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Debating Shifting Cultivation in the Eastern Himalayas

Farmers' Innovations as Lessons for Policy

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About the Organisations

The International Centre for Integrated Mountain Development (ICIMOD) is an independent 'Mountain Learning and Knowledge Centre' serving the eight countries of the Hindu Kush-Himalayas – Afghanistan  , Bangladesh  , Bhutan  , China  , India  , Myanmar  , Nepal  , and Pakistan  – and the global mountain community. Founded in 1983, ICIMOD is based in Kathmandu, Nepal, and brings together a partnership of regional member countries, partner institutions, and donors with a commitment for development action to secure a better future for the people and environment of the extended Himalayan region. ICIMOD's activities are supported by its core programme donors: the Governments of Austria, Denmark, Germany, Netherlands, Norway, Switzerland, and its regional member countries, along with over thirty project co-financing donors. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations.

The International Fund for Agricultural Development (IFAD) is a specialized agency of the United Nations dedicated to enabling rural poor people to overcome poverty. It began operations in 1978 in response to a resolution adopted by the 1974 World Food Conference calling for the establishment of an international fund to finance agricultural development programmes and projects primarily in developing countries. IFAD provides financing and mobilizes additional resources for programmes and projects that promote the economic advancement of rural poor people. The organization's activities are guided by three strategic objectives: to strengthen the capacity of rural poor people and their organizations; to improve equitable access to productive natural resources and technologies; and to increase rural poor people's access to financial services and markets.

Debating Shifting Cultivation in the Eastern Himalayas

Farmers' Innovations as Lessons for Policy

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- Agrobiodiversity in shifting cultivation *(E. Kerkhoff)*
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Back inset: Policy makers, researchers, development workers, and farmers from Bangladesh, Bhutan, India, Myanmar, and Nepal at the Shillong Workshop

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Foreword

It might indeed be paradoxical to imagine that the basic philosophy of shifting cultivation has been 'to create forests and not to destroy forests'*, for without forests the next jhum cannot be cultivated*.

Shifting cultivation is an old topic, and there is plenty of conventional wisdom, set opinions, and policies that have been in place for a long time. It has been generally and widely considered that shifting cultivation is always bad from both environmental and socioeconomic perspectives. Or, if it wasn't all considered bad, it was fine when there was a long rotation, but now the rotation has become too short, so therefore shifting cultivation is bad. Thus the only wise policy is to stop shifting cultivation and look for new alternatives.

This makes us ask, why have these new alternatives not been working that well? Are the hundreds of millions of people dependent, at least partly, on shifting cultivation in Asia wrong in the way they cultivate their land?

We have realised the need for new research, re-appraisal of old research, a need for us to listen to the new voices and old wisdom of indigenous people, a need to incorporate new values and understanding that have been coming in globally. Through the work of ICIMOD, we have come to realise that there is a mountain perspective which is different from the plains' perspective. It's one that values a completely different approach to sloping land and the many different products that come from that kind of diversity. This has led us to new insights, new data, new energy, new sympathies and new questions.

We are aware that there are many negative examples of shifting cultivation, but have to ask: do they present a scientifically accurate picture? Too often, shifting cultivation gets compared to natural forests, but if compared to either settled agriculture on these same sloping lands or mono crop forest plantations – as it should be, for these are policy alternatives generally recommended in all five countries in this study – shifting cultivation is often – but not always – the better alternative. The potential for growth and rural transformation by people themselves is high, building on their own knowledge, own institutions and social and cultural capital.

So how have we gone wrong, or partly wrong, if we agree that we have? For one thing, I would suggest that the wrong label has led to the wrong focus. Slash-and-burn and shifting cultivation are very negative terms. They give the wrong focus, the slashing, burning, shifting, the image of fire. If we change our label from slash-and-burn to rotational agroforestry or agroforestry with a burn cycle, or a form of forest gardening, then we start to use positive words that focus on the growth cycle rather

than the cutting cycle. As studies show, farmers spend many more years growing trees and crops than burning them – protecting soil, restoring nutrients, fallowing and resting. And in most land allocation regimes under shifting cultivation, issues of equity and poverty are often better addressed than in the alternatives.

Why is it urgent to re-examine and revise our policies? There are 10 million hectares in South Asia under rotational agroforestry or agroforestry with a burn cycle. It is the dominant land use in vast areas in North East India, the Chittagong Hill Tracts of Bangladesh, Eastern Bhutan, hilly Myanmar, Southwest China and parts of Nepal. Most shifting cultivators of the eastern Himalaya fall into the 14-38% of very poor who live on less than 1 US dollar a day.

Traditional shifting cultivation faces huge obstacles both from development and from policies. Shifting cultivators have been given little space for support and for innovation within their cultivation, and yet we know that the attempts to completely change this system and replace it with entirely different agricultural and horticultural systems have mostly been unsuccessful. Therefore, we need positive alternatives.

The 'Farmers' Innovations in Shifting Cultivation' initiative was designed by ICIMOD and its partners from five countries of the eastern Himalayas, including Bangladesh, Bhutan, India, Myanmar and Nepal, with support from the International Fund for Agricultural Development (IFAD). It has brought together experts from our regional member countries who have been doing path-breaking research, advocacy, and development implementation. There is a strong working group debating the issues, a network of jhumias who formed electronically, and there have been working group meetings and policy fora in India and Nepal. What has come out of this is that there are commonalities throughout the region, there are real policy options already available to be debated and considered, and that can be up-scaled.

The results provoke us to challenge our old ideas, think new thoughts, and do new actions. Not because the old thoughts were wrong, everyone can cite real examples of degradation from unsustainable shifting cultivation in distorted form and these are true. But because maybe they are only partly true when distorted; there is a need to examine the real balance in light of experience and data; a need to recognise traditional knowledge; a need to support traditional social security and equity for the poor; a need to have a clear path for real bottom-up development with a facilitative government; a need to learn from innovations throughout the region; and a need to galvanise rural transformation.

This policy document is meant to lead us to new policy dialogues, and help us to collectively challenge the exclusively negative picture that has so far been prevalent. It reflects a shared vision as well as policy options that are both realistic and actionable at national and other levels. The main conclusion is that the common negative perception on shifting cultivation is often misplaced. Shifting cultivation – if properly practised – is actually a 'good practice' system for productively using hill and mountain land, while ensuring conservation of forest, soil, and water resources.

The findings are that farmers are actively developing viable solutions within shifting cultivation or they are modifying their practices in the light of opportunities.

For all these reasons this document deliberately takes a provocatively positive approach. The chapter headings are designed to challenge conventional wisdom and stimulate new approaches.

Now at the time of publication of this document, some spin-offs of this initiative can be seen in the form of positive developments. At the policy level, several partners have actively advocated our common policy findings, including the Shillong Declaration and accompanying recommendations, by participating at relevant discussion fora, and organising workshops. At community-level, regional-level networking has enabled the exchange and implementation of options for local-level governments to learn from farmers and develop shifting cultivation together.

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And finally, none of this would have been possible without the support and active cooperation of the many farmers in the eastern Himalayas who continue to practise and adapt a way of life developed by their forefathers and who shared their experiences so generously with the country teams.

Executive Summary

In the eastern Himalayas, shifting cultivation is the most prominent farming system, providing a way of life for a large number of ethnic minorities and other poor and marginalised upland communities. The policy approach to deal with shifting cultivation is common across Bangladesh, Bhutan, India, Nepal and Myanmar, the countries in this study, and aims to replace it with permanent forms of land use. The current problems related to shifting cultivation, however, are found to be often as much a result of counterproductive policies as of inappropriate land use practices. Therefore, there is a need across the region for new, more effective and socially more acceptable policy options that help to improve shifting cultivation, rather than replace it.

The research presented here identifies farmers' traditional practices and more recent indigenous innovations that contribute to the benefits this farming system has to offer. These benefits accrue both to the practitioners and to other stakeholders, including national governments. Shifting cultivation, and the farmers' innovations in particular, were found to contribute to forest cover and biodiversity conservation, while at the same time maintaining agricultural and forest productivity. Commercial niche products and organic farming contribute to economic development that is adjusted to mountain circumstances and builds on existing potential. The local institutions developed by shifting cultivation communities were found to be relatively strong, and they enhance social security and cultural integrity. Development approaches that build on these existing potentials and capacity are likely to be more achievable and acceptable to the farmers concerned.

Realising this potential, and the need for policy change across region, the participants of the 'Shifting Cultivation Regional Policy Dialogue Workshop for the eastern Himalayas', held in October 2004 in Shillong, India, adopted the Shillong Declaration and formulated concrete policy recommendations based on the research findings of this initiative. The participants included representatives of government agencies, farmers, international bodies, non-government organisations, academia, science and research institutions, local institutions, international donors and development assistance agencies, the private sector, and other professionals. They recommended policy makers to reexamine the policies in place, to remove explicit policies and policy instruments that discourage shifting cultivation, and to strengthen the implementation of existing beneficial policies. They also recommended that they address issues of land tenure security, research, and extension and their impact on traditional shifting cultivation practices; market development and commercialisation of niche products of shifting cultivation; strengthening and capacity building of customary institutions; credit policies in situations where common property regimes apply; and coordination among the different government agencies that have responsibilities for aspects of shifting cultivation.

Contents

Part One

Introduction

Chapter 1

Current Understanding of Shifting Cultivation

Introduction

Shifting cultivation is a farming system mired in misunderstanding. For years it has been seen by governments and development workers as an anachronistic, outdated, and even destructive practice – summarised in the negative phrase 'slash-and-burn'. But why did this type of farming become common practice across vast swathes of mountainous Asia, continuing for centuries? Why do close to 400 million farmers in the region, despite all gentle and forced attempts to persuade them to change their ways, continue the practice? Is it possible that in fact farmers in the region developed one of the most efficient and least destructive ways of using steep and fragile slopes for production of a varied and balanced diet, whilst protecting the land on which they rely? Recently these questions have become the central theme of a new debate in the eastern Himalayas. Scientists and development workers have begun to realise that while there clearly are examples of negative impacts, shifting cultivation can actually represent an efficient and appropriate form of agroforestry for the steep slopes of the region. Indigenous shifting cultivators have a vast store of local knowledge about their particular landscape and how best to use it for survival, and have much to teach the world about the efficient use of their landscape for combined agriculture and forestry. Equally modern pressures are forcing changes and limiting proper application of the practice. Shifting cultivators are introducing innovations in response that also suggest possibilities for reconciliation of different approaches in the future. This book attempts to document some aspects of this new debate.

Shifting Cultivation – Rotational Agroforestry in Practice

The term shifting cultivation is often used interchangeably with slash-and-burn or swidden agriculture. A wide variety of practices across the globe fall under these terms. Most are characterised by a short 'cultivation phase' of a few years followed by a relatively longer 'forestry phase' usually referred to as the 'fallow'. However, there are significant differences in the practices which affect their sustainability and management choices. These have been discussed in some detail by Fujisaka et al. (1996). Such factors are, for example, to what extent does it represent conversion of primary forest versus re-cultivation of secondary forest? Are farmers members of indigenous groups or recent settlers with limited local agro-ecological knowledge? Are lands left to fallow or converted to (permanent) pastures or plantations? Are fallows relatively long and 'stable' or short, reducing in recent times? And how

integrated into the national cash economy are the different groups studied? 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. This is the type of shifting cultivation discussed in the present publication.

This type of shifting cultivation is known under different names in the different countries included in the study. In Bangladesh and North East India it is called 'jhum', which literally means 'shifting'; in Myanmar it is 'taungya' or 'hill crop land'; and in Nepal 'khoriya' and 'basme', which refer to the fallow phase. In Bhutan, 'tseri' refers to the shifting cultivation with forest fallows practised at lower elevations, while 'pangzhing' is a similar practice at elevations close to the tree line where the fallows are mainly grass and shrub.

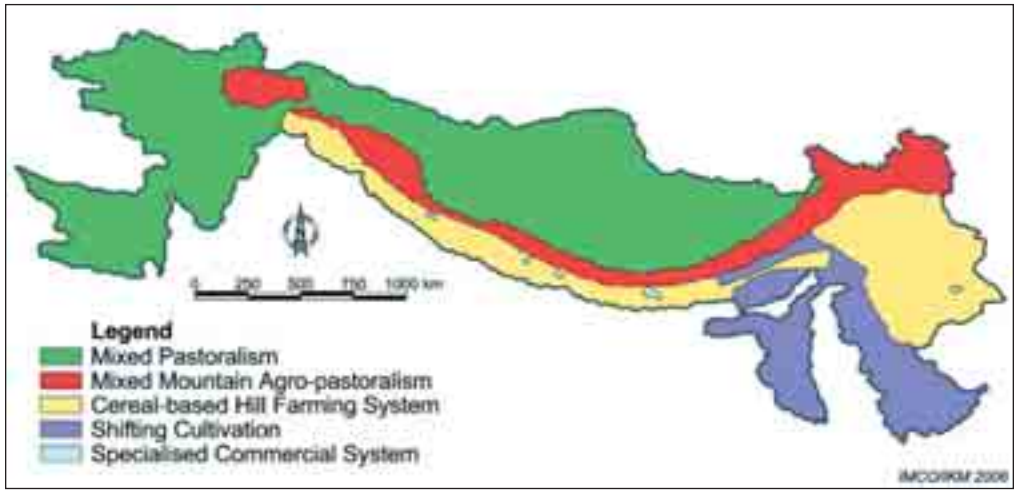
The common (mis)perception of shifting cultivation is clearly indicated in the terms used to describe it. They give the wrong focus centred on negative images, the slashing, burning, and shifting, and the image of fire. Especially the term 'slash-and-burn' draws attention to a land clearing technique that is used by shifting cultivators as part of their rotational cycle, as well as by others who clear forests for permanent land use. The term draws attention to only a small part of the complete shifting cultivation cycle, and leads to confusion between shifting cultivators and recent migrant settlers from the plains. This language has contributed further to the general condemnation of the practice and the difficulties it faces in gaining respect and acceptance. Shifting cultivation is much better described as rotational agroforestry, agroforestry with a burn cycle, or a form of forest gardening – terms that focus on the growth cycle and continuation rather than the cutting cycle. Farmers practising shifting cultivation actually spend many more years growing trees and crops than burning them – protecting the soil, restoring nutrients, fallowing, and resting.

The bad reputation of shifting cultivation comes partly because the fallow period tends to be seen as abandoned and unproductive rather than as the regenerative phase and an integral part of the cycle. The methodology is thus considered to be wasteful, inefficient, and a leading cause of deforestation; rather than an admirable way of maintaining forest while practising agriculture. As a result, governments have often allocated fallow areas for other purposes, thereby reducing shifting cultivators' access to land. Until recently, state policies invariably viewed shifting cultivation as an old practice that needed to be stopped. Currently, shifting cultivators in the eastern Himalayas face problems with a dwindling natural resource base and difficulties in meeting their livelihood requirements. The question is, however, whether these problems are inherent to shifting cultivation, or the result of policies adopted by governments.

The Need for New Policies

Why is it urgent to re-examine and revise our policies? Shifting cultivation is still the most widely practised farming system in the sub-tropical and tropical zones of the eastern Himalayan region (Sharma and Kerkhoff 2004), including in the Chittagong

Hill Tracts of Bangladesh, eastern Bhutan, southwest China, North East India, hilly Myanmar, and parts of Nepal (Figure 1). It is the dominant land use system across much of South Asia, with an estimated 10 million hectares of land cultivated in this way in the above named areas and parts of Lao PDR, Cambodia, Northern Thailand, and Vietnam (Figure 2). Across Asia, more than 400 million people are dependent on tropical forests and a majority of them practise shifting cultivation.



ICIMOD, Ecoregional Approaches to Mountain Agriculture Project

Figure 1: Farming systems in the Hindu Kush-Himalayan region

Cung Chin Thang

Figure 2: Shifting cultivation in Myanmar; Nyaungshwe Township, Shan State, Myanmar

The majority of shifting cultivators in the eastern Himalayas belong to indigenous ethnic minority groups. Most of these ethnic minority groups subsist on variations of forest farming supplemented by hunting and gathering activities. Shifting cultivators have benefited from neither the 'green revolution' nor the fruits of Asia's economic growth. They remain on the fringes of society – geographically, politically, and economically – and are frequently among the poorest of the poor, the 14-38% of people in the region who subsist on less than US$1 per day. The survival of these indigenous peoples and their tropical forest habitats are inextricably linked. However, in many of these places, property rights regimes have made shifting cultivators illegal squatters on land that has been cropped by their ancestors for countless generations; no concerted effort has been made to address this dichotomy in the eastern Himalayan region as a whole, despite individual country initiatives.

Present policies tend to work against good practices of shifting cultivation. These policies are mostly based on questionable perceptions of the ecological and livelihood realities both of the practice itself and of the farmers involved. Policymakers, governments, and analysts have often assumed that shifting cultivation is universally unsustainable and destructive of forests and wildlife and have failed to recognise the great variety of land use types involved, to understand the cultural knowledge of the indigenous peoples, or to realise the vast number of plant and tree species associated with shifting cultivation. Modern tenurial arrangements often undermine the motivation of farmers to invest in longer term agricultural and forestry practices. For example, the laws and policies of many countries treat fallow areas as empty or unused land without valid tenurial claim, despite the fact that they are an integral part of the shifting cultivation cycle.

Implications for Biodiversity

The eastern Himalayan region is one of the 34 'biodiversity hotspots' of the world (CI 2005). However, although it is one of the richest regions in the world in terms of biodiversity resources, it is also home to some of the poorest people, whose livelihoods are heavily dependent on those same resources.

Although the state is the de jure owner of the majority of the tropical forests in the region, some which have already been gazetted as parks and preserves, the ground reality is that most are inhabited by indigenous peoples who depend on them for their livelihoods. These people are the de facto managers of these forests and have been for thousands of years. They have accumulated a wealth of knowledge about the forests that has been passed down verbally from generation to generation. Their practice of rotational agroforestry has actually helped to establish and maintain the biodiversity of the tropical forests, in contrast to areas inhabited by settled agriculturalists in the plains and lowlands around the world, which have simply been cleared of trees permanently.

If land used for shifting cultivation is 'protected' and closed to use by indigenous people, it could actually lead to a long-term reduction in the overall biodiversity of

the region, as the changing pattern of agriculture, shrub, and forest fallow land provides a greater variety of habitat for flora and fauna than simple 'forest'. Similarly, if land is cleared for permanent cultivation in an effort to 'settle' these people, it will definitely lead to an overall loss in forest cover.

Marginalisation of Indigenous Peoples

Integrated shifting cultivation – or rotational agroforestry – is mainly practised by indigenous peoples. These groups tend to be marginalised by mainstream society, and their approaches tend to be dismissed as at best 'inappropriate in modern times' and at worst simply as 'primitive'; which adds to the misjudgement of the practice. Their intimate knowledge of their environment is rarely valued, unless it can be exploited for profit, and is often ignored or even denied. When policies are developed by people from the plains for mountain areas, they are usually based on perceptions of the needs of the environment and the local people that are extrapolated from the plains experience, and are intended to provide what plains people perceive as benefits.

Some of the major factors that contribute to the continued marginalisation of indigenous peoples include intra-state conflicts that lead to a lack of security; federal and national policymakers paying less attention to the needs and aspirations of indigenous peoples compared to more mainstream groups, leading to alienation; widening disparity and inequities between the wealthy and the poor; ambiguous tenure and property rights regimes, including loss of access to and control over common property resources; demographic changes, including both refugee migration across borders and internally displaced persons; and an illegal trade in biodiversity products.

Recent Developments

Recently, a number of national governments in the eastern Himalayan region have begun to take proactive steps to enable sustainable development for their people, the majority of whom belong to a diversity of ethnic groups and minorities. Most importantly, the governments are initiating a set of policies and practices aimed at sustainable management of the bio-resources of the region.

Both farmers and policy makers are key players in the current developments in shifting cultivation. Like farmers all over the world, shifting cultivators constantly try to modify their farming to address the modern needs of larger societies. This is done through an innovative process that is based on guiding principles derived from previous experiences, as well as prevailing values related to what is necessary and appropriate. Their actions take place within the boundaries set by developments and policies resulting from the work of policy makers, who are responsible for the sustainable development of shifting cultivation areas.

In the eastern Himalayas, however, this innovation process seems not to be working effectively for the benefit of either communities or policy makers. Policy makers often feel that farmers are slow to respond to their guidance, whereas recent studies show that many well-intended farmers' efforts are misunderstood and

undermined by current policy and government practice. The greatest risk in the current situation is that shifting cultivators are made to give up their traditional practices but are not provided with real alternatives, as these would take a long time to materialise in practice.

A growing pool of more recent literature has shown how wrong the misconception is of fallows as abandoned and unproductive land – and that far from being abandoned, fallows are often carefully managed by farmers to provide a wide range of economic products and environmental services. Some, for example, transform their shifting cultivation fields into secondary forest gardens by planting them with trees that provide fruits, nuts, resins, fibre, medicinal herbs, and building materials. This forestry phase thus makes a critical contribution to the household economy. Other farmers introduce soil-building trees into their fields that enhance the biological efficiency of the fallow so that soil fertility is rejuvenated, weeds suppressed, and other fallow functions achieved within a shorter time frame. This permits a shortening of the fallow phase without sending the system into a downward spiral of degradation. In turn, this intensified cultivation deflects agricultural pressure from expanding into nearby forests. Rather, they can be excluded from the shifting cultivation cycle and instead preserved as community or state forests.

The ICIMOD Initiative

Despite intensive and lengthy government efforts throughout the eastern Himalayan region to stop the practice of shifting cultivation, the practice has remained entrenched over large areas. Recognising this, the International Centre for Integrated Mountain Development (ICIMOD), with support from the International Fund for Agricultural Development (IFAD), and joined by partners in five countries of the eastern Himalayas (Bangladesh, Bhutan, India, Myanmar and Nepal), designed a new initiative based on the idea that shifting cultivation must make some sense if hundreds of millions of farmers continued to practise it despite all incentives to stop.

The study was designed to take a fresh and unbiased look at the practice, and especially at innovations introduced by farmers in response to modern pressures and restraints. The hope was to find innovations that would help resolve the current situation in which outside interventions are not taking effect, while the practice of shifting cultivation is deteriorating as a result of the limitations imposed on it. The aim was to raise awareness about issues related to shifting cultivation, to establish a platform for exchange of ideas, and to develop detailed policy recommendations to support the work of governments.

The overall design of the project is summarised in Figure 3. The activities started with the formation of country focal teams at a regional partner consultation meeting, and the selection, design, and performance of 20 detailed case studies in the five countries (locations shown in Figure 4) to document the details of local practices of shifting cultivation. The country teams selected and analysed their cases based on their own views and country context. They paid special attention to

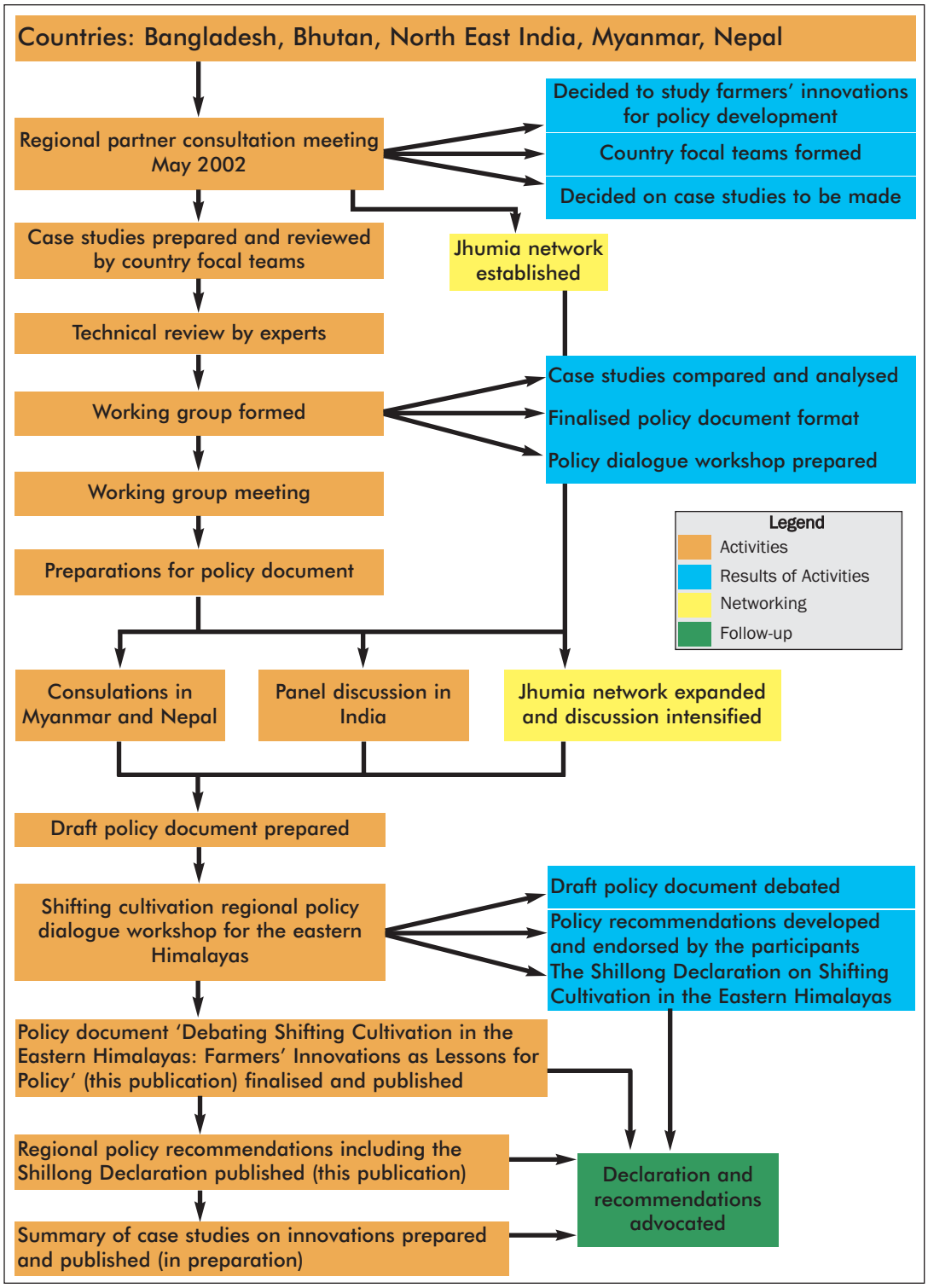
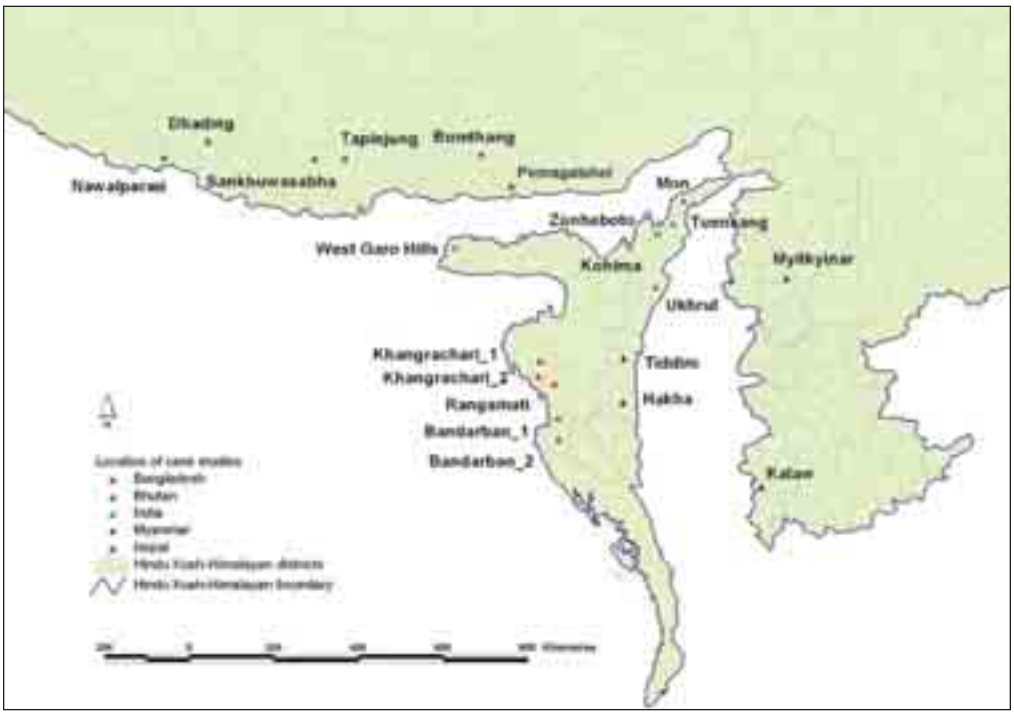


Figure 3: Farmers' innovations in shifting cultivation: policy implications – project design



Cung Chin Thang, ICIMOD

Figure 4: Map of case study locations

the benefits that accrued to farmers, the environmental impact, and any recent innovations in the methodology. The focus was on the positive developments and benefits; negative developments were not ignored, but they were not studied in the same detail as there is already considerable awareness of negative developments and impacts, both real and assumed. This study was designed to provide the basis for a more balanced assessment of shifting cultivation to redress the almost purely negative viewpoint prevailing in development circles.

A 'Jhumia Network' was established in parallel as a platform for dialogue – both direct and electronic – for the broad spectrum of people in the region with an interest in shifting cultivation including, researchers, development workers, policy makers, members of community-based and non-government organisations, and practitioners. The case studies were reviewed by experts and discussed by the regional partner group. The findings and lessons learned from the case studies and Jhumia Network discussions were summarised through a series of discussions and consultations and used as a basis for developing policy recommendations. The major findings were finally discussed and agreed at a Regional Policy Dialogue workshop held from 6-8 October 2004 in Shillong, India. Participants included representatives of government agencies, farmers, international bodies, non-government organisations, academia, science and research institutions, local institutions, international donors and development assistance agencies, the private sector, and other professionals (see Annex). The workshop participants formulated the major policy issues and recommendations. In response to the suggestion of the Honourable Union Minister of the Government of India on Tribal Affairs and

Development of the North East Region, Mr. P. R. Kyndiah, these were encapsulated in the form of the 'Shillong Declaration on Shifting Cultivation in the Eastern Himalayas' (see Chapter 6), which was adopted on October 8th, 2004.

The main findings of the case studies and discussions are summarised in this publication. Together these are now being used as a basis for advocacy of new approaches to shifting cultivation – rotational agroforestry – in the eastern Himalayas and beyond, which are now being included in new government policies.

First results

The careful documentation and validation of shifting cultivation practices has helped to show that the common stereotype of shifting cultivators as engaging in wanton destruction of forest ecosystems is more the result of misunderstanding and misinterpretation than a real truth. The results of the study suggest strongly that shifting cultivators are more accurately portrayed as forest planters and managers. Regardless of whether trees are chosen for economic or biological purposes, or most commonly a combination of both, the improved forest fallows play an important role in conserving biodiversity and deliver many of the same environmental services as primary tropical and sub-tropical forests. The fallow phase helps in species regeneration, maintenance of biological richness of forest species, and continuing land coverage by healthy secondary tropical forests. There is thus a growing stream of thought that mechanisms should be devised to compensate forest-dwelling communities for the real services that they provide in managing these forests. The results of the ICIMOD study clearly showed the benefits of shifting cultivation, the practices within shifting cultivation that provide these benefits, and the efforts of shifting cultivators to maintain such benefits under the current circumstances. The study also shows the ways in which policy development can contribute to these efforts.

While the present research is not sufficient to clearly confirm a purely positive or negative view of shifting cultivation, it has served to reopen the debate and suggest a major shift in approach. The study does not deny that problems exist with the present practices or pretend to solve them all. However, it makes a strong contribution towards changing the current research and policy paradigm from an overly negative perception into a constructive approach towards dealing with current issues by building on farmers' innovations. The farmers' practices presented in the following chapters are not all common practice. Rather, they are innovations that show that farmers are aware of the current problematic situation and trying to deal with it. These innovations indicate that shifting cultivation can be managed even under changing circumstances and still has much to provide.

During the course of the study and discussions, it became clear that shifting cultivation – if properly practised – is actually a 'good practice' system for productively using hill and mountain land, while ensuring conservation of (fallow) forest, soil, and water resources. The practice has marked benefits, not only for the shifting cultivators themselves, but also for the countries where it is practised and

the region as a whole. Four major benefits were identified during the course of the studies and discussions: (1) shifting cultivators conserve more forests on their land than any other farmers, and make it productive at the same time; (2) biodiversity conservation is favoured in the forest and farm management practised in shifting cultivation; (3) shifting cultivation is a storehouse of species of commercial value and innovative organic farming practices; and (4) social security is one of the main functions of local institutions of shifting cultivators.

Organisation of the Book

This publication has been prepared in order to share the experiences and knowledge gathered during the course of the project with a wider audience, especially those involved in the policy-making and decision-making that will affect the future of shifting cultivation.

The book is divided into three parts, the first of which is this Introduction. Part 2 provides a summary of particular characteristics of shifting cultivation and farmers' innovations as identified during the course of the project. These findings are presented in four chapters, each focusing on one of the four major benefits identified. Part 3 looks at the lessons for policy that were extracted by comparing the case studies at a regional level. This comparison proved to be a useful exercise both for identifying the benefits of shifting cultivation, and for defining policy options that will help these benefits to be harnessed. These findings are summarised in the policy issues and recommendations formulated by participants at the regional policy dialogue workshop, and the full text of the 'Shillong Declaration for Shifting Cultivation in the Eastern Himalayas.' The final chapter, 'Outlook', provides a brief glimpse of the future and summary of policy developments in progress.

Part Two

Farmers' Innovations in Shifting Cultivation

Chapter 2

"Shifting Cultivators Conserve More Forests on Their Land than any Other Farmers, and Make It Productive at the Same Time"

Forest Fallows and Their Importance

Forest fallows are the most important component of shifting cultivation farming systems. Fallowing is a common agricultural practice all over the world. It is defined as 'allowing crop land to lie idle, either tilled or untilled, during the whole or a greater portion of a growing season,' or 'land rested from deliberate cropping, not necessarily without cultivation or grazing but without sowing.' Fallows are used to rest and revitalise soils after cropping. The precise role and appearance of fallows varies depending on the local ecological circumstances. Fallows vary from barren plains for moisture collection in arid regions to rain forests in humid areas. Forest fallows are fallows in which forests are allowed to regenerate on land after it has been used to grow crops. Trees take a comparatively long time to grow, thus forest fallows last longer and comprise a much greater proportion of the cropping cycle, and corresponding larger area of land, than fallows in rotational arable systems. Forest fallows enable restoration and conservation of forest ecosystem functions, while making the land suitable for the cropping phase that follows. They show variation depending on the local circumstances.

The problem with fallow land, and particularly forest fallow, is that it is rarely recognised for what it is. Particularly in tropical forest areas, land without a visible agricultural crop is often considered to be 'unused' or 'wasteland', and when it contains regenerating forest of various ages, it is considered to be 'government forest'. From an outside perspective, fallow forest land appears to be unmanaged 'open access' land, available for use, and particularly for economic exploitation. There is a general lack of recognition of the interdependency of forest and cropping. Similarly, shifting cultivation is often interpreted as destroying forests to make way for agriculture, whereas in fact the farmers are nurturing trees and forests on their agricultural land (Figure 5).

One of the reasons for the misconceptions and misunderstanding of shifting cultivation lies in the different circumstances prevailing in shifting cultivation areas in comparison with the areas that the majority of policymakers and development workers come from, where forest land has been and is being cleared permanently to make way for agriculture. In areas with tropical and sub-tropical forests on steep slopes often subjected to extremes of rainfall farmers have chosen to develop rotational forests, rather than clearing the forests permanently and exposing the

Figure 5: Forests are regenerating on what is technically agricultural land – (a) in the Garo Hills, Meghalaya, India and (b) in Dhading, Nepal

slopes to degradation. They clear small patches for a short period to use for growing crops, and then allow secondary forests to regenerate. Growing of crops and maintenance of forest cover are thus reconciled rather than becoming opposing uses.

Understanding and recognising the role of forest fallows is crucial to addressing the sustainability of shifting cultivation and the management of natural resources in general in the eastern Himalayas. In order to understand why forest fallowing developed as a methodology, and the importance of the fallow forests and trees, it is necessary to understand the ecological circumstances prevailing in the shifting cultivation areas.

The eastern Himalayas are characterised by tropical and sub-tropical semi-evergreen moist forests. The area is characterised by high average annual rainfall, most of which falls during a short period and thus has a marked effect on soils and vegetation. The soils have a high water drainage capacity, which means that most of the nutrients are stored in the vegetation rather than the soil. A thick humus and root mat is formed on top of the soil through which nutrients can be exchanged. If the vegetation is cleared for a longer period, soil fertility is no longer replenished and – more importantly – the root mat disappears and nutrients are no longer available for take up by crops. Trees are important to maintain the structural quality and drainage capacity of the soil, and to prevent the formation of impermeable hard pans that inhibit crop growth and water infiltration into the soil. For example, Cherrapunjee in Meghalaya, India, has one of the highest levels of rainfall on earth. After the forests in the area were cleared, there were no deep roots left penetrating the soil and a hard pan was formed. The topsoil was washed off exposing the hard pan, and now vegetation can no longer regenerate.

Forest follows ensure that the structure and drainage capacity of the soil is maintained, and that there is a good humus and root mat. Thus they are the single most important component of shifting cultivation that makes it an appropriate and sustainable form of agricultural land use for sloping areas of subtropical and tropical forest. Finding alternatives that are suitable for these sloping tropical forest soils would be challenging. The disturbance for cropping is only temporary; and the tree cover needed to maintain fertility is retained (Box 1). The result is a patchy landscape with forest fallows at different stages and different types of agricultural plots[1]. The rotational pattern of forests and crop fields is managed at a landscape level, and maintained by local leaders or village heads who select and allocate plots to farmers each year. This requires a good knowledge of land properties as well as of the status of each of the fallow areas.

The economic function of forest fallows is substantial and forestry is a prominent part of shifting cultivators' livelihoods. Many poor farmers collect wild fruits and vegetables from the forests, which they sell in the local market to make a living (see Box 2). Different ages of forest provide different sets of products, which is an

[1] Cairns (2004, Figure 8) provides a summary of cultivation history and shows the typical layout of shifting cultivation blocks.

additional benefit of the patchy landscape. Fallows are managed in such a way as to provide a variety of products, including timber, firewood, bamboo, wild food, and medicinal plants. Although as yet little recognised, wild foods collected from forest fallows are vitally important for the livelihood security of farmers, and especially of the poorest.

Box 1: Shifting Cultivation and Soil and Water Conservation

"An obvious question is what would have happened to the local environment in the absence of this fallow. Although there is lack of quantitative data, dryland areas are experiencing more soil erosion than 'tseri' [shifting cultivation] areas as per the observation of the local extension agents." (Wangchuk and Tashi 2004)

There are almost no accurate data available. Quantitative data have been collected on soil erosion in a few studies, but only from the period right after the clearing, when runoff levels are highest. These are presented as average soil erosion levels from shifting cultivation land, even though data from the remainder of the cropping and fallow phases are missing.

Box 2: Most Useful Trees Are Not in Primary but in Secondary or Fallow Vegetation

"Timber trees found commonly around the house are similar to those of the secondary or fallow vegetation. It is likely that there are more useful species in the fallows than in the primary forest. They include the following timber species: kanak (*Schima wallichi*), gamar (*Gmelina arborea*), goda (*Vitex* sp.), dharmara (*Sterospermum personatum*), bot (*Ficus* sp.), jam (*Syzigium cumini*), silkoroi (*Albizia procera*), and tetua koroi (*Albizia odoratissima*). Some hill slopes are also covered with muli bamboo (*Melocanna baccifera*) as secondary vegetation. Some recent fallows are covered with *Thunbergia grandiflora, Mucuna* spp., *Pureria* spp., sun grass (*Imperata cylindrica*), broom grass (*Thysanolaena maxima*), and other species." (Khisa et al. 2004)

How Do Shifting Cultivators Manage and Enhance Forest Fallows?

The presence of forest fallows is the main difference between permanent and shifting agriculture (Box 3). Shifting cultivation has certain practices in place to facilitate the forest fallows. The main ones are: 1) the rotation of agricultural fields, involving land planning and allocation at the landscape level; 2) planting and maintenance of trees in the cropping phase; 3) common-property land tenure regimes to allow shifting of plots; and 4) controlled burning for the re-opening of fallows. Slashing and controlled burning involve substantial labour costs as well as a level of community organisation that sedentary farmers do not have to deal with. Some typical practices related to the rotation of agricultural fields and tree management during the cropping phase are described below. The other two are discussed in later chapters.

Box 3: The Fallow Cycle and Fallow Stages

The purpose of 'forestry' in the context of shifting cultivation is to maintain a healthy growth of secondary forests with enough biomass, but devoid of too many big trees. Clearing of large size trees is time consuming, especially considering the simple tools used by shifting cultivators.

The length of the shifting cultivation (jhum) cycle plays a critical role in soil recuperation and the natural regeneration of vegetation, which in turn determines the health of the local economy. The ideal jhum cycle of 20-30 years passes through three successions of weedy profusion, bamboo exuberance, and finally tree dominance. Each of these stages contributes to the conditioning of soils and biomass reservation. If the jhum cycle is less than 30 years, there is not enough time for a stable broad leaf forest to become established. If the cycle is less than 20 years or so, only two successions are possible and bamboo becomes dominant. When the cycle is further reduced to less than 5 years, the succession becomes arrested at the early stage of weed profusion, whereby the natural process of regeneration and recuperation of soil fertility is abruptly arrested or terminated even before it begins (Darlong 2004).

"Recent research, however, has produced a large body of work that has demonstrated the efficacy of many of these 'weeds', particularly *Asteraceae*, *Mimosa*, and others, in scavenging nutrients, building biomass, smothering grasses, and performing other fallow functions even in such shortened fallows." (M. Cairns, personal communication)

Land allocation

For the management of the plot rotation and distribution, the crop/fallow sequence is translated into terms of area. For example, if the shifting cultivation cycle is a total of eight years, with two years cropping and six years of fallow phase, a farmer (or group of farmers) will in any one year have on average two plots under cultivation and six plots under fallows of different ages. Thus the individual farmer's land or the total shifting cultivation land area of the village can be divided into eight phases, with different crop combinations and fallow ages, depending on the prevalent land tenure regime and local customs. This area does not include any areas of permanent fields, community-protected forests, orchards, or commercial tree plantations that the village or individual farmers own.

Figures 6a and b show typical examples of shifting cultivation landscapes as seen from the air, with crop fields and forest fallows of various ages. The geographical spread pattern of plots and fallows depends on the way plot allocation and distribution are organised as per the customary institutions of each community. Some villages divide the shifting cultivation land into fixed blocks, within which each family is allocated a plot. In other communities, farmers rotate individually among their own fixed plots. The rules of access to plots vary from community to community, as does the level of control by customary village authorities. This perception of plot management at landscape level by the community differs greatly

Figure 6: Forest fallows of various ages form a prominent part of the shifting cultivation landscape – (a), Meghalaya, India and (b) Nagaland, India

from the commonly held idea that the farmer opens plots at random in the jungle and 'abandons' the fields that are no longer of use. In general, the fallows and plot allocation are strictly managed and not open access. In the following, some examples are given from the case studies of different methods of plot allocation. They show that farmers make use of zoning and land capability assessment, as well as site selection criteria, when allocating land for cultivation and other purposes.

The Chakma community in Bangladesh traditionally classifies its land into various zones or land suitability classes. According to these classes, the land is allocated for cropping, forestry, and other purposes. The defined zones are villages, cultivation sites, fallows, and water bodies. Selection of sites for cultivation is based on soil texture and taste, soil colour, and the presence of certain species – with preference given to black soils with burrows of earthworms and covered with vegetation, preferably bamboo (Alam and Mohiuddin 2001).

In the case of the pangzhing type of shifting cultivation in Bhutan (Figure 7), women select the sites because they manage the fields and crops. The criteria used are:

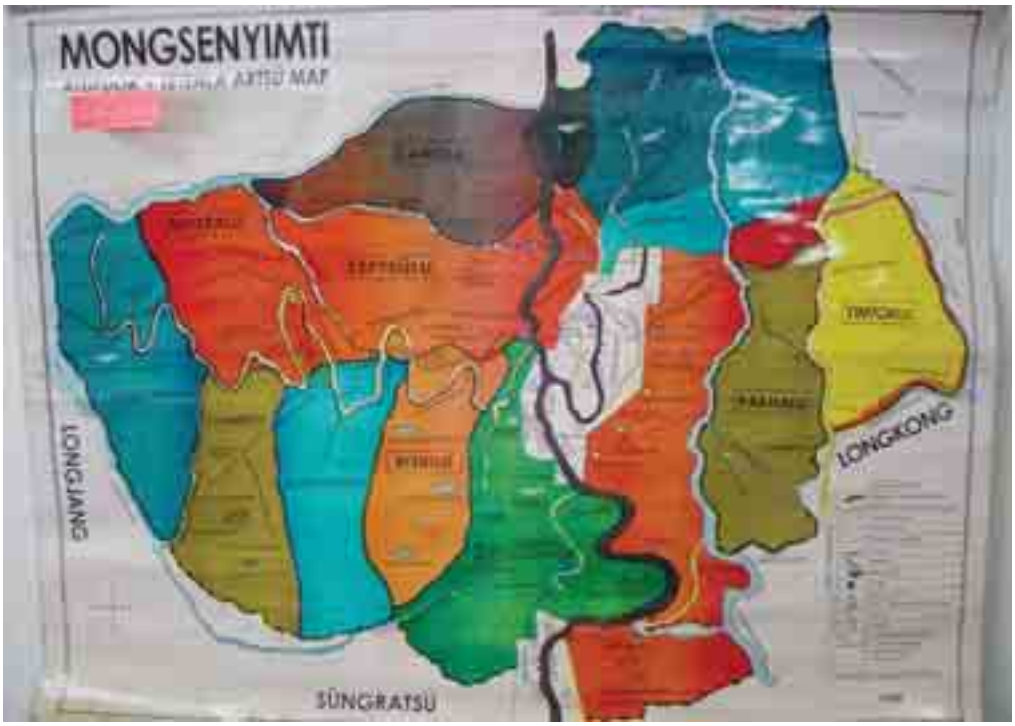
- Closeness to the homestead – for convenience and effective use of scarce family labour;
- Fallow length – fallows of about 8 years are identified based on several vegetation characteristics;
- Soil characteristics – preferably blackish, and breakable with a fist (indicator of workability);
- Vegetation – pine seedlings and ferns should be enough to yield sufficient biomass for burning;
- Availability of mosses – as an indication of moisture in the soil and maturity of land. The farmers consider this last criterion to be the most important of all.

In many villages in North East India, the village land is traditionally subdivided into fixed blocks. Figure 8 shows a map of the jhum-blocks in Mongsenyimti, Nagaland, India. There are as many blocks as there are years in the shifting cultivation cycle. Each year the community cultivates the next block in a fixed sequence; each of the farmers is allocated a plot in this block. These blocks have been fixed for centuries, and sometimes they even have a name. This shows that in these villages the shifting cultivation cycle has never been reduced. This fixed pattern for occupying the blocks also has a cultural connotation; people remember their age by remembering the block that was cultivated in their birth year. Nowadays, in many villages shifting cultivation is no longer the only source of livelihood and labour is not as readily available as previously. Thus communities may decide to give up an entire block for conservation, and in other areas the blocks are split into two or three smaller ones, which results in a substantial lengthening of the fallow phase.

In response to the increasing pressure on land resources, farmers in some areas are developing innovations that allow them to produce more and stay longer on the same plot, under the same soil fertility conditions. They can thus postpone the

P. Gyamtsho

Figure 7: Pangzing: high-altitude shifting cultivation in Bhutan



E. Kerkhoff

Figure 8: Map of the jhum blocks that are cultivated in turn in Mongsenyimti village (Nagaland, India)

clearing of a new plot, and allow the forest on that plot to grow a few years longer, which in the long run saves labour.

The case studies on Ukhrul (Manipur, India) and Zunheboto (Nagaland, India) provided two examples of this. In Ukhrul, cropping has expanded from three to five years, and beyond in exceptional cases, and in Zunheboto to up to five or six years. This intensification is made possible by innovations in the crop selection, combination, and sequencing, and adoption of erosion prevention measures. The main restriction to how many years a particular plot can be cropped is actually the increasing occurrence of weeds, and the second is soil quality. A further benefit of this innovation is that it does not compromise on the basic tenets of shifting cultivation, particularly mixed cropping, sequential harvesting, and risk spreading, and is therefore particularly convenient to farmers.

The use of plots for cropping or fallowing is affected by the prevailing land tenure arrangements and government policy. In Nepal, during the cadastral survey, most fallows were classified as government forestland because they did not have any visible crops or crop remains on them. In the one case where a land title was granted, the fallow length has increased. In Bhutan, by law, land can only be fallowed for twelve years, after which it reverts to the government unless it is re-opened. In India, Bangladesh, and Myanmar, cases are seen where wealthier farmers are claiming parts of the communal land by establishing orchards or other types of perennial crops and trees. As long as these trees are on the land, they keep unofficial tenure of the land.

Maintenance of trees during the cropping phase

In general more trees are planted on cropland in shifting cultivation systems than in most sedentary farming systems. Farmers enhance the biological efficiency of the forest fallows through sophisticated practices to maintain useful trees on their cropland, thereby intensifying the shifting cultivation. Multipurpose (usually nitrogen-fixing) tree species are protected during the clearance (slash-and-burn) phase, and managed during the cropping phase. Coppicing and pruning are used to reduce competition for sunlight, and also to optimise the production of fodder, mulch, and other tree products.

A typical example is the management of *Macaranga denticulata* by the Konyaks in Nagaland. The trees are fast growing and early colonising, they grow well in poor sites and regenerate prolifically. The Konyaks manage them as they would their crops, applying selective weeding, protection during burning, spacing of seedlings, and cutting of lower branches. The tree density of this system is up to 3000 trees per hectare, which is relatively high. Figure 9 shows examples in the Garo Hills, India, and Dhading, Nepal. Box 4 describes one example in detail, pollarding of alder in Khonoma. It is illustrated in Figure 10. A considerable level of sophistication is required for proper tree management.

S. Chakraborty

E. Kerkhoff

Figure 9: Tree stumps that are maintained during the cropping phase and early fallows provide seed for speedy regeneration – (a) Garo Hills, Meghalaya, India, (b) Dhading, Nepal

Box 4: Pollarding of Alder in Khonoma, Nagaland, India

The shifting cultivation area in Khonoma is characterised by terraces and dispersed alders (*Alnus nepalensis*) that have been pollarded for a very long time. Farmers often interplant a few fruit trees (e.g. *Eleagnus conferata, Docynia indica*) or timber trees (e.g. *Melia composita, Hovenia dulcis*) among the alders. These are protected through subsequent jhum cycles, at which time the side branches are pruned to reduce shading on nearby crops.

The alders are pollarded yearly at an optimum time for seed to ripen, whilst avoiding insect damage, and when most energy is available for coppicing. The pollarding is done by climbing up the tree and chopping off the branches as well as any parasite epiphytes, leaving the bare stumps. The coppices are thinned twice in the first cropping year.

Alder trees are usually pollarded for the first time at about nine to twelve years of age, when they are both large enough and young enough to survive pollarding and support the coppices that will then grow. The cutting height is chosen so that it is sufficient to ensure the continued vigour of the tree and strong coppice growth, and further depends on competition with crops for light and space and the reach of grazing cattle. The proper pollarding technique is viewed as vital to the alder fallow system and is reserved for skilled hands.

The benefits of pollarding are that it allows for crop cultivation in two out of every four years, and that it increases the productivity of the alder. According to former Chief Minister Jasokie Zinyü: "Khonoma can only exist because of the alder trees."
(Cairns 2004)

S. Chakraborty

Figure 10: Pollarded alders in a jhum field in Manipur

Forests other than fallows

Apart from the forest fallows, there are other kinds of forests in shifting cultivation areas, which are not part of the cycle, but do have a role in the farming system. Communities have conserved patches of primary vegetation from historic times, mainly for ecological and religious purposes. In recent times, home gardens have expanded and fallows have been converted to orchards and forest plantations to comply with the demands of the market economy. Some typical examples are described in the following.

In Empu para village, Bangladesh, the community has retained a 25 ha patch of intact three-storey tropical forest to protect its only water source, and to protect the village against accidental fire. Such village forests are quite common in the Chittagong Hill Tracts. Additional ecological benefits include regulating the village microclimate, wind breaking, and as mother trees to enhance natural regeneration in the fallows.

For the same reasons, the Konyak in Mon (Nagaland, India) maintain small islands of primary forests in between the shifting cultivation area, specifically in the outskirts of villages and in uncultivable areas. Although these are not production forests, hunting and collection of minor forest products is often allowed. They also have 'toko' gardens (the local name for *Livistona jenkinsiana*, a midsize palm tree which provides fruit as well as leaves, used as roofing material) which combined can cover up to 30% of a village area. Almost all communities keep patches of bamboo. In Nepal, the government has been harnessing and formalising such indigenous forestry practices through the community and leasehold forestry programmes, in which government forestland is handed over to communities to be managed for forestry purposes.

Plantations are promoted by governments and extension agencies in a bid to find alternatives to shifting cultivation that provide farmers with a livelihood, while at the same time maintaining forest cover. Species often used for this include several timbers, rubber, and cashew and areca nut.

What Are the Opportunities and Constraints for Fallow Management in the Current Situation?

The studies show clearly that shifting cultivators conserve more forests on their land than permanent farmers, and make it productive at the same time. Farmers are well aware of the importance of forest fallows for reviving their soils. Therefore they try to do what is possible to maintain (or at least not undermine) the fallow functions even when introducing new farming practices. Efforts to maintain a high diversity of useful trees have been shown in recent farmer innovations like home gardens. In Chandigre village (Meghalaya, India) 37 seasonal crops and 30 perennial crops were identified. Some of this is discussed in the following chapters. Some of the opportunities and constraints for fallow management in the modern situation are summarised below.

Improved fallow management

There are shifting cultivation areas in the eastern Himalayas where the fallow phase needs strengthening through technical, institutional, and/or policy options. In the above, we have shown how farmers manage the fallow phase, but such practices need policy and research-and-development support. One example of technical options for improved fallow management is enrichment planting, either during the cropping phase (as described above) or at the start of the fallow phase. In Nagaland, for example, farmers have planted timber species on their fallow land in an attempt to increase the value of the fallow forests, and lengthen the fallow period (Figure 11). This has met with mixed results, however, for lack of proper marketing and policy measures; there is a ban on selling unsawn timber outside the state and farmers have lost interest in the timber species.

In addition, other fallow functions, such as the recuperation of soil fertility and the production of minor forest products, should not be compromised too much. The question is whether the land is not too depleted of the nutrients needed for cropping after harvesting the plantation crop. Reports from Bangladesh indicated that orchards exhausted the soil rather than replenishing it, and cropping was not possible after cultivating orchards instead of fallow forests. This impinges on food security and increases pressure on the remainder of the shifting cultivation land. Indigenous commercial species may have the potential to provide income while performing fallow functions. All over the world, indigenous species (timber as well as fruit) are being identified that have both subsistence and commercial value.

The establishment of permanent plantations on fallow land has several drawbacks that need attention. The market for cash crops like rubber, coffee, and tea is highly dependent on the world economy as they are produced all over the world. Furthermore, farmers usually need a strong business partner to deal with the market, and farmers' cooperatives can only play a secondary role. Although timber harvesting may be allowed in certain areas, the timber market is often inaccessible for farmers, as they are faced with strong regulations on the one hand and illegal timber trade on the other.

Community-based forestry

The option of community and leasehold forestry programmes in Nepal and joint forest management in India, though generally appreciated (Sharma and Chettri 2003), are controversial in shifting cultivation areas. In Nepal, some of the areas under consideration are shifting cultivation fallows that have been mistakenly identified as government land. The forests are now handed over to community groups, but often these are not the traditional tenure holders. The latter prefer to use the land for shifting cultivation, including fallows, rather than just forestry, and they maintain their traditional land claims. In India, joint forest management means sharing forest responsibilities and rights between government and communities. However, in communal fallows this means increasing government control and loss of rights for communities.

Nagaland Environmental Protection and Economic Development Project (NEPED)

Figure 11: Improved fallow management through outside intervention in Nagaland, India

S. Chakraborty

Figure 12: Participatory 3-dimensional modelling in Sasatgre, Meghalaya, India

Participatory land use planning

The use of participatory 3-dimensional modelling (sometimes called P3DM) for participatory mapping and planning has helped communities to strengthen their resource management practices because it recognises shifting cultivation as a forest management strategy at the landscape level, and not just as agriculture (Figure 12).

As explained above, village councils manage shifting cultivation from a landscape perspective, identifying different areas for different uses at different times. This process has now been greatly improved, because participatory 3-dimensional modelling has made it possible for the community as a whole to discuss land capability and allocation, rather than just the leaders alone. When this tool was used for participatory planning in Sasatgre, Garo Hills (Meghalaya, India), the area that the community decided to clear that year was reduced from 141 to 40 ha. This, in turn allowed for a longer fallow period. The main reasons why this reduction was possible, was because land allocation could be done properly according to how much a family could actually work, and because the most suitable land could be selected.

Participatory 3-dimensional modelling was further used for planning during settlement expansion, identifying a good place for establishing orchards, and for negotiating with government officials about priorities for water source protection. Without the model, the government officials would have had to walk extensively to the different places, and the farmers concerned would not have been able to make their point.

Policy Points

Some of the major points that should be taken into consideration during policy development are as follows.

- **Fallow land (even that with forest on it) should be classified as agricultural land for the benefit of both governments and shifting cultivators.**

  All shifting cultivation land should be classified as agricultural land, including the fallow although it has forest on it. To the present day, fallow land is often considered to be forestland in which agriculture is practised. Others identify it as wasteland due to a supposed 'open access' regime. However, shifting cultivators put the land to valuable use and observe a strict common property regime, as opposed to every one taking whatever they please (Box 5).

- **The allocation of forest fallows to other purposes increases the pressure on the remaining shifting cultivation land.**

  This includes re-allocation for settled farming with cash crops, plantations, reserved forests and protected areas, inundation for hydropower, and others. Allocation of forest fallow, rather than increases in rural population, may be the main cause for the shortening of shifting cultivation cycles. If the total land

available for shifting cultivation is reduced, greater tenurial rights and/or alternative non-farming income opportunities need to be developed, to alleviate pressure on the remaining shifting cultivation land.

- **Options for improving the livelihoods of shifting cultivators are more successful if they are in line with the ruling principles of shifting cultivation at the local level.**

  Such principles include, soil regeneration through forest fallows, a common property regime, risk spreading, and agrobiodiversity.

Conclusion: "Shifting cultivation is more than just an agricultural practice - it is a forest management practice at the landscape level".

Box 5: Shifting Cultivation as Rotational Forestry

"Shifting cultivation is widely condemned as one of the major causative agents in tropical deforestation, a primitive remnant of the past, and in need of reform. This thinking presupposes that these are forest lands periodically despoiled by marauding forest dwellers. Even the term 'shifting cultivation' suggests, misleadingly, not only nomadism, but also that agriculture is periodically imposed upon permanent forest lands. The logic appears to be that since these lands are intermittently covered with trees, then they should properly fall within the domain of forestry and agriculture should be discouraged. Careful analysis of the reality suggests that this argument should be turned upside down and, at least in some cases, these areas should more accurately be considered as agricultural lands on which farmers intentionally encourage trees to grow as an integral phase of a cyclical and sustainable farming system.

I therefore propose a revisionist view of 'shifting forests on an agricultural landscape', dramatically recasting the role of swidden [shifting cultivation] farmers from forest destroyers to forest planters and managers. This is more consistent with the world view of tribal peoples such as the Karen of northern Thailand, who describe upland cultivation as 'baa muan wiang', translating literally as 'rotating forests'."

From: Cairns, Keitzar and Yaden (2006)

Chapter 3
"Biodiversity Conservation is Favoured in the Forest and Farm Management Practised in Shifting Cultivation"

Biodiversity in the Eastern Himalayas

The eastern Himalayas are a part of one of 34 'biodiversity hotspots' in the world (CI 2005). This fact is appreciated more and more at the global level as a result of the increasing concerns about biodiversity conservation. However, although it has helped to draw attention to the eastern Himalayas, it has also strengthened the surge against shifting cultivation, as until very recently no one fully appreciated the contribution that shifting cultivators have and are making to the local biodiversity. As a result of the practices of slashing, burning, and fallowing, shifting cultivators are highly visible, and shifting cultivation is often blamed as being the main cause of biodiversity loss. But is shifting cultivation really as bad as it is claimed to be? There are many players and processes influencing conservation, and shifting cultivators are an easy scapegoat. In the following, several examples are presented of the different ways in which shifting cultivation can benefit conservation efforts.

How Does Shifting Cultivation Benefit Biodiversity Conservation?

Livelihood dependency

The range of products (and species) that shifting cultivators depend on for their livelihoods is much higher than for most other farmers, because they use their plots and other common resources to supply virtually all their needs. Most shifting cultivators are relatively poor and have little access to markets to purchase what they cannot produce. Their interest in diversity is not limited to species alone, but also to the wide array of landscape elements from which these products are obtained.

The different livelihood uses for the diverse range of products include food (variety is required to ensure both food security and quality of diet), medicine, fuelwood, fodder, agricultural implements, utensils, construction materials, cultural and religious uses, ornamental purposes, and, increasingly, commercial purposes. Tiwari (2003) has listed and classified according to use over 380 non-timber forest products in the shifting cultivation areas of the War Khasi region of Meghalaya (Table 1).

Table 1: Uses of non-timber forest products in Meghalaya

Type of Product	Number
Medicinal and aromatic plants	> 200
Edibles	> 80
Crafts	> 10
Construction and household materials	> 40
Dye and oil yielding	> 40
Others	> 10

Source: Tiwari (2003)

Some people think that the relative poverty of many shifting cultivators leads to too great a pressure on different species, but in fact if proper policies are in place, this dependency can turn farmers into the best conservers (Box 6). Any loss of species will have a marked impact on the farmers' livelihood and food security; thus they are willing to invest in conservation.

Box 6: Conservation of Germ Plasm of Preferred Food Crops and Livestock in Tuensang, Nagaland, India

In Tuensang, Nagaland, farmers make an effort to maintain good breeds of crops and livestock in their fields and to conserve germ plasm. The aim is to produce a wide variety of foods that are nutritious and tasty and available year round. A number of different varieties of each crop are cultivated depending on soil conditions and altitudes. This maximises crop productivity because risk is spread and species selection is adjusted to land capability. Farmers take the necessary measures to ensure that the crop seeds are never lost. They are exchanged from farmer to farmer and village to village. Shifting cultivators not only conserve crops, they also conserve many other plant and animal species.

Cultural values and requirements

There are many ways in which culture can influence the conservation of species and landscape elements. Particular species and ecosystems may have a religious or cultural value, or even be an object of worship, and be protected for this reason. The value can be intangible and difficult to comprehend for outsiders, but often cultural significance is actually linked to tangible benefits. Most of the species and areas that are worshipped or protected for religious reasons by shifting cultivators have important tangible benefits for livelihoods and/or ecological services. Culturally preferred species are often keystone species, which means that, like the keystone in an arch, they keep several other species in place. Loss of these species would cause the loss of several others in the same ecosystem (P.S. Ramakrishnan, personal communication in 2004). Examples include the chiuri tree (*Diploknema butyracea Roxb, syn. Bassia butyracea, syn. Madhuca butyracea, syn. Aesandra butyracea)*, which is a multi-purpose tree species with a strong cultural significance for the Chepang in Nepal; the *Macaranga* tree, which is valued by the Konyak in Nagaland, India; and sacred forests in general, which are common in many shifting cultivation communities.

The erosion of cultural values can lead to deterioration of sacred groves. In Meghalaya, India, for example, village communities traditionally set aside sacred groves and protected them, thereby conserving a significant amount of local biodiversity. In recent times, however, the erosion of traditional values and accompanying deterioration of sacred groves has become a matter of concern (Shankar Raman 2000).

Agricultural practices for agrobiodiversity and genepool conservation

Agrobiodiversity (the biological resources that support the agricultural production systems of every farming culture, the crops and livestock, and the agro-ecological processes of which they are part) is a vital subset of biodiversity. Shifting cultivators maintain high levels of agrobiodiversity in their farming practices. All the farmers in this study used complex practices of intercropping and sequential cropping in their agricultural fields and home gardens. Home gardens have developed in all eastern Himalayan countries; they harbour a great variety of species selected on the basis of intricate ecological processes (Figure 13). The farmers also had well-developed seed conservation practices which contributed to in situ conservation of agro-biodiversity and the overall gene pool. Some specific examples are described below.

Farmers apply intercropping and sequential cropping to produce a wide variety of crops within the limits of the resources available. They place a high variety of crop species (including shrubs and trees) on a single plot, with the specific selection based on the biophysical features and the farmer's requirements (Figures 14 and 15). Sequential cropping allows new species to take up the space vacated by species that have been harvested, while perennial species remain in the field. Different crops are selected in different years and planting seasons (Box 7). The selection depends on the availability and plant-specific requirements of nutrients, the suitability of combination with other species, and other plant characteristics. Crops like rice are more prevalent in the first and second year, while maize and millet are more prominent in subsequent years. In the later years, farmers plant higher-stature and more nutrient-efficient crops that are better able to compete with weeds.

E. Sharma

Figure 13: A home garden in Bangladesh with trees, shrubs, and other plants, and livestock

E. Kerkhoff

Figure 14: Multipurpose tree species are intercropped during the cropping phase

E. Kerkhoff

Figure 15: Crops of different shapes and sizes are fitted closely together

Box 7: High Levels of Agro-biodiversity Based on Intercropping and Sequential Cropping

Crop diversity in Ukhrul (Manipur, India) is as rich as in any shifting cultivation practices in the uplands of North East India. Crops include cereals, legumes, tubers, rhizomes, bulbs, spices, vegetables, oilseeds, and others. A total of 33 crops were recorded from these systems; 28 crops were grown in the first year, 26 in the second, 23 in the third, 18 in the fourth, and only 4 in the fifth year. The farmers explained that the decline in diversity by the fourth year is due to weeds, not a reduction in soil fertility.

In Mon district (Nagaland, India) rice is intercropped with taro (*Colocasia* spp.) to suppress weeds. Since rice and taro are the most important crops, many varieties are conserved. For example, nine varieties of rice and thirteen varieties of taro were found growing in Ngangching village at the time of study. Trees and many other crops are cultivated. Each crop has its specific location within the plot, including the boundary, burnt heaps, burnt bamboo groves, main field, near hut, and near poles and tree stumps.

The benefits of this practice are that a single plot can be used intensively for many different crops. This has a number of additional advantages, including that it is a valuable pest management tool; that the soil is covered at all times, which helps erosion control and weed suppression; and that certain species provide ecological benefits to others like nutrition or shading. The conservation value of these species should not be underestimated.

Tree seedlings of varied species are planted between other crops during the first year to grow up during the cropping phase. One of their roles is to enhance rapid forest regeneration in the first fallow phase. Crop combination and selection is adjusted according to the tree cover, and more shrub and tree species are incorporated in the later years.

In Ukhrul (Manipur, India), farmers' innovations like fireless shifting cultivation and extension of the cropping phase to more than two years were only made possible by the use of crop diversity maintenance, complicated crop combinations, and sequential harvesting.

In terms of genetic diversity, there are many land races, rather than hybrids, as well as many wild (endemic) varieties of important food crops. According to Darlong (2004): "*... the historical value of shifting cultivation is often seen in the context of the in situ conservation of so many varieties of edible food crops through the practice of shifting cultivation. ... It is often argued that had there been no shifting cultivation, perhaps many of these germ plasms would have been lost in the wild or would not have been possible to conserve as they are today*." Genetic diversity is maintained among communities through intricate seed exchange and conservation measures.

Farmers have extensive knowledge related to seed selection, preservation and exchange, which is the origin of so many crop species. Farmers actively preserve

local germ plasm, in the form of living material as well as seed (Figure 16). They maintain good breeds of major food crops, supporting crops, and animals. To increase variety, villagers exchange seeds through extensive networks. Box 8 describes an example of traditional seed storage.

Farmers in Bangladesh have developed a special indigenous method of preserving seeds. "The selection of seed begins during the previous harvest. At those places in the field where the harvest is unusually good, the fully matured and evenly proportioned paddy ears are harvested separately according to variety; they are then dried, threshed, winnowed, and finally put into a basket lined with special leaves...". (Brauns and Loffler, undated). Other criteria for seed selection are early maturity, high-yielding and disease-free crops, and preferred varieties.

Box 8: Seed Storage in Toimatai, Bangladesh

In Toimatai seed collection and storage generally fall in the women's sphere. Vegetable seeds are stored in dry bamboo pots (culms, internodes) and/or in dry gourd shells with the mouth closed and airtight; rice seed is stored in bamboo baskets. The women hang maize heads by the stalk, and beans over the kitchen fireplace. These seeds remain aerated at all times, while smoke protects them from insect infestation. Cereal seeds are often checked and periodically slightly re-dried in the sun. Stocks of ginger and turmeric are kept spread on the earth floor in a corner of the house.

E. Kerkhoff

Figure 16: Farmers actively preserve local germ plasm

Rotation and fallows are a source of ecological diversity, as well as providing a wide range of products for farmers

Rotation is a fundamental characteristic of shifting cultivation and in itself is a good practice for combining conservation with agriculture. Since shifting cultivation creates a diverse landscape (compared with only primary forest or only agricultural fields), more habitats are created and therefore species and ecological richness are higher. Shifting cultivation promotes a series of landscape successions, which if left undisturbed would 'climax' to conditions very close to the primary forests. The result, on a landscape level, is a mosaic of secondary forests with a primarily native species composition. This is conducive to the needs of both wildlife and people. Though primary forests are important, farmers cultivate, collect, and hunt in all fallow stages.

Bamboo and cane are typical products of major livelihood importance that are obtained during earlier successional stages in the fallows, and that tend to disappear in primary forest vegetation. Thus the landscape variety is beneficial to livelihoods as well as biodiversity. Box 9 shows how this varied landscape favours the management of mithun cattle; rotational grazing is a well-known practice for managing livestock in forests.

Some very valuable species have become predominant because of shifting cultivation. Alder (*Alnus nepalensis*) is a pioneer species and occurs in recent clearings. Similarly, farmers' observations suggest that chiraito (*Swertia chirayita*), which is listed as a critically endangered species, prefers recently burned open places for germination (Maiti and Chauhan 2000). Chiraito is an economically important medicinal plant in Nepal, and the government promotes its cultivation by encouraging even non-shifting cultivators to burn the soil before sowing.

Box 9: Mithun Are Favoured by Rotation and Have Become a High Value Product in Khonoma

"The semi-domesticated mithun (*Bos frontalis*) roams Khonoma's forests. A mature beast is worth 10-12,000 rupees on today's market, which stems partly from a new ritualistic use – slaughtering great numbers of mithun during wedding ceremonies – that has developed in Nagaland's increasingly status-conscious society. Mithun free-graze the jhum-fields after the crops are harvested. Raising mithun in Khonoma's forests has become increasingly popular as a way to earn extra cash with little labour input. Mithun run free in the forest and are looked after communally by herdsmen. Many are owned by Khonoma descendants who have become government officials in Kohima, but continue to maintain property rights. In this way they benefit from community resources without investing any of their own labour" (Cairns 2004).

What Are the Opportunities and Constraints for Biodiversity Conservation in the Current Situation?

It is clear that biodiversity conservation is favoured in the type of forest and farm management practiced in shifting cultivation. The question is how this potential can be strengthened in the future, to strengthen the sustainability of shifting cultivation as well as for the benefit of both farmers and society at large.

The practices described above were taken from cases in all the countries included in this project. Crop diversity maximisation is a fundamental principle of shifting cultivation as are the rotating of plots, the forest fallows, and the typical customary institutions and knowledge. Some special considerations that should be taken into account for conserving biodiversity in shifting cultivation areas are summarised in the following.

Recognising the value of farmers' practices and innovations for agrobiodiversity conservation

The biodiversity nurtured in both the agricultural and fallow phases is useful to both farmers and the world at large. The germ plasm conserved in shifting cultivation provides the 'building blocks' for improved varieties of most modern day cereals. Shifting cultivators are the custodians of the germ plasm that conventional plant breeding depends on for the future.

Despite adjustments made to a new market and legal environment, farmers often try to maintain their principles of crop diversity and the use of locally developed varieties. This is not because they cannot part with their customs, but because it makes economic and environmental sense. Intercropping and sequential cropping make sense for reducing the risks of market dependency, efficient land use, soil conservation, and weed control. In some places, farmers grow a mixture of crops under introduced systems, such as orchards and plantations, for example in Empu para in Bandarban, Bangladesh (Figure 17). This has increased both productivity and ecological sustainability.

Many people fear that agrobiodiversity will be lost when farming adjusts to market forces, since subsistence farming is associated with risk spreading. In the case of shifting cultivation, the choice of crops is changing towards more commercial varieties, but since this change is occurring gradually, opportunities are created to avoid the loss of less important species. Many of the non-timber forest products used traditionally for subsistence have become commercial, and their importance for farmers' livelihoods is increasing.

Successes in enterprise development based on non-timber forest products are by no means universal, and obstacles are common, even in non-shifting cultivation areas. Farmers and collectors are often unable to obtain a fair share of a product's total value. Where no appropriate regulatory mechanisms are in place, many of these products have experienced 'boom-and-bust' cycles. A typical example is wild ginseng in Nagaland. At first it commanded a high price, then collection became 'free-for-all'

G. Chakma

Figure 17: Undercropping of orange orchards with traditional crops in Empu para, Bangladesh

and it was collected from the forests at a high rate, to the point of depletion. This happens when village institutions are powerless to stop community members (particularly the young) from plundering communal forests after they taste easy money. There are, however, also cases where, with proper local-level regulations and strong local-level bodies, farm income from non-timber forest products has increased, and so have local-level investments in their conservation.

The potential for strengthening the role of shifting cultivators in conservation of biodiversity does not just relate to non-timber forest products; it stretches from individual species to the ecological processes and landscape elements that sustain them. In Bhutan, shifting cultivation fallows are applied as a buffer to protect farmers, crops, and livestock against threats by wildlife. Farmers say that their permanent fields are better protected when wildlife makes use of the fallows and shifting cultivation plots. These plots are less productive anyway, because they are on more marginal land.

Conservation of a natural or a human landscape?

The objective of nature conservation is often thought to be to preserve ecosystems and landscapes in a state as close to the natural state as is possible (Sharma and Chettri 2005). However, the question “What is natural?” is highly relevant. Many apparently ‘natural’ landscapes have actually evolved or been maintained as a result of human activity over millennia. If the interventions ‘match’ rather than ‘remodel’ the landscape, e.g., promoting useful tree species, they tend to remain unrecognised. Shifting cultivation areas are cultural landscapes with their own

value. Shifting cultivation has transformed a great part of the 'natural' landscapes of the eastern Himalayas into cultural landscapes with their own unique biodiversity. It is now impossible to distinguish between 'natural' or 'pristine' forests and human influenced or 'secondary' vegetation. Equally, although shifting cultivation has been practised for a long time in the region, the biodiversity resources are very rich. This indicates that the people themselves are probably at least partly responsible for the wealth of biodiversity that is now present. Forest farmers are often found to have an enriching influence on natural vegetation.

Cultivated or protected areas for the conservation of threatened wildlife?

There are some threatened species that can benefit from shifting cultivation, even though they do not directly benefit the farmers. Hoolock gibbons, for example, prefer undisturbed primary forests in protected areas, but have also been found in the home gardens of Chandigre, where food availability is higher.

Shifting cultivation also benefits wild elephants, which prefer large spaces with grassy vegetation as well as forest patches. Due to their migratory habits, elephants often pose a threat to sedentary farmers, whereas the rotation practised in shifting cultivation enables people and elephants to use the same resources at different times. If elephant conservation were to be taken up in shifting cultivation areas, the cycles could be made long enough to allow for the different habitats they require. In Sri Lanka, the traditional plot pattern was changed from dispersed smaller plots to larger congregated areas for this reason (Dr. Eric Wikramanayake from WWF-US, personal communication). In the Garo Hills of Meghalaya, farmers have several elephant management practices in place, including tree huts for crop protection during the night (Figure 18), intact forest patches that serve as corridors (Figure 19), use of fire, and even an elephant repellent tree species at strategic locations.

Without doubt, there is a need to conserve primary undisturbed forests, and for these there is the protected area system. However, the park system has limitations for animal species that are migratory or that need a large area to fulfil their needs, as it does for forms of biodiversity supported by human practices. The formation of protected areas in areas formerly used for shifting cultivation has also increased the pressure on the remaining land, causing the shortening of cycles. Provided that shifting cultivators share in the benefits and maintain control over their resources, shifting cultivation can play a vital role in biodiversity conservation.

Policy Points

Some points that could or should be taken into consideration when developing policy are summarised in the following.

- **Shifting cultivation is much less destructive to biodiversity than settled agriculture.**

  The effect that shifting cultivation has on conservation should be compared with that of settled agriculture, which has caused the permanent destruction of large areas of natural vegetation. Because only limited biodiversity remains in

E. Kerkhoff

Figure 18: Tree hut for crop protection during the night

E. Kerkhoff

Figure 19: Elephant corridor in the shifting cultivation landscape

agricultural areas, settled cultivators are not expected to conserve wildlife or natural biodiversity. Shifting cultivators, on the other hand, are made to feel like intruders, although they actually combine agriculture with maintenance of a quasi-'natural' system. Outside settlers who practise slash-and-burn as a clearance procedure for permanent farming contribute to the bad name of shifting cultivators, but are vastly more harmful.

The advantages and disadvantages of several alternatives that are currently being promoted in the eastern Himalayas should also be assessed in this light. Commercial tree plantations have taken much of the land previously used for shifting cultivation, thereby increasing the pressure on the remainder. However, they are mono crops, and although they increase tree cover, they have a negative effect on forest conservation and overall biodiversity. For example, Darjeeling's *Cryptomeria japonica* plantations are currently seen as one of the greatest obstacles to biodiversity conservation.

- **Shifting cultivators' role in conservation, especially of agrobiodiversity and wildlife, should be acknowledged and supported, and their control over conservation efforts increased.**

  Considering shifting cultivators' role in landscape management and biodiversity conservation, and the impact of conservation activities on their land and livelihoods, they should be provided with some level of control over conservation activities that are introduced from outside. The communities in question must have the right to participate when development policies are framed, and when the parameters and definitions are being created. Farmers could be rewarded for environmental services, rather than depriving them of their resources (Box 10).

  The current practices and knowledge that are beneficial to the conservation of biodiversity and agrobiodiversity should be conserved and strengthened.

  Wildlife management practices can be strengthened and rewarded (Box 10). Fallow cycles can be adjusted to the needs of certain species that are part of the conservation objective. Traditional knowledge can be documented and put to good use for income purposes.

- **Objective research is vital to assess the effect of shifting cultivation on biodiversity and to increase its positive potential.**

  Too much research is done with the preconceived assumption that shifting cultivation is bad for the environment and outdated. Such research focuses on assessing the damage caused by shifting cultivation, but fails to recognise potential benefits. It is biased towards the general government stance that shifting cultivation will soon be a thing of the past.

  On the other hand, there are researchers who romanticise 'tribals' and their culture. They are sometimes blinded by the notion of the 'noble savage' who is

part of 'pristine' nature. Apart from the fact that this attitude is discriminatory, they fail to recognise the modern relevance of shifting cultivation, and the modern needs of its practitioners. Many scientists and influential people still demonstrate such attitudes; although well intentioned, it can be very detrimental both to objective research and to the shifting cultivators themselves.

Objective research is required on the role of shifting cultivation in biodiversity conservation. Biased research will identify all the species that may be lost due to certain practices, but does not consider those species that benefit. Both shifting cultivators and conservation efforts could benefit from objective research into the intricate relationship between shifting cultivation and a particular conservation goal. In any such research, shifting cultivation should not be seen in isolation, but within the broader picture of processes and stakeholders influencing conservation in a particular place. Scientists and policy makers should realise and research what will be lost if shifting cultivation becomes degraded or is abandoned.

Box 10: Environmental Services

Improved forest fallows play an important role in conserving biodiversity and deliver many of the same environmental services as primary forests, including soil erosion control and water source protection. There is thus a growing stream of thought that mechanisms should be devised to compensate forest-dwelling communities for the services that they provide in managing and maintaining tropical forests. While most funds for conservation come to communities in the form of development projects, rewards could take the form of payments for as long as the service is being provided. This provides a much stronger incentive to farmers to maintain the service than does any development project.

Chapter 4
"Shifting Cultivation is a Storehouse of Species of Commercial Value and Innovative Organic Farming Practices"

Commercial Mountain Products and Organic Farming

There is an increasing demand for subsistence farmers to integrate into the market economy. At the same time, there is an increasing demand for farming to be 'organic' (i.e. carried out without application of agrochemicals and using 'natural' techniques) and for organic farm products, which offers a possibility for subsistence farmers to enter the market economy while retaining their indigenous practices. If farmers can obtain premium prices for organic products, this can contribute to the rural economy. The challenge is to develop commercial products and organic farming practices that are suitable for the Himalayan environment. Shifting cultivators rarely adopt intensive 'green revolution' technologies such as agrochemicals and heavy machinery, mainly because such technologies are generally inappropriate for the shifting cultivation farming system, and partly because such technologies are poorly accessible. Thus in many places shifting cultivation, as other areas of subsistence farming, can be considered organic by default.

Farmers have already developed adaptations to enhance production based on their own principles and the limitations of their land. The case studies revealed that shifting cultivation is a showcase of organic farming practices that are adapted to the Himalayan environment. Shifting cultivators have developed some promising technologies and practices, which could be applied when adopting organic farming in other areas. Shifting cultivators also maintain a wide diversity of species on their land adapted to the Himalayan conditions, including some that are difficult to grow in sedentary farming systems or have been abandoned by agriculturalists focusing on a few high volume crops. Some of these are now proving to have high commercial value.

Commercial Crops and Organic Farming Techniques

Some examples of local niche products and innovative organic farming practices are provided below.

Commercial crops

Several important food and other crops of major commercial importance have originated from shifting cultivation systems (Figure 20). The benefit of these is that they are endemic and niche products with which farmers can compete on the world

Figure 20: Shifting cultivation is a storehouse of local niche products with commercial value – (a) Chiraito has become a major niche product in Nepal, (b) pulses in Manipur, (c) baharpatta, (d) rongas *(Vexa orelea)*, a food dye, in Bangladesh

market. Shifting cultivation crops with existing or potential commercial value include medicinal plants, several legumes, and bamboo. As market access is increasing, farmers are adjusting their crop selection more and more to incorporate commercial species.

In Chandigre (Meghalaya, India), squash (*Sechium edule*) is an important cash crop – it is available for seven months of the year and can be harvested continuously. In Tuensang (Nagaland, India) crops like rajma (kidney bean), French bean, and soy bean not only serve to improve soil fertility, but have become important commercial crops. The bay leaf tree (*Cinnamomum tamala*) is a medium-sized native tree of the subtropical humid forests of North East India. In the War area, it has emerged as a husbanded and semi-domesticated wild tree. The leaves are used as condiments and yield essential oil. Trees growing in the wild are protected and helped to regenerate; in some areas, it is cultivated. The tree is grown together with betel, jackfruit, wild pepper, and timber trees.

Toko (*Livistona jenkinsiana*) is a multipurpose palm tree of medium size, which is grown in special toko gardens (some more than 100 years old) in the villages of Mon (Nagaland, India). Its leaves are important for roofing and its fruits are consumed during the lean period. Wild leafy vegetables that grow underneath are also consumed. In remote areas, toko leaf has a market value, but prices are going down in areas where tin sheet is used for roofing. Perhaps a new use might be found once tourism develops.

In Nalbu (Taplejung, Nepal), the medicinal plant chiraito (*Swertia chirayita*) has become a product of major economic importance in the last decade. The number of farmers involved in its production increases day by day, and production levels are currently at five tonnes per year. It has been domesticated locally by farmers who say that it grows best in shifting cultivation fields, particularly after burning. Nowadays, fallows and community forests are planted with chiraito.

The chiuri tree (*Diploknema butyracea*) has been domesticated by the Chepang of Nepal, but its economic importance spreads to a much more extensive area. It is used for fruit, ghee, fertiliser, pesticide, and fodder purposes.

Large cardamom (*Amomum subulatum*), ginger (*Zingiber officinale*), and bahar patta (*Eryngium foetidum*) are three introduced species that have been adopted successfully in shifting cultivation farming systems.

Soil and water conservation

In organic farming, it is necessary to pay careful attention to techniques for soil, weed, and pest management, as mistakes cannot simply be compensated with chemicals. Shifting cultivators have developed such techniques from centuries of experience. Farmers in Tuensang (Nagaland, India) show extensive knowledge of soil fertility management; the cropping of leguminous crops and tree species compensates for the nutrient losses in crop fields. Crop combinations used during various years of cultivation match the soil capability with the fertility requirements of the various crops.

Intercropping of maize with a variety of legumes (cowpea, black gram, common beans, soybean, and horse gram) is a long-standing practice for the Chepang in Dhading, Nepal (Figure 21). Marketing of the beans is a recent development, but the agricultural practice is not. Rather than pulling the beans at harvest time, the stalks are cut and the stumps and roots are left in the ground to decompose and add nutrients.

In Chandigre (Meghalaya, India), vegetables such as pumpkin, and sometimes sweet potatoes, are used effectively as ground cover to suppress weeds. Farmers cut and dry thatch grass (*Imperata sp.*) and lay it on top of the ground as a mulch to suppress weeds, particularly in beds of ginger and turmeric. The latter are erect emergents, and thus grow undisturbed, thereby reducing the labour requirement. In other home gardens, farmers consciously choose taller crops with erect forms, like maize, roselle (*Hibiscus sabdariffa*), taro, or chillies, which are less susceptible to weeds (Box 11).

Minimum tillage, although it sounds uneventful, is an important soil conserving practice on sloping land. Dibbling is a technique whereby farmers make a small hole with a dibbling stick, called ‘dao’ in North East India, and then throw in the seeds (Figure 22). In Sankhuwasabha, Nepal, this is even practised on unterraced land of more than 45-degrees slope. This is quite challenging for farmers since they have difficulties in planting; they hold the dibbling stick in one hand and maize seed

Local Initiatives for Biodiversity, Research and Development (LI-BIRD)

Figure 21: Growing a variety of legumes together with maize on steep slopes in Dhading, Nepal

S. Chakraborty

Figure 22: Dibbling is an example of minimum tillage that prevents soil loss

Box 11: Rice and Taro in Mon, Nagaland, India

Rice and taro are two of the most important crops in Mon. Intercropping seems unlikely because taro is a wide-leaved crop that could overshadow the rice. However, Konyak farmers take advantage of certain crop features for productive interaction. Rice is erect while taro is broad leaved, and rice has fibrous superficial roots, while taro has deep rooting tubers. Both are sown at the same time, but the rice germinates much ahead of taro covering the entire field. This process suppresses the growth of taro, which does not emerge in time to compete for sunlight. The taro emerges later and only reaches full coverage after the rice has been harvested.

Mixed cropping of rice and taro has also been reported among the Khasis and Garos of Meghalaya, India. In Ukhrul (Manipur, India), in fields that are five years-old or more, maize is the dominant crop, grown in combination with tall varieties of rice, beans, taro, and pumpkin.

in their mouth and dibble seeds directly from their mouth. In some areas, farmers also tie a string at their back and sow the seeds.

Most shifting cultivators apply a wide variety of soil and water conservation measures in combination (Box 12). Structural measures include furrowing in Bhutan and contour bunding in Nepal and North East India (Figure 23). In Nepal, two technologies have been introduced successfully that were based on principles of intercropping and other traditional measures. Contour hedgerows (sloping agricultural land technology) have the potential to control soil erosion and improve crop productivity, and strip cropping has the potential to improve soils and provide direct cash income.

Box 12: Traditional Soil and Water Conserving Practices in Taplejung, Nepal

Farmers have the following good practices: water channelling, stone walling, terracing, controlled burning, leaving trees in the crop fields, use of farmyard manure or composted leaf litter, removal of weeds, fallow management, mulching, rotational cropping, and growing of legumes. In addition, farmers monitor the soil fertility status of their farm through indicators such as lower crop production levels, occurrence of certain weeds, and soil dryness.

Settled farming as practised by newcomers who do not know how to practise shifting cultivation can be detrimental both to the environment and to people's livelihoods. This is shown in a case from Bara Dalu village in Khagrachari, Bangladesh. Inappropriate land use for commercial vegetables and tuber crops has had a damaging effect on the environment in the hills. The root crops planted by the migrants from the plains require 'double scoop', in other words deeper digging, as well as weeding and the use of chemical fertilisers. These farmers do not know about appropriate compensatory soil erosion prevention measures for this type of land. Growing crops in this way has a devastating effect on soil and water conservation, resulting in lower water yield, soil erosion, and sedimentation at mini watershed level. In contrast, Marma shifting cultivators allow some naturally growing herbaceous plants to grow, because they help in controlling soil erosion, retaining soil moisture, and

NEPED

Figure 23: Contour bunding in North East India

improving soil fertility. When the field is free from weeds and at the end of the heavy monsoon, farmers plant sweet potato (*Ipomoea batata*) as a relay crop, which covers the soil after the herbaceous weeds dry up at the beginning of the drought period.

Controlled burning

The use of fire is an integral part of shifting cultivation, and helps in the organic management (Figure 24). The environmental movement tends to focus on fires as an indication that shifting cultivation is bad, but fires are not necessarily harmful, especially when they are controlled. Burning of slashed vegetation is only carried out once in the jhum cycle of many years, although some communities also burn crop residues before planting in the second year. The main reason that farmers use fire is that it enables them to manage soil fertility and control weeds and pests in a labour efficient manner. Use of fire is one of the major reasons that use of agrochemicals can be avoided. As explained above, most of the nutrients in rainforests are stored in the vegetation. These nutrients are returned to the soil through slashing and burning. If the slashed material was simply left to decompose, the nutrients would not become available for a long time, and cropping would not be possible. Although the slashed matter could be chopped finely to hasten decomposition, this would be too labour intensive.

Suppression of weeds is also of vital importance, as weeds (rather than soil fertility) are the main factor limiting the length of the cropping phase. Burning suppresses weed growth, but even so weeding takes up most of the time in the farming calendar. If weeds and pests had to be removed by hand at the start of the cycle, it would take much more time than the few hours it takes to burn them, and later chemicals would have to be used.

Insect pests, particularly soil-borne (i.e. eggs or 'hibernating' forms) are also eliminated during burning. By the time natural re-colonisation takes place, the crops in the jhum fields will have germinated well, and are less vulnerable to damage. Many farmers smear the crop seeds with a mixture of soil and ash before sowing to 'mask' them from birds. In this way seed loss is significantly reduced.

Although burning is used to capture the nutrients from the slash, many nutrients are lost with the smoke. One way farmers try to reduce nutrient losses is through controlling the intensity of burning and keeping the fires small and low. In Bhutan and parts of India (Arunachal Pradesh and Meghalaya), the slashed material is covered with soil before burning (Figure 25).

Another hazard that comes with burning is the risk of forest fires. Shifting cultivation communities have developed local fire prevention mechanisms which adequately reduce the major risk of fires spreading into forests and other nearby areas.

S. Chakraborty

Figure 24: Controlled burning

P. Gyamtscho

Figure 25: Covering slash with soil prevents nutrients from going up in smoke

Common technologies include choosing the appropriate timing (season as well as hour of the day) and fire lines, which are dug either around areas that need protection or around the fields to be burned. In Bangladesh, a buffer forest is maintained around villages to protect them against fire. In Nepal (Nawalparasi district) counter firing is practiced in which two fires are set up against each other, to prevent both from spreading and to reduce the labour required for control measures.

While the use of fire is a contentious issue in shifting cultivation areas, in other parts it is considered a common and useful silvicultural practice, including by the Indian forest service and in the teak plantations in Myanmar. Forest officials and newly immigrated farmers can cause forest fires when they burn their fields or trees, because they do not have experience and cannot mobilise whole communities for help. This they could learn from shifting cultivators. In Bhutan, controlled burning is even used in annually cropped rainfed land (Figure 26).

What Are the Opportunities and Constraints for Organic and Commercial Farming in the Current Situation?

Shifting cultivation farming systems are a storehouse of crop species of commercial value and of innovative organic farming practices. Shifting cultivators demonstrate an intimate knowledge of the qualities of and cultivation techniques for a high number of crop species.

In view of this, the persistent misconception that shifting cultivation is 'backward' or 'irrational' and in need of modernisation should be changed. Permaculture is a modern form of organic farming and agroforestry based on the criteria of keeping the soil covered at all times, imitating nature by intercropping a wide variety of species, and optimising space by maintaining multiple vertical layers. All of these criteria are matched by shifting cultivation practices. Efforts to maintain agrobiodiversity are even shown in recent farmer innovations like home gardens and orchards. Fruit orchards, although introduced from outside, are intercropped by farmers with a variety of other species.

Promotion of commercial crops from shifting cultivation

In most shifting cultivation areas, there is insufficient market and infrastructural development to support commercial farming. Some initiatives already exist for cash crop farming, including orchards and other major cash crops, but these have disadvantages as the land needed is taken from areas previously used for shifting cultivation, thereby upsetting existing tenurial arrangements, and there is little retention of economic benefits locally. As efforts are needed anyway for market development, it might be beneficial to look into the opportunities offered by niche products, rather than focusing on crops such as pineapple, rubber, tea, and coffee for which competition on the world market is very strong.

Shifting cultivation is a storehouse of innovative commercial crop species that could be exploited for commercial purposes at a much larger scale (Figure 27). Shifting

E. Kerkhoff

Figure 26: Burned annually cropped rainfed land in Monghar, Bhutan

G. Chakma

Figure 27: Upland rice is increasingly intercropped with sesame and cotton in Bangladesh

cultivators have found markets for crops that were previously grown for subsistence purposes, and increasingly adopt commercial crops to sustain their livelihoods (Figure 28). Those described above represent just a few of the native species that have developed from the shifting cultivation systems themselves, rather than being introduced. The advantage is that they are most prevalent in the eastern Himalayas, and nowhere else in the world. This makes them niche products with which farmers can compete on the world market. These crops have been manipulated and improved by the farmers through their systems of seed selection and management, and are thus a part of the farmers' intellectual property.

Acknowledgement of shifting cultivation produce as organic

Shifting cultivation is mainly organic in the sense that little or no chemical pesticides or fertilisers are used. The per hectare consumption of chemical fertilisers (N, P, K and N+P+K) for cropped area during the year 1999/2000, was only 2.8 for Nagaland, and 2.0 for Arunanchal Pradesh, as compared to 95.6 for India as a whole (DoF undated); and in Nagaland, for example, no plant protection chemicals are used, the Department of Agriculture only produces chemicals for research use. Still, it will be a long time before farmers will be able to get a premium price for their products, or indeed a reasonable price at all. Besides the existing market requirements, each and every process in the farming and processing needs to be certified and externally verified, in order to get the premium price for certified organic produce. Organic farming is for the benefit of the world at large, however, and therefore certification and premium pricing could be pursued as a long-term objective.

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Figure 28: Local markets for traditional shifting cultivation products

One of the short-term benefits of shifting cultivation being organic is that other (permanent) farmers may discover technologies and crop species available in the system that they can use to help make their own farms organic. Good organic farming practices could be identified and studied in shifting cultivation areas and be used to improve other farming systems that are having trouble in maintaining organic standards, while at the same time managing pests, weeds, and soil fertility. In Kachin state, Myanmar, knowledge about biological methods of insect control is slowly vanishing, while newly introduced options are not yet taking effect. Similar cases can be found all over the eastern Himalayas, and such knowledge should be studied and captured for future use.

As explained above, controlled burning is one of the main practices enabling farmers to avoid the use of chemicals. However, it is a controversial issue, as most existing certification agencies do not accept any land that is periodically burned as organic because there is no control over the chemical composition of the soil. On the other hand, state policies to subsidise chemical fertilisers, pesticides, and other inputs are a strong disincentive against the adoption of more organic farming methods. Even permanent cultivators would probably become more interested in integrating nitrogen-fixing trees or pulses into their land-use systems if they had to pay the true cost of external inputs.

Fire management

Existing controlled burning and fire control practices should be fortified by policy measures. A good example was found in Bhutan, where a 'resoop' is recruited from each community to work as a salaried forest caretaker. This person is informed of any burning and mobilises the community at the site. Together with the men and women involved, they ensure that no fire outbreaks occur. A case from Mizoram is presented in Chapter 5, describing the institutional difficulties involved in changing from a community-based to a government-based fire control system.

Fireless shifting cultivation has been tried out in several countries. Simply doing away with the burning as part of the cycle is not possible; fireless shifting cultivation requires several major changes in the system as a whole. The case from Nepal reported that it was mostly practised for bush fallows, rather than forest fallows with big trees. In a case from India, there was a major shift in the season and timing of the cropping phase, which caused constraints in the organisation of labour as the peak season was at the same time as the season of the rice terraces. Adaptations in crop selection were also needed, with only legumes being grown in the first year. While farmers may be encouraged to practise fireless shifting cultivation due to outside circumstances, it is not as easy as it seems.

Without closing our eyes to the current problems in shifting cultivation, the innovations by shifting cultivators that are in line with current government programmes should be appreciated. In other words, shifting cultivators have been doing many of the things that governments want them to do, but in a way that fits with local circumstances. Overall, traditional agroforestry practices are one of the

main tenets of the shifting cultivation system. Shifting cultivators are contributing their portion to adjust to markets and develop commercial farming, and they have tried out innovations like orchards, cash crops, and rice terraces wherever appropriate and have developed innovations to maintain the length of the fallows and practise fireless shifting cultivation.

Policy Points

Some points that could or should be taken into consideration when developing policy are summarised in the following.

- **The value of farmers' innovations to improve shifting cultivation should be recognised.**

  Changes should be made gradually, in the form of do-able technologies that fit within the main principles of shifting cultivation, rather than complete conversion (Box 13).

- **Niche products should be prioritised for marketing research and development.**

  An enabling environment should be created, including roads and other infrastructure, access to credit, stabilised prices at the farm gate, appropriate land tenure arrangements, and research and development into post harvest technology and product development.

- **Organic farming can be promoted in many ways.**

  Existing good practices can be identified for adoption in other farming and forestry systems. New settlers can be taught about appropriate practices from shifting cultivation, rather than making shifting cultivators convert to practices from the plains. And lastly, shifting cultivation products could be promoted as organic and premium prices pursued.

- **The value of controlled burning as an agricultural and silvicultural practice should be appreciated.**

  Regulations on the use of fire should be reconsidered and farmers and forest officials should learn from each other about the most appropriate burning techniques. The effect of burning on agricultural products should be more widely understood so that shifting cultivation products can be certified as organic.

Box 13: What is an Innovation?

We need viable solutions to address the increasing marginalisation of shifting cultivation, and the vulnerability of its practitioners. Viable solutions should reflect a high degree of pragmatism and flexibility, particularly the ability to adjust to the ever-changing markets. At the same time they should safeguard the strengths of traditional practices. Such solutions will have a high degree of acceptance and replicability (Jamir et al. 2004).

Chapter 5
"Social Security is One of the Main Functions of Local Institutions of Shifting Cultivators"

The Importance of Strong Local Level Institutions and Customary Tenurial Arrangements

Strong local-level institutions are a key asset in the development of shifting cultivating societies. The strength and adequacy of institutions varies widely across the region. A common characteristic is that they are based on locally accepted cultural values and are functional within each community, including in the management of natural resources. Beliefs, cultural practices, festivities, and calendars all play an important role in shifting cultivation. Institutions are often thought of simply as formal organisations. However, in sociological terms, institutions comprise shared norms, values, traditions, beliefs, religion, rules, regulations, laws, civil society organisations, and government agencies. It is all of these that form the 'rules of the game' in a society (North 1990).

To be successful and sustainable, shifting cultivation farming requires community-based management at a landscape scale. Thus local regulatory institutions are of vital importance for sustainable management, not only in the past but also in the future. When the social, cultural, and religious fabric on which these institutions depend disintegrates, natural resource management inevitably comes under pressure.

Customary institutions are the basis of the cultural integrity of most shifting cultivating communities in the eastern Himalayas, as is the shifting cultivation practice itself. They provide farmers with the social capital they require for their livelihood, through labour sharing, land access security and the sense of belonging to a community. Any people who loose their culture face serious problems and this has implications for social security of the region as a whole. The good governance provided by customary local level authorities is another valuable advantage of the local institutions existing in shifting cultivation communities. This chapter presents some examples of institutions.

How Do Shifting Cultivators Manage and Enhance Local Institutions and Customary Rules?

Customary village authorities

The 'Hangvu' (Box 14) in Manipur, India, is a customary village authority similar to many in shifting cultivation communities. The often exotic appearance of local

Box 14: The Hangvu is a Strong Traditional Institution

Among the Tangkhuls in Ukhrul (Manipur, India) local governance, particularly with regard to the use and management of natural resources, is firmly entrenched in a traditional institution called Hangvu. This institution is composed of the chieftain and a council of clan elders. They decide on all matters relating to local governance, including land use, access, and control of land resources. The traditional social fabric is still very strong in this community.

The land tenure system among the Tangkhuls follows a mix of private ownership and community ownership. The Hangvu plays a critical role in ensuring equitable access of all households to the shifting cultivation patches, as shifting cultivation is practised on the community land – i.e. under the 'ownership' or custody of the chieftain, but with access to all members. The tenure system follows the broad framework seen elsewhere among upland communities. The settlements and any plots under permanent cultivation on the outskirts of the village (i.e., terraces, plantations and home gardens) are privately owned and inherited through a customary patrilineal system, while shifting cultivation lands are under communal tenure.

leaders may lead outsiders to think they are merely the custodians of traditional culture (Figure 29), but the actual role of these bodies is village-level governance. These village authorities manage community lands and resources, do the yearly planning and allocation of plots for shifting cultivation, provide council regarding customary rules and regulations, and often have political power in the community.

The advantage that these customary institutions have as opposed to introduced institutions is that they have the knowledge and political power required to manage the shifting cultivation as well as provide a governance to the communities that is in line with the existing culture and requirements. Most of them have been functioning for a long time, and do not face the problems of new groups and village level councils. On the other hand, they may not be well adjusted to function within a larger, modern nation state. Therefore, national governments have the tendency to establish parallel village level councils, which are given authority and finances through the national system, rather than empowering the existing institutions.

Indigenous knowledge, skills, practices and customs

Indigenous knowledge is the basis for local-level decision making in shifting cultivation. It covers a host of activities, including agriculture, land use planning, biodiversity, water management, food preparation, health care, and education. The cultural norms, values, beliefs, and rituals also form an inseparable part of this knowledge.

Each shifting cultivation society has technical knowledge based on careful observation and use of its natural resources. Not only is this knowledge location-specific, it also binds communities to their locality. There are mechanisms through which indigenous knowledge provides the basis for group decision-making. These mechanisms also help to generate and disseminate new knowledge and

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Figure 29: Local leadership is about governance and natural resource management, not just about conserving culture

technologies, when current problems and how to cope with them are discussed. Community members have the knowledge that is specific to their role and duty in their society; it differs according to gender, age group, and other social aspects. Examples of indigenous knowledge on a range of topics have been presented in the previous chapters. Here, we present examples of ways that people make use of this knowledge in the development of shifting cultivation.

The 'knowledge map' that community leaders use for land use planning can be depicted in part in a participatory 3-dimensional model (Figure 30). The extent and level of detail shown in the example in Figure 30 are a testimony to the richness and value of the traditional knowledge that is available for the management of community natural resources. It further shows that farmers take the entire landscape into account for integrated management, including shifting cultivation blocks (cultivated and fallows), reserved forests, settlements, water bodies, and areas identified for orchards. This contrasts with the common idea that shifting

V.T. Darlong

Figure 30: The 'knowledge map' of community leaders, becomes clear when depicted on a 3-dimensional model

cultivators only care about their current plot, leaving the rest to waste. There is no 'open access', but rather a common property regulatory system based on extensive knowledge of the locality.

Roy (1996) describes community decision-making on natural resources in the Chittagong Hill Tracts, where the community has the responsibility for resource conservation within its jurisdiction. "When any common lands show signs of soil exhaustion and deterioration, thereby indicating the need for a regenerative period, a decision is taken by the community as a whole to leave this area untouched for a determinate period. In this way, fallows, areas for sungrass, and bamboo forest are temporarily declared closed, in order to accommodate a period of recuperation of essential soil nutrients." (Roy 1996)

Women often play a larger part than men in gene pool conservation as a result of their specific gender roles. Women have a detailed knowledge of, and strong preferences for, specific crop traits. They are often the main participants in traditional seed supply systems (see also Box 8 in Chapter 3).

Collective action and community interests

Sharing and exchange of labour is very common in upland communities, and especially in shifting cultivation communities where labour availability is often the main factor that limits production (Box 15). Although each family has its own plots, groups of families tend to work together on all the plots one by one. Many such

Box 15: Labour Sharing in Tseri

In Bhutan, farmers practise the tseri form of shifting cultivation on private rather than communal land. But community mobilisation is considered a prerequisite for cultivation, due to the high demand on labour. The farmers decide together on the best time to slash a plot and share their labour. If several households have adjoining plots, they will pool the area and treat it as one for clearing, planting, and weeding. Synchronising activities further helps in pest and disease control, as the crop will ripen at the same time on all plots.

occasions, especially the harvest, mark important festive events, which makes work enjoyable. It is the duty of the host family to provide food and drink to the group.

There are several benefits to this communal labour practice, including reduction in drudgery and increase in productivity. Farmers can exchange experiences and look at each other's innovations as they work. Furthemore, exchanging work can fill gaps in labour or skills. For example, if the man of a family dies, his wife cannot take over all his tasks because of the gender division of labour. She can, however, do women's work for the community and get men's work in return.

An example of an innovative way to work together for community benefit comes from a village in Nawalparasi, Nepal. In this village, part of the shifting cultivation land is set aside and cultivated communally. The produce from this area is used by the community to fund the community school, including teachers' salaries.

Communities that manage resources as common property often have customary institutions in place to enhance the sense of common ownership and interdependence among community members. A common problem in current day shifting cultivation areas is that farmers increasingly lack a sense of ownership and responsibility for the land they are using, as the power of customary institutions is waning and neither they nor national governments are able to provide tenure security. Farmers are unsure whether they will be able to come back to the same plot during the next cycle and so they invest less in its maintenance. In this context, community institutions are especially relevant, but in recent times they have started to show signs of disintegration and the land-based resources they control are also degrading.

Fire management is typically a community-based institutional affair, in which collective action is important (Figure 31). Its success relies on constant community vigilance and participation, and a combination of inter-village communication and agreements, customary rules and regulations on burning, and punishments in case of negligence. In Nagaland, the community as a whole is involved in selecting the date, demarcating the area for burning, digging fire lines, and controlled burning. They also function as firewatchers and guards with strict rules, roles, and responsibilities. Similarly, in Kachin state in Myanmar, even though shifting cultivation fields are under individual tenure, cooperation takes place in fire management and wild fire control. It includes vigilance for accidental fires as well as other measures.

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Figure 31: Community-built firelines have a visible effect on landscape management

Customary tenurial arrangements ensure equitable access to resources

Customary authorities tend to distribute land according to the availability of labour in each family. In addition, they ensure that every household has access to production resources, including new and landless families (Box 16). Both of these are effective measures to optimise labour as well as land use. An additional benefit is that they enhance equity and avoid problems of landlessness, and as such are fundamental to poverty alleviation and address disparities among farmers.

A case from Bhutan shows that equitable distribution can involve other resources, not just land. "There is no restriction imposed by the owner if another household collects any minor forest products, such as mushrooms, edible fruits, fodder, edible roots, or others from the fallow land. However, felling of sizeable trees, collection of stones, and tethering of cattle for seasonal grazing by other villagers must be consented to by the land owners." (Wangchuk and Tashi 2004)

Box 16: Access to Land

"Shifting cultivation, unlike any other practice, ensures universal access to land resources. Further, institutional arrangements are such that plot size is rationalised with labour availability, and hence optimises labour. If shifting cultivation is replaced by settled agricultural land use, the adverse impact on access to resources would result in the poor and under-privileged becoming landless, hence 'tomorrows' poor' would increase!" (Dr. Dhrupad Choudhury, personal communication)

What Are the Opportunities and Constraints for Local Institutions to Function in the Current Situation?

Social security is one of the main functions of local institutions of shifting cultivators, and is of benefit to the society at large. Customary local institutions contribute to social security, because they provide good governance that is under community control, matches traditional customs, and maintains cultural integrity. As explained above, when they provide equitable access to land resources, they prevent social marginalisation.

Cultural integrity is only minimally about festivals and costumes. Much more, it is about the common cultural norms of a society that are the basis of community organisation and social capital, and that enable labour sharing and tenurial security. Cultural integrity is especially important to shifting cultivators, because they have a social and cultural identity that is distinct from that of the dominant or mainstream society. This makes them vulnerable to becoming disadvantaged in the development process.

Vulnerability of customary institutions within the wider economic and political environment

Shifting cultivators have to deal with increased dependency on external market and political forces for which they and their institutions are little prepared. Since there is no policy support for this, their vulnerability increases. While traditional bodies are usually capable of organising people and controlling the resources within their community, they are often less able to deal with outside forces. They need to adjust to modern demands, while at the same time measures need to be taken to strengthen the inherent rights and values that they enshrine. Often this will require greater codification of the rights and decision-making processes that were practised in the past. The following highlights some specific aspects of this problem.

Local institutions are not set up to deal with outside markets, or to manage local enterprises. There is vulnerability towards traders and middlemen when negotiating prices and in preventing unauthorised collection of high value products. Similarly, illegal timber smugglers can easily corrupt such institutions, so that they are unable to protect their timber resources. There is good potential for community-based forest management, but this often involves the formation of new groups, rather than building the capacity of traditional institutions.

Institutions can also become vulnerable to inequities such as capture by elites, because new social, economic, and political systems disturb traditional balances. Similarly, capture by elites of common-property land resources reflects the failure of current day institutions to protect farmers' traditional rights. There is a wide variety of examples; among them the establishment of orchards and other permanent cropping on communal land by absentee landlords. Another is the disproportionate number of cattle that rich farmers bring under the communal grazing scheme, while not providing labour. On the other hand, the strict division of rights and responsibilities according to gender conflicts with modern notions of gender equity.

There is a lack of synergy between customary institutions and the state. In many places, governments have created local government bodies and given them many of the roles and responsibilities of customary authorities. Traditional authorities have lost significance and strength, since governments prefer to source both funds and authority through these new bodies. At the same time, the introduced authorities lack many of the capacities and benefits of the customary institutions. There is little or no collaboration between the customary and the new authorities, especially at district and higher levels, thereby increasing bureaucracy and conflict for communities. The alternative would be to strengthen, formalise, and capacitate customary institutions to take up new tasks, but as yet cases of this are few. The case described in Box 17, shows how the replacement of customary institutions with official government regulations can have a negative impact on natural resource management.

Box 17: Traditional Community-based Fire Management among the Mizo Shifting Cultivators of Mizoram in North East India

Community-based fire management practices exist in each ethnic community in North East India. The Mizos from Mizoram have developed effective and well-organised community-based fire management practices around shifting cultivation. While the traditional fire management tools and techniques are simple, the strategies rely on timely community response and participation. The foundation of this practice is the village council, a system of village community governance.

Constrained by the dilemma of a society in transition and influenced by various factors, the effectiveness of the Mizos' fire management practices appears to have weakened in recent years. The shift from community-based to government-initiated programmes highlights the erosion of 'tlawmngaihna' – a community spirit that puts the common good above personal gains. Rather than seeking to replace such management practices, the government should enhance the effectiveness of the traditional systems, supplement community efforts and encourage maximum community involvement (Darlong 2002).

Common property regimes

Formalising and otherwise dealing with common property regimes within the national legal framework remains an issue in all five countries included in the study. In many places, the proper management of shifting cultivation depends on a common property regime for both land and forest resources, but legally the only option is between private and government property. The lack of legal validity of common property regimes makes them vulnerable to distortion, elite capture, and mismanagement in the face of outside economic and political forces. In turn, this causes degradation of resources and loss of social security for farmers.

In many parts of North East India, shifting cultivation land is legally registered as government forest land, though shifting cultivators have varying degrees of rights and privileges to use it for shifting cultivation. The lack of tenurial security is a continuous source of conflict between local communities, land registration authorities, and the forest department. Wherever privately registered land is under

shifting cultivation (in Bhutan, and in one case in Nepal), forest management has improved as compared to when the land was registered as government land. In North East India and Bangladesh, however, private registration of land that used to be common property severely disrupts the functioning of common property regimes. It threatens the remaining shifting cultivation land, and often undermines the equitable access to resources, increasing the risk of development of a class of landless poor in the uplands.

The process of sedentarisation of farming also upsets existing common property tenure relations. In some North East Indian states, absentee landlords grow orchards on common property shifting cultivation land. Afterwards, the de facto land rights change, because land becomes the property of the orchard owner for as long as the fruit trees are there. In Nepal and Myanmar, richer and more powerful community members encroach in forest areas, claiming they are shifting cultivators who have traditional rights. Soon after, however, they start using the land for permanent cultivation of cash crops.

Another related issue is the access of shifting cultivators to credit. This is a problem because they cannot use land under common property as collateral. Nowadays, there are examples of banks that will take the guarantee of a customary authority to issue a loan to a member of a community, and there are also cases of communal loans, but these are few.

Threats to indigenous knowledge and opportunities to build on it

In shifting cultivation, indigenous knowledge and cultural values are strongly interlinked with the management and conservation of natural resources, especially biodiversity. In recent times, however, indigenous knowledge and cultures have come under increasing pressure as a result of various threats, leading to reduced cultural integrity and degraded natural resources. The main constraints to the conservation of indigenous knowledge are described in the following, together with some suggestions on how to build on indigenous knowledge in the research and development process.

One major constraint to the conservation of indigenous knowledge is that knowledge, skills, and practices are adapted to local circumstances, and knowledge is location specific and unique to certain communities. When circumstances change, farmers themselves have less and less use for their traditional knowledge. It also becomes more difficult to pass knowledge on to the next generation as school enrolment is increasing and farmers themselves spend more time on non-farm employment and sometimes migrate out. Many of the skills require physical strength, heavy labour, and constant practise, which are not possible to combine with a school curriculum.

One involuntary type of migration is the re-settlement of shifting cultivators, as happens in certain places for security reasons. Although this facilitates the delivery of government services to rural communities, there are many cases in which farmers have later decided to return to their original location. Reasons may be the cultural attachment to ancestral lands, (non-)relevance of traditional knowledge,

and lack of familiarity with the qualities of the new location. In one case in Tripura, the houses in a new village were built very close together, leaving no space for home gardens and making farmers travel much farther to their fields (Figure 32).

Another constraint is that scientists and extensionists do not acknowledge the value of farmers' knowledge for research and development, where scientific knowledge dominates the discourse. The traditional ecological knowledge recorded from many shifting cultivation communities is often limited to ethno-botanic studies, resulting in lists of species, their uses, and occurrence. However, indigenous knowledge is much broader than this. Farmers can also have a positive influence on decision-making related to their community, on their resources, and on the research agenda.

One reason why researchers and extension workers often do not readily appreciate farmers' knowledge or agricultural practices is that farmers themselves are not able to explain their actions scientifically, even though when properly researched most of the practices are found to make scientific sense. Rather, farmers might say it is how their ancestors used to do it, or that it pleases or angers the gods (Figure 33). For communities, creating customs and taboos is a much more effective way of teaching people how to farm and behave, than is setting up science-based education.

There is a different set of constraints related to the conservation of cultural values, many of which are beyond the scope of this document. What is clear is that the variety of cultures contributes to the biodiversity, both agricultural and wild, of shifting cultivation. There is a unique diversity of human cultural and ethnic groups in the eastern Himalayas, but these groups tend to be marginalised by mainstream society. If these communities vanish, we will also lose the agrobiodiversity and indigenous knowledge of which they are the custodians (Ramakrishnan et al. 1998).

There is a clear need for communities to maintain their cultural heritage; both for social security and for the way they manage their resources. Cultural values ensure that people conserve what is sacred – as long as communities adhere to them. The question is, however, whether it is possible to re-create such values in practice once they are lost.

Policy Points

Some points that could or should be taken into consideration when developing policy are summarised in the following.

- **Existing customary organisations should be strengthened and capacitated.**

  They should be able to deal with markets and political forces, and there should be better synergy with the state. They should be able to enforce existing principles of and mechanisms for equity and social security, and be supported to meet with additional modern demands. Existing good governance should be recognised and given official authority and funds for local development. Rather than forming new groups and new layers of administration, governments should appreciate what is already there, and avoid forming parallel local governments.

E. Kerkhoff

Figure 32: Re-settled shifting cultivators in Tripura

U Tint Lwin

Fig. 33: Interviewing farmers in Shweminphone, Southern Shan State, Myanmar

- **Local knowledge and cultural systems should be formalised and revitalised.**

  Besides research and documentation, incentives and opportunities need to be created for farmers to maintain their traditional knowledge and apply it in new circumstances. Indigenous knowledge has value not only for the culture in which it evolves, but also for scientists and planners striving to improve conditions in rural localities. Especially in the case of shifting cultivation, with its many particularities, indigenous knowledge is an important source of solutions for local problems, for which science does not yet have solutions. In general, indigenous knowledge helps farmers to assess the appropriateness of science-based innovations, and provides local technologies that can be validated scientifically (Figure 34).

- **Common property regimes need strengthening and legal fortification to enhance tenurial security.**

  With appropriate policy measures and strong local level institutions, tenure can be secured without privatisation of property; however, this depends on changes in current policy and on the strength of local bodies in governance. On the other hand, not all land needs to be common property. There is a lot of middle ground between the opposing poles of common property and private property. Many villages, for example, recognise private ownership of the most intensively cultivated lands – providing the security of tenure necessary for farmers to invest heavily in land improvements – but still have pools of communal land available to anyone who wishes to cultivate it.

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Figure 34: Using traditional knowledge to find solutions for development

Part Three

Policy Issues and Recommendations

Chapter 6

Regional Policy Dialogue

Introduction

The major findings and lessons learned from the case studies and Jhumia Network discussions were summarised through a series of discussions and consultations. Towards the end of the project, a Regional Policy Dialogue workshop was held in Shillong, India. Participants included a broad spectrum of people from the five countries with an interest in or responsibility for shifting cultivation. They included representatives of government agencies, farmers, international bodies, non-government organisations, academia, science and research institutions, local institutions, international donors and development assistance agencies, the private sector, and other professionals (Annex).

The workshop was organised by the

- International Centre for Integrated Mountain Development, Kathmandu, Nepal
- International Fund for Agricultural Development, Rome, Italy
- North Eastern Council, Department of Development of North East Region, Government of India, Shillong, India
- LEAD-India, New Delhi, India
- The Missing Link, Guwahati, India
- IFAD-North Eastern Region Community Resource Management Project, Shillong, India

It was inaugurated by Mr P. R. Kyndiah, Honourable Union Minister Tribal Affairs, Government of India, and Department of Development of North Eastern Region (DONER). Mr Peter J. Bazeley, Chief Secretary to the Government of Meghalaya, India, delivered the concluding remarks.

The participants discussed and agreed the overall findings and conclusions, and formally formulated the major policy issues and recommendations derived from the case studies and multilayered discussions and consultations. The text of the policy issues and recommendations document is reproduced below.

In response to the suggestion of Mr P. R. Kyndiah, these were encapsulated in the form of the 'Shillong Declaration on Shifting Cultivation in the Eastern Himalayas', which was adopted on October 8th, 2004. The text of the declaration is also reproduced below.

Policy Issues and Recommendations of the Regional Policy Dialogue Workshop

Preamble

There are common trends in shifting cultivation across the eastern Himalayas, which span six countries: Bangladesh, Bhutan, China, India, Myanmar, and Nepal. Policy lessons can be learned and exchanged at the regional and global levels, without romanticising the issues and by taking a hard look at changes needed to improve shifting cultivation.

Any policies related to shifting cultivation and land management in shifting cultivation will affect the livelihoods of millions of marginal farmers. Across Asia generally, more than 400 million people, most of them indigenous, are dependent on tropical forests, and a majority of these practise shifting cultivation. In all of South Asia, an estimated 10 million hectares of land are under shifting cultivation.

The aim of policies regarding shifting cultivation should not be to conserve the practice for conservation's sake, nor to scale it up to other communities. However, those who practise shifting cultivation should be allowed to maintain and build upon their practices and culture without having to face the consequences of an undeserved bias.

Shifting cultivation and its benefits

Shifting cultivation is a rotational agroforestry system, which is dynamic in space and time. It includes an agricultural and a forestry component, which are practised sequentially. There are various forms of shifting cultivation that are practised in the region, ranging from 'good' to 'bad', and from 'undistorted' to 'distorted' (changed as a result of negative pressures). The practice is not impoverishing as such, there are cases in all countries where it is currently practised in a sustainable and integral manner. However, there is a clear need for strengthening and improvement in other cases. Strengthening rather than replacement of shifting cultivation is recommendable, especially considering the benefits shifting cultivation has to offer. These benefits include the following.

1. Fallow forests are an integral and important part of shifting cultivation and are managed actively by farmers. They have evolved as part of the practices that are adjusted to the prevailing agroecological circumstances in the region. Where land tenure of communities and households is better secured, such as in parts of North East India and Bhutan, shifting cultivators conserve more forest and make it more productive than other farmers. Prerequisites for the existence of fallow forests are rotation (or shifting), a common property regime, and patches of preserved forest to enhance regeneration. The fallow forests are also referred to as the forestry phase of shifting cultivation.

   Controlled burning is a necessary management practice to combine agriculture with a forestry phase. It makes the fallow forests manageable in terms of the

time and labour involved in removing the forest when the land is re-used for farming. If the forest could not be removed so easily, farmers might be less inclined to let it grow on their land in the first place. During the cropping phase, burning is essential for weed and pest management and fertility enhancement, enabling farming to remain organic.

2. Biodiversity conservation is benefited by the farmers' practices, indigenous knowledge, and customs that are associated with shifting cultivation. In other words, the strength of shifting cultivation to contribute to conservation lies in the diversity it creates. Shifting cultivation benefits biodiversity conservation through the following: a high level of livelihood dependency that creates incentives for conservation; abundant skill in mixed cropping, seed development, and in situ gene pool conservation; the creation of different successional stages through rotation; and richness of indigenous knowledge (and particularly traditional ecological knowledge) and cultural practices. Shifting cultivation can provide a less intensive land use system to complement conservation activities in protected areas in buffer zones and biodiversity corridors between protected areas.

   Shifting cultivators have the knowledge and skills to provide many environmental services such as conservation of soil and water, biodiversity and gene pools, and also carbon sequestration. This potential could be used to provide permanent forms of income and employment.

3. Shifting cultivation farming systems are a storehouse of innovative products of commercial value as well as of innovative organic farming practices, which increases the potential for economic development.

   Niche products enable farmers to move towards commercial farming without compromising on the main principles of shifting cultivation. Less common crop and livestock species of commercial value are one of the benefits that shifting cultivation has to offer, but government support is required for marketing, production, processing, value addition, securing intellectual property rights, credit, and ensuring premium pricing for the organic produce.

   Farmers keep shifting cultivation organic and productive through their in-depth knowledge of soil fertility management, crop requirements and weed management; prevention of soil erosion through contour bunds and minimum tillage; agroforestry practices; and controlled burning. Shifting cultivation is superior to sedentary agricultural alternatives in this context, because there are few external inputs required and untapped opportunities are still present.

4. Local institutions are a vital element of shifting cultivation for resource management, equitable access to resources, and a social safety net. Important local institutions include customary resource tenure systems; traditional knowledge systems; fallow forest management at the landscape level; community mobilisation for fire management and communal action; and local

governance and authority. Shifting cultivation farmers have ample traditional knowledge. Much of it can be scientifically validated.

Traditional organisations and institutions have an important role to play in the proper management of shifting cultivation areas, even though not all are necessarily democratic or equity oriented. This role can be enhanced if they are given authority and are embedded into the national government set up. The modern state has its own role to play in development, including in the re-development of distorted or degraded shifting cultivation areas.

Adverse policy environment

Shifting cultivation faces an undeserved bias resulting from the common assumption that it is a destructive practice, although there is a body of scientific evidence that underscores its many benefits. Examples of the adverse policy environment affecting shifting cultivation are the following.

Fallow forests are an integral and important part of shifting cultivation and are managed actively by farmers. However, public opinion of shifting cultivation is focused on the slashing and burning, while no attention is paid to the replanting and regeneration of fallows. Outsiders and governments often see fallows as 'open access land' or 'waste lands', and they allocate fallow land to other purposes. This has led to the shortening of cycles in the remaining shifting cultivation land, and permanent loss of access for the shifting cultivators.

In practising (traditional) agroforestry and moving to commercial production, albeit of traditional crops, shifting cultivators are doing what governments want: agroforestry and economic growth. Yet not enough credence is given to them, and government approaches are geared towards replacing shifting cultivation, rather than integrating alternatives into existing good practices.

The introduced sedentary options of farming and plantation forestry have been adopted wherever they were appropriate, but are also extensively promoted in less appropriate upland areas. This often results in loss of environmental resilience. The allocation of land for these purposes reduces the land available for shifting cultivation, while productivity and economic returns are not assured. This increases the vulnerability of shifting cultivators to market risks, and results in marginalisation of the practices.

Current regulations on the use of chemicals and fertilisers, as well as those on seed supply, are often a disincentive for organic farming and a threat for the integrity of the shifting cultivation practice. Formal research and development interventions related to seed supply systems are undermining traditional seed supply arrangements. Regulatory frameworks are biased against local land races. This creates procedural problems for conserving them and undermines the potential for local communities to benefit from intellectual property related to agrobiodiversity. Strengthening traditional seed supply systems requires re-examination of policy regulations on crop variety testing and release systems.

In order to access credit, land is often taken as collateral. In the case of common property regimes, however, land cannot be used as collateral, and access to credit is often impossible.

While in most countries there is no specific policy to deal with shifting cultivation, the practice is affected by a diverse range of policies varying from forest, agriculture, and hydropower to rural development and indigenous and tribal policies. Current policies and legislation are not consistent and are often not supported by informed decision-making. Often policies are political and do not reflect ground realities. While there are examples of favourable policies, in general the thrust is against the practice either in the policies themselves, their legislation, or their implementation.

Main impacts of adverse policy

Given the negative perceptions of shifting cultivation, the underlying premise of all policies is to replace the practice with permanent, settled agriculture or other settled land-based activities. Such an approach is insensitive to the tenets and strengths of shifting cultivation. The replacement of shifting cultivation by permanent agriculture or forestry activities results in:

1. Reduction of the total area available for shifting cultivation and subsequent shortening of the fallow phase, resulting in reduced productivity and food security,
2. Transformation of tenurial regimes from common property in which everyone gets a share, to private property, resulting in landlessness and poverty,
3. Increased dependency on external market and political forces for which communities and their institutions are little prepared or supported, increasing their vulnerability, and
4. Environmental degradation in areas where the traditional shifting cultivation practice has been distorted and acceptable alternatives have not been found.

These are the effects on the livelihoods of millions of farmers in the eastern Himalayas who depend on shifting cultivation.

Principles

The following principles were followed to lead to the main recommendations.

1. The existing prejudice against shifting cultivation must cease. Shifting cultivation should be considered as a potentially constructive tool for development, rather than destructive for environment or livelihoods.
2. The changes in shifting cultivation communities are inevitable. These changes, however, should come from within the system. We need to build on and facilitate technological and institutional innovations and change processes.
3. An adaptive management approach is required to develop shifting cultivation. This approach is focused on transformation rather than replacement of existing practices; it recognises traditional knowledge and practices as well as social sensitivity.

4. Scientific research is required to validate and document existing good practices and traditional knowledge of shifting cultivation farmers. Support for the farmers' innovative processes needs priority. This will provide do-able options for the improvement of shifting cultivation as well as other farming systems in similar agro-ecological conditions. Agricultural extension and training should be focused on these options.
5. Fallows should be recognised as forests on agricultural land, whereas now shifting cultivation is considered to be farming on forest land. Fallow forests are used as an integral part of the system, and cannot be allocated for other purposes like (permanent) afforestation, wasteland development, protected areas, or resettlement programmes.
6. Shifting cultivators should be rewarded for their role in biodiversity conservation, and should have more control over biodiversity conservation efforts in their areas.
7. Controlled burning by shifting cultivators as a means of fertility enhancement, and weed and pest control should be recognised as an important management practice.
8. Locally existing niche products are the key to economic development in shifting cultivation. Government support should focus on enterprise development with these products by providing facilities for marketing, processing, value addition, and credit. The produce should be certified as organic. The rights of shifting cultivators to use and market any produce from the fallow forest (like non-timber forest products) should be recognised.
9. Common property resources are a basic tenet of shifting cultivation. Customary institutions provide access to the sources of production to all community members. Community land management systems need to be studied instead of focusing on privatisation; communal land management innovations are required to strengthen existing communal tenure arrangements and complement private tenure. This will help to avoid land speculation, and promote social capital and other benefits.
10. Alternative ways of providing access to credit should be developed for shifting cultivation farmers. For example, local institutions that regulate the common property could provide guarantees to the bank on behalf of the loan taker.
11. Local customary institutions should be strengthened, capacitated, and formalised. They should have appropriate synergy with the state and be embedded within it, rather than being replaced by parallel government bodies at the local level. Gender sensitisation, representation, and equity issues should be addressed. They must collaborate with the local/state level government for policy formulation and implementation with regard to shifting cultivation. Cooperation between the levels should be facilitated to reduce conflicts, and the policy process must be supported at the national level.
12. Capacity building should be sensitive to the role of women (and gender aspects in general) in shifting cultivation; women focused capacity building programmes are required.

13. Population dynamics need to be understood while developing policy; too often the impression is created that it is the shifting cultivators themselves whose natural population growth is causing land shortage and shortening of cycles, but immigration and reduction of land through other reasons plays a considerable role.
14. Inter-collaboration of all government departments related to land use (e.g. agriculture, forests, environment, soil conservation, and horticulture) is required as shifting cultivation cuts across all these. The same is true for academic institutions.
15. Regional collaboration mechanisms are important to share and exchange knowledge on good practices and innovations in shifting cultivation within the eastern Himalayas.
16. Existing policies are not all bad and there are examples of favourable policies that have led to positive development of and improvement of shifting cultivation management. The same is the case for technological alternatives, but the overall tendency is negative. Large investments have not all been in vain, but their effects should be evaluated taking the above-mentioned insights into account.

Recommendations

1. Remove explicit policies and policy instruments that discourage shifting cultivation, and strengthen the implementation of existing beneficial policies.
2. Increase security of land tenure for shifting cultivators for both the agricultural and fallow phases through country specific measures by reconsidering the classification of shifting cultivation areas and categorising them as agricultural land with adaptive forest management in the fallow period.
3. Invest in research and extension to document and scientifically validate traditional shifting cultivation practices, increase their productivity and profitability, and enhance ecological and social benefits, providing formal recognition of the innovations practised by farmers.
4. Encourage market development and commercialisation of traditional and new niche products of shifting cultivation systems.
5. Strengthen and capacitate customary institutions for improved local level governance, management of community-based natural resources, and tenurial access and control.
6. Reorient existing credit policies to be sensitive and proactive to situations where common property regimes apply.
7. Encourage coordination among different government agencies that have responsibilities for aspects of shifting cultivation (esp. forestry, agriculture, rural development).

The Shillong Declaration on Shifting Cultivation in the Eastern Himalayas

Responding to the suggestion of the Hon'ble Union Minister of the Government of India on Tribal Affairs and Development of the North East Region, Mr P. R. Kyndiah, to propose a Shillong Declaration,

Recognising that Shifting Cultivation is key to production systems, both agriculture and forestry, for providing livelihoods to many ethnic and tribal groups in the tropical and sub-tropical highlands of Asia and Africa as well as Latin America,

Recognising that Shifting Cultivation is one of the most complex and multifaceted forms of traditional agroforestry practice in the world reflecting a robust traditional ecological knowledge,

Realising that Shifting Cultivation evolved as a traditional practice and is an institutionalised resources management mechanism at a species, ecosystem and landscape level ensuring ecological security and food security and thus providing a social safety net,

Being conscious of the diverse traditional institutions and tenurial systems pertaining to Shifting Cultivation in the eastern Himalayan region comprising Bangladesh, Bhutan, China, India, Myanmar, and Nepal,

Understanding that the institutional mechanisms ingrained in traditional Shifting Cultivation systems can ensure access to productive resources for every member of the community including landless people and the most marginalised groups,

Recognising that Shifting Cultivation is a way of life for a large number of indigenous, tribal, and other poor and marginalised upland communities,

Recognising that traditional Shifting Cultivation systems have been stressed by external and internal forces,

Having knowledge on existing policies on Shifting Cultivation in the countries of the Eastern Himalayas.

We, the participants from the eastern Himalayan countries, representing government agencies, farmers, international bodies, non-government organisations, academia, science and research institutions, local institutions, international donors and development assistance agencies, the private sector, and other professionals, concerned about Shifting Cultivation and shifting cultivators, regionally and worldwide, assembled in Shillong in Meghalaya, India from 6 to 8 October 2004 declare as hereunder:

a) That Shifting Cultivation must be recognised as an agricultural and an adaptive forest management practice which is based on scientific and sound ecological principles.

b) That it is imperative to provide an enabling environment in order to address the urgent livelihood and ecological concerns arising out of rapid transformations driven by development and other externalities including market forces.

c) That it is imperative to empower shifting cultivators as practitioners of rotational agroforestry to become active participants in decision making and policy processes that impact them most.

d) That it is essential to make existing research and extension services sensitive and relevant to the needs and challenges of Shifting Cultivation and shifting cultivators and simultaneously assimilate the traditional ecological knowledge of Shifting Cultivation into future research, development and extension processes.

e) That it is necessary to recognise the traditional institutions and intellectual capital generated from traditional practices relating to Shifting Cultivation and ensure its protection in the legal and policy regime.

f) That it is essential to provide interactive forums and environment for information access and sharing between multiple stakeholders at local, national, regional and global levels.

g) That it is imperative to acknowledge that women usually play the most critical role in Shifting Cultivation both at the activity and the impact level and therefore any development intervention must be sensitive to this fact.

AND THEREFORE

The regional, national, and local policies for Shifting Cultivation need to be re-appraised and, where necessary, reformulated. For this purpose, the detailed recommendations of the 'Shifting Cultivation Regional Policy Dialogue Workshop for the Eastern Himalayas', 6-8 October 2004, Shillong can provide input.

WHERE ALL POLICIES AND ACTIONS SHOULD BE FOUNDED ON THE FOLLOWING GUIDING PRINCIPLES

To support decentralised, participatory, multi-stakeholder, interdisciplinary, eco-regional, and adaptive management approaches that respect human and cultural diversity, gender equity, livelihood security, and enhancement as well as environmental sustainability, where we value and build upon both traditional and scientific information and knowledge.

Adopted: 8 October 2004 at Shillong, Meghalaya, India

Chapter 7
Outlook

Through this review and policy dialogue, we have come to a better understanding of shifting cultivation, and its usefulness for making the fragile mountain landscape of the eastern Himalayas productive. There are good examples of innovations in shifting cultivation that we can build on to make it more productive in terms of income, food security, forest cover, biodiversity, and social security. While farmers have started to innovate, they require policy changes and research support to optimise the benefits.

We hope that our findings will help the many people involved with, interested in, and having an influence on shifting cultivation to re-assess their ideas about the practice and its practitioners. Further, we are optimistic that the spread of these findings will stimulate policy makers to consider the recommendations and build a policy environment that will help improve and reap the benefits of shifting cultivation. We are optimistic that ways can be found of dealing with the persistent problems that shifting cultivation and its practitioners are facing such as lack of economic growth, increased tenurial and social insecurity, and environmental degradation, by building on the good practices that already exist within the approach and encouraging further innovation. Interested readers can join the discussions of the Jhumia Network at <http://in.groups.yahoo.com/group/jhumias>.

A number of promising developments have taken place in the policy dialogue in the year between the publication of the Shillong Declaration (see Chapter 6) and this document going to press. Several governments in the participating countries have placed shifting cultivation on their agenda, and development efforts are underway to put some of the findings into practice. The state governments of Tripura and Nagaland in India have taken lead initiatives. In Tripura, the debate on shifting cultivation has regained its vigour, helped by the new opportunities and perspectives presented at the Shillong meeting, and the government has developed a 'Redevelopment of Jhum in Tripura' project. In Nagaland, the government has invested in participatory 3-D modelling to enhance community-based land use planning. In North-East India, the North-Eastern Regional Institute for Water and Land Management has been mandated by the North-East Council to follow up on implementation of the Declaration's recommendations. The recommendations have been advocated during important policy meetings and events and in reports, including the Farmers' Commission Report on North-East India, and an initiative on

participatory forestry. The Ministry of Environment and Forests of the Government of India has set up a task force on 'Rehabilitation of Shifting Cultivation (Jhum) Fallows'; similarly reference was made to the Shillong Declaration in the note for inclusion in the work of a high level committee constituted by the Government of India to set future directions for watershed development in shifting cultivation areas. ICIMOD shifting cultivation network partners were included in the Technical Support Group of the Drafting Committee for the Scheduled Tribes (Protection of Forest Rights) Bill 2005 in India. Most recently (April 2006) the Government of Meghalaya agreed that it would no longer try to suppress the practice of shifting cultivation and would instead examine ways of integrating soil and water conservation measures within it. In Nepal, awareness on shifting cultivation issues has increased among stakeholders. In Bhutan, the Forest Department has expressed keen interest in research on crop and tree species that perform well after controlled burning, a shifting cultivation practice. Even in countries beyond ICIMOD's focus area, including Laos and Thailand, researchers and development professionals have shown interest in the findings and welcomed the new perspective.

We hope that researchers and development services will show appreciative interest in the complexities of shifting cultivation, and that their efforts will help to bring its potential to fruition. On the part of ICIMOD, we hope to find more partners for further research and policy dialogue on the particularities and potentials of shifting cultivation that we and our partners discovered.

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Annex

Annex

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