, which: _____			☐	☐	
	Village level					
g	Village organization			☐	☐	
h	Self help group, which: _____			☐	☐	
	Other					
i	Marketing co-operative			☐	☐	
j	Credit co-operative			☐	☐	
k	Farmers' organization			☐	☐	
l	Religious organization			☐	☐	
m	Tribal association			☐	☐	
n	Women organization			☐	☐	
o	Labour sharing/exchange group			☐	☐	
p	Other (specify)			☐	☐	

F II: Political participation

a Has any of your household-member ever voted? 1☐ yes 0☐ no 9☐ don't know

• if yes, indicate voting behavior of household-members:

HH member ID	[1]Frequency of voting					[2]Type of elections			
	Always	Often	Seldom	Never	Don't know	National	Provincial *(leave empty for Nepal)*	Local	Don't know
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
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	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐

F III: Information

• What are your sources of information *(to be answered for and by the interviewee only)*

a Watching TV: 1☐ daily 2☐ weekly 3☐ sometimes 4☐ never

b Listening to the radio: 1☐ daily 2☐ weekly 3☐ sometimes 4☐ never

c Reading newspapers: 1☐ daily 2☐ weekly 3☐ sometimes 4☐ never

Block G: Vulnerability context

G I: Crises, Shocks, Security

a Number of months per year in which the HH can live from **own food** production: ____

b Number of months per year in which the HH has **adequate food** to feed all of its members: ____

c Most difficult months to provide adequate food for the HH: 1☐ JAN 2☐ FEB 3☐ MAR 4☐ APR 5☐ MAY 6☐ JUN
7☐ JUL 8☐ AUG 9☐ SEP 10☐OCT 11☐ NOV 12☐ DEC

• What kind of crises have you experienced during the past 12 months and how did you cope with it:

C	Crisis	[1]No problem	[2]Minor problem	[3]Big problem	[2]Coping strategy*	Remarks
d	Poor production specify: _____	☐	☐	☐		
e	Shortage of food Reason: _____	☐	☐	☐		
f	Illness/accident of a HH-member	☐	☐	☐		
g	Death of a HH-member	☐	☐	☐		
h	Arrest of a HH-member	☐	☐	☐		
i	Loss of job	☐	☐	☐		
j	Irregular remittance	☐	☐	☐		
k	Market fluctuation/inflation	☐	☐	☐		
l	Loss of land	☐	☐	☐		
m	Loss of livestock	☐	☐	☐		
n	Damage, specify: _____	☐	☐	☐		
o	Political crisis/insecurity, specify: _____	☐	☐	☐		
q	Other, Specify: _____	☐	☐	☐		

* Use the following codes: 1 = Taking loan 2 = Grain loan from kin 3 = adjustment to meals 4 = Cash or cereal loan from merchants 5 = Farmland mortgage out
6 = Farmland leased out 7 = Sold household assets 8 = Sold animals 9 = Sold jewelry 10 = Sold farmland 11 = Occupation change
12 = temporary labour migration 13 = Permanent labour migration 14 = Begging 15 = Free support by any organization
16 = Free support by family / kin / neighbours / community 77 = other (specify)

G II : Long-term changes

• Considering the last ten years – what has changed in regard to:

C	Area	Quality of change			Remarks
		[1]improved / increased / higher / better	[2]The same	[3]worsened / declined / smaller / lower	
a	Frequency of illness	☐	☐	☐	
b	Health facilities	☐	☐	☐	
c	Purchasing power	☐	☐	☐	
d	Possibilities to generate income (locally)	☐	☐	☐	
e	Possibilities to generate income (remittances)	☐	☐	☐	
f	School facilities	☐	☐	☐	
g	Quality of public services	☐	☐	☐	
h	Access to forest	☐	☐	☐	
i	Soil fertility	☐	☐	☐	
j	Food security	☐	☐	☐	
k	Veterinary facilities	☐	☐	☐	
l	Family size	☐	☐	☐	
m	Security	☐	☐	☐	
n	Communication, access to relevant information	☐	☐	☐	
o	Transportation	☐	☐	☐	
p	Access to credits	☐	☐	☐	
q	Water availability	☐	☐	☐	
r	Water quality	☐	☐	☐	
s	Irrigation facilities	☐	☐	☐	
t	Participation in decision-making	☐	☐	☐	
u	Other (specify)	☐	☐	☐	

G III : General workload

• Indicate when the general workload is high / medium /low

C	Month	[1]Workload			[2]Explain main activities	[3]Involved HH members (HH-member-IDs)
		[1]low	[2]med.	[3]high		
a	JAN	☐	☐	☐		
b	FEB	☐	☐	☐		
c	MAR	☐	☐	☐		
d	APR	☐	☐	☐		
e	MAY	☐	☐	☐		
f	JUN	☐	☐	☐		
g	JUL	☐	☐	☐		
h	AUG	☐	☐	☐		
i	SEP	☐	☐	☐		
j	OCT	☐	☐	☐		
k	NOV	☐	☐	☐		
l	DEC	☐	☐	☐		

Block H : Institutions and Processes

H I : Outside village

a Has a household member been out of the village within the last 12 months: 1☐ yes 0☐ no

If yes: which HH member has visited the following places during the last 12 month?

C	Place	[1]Type*	[2]Name of NGO / Govt. office	[3]HH member IDs	[4]Distance**	[5]Frequency***	[6]For what purpose****
b	NGO office, type****						
c	NGO office, type****						
d	NGO office, type****						
e	Govt. office, type****						
f	Govt. office, type****						
g	Govt. office, type****						
h	Relatives outside village	*leave empty*					
i	Parents' home						
j	Market						
k	Medical facility						
l	Other specify: _____						
m	Other specify: _____						

* use the following codes: 1 = education 2 = credit/loans 3 = soil and water conservation 4 = health 5 = marketing 6 = technical vocational training 7 = nursery 77 = other (specify)

** use the following codes: 1 = next town 2 = provincial capital 3 = national capital 4 = foreign countries (specify)

*** use the following codes: 1 = daily 2 = weekly 3 = monthly 4 = once a year

**** use the following codes: 1 = education 2 = loans 3 = employment 4 = buy goods 5 = health 6 = conflict resolution 7 = other (specify)

H II: Household level

• Which HH member can decide in what household matters?

C	Area	HH member ID(s)
a	Food items in large quantity	
b	Production strategy	
c	Livestock	
d	Land	
e	Buying agricultural equipment and inputs	
f	Income generation	
g	Family planning	
h	Education	
i	Buying clothes, toiletries, jewellery, household utensils	
j	Other (specify) _____	
k	Other (specify) _____	

Remarks

a Has the livelihood of the household improved compared to the situation 10 years ago? 1☐ yes 0☐ no

b What would be most helpful to improve the livelihood of your household?

c Possibility to come back in order to clarify some points: 1☐ yes 0☐ no