

RESOURCE BOOK

Transitioning shifting cultivation to resilient farming systems in South and Southeast Asia

Guidelines for policy makers and development practitioners



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Production team

Carmen Wickramagamage (Consultant editor)

Samuel Thomas (Senior editor)

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Photos

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Julian Gonsalves: pp 27, 29, 33

Sanat Chakraborty: pp 1, 19, 25, 31, 39, 41, 43, 44

Sanjeev Bhuchar: pp 21

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For further information, please contact:

Dhrupad Choudhury (Corresponding author)

dhrupad.choudhury@icimod.org

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Authors

Dhrupad Choudhury, Sanjeev Bhuchar, and Samuel Thomas

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Message from ICIMOD

The management of shifting cultivation has been a challenge for governments across the world. Despite policies and supportive programmes to replace the practice with settled agriculture, shifting cultivation persists across the uplands of South and Southeast Asia. Although exact figures of the area under shifting cultivation and the population involved are hard to come by, it is estimated that around 280 million hectares is under shifting cultivation globally, with around 110 million hectares in Asia alone. An estimated 200 million people in Asia are reported to be dependent on forest-based agriculture, including shifting cultivation, even today. Clearly, the efforts of governments to replace shifting cultivation with settled agriculture has not yielded the desired outcomes. Instead, research and field studies suggest the emergence of second-generation issues following transitions to settled agriculture, resulting in ecosystem degradation, insecurity of tenure, and affecting food availability particularly for poorer households. This has ramifications for poverty alleviation and attainment of the UN Sustainable Development Goals across these landscapes.

With new scientific insights into shifting cultivation practice and dynamics, and a better understanding of the impacts of sedentarization on communities and the environment, perceptions about shifting cultivation are gradually changing. The new findings have led international agencies and governments to revise their positions and call for more inclusive and transformative change. There is growing consensus on the need for serious reappraisal of ongoing approaches facilitating the transition to settled agriculture so that management approaches can be revised, the pitfalls of transition avoided, and concerns around food security, ecosystem services and security of tenure addressed. Such perceptions also recognize the need for management approaches to be sensitive to the particular needs and capabilities

of shifting cultivators and supportive policies that will help facilitate the transition to resilient farming systems. It is in this context that the resource book attains its relevance and importance.

This publication is the result of a collaborative partnership between ICIMOD and IFAD. It provides an overview of the issues and offers insights that can help in policy formulation and the development of suitable programmes to manage change in shifting cultivation areas. The resource book also provides an operational framework which can help in the design and delivery of programmes that aim to facilitate this transition. It is hoped that the recommendations will contribute to refining the policies facilitating transition while avoiding the negative trade-offs that we have witnessed till date. Policy makers and programme implementers will find the book and the accompanying policy briefs informative and useful in facilitating a conducive policy environment that favours development and implementation of programmes that support transition of shifting cultivation to resilient farming systems, stimulating a process that helps shifting cultivators assimilate into the overall development process. In the long term, this would contribute significantly to poverty alleviation and sustenance of ecosystem services, thus helping nations in their efforts to attain the Sustainable Development Goals and the Agenda 2030 objective of leaving no one behind.

Pema Gyamtsho, PhD

Director General
International Centre for Integrated Mountain
Development

Message from IFAD

Millions of people in upland areas of South and Southeast Asia still depend on shifting cultivation for their livelihoods, nutrition, and food security. The ‘real’ number of shifting cultivators in these regions is unknown and remains understudied, but in Southeast Asia it is estimated to be anywhere from 14–34 million. Transitioning away from shifting cultivation remains a fundamental imperative of sustainable agricultural development in these areas since it has, in current times when pressure on land has amplified, become a practice associated frequently with deforestation and environmental degradation.

Over the last 30–40 years, a growing body of research has assessed the impacts of government policy and programmes on transforming shifting cultivation. This research has documented the emergence of multiple ‘second generation’ issues such as loss of dietary diversity, declining ecosystem services, and compromised land tenure security, which make shifting cultivation unsustainable, and lead to landlessness and poverty. Now is the time for innovation. Facilitation and adoption of innovative technology and practices by communities practising shifting cultivation can bring about more sustainable transitional change.

In 2018, after a longstanding, approximately 22-year partnership between IFAD and ICIMOD, on themes related to nutrition, food security, indigenous peoples, environment and climate change, IFAD approved a grant to ICIMOD to organise the International Symposium on Transitioning Shifting Cultivation to Climate Resilient Farming Systems in South and Southeast Asia. The overall goal of the grant was to strengthen the resilience of shifting cultivator communities to climate and other shocks through effective transition towards economically viable, inclusive, climate resilient, and nutrition-secure farming systems.

The symposium took place in Guwahati, India, in June 2019. It brought together researchers, policy makers, policy think tanks, IFAD project staff and practitioners to take stock of challenges and opportunities faced by governments and the shifting cultivators in transitioning to a more resilient and profitable form of agriculture that is less damaging to the environment and is carbon neutral. It highlighted approaches and policy measures that have been effective (or hold potential) for facilitating a transition that is more climate resilient and ensures food and nutritional security, while being inclusive and safeguarding the rights of access to productive resources by marginalised groups such as indigenous peoples, women, and youth. The symposium also generated much of the content for developing this resource book.

We hope this book can guide policy makers and practitioners in the region, and beyond, to navigate common challenges in realising an effective transition and to adopt best practices when transforming shifting cultivation systems.

I would like to express my gratitude to our partners and country project teams for their commitment, knowledge and dedication and I especially thank ICIMOD for our excellent collaboration.

Jyotsna Puri, PhD

Director, Environment, Climate, Gender, Social Inclusion Division
International Fund for Agricultural Development



Germinating rice seedlings in a recently prepared shifting cultivation field (Chode village, Arunachal Pradesh, India)

Acknowledgements

The preparation of this resource book and the International Symposium on Transitioning Shifting Cultivation to Climate Resilient Farming Systems in South and Southeast Asia were supported by a grant from IFAD, Rome, to ICIMOD. The authors are grateful to the participants of the symposium for deliberations on the issues discussed in this publication.

The lead author would like to express his gratitude to numerous villagers and elders across the uplands of the region who shared their knowledge and experiences on transitions, especially the elders of Chuchuyimlang and Changki in Nagaland, India, for patiently sharing their knowledge on customary norms of land access and governance. Numerous

opportunities to apply this understanding and to pilot approaches opened up during the lead author's tenure in NERCORMP and while managing several IFAD grants at ICIMOD. The exchanges and support from project field teams during the field piloting is deeply appreciated. These experiences have lent an appreciation of the challenges entailed in transiting from shifting cultivation to settled systems and to devise an approach that could avoid the negative trade-offs of change.

The authors are also grateful to Antonella Cordone and Marie-Aude Even, IFAD, Julian Gonsalves, IIRR, Dev Nathan, IHD, and Brij M Rathore, ICIMOD, for critically reviewing the draft and offering useful insights for improving the document.



Post burning, shifting cultivation landscapes transform to different hues of green (Wokha, Nagaland, India)

CHAPTER 1

Transitioning shifting cultivation to resilient farming systems: Setting the context

Shifting cultivation commonly conjures up images of a landscape pockmarked with burnt patches or whole hillocks shaved of vegetation and left with burnt debris. For those familiar with the practice, this image is temporal and constitutes the antithesis of what is to follow subsequently. Post-burning, as crops are sown, the same burnt patches and shaven hillsides gradually turn green with germinating crops and, still later, the regenerating fallows convert the denuded landscapes into different hues of green as they turn progressively into secondary forests. But it is the first phase of pockmarked or shaven hills in shifting cultivation that influences common perceptions and policy making. Shifting cultivation, thus, continues to be viewed as a rudimentary agricultural practice with little economic viability and a major cause of

deforestation and environmental degradation and a hurdle for development of the uplands. This view persists despite a growing body of scientific literature contradicting the perception (Myers 1992, 1993; Kleiman et al. 1995; Fox 2000; Fox et al. 2000; Sidle et al. 2006; Cairns 2007, 2015; FAO, IWGIA and AIPP 2015; Erni 2015; Lestrelin et al. 2012; Ducourtieux 2015; Dressler et al. 2017). While Myers (1992, 1993) challenged the deforestation narrative, Sidle et al. (2006) debunked the myth of increased soil erosion by demonstrating that erosion from shifting cultivation is much less than that from other agricultural systems. In their study, Dressler et al. (2017), on the other hand, has provided a detailed account of the trade-offs of transition, particularly on soil fertility, ecosystem services and livelihoods.

KEY MESSAGES

Shifting cultivation continues to be viewed as a rudimentary agricultural practice with little economic viability and a major cause of deforestation and environmental degradation and a hurdle for development of the uplands. This view persists despite a growing body of scientific literature contradicting the perception.

Driven by this misconception, management of shifting cultivation continues to remain a fundamental imperative of agricultural development in upland areas of South and South East Asia with governments allocating substantial financial outlays to replace the practice.

There is an urgent need to reappraise the past and present approaches seeking to promote transition from shifting cultivation and to explore ways to usher in transitions to settled agriculture that avoid the common pitfalls and negative fallouts arising from short-sighted interventions.

Driven by this misconception, management of shifting cultivation continues to remain a fundamental imperative of agricultural development in upland areas of South and South East Asia with governments allocating substantial financial outlays to replace the practice (Fox et al. 2009; Choudhury 2012; Leduc and Choudhury 2012; Lestrelin et al. 2012; van Vliet et al. 2012). On their part, shifting cultivators too desire change as much as the governments do seeking options that would help them to transit the practice and assimilate gradually into the mainstream economy. To them, development programmes therefore appear as a critical – often the only – means to take them out of poverty.

Government programmes to replace shifting cultivation with settled agricultural practices in the '70s introduced wet terrace cultivation to address staples security and cash crop plantations to create opportunities for income generation. Over the years, plantations of rubber, cashew, coffee, tea and cardamom have replaced regenerating fallows, thereby reducing forest cover and permanently changing shifting cultivation landscapes across South and South East Asia. While rubber plantations, which were promoted as part of afforestation, and the 'Grain for Green' programme in China expanded to Laos and Vietnam in Southeast Asia (Fox et al. 2009; Xu et al. 2009), rubber, cashew, coffee and tea plantations have become the new alternative in South Asian countries since the '70s (Choudhury 2012; Leduc and Choudhury 2012).

Complementing policy-driven transformations, market-induced transitions have encouraged shifting cultivators to adopt cash crops, transforming fallows into plantations. Prominent among these have been rubber and palm oil expansion in South East Asia (Fox et al. 2009; Xu et al. 2009; Obidzinski et al. 2012) and arecanut, cashew, rubber, tea and spices in South Asia. Despite these efforts and the policy support from governments and international agencies, shifting cultivation persists even today in the uplands and humid tropics of the region as transformations have failed to be inclusive. Around 14 to 34 million people across Southeast Asia (Mertz et al. 2009) and several million in South Asia (FAO, IWGIA and AIPP 2015) continue to depend on shifting cultivation for their livelihood and food security. For these people, shifting cultivation is not simply a production system but a livelihood and governance system on which a large number of people depend for their food, nutrition and tenurial security. In Asia alone, an estimated 200

million people depend on forest-based agriculture such as shifting cultivation (Cairns 2017; Karki 2017). Heinemann et al. (2017) estimated an area of 280 million hectares worldwide under the practice, including cultivated fields and fallows, with Asia accounting for around 110 million hectares.

Attempts at conversion have instead led to several 'second-generation' challenges such as the depletion of agro-biodiversity (leading to food and nutritional insecurity) and drastic erosion in ecosystem goods and services (Fox et al. 2000; Peroni and Hanazaki 2002; Cramb et al. 2009; Rerkasem et al. 2009; Xu et al. 2009; Lestrelin et al. 2012; van Vliet et al. 2012; Dressler et al. 2017). Agricultural transformation has also resulted in changes to property regimes, often depriving rights to land access and productive resources for the poor (Suyanto and Otsuka 2001; Hariyadi and Ticktin 2012; Leduc and Choudhury 2012; Dressler et al. 2017). In addition, the increasing out-migration of youth due to loss of interest in agriculture has created labour shortages among many communities engaged in the practice, with alarming increases in women's workload. Moreover, even as territory traditionally under shifting cultivation is rapidly shrinking, their encroachment is increasing, leading to 'elite capture' of commons, a loss of traditional land rights and a resultant cultural erosion, (Suyanto and Otsuka 2001; Choudhury 2012; Leduc and Choudhury 2012). These developments have led to both impoverishment and increased marginalisation of poor, indigenous, tribal, and minority groups who have traditionally practised shifting cultivation in the region. These second-generation issues have important ramifications for attaining the 2030 Sustainable Development Goals – zero hunger, nutritional security, poverty eradication and access to productive resources – as well as climate change adaptation and mitigation measures. There is, therefore, an urgent need to reappraise the past and present approaches seeking to promote transition from shifting cultivation and to explore ways to usher in transitions to settled agriculture that avoid the common pitfalls and negative fallouts. The need for a resource book emerges in this context.

Why a resource book?

With governments determined to replace shifting cultivation, communities seeking change, and markets encouraging commercial agriculture, transition to settled agriculture seems inevitable in the long run (Heinemann et al. 2017). This change,

however, needs to be all inclusive benefitting even the most marginalised avoiding, thereby, the negative fallouts witnessed till date. An appraisal of ongoing development projects designed to bring change in shifting cultivation areas and interactions with project teams implementing such projects suggest that project designers, implementation teams and policy makers are either unaware of the complexities of shifting cultivation or even prejudiced against it (FAO, IGWIA and AIPP 2015), viewing it solely from the point of view of agricultural transformations, overlooking the implications of transitions for livelihoods, governance systems and cultures of shifting cultivators, including seasonal food availability and nutritional security, forest cover and ecosystem services, and tenurial arrangements. 'Second generation' issues have emerged from this failure to recognise the linkages and to implement interventions that are sensitive to these serious ramifications.

The resource book is intended to help programme designers, practitioners and implementation teams as well as policy makers of development agencies and governments to understand the complexities entailed in facilitating transition in shifting cultivation systems and improving designs of development programmes, projects and policy frameworks to make them more inclusive and considerate of the needs of shifting cultivators so as to avoid the negative fallouts arising from short-sighted interventions. It will also better equip monitoring and evaluation teams to design effective performance indicators and track whether interventions have been appropriate and sensitive in guiding transitions in the desired direction or whether corrections need to be made to navigate potential pitfalls. Lastly, the book will also serve the interests of researchers who would like to develop a better understanding of the impact of development approaches on shifting cultivators and their livelihoods. The development of more effective and appropriate programmes and policy frameworks influenced by the resource book should thereby contribute towards the achievement of the SDGs while simultaneously ensuring adaptation and mitigation efforts for combating climate change are addressed.

Before discussing the specific approaches that can help navigate pitfalls, the book will introduce the readers to the fundamentals of shifting cultivation and the functional links the practice has with seasonal food availability, forest management and

tenurial arrangements as that would help readers to appreciate the potential negative ramifications arising from interventions lacking a holistic socio-ecological approach. The ensuing sections will discuss how customary tenurial arrangements are impacted as sedentary practices are introduced to replace shifting cultivation with key issues relating to shifting cultivation practice and the customary framework on land access and tenure highlighted in Boxes 1 and 2, respectively. It is critical to gain an understanding of tenurial frameworks prior to introducing interventions as the consequences of ignoring these aspects lead to situations where interventions become part of the problem, threatening poor people's access to land and tenure security (IFAD 2008).

Key considerations relevant for a holistic approach to transitions

The narrative on the practice of shifting cultivation and the customary tenurial arrangements under which it functions provide important insights into the strength of the practice and its associated customary framework (Box 1 and 2). The major inferences that can be drawn from the account, which have relevance for a balanced, socio-ecologically sensitive transition and should, therefore, constitute fundamental considerations in designing programme interventions or policy action, are the following:

- A shifting cultivation landscape in the cultivation phase is a rich repository of agro-biodiversity due

to the wide variety of crops and vegetables grown through a well-balanced crop calendar which allows sequential harvesting ensuring seasonal food availability and dietary diversity. Interventions designed for transition to settled agricultural systems must retain this diversity and maintain the balanced cropping calendar with opportunities for sequential harvesting.

- Contrary to popular belief, farming practices, particularly weeding, inherent in shifting cultivation are sensitive to soil erosion and fertility management. Thus, improved nutrient management and erosion control approaches need to build upon these traditional practices and blend in modern scientific methods to augment and strengthen traditional practices rather than replace them.
- Traditional land access and tenurial arrangements work on the principles of the common property framework. Thus, the tenurial rights of a family, though inheritable, are inalienable and non-transferable to outsiders – ownership remaining a community right held by the clan or village. Programme designs and interventions must respect such customary norms and consciously avoid interventions that undermine them.
- The size of the plot depends on the family size, the plot size changing each year according to the number of members resident in the house that year. The surplus land accruing each year thereby is allocated

BOX 1

SHIFTING CULTIVATION: THE PRACTICE

Activities for shifting cultivation are initiated towards the second half of November (or from March to mid-May in parts of Southeast Asia), when traditional institutions, as custodians of land at the village level, organize meetings involving all households for site selection for the next year's cultivation and allocation of plots. Selection of sites is usually pre-determined based on the fallow cycle (length of years the land parcel has been under rejuvenation and regeneration between two cultivation phases) and plot allocations are done based on traditional land access rights (or by lottery, as is the case among the ethnic groups in Mizoram, India, and Chin state in Myanmar). Once allocations have been

agreed upon, individual households are permitted to clear the vegetation as the first step for land preparation and initiation of the following year's cultivation. Vegetation clearing is usually done as a collective effort among most ethnic groups (e.g., Aos in Nagaland and Tangkhuls in Manipur) but can also be done by households individually, as among the Karbis in Assam, India.

PLOT PREPARATION, VEGETATION CLEARING AND INITIATION OF FALLOW MANAGEMENT

The general practice has been to clear a vegetated parcel of land that has been under fallow regeneration at the end of November or early December (or March onwards in some Southeast Asian countries). In

Northeast India, vegetation clearance is carried out in a systematic manner as it is the first step in sustainable fallow management and regeneration of fallow forests. During clearing, farmers consciously carry out fallow management practices, pollarding bigger trees and lopping the branches of others while the trunks are left standing or felling large trees at breast height to retain trunks to allow coppicing. Root stocks, root stubs and stumps are selectively retained as this allows the individual species to coppice or regrow and regenerate once the rains start and as cultivation proceeds (Duourtieux 2015; Singh 2009; Singh and Choudhury 2015). Smaller logs and branches are retained in the fields and laid along contours to prevent soil erosion. These practices assist regeneration of the fallows into young forests and, subsequently, into secondary forests if the fallow period is long enough (over 10-15 years). Thus, vegetation clearance is conducted as a fundamental step for fallow management and not solely for the purpose of indiscriminately clearing land for agriculture as is commonly perceived. Exceptions are found in areas where the vegetation shows arrested succession and is largely dominated by bamboo (as is the case in parts of Mizoram and in large parts of the Garo Hills in Meghalaya, India). In such areas, clear felling is unavoidable. With the shortening of fallow cycles because of conversion of fallows to permanent crops, the system in most areas does not mature into wooded patches and, instead, progress, at best, to scrubs and bushes. In such situations, clear cutting and burning is unavoidable. An exception is the 'yamkui' system among the Tangkhuls of Ukhrul district, Manipur, where the cut vegetation is left unburned and is, instead, heaped along contours as mulch for composting (Singh 2009; Singh et al. forthcoming). After the vegetation has been felled, the biomass is left to dry. Towards the end of January, useful biomass is removed from the fields for firewood, timber, boles for house building and fencing, or for making furniture and household items. Once that is done, a date is fixed based on weather conditions for burning the remaining now-dry debris. Fire breaks are prepared and fire management precautions followed strictly during burning.

AGRICULTURAL PRACTICES

Post-burning, after the embers have cooled, the ashes are spread across the fields and seeds sown by dibbling or broadcasting, thus following a 'zero tillage' practice. Mixed sowing of maize, legumes, cucurbits, and leafy vegetables is done by dibbling while cereals such as paddy and millet are broadcast. A shifting cultivation landscape in the cultivation phase is a rich repository of agro-biodiversity with a crop diversity ranging between 20 to 30 crops, sometimes going up to 40 plus crops cultivated simultaneously, including diverse landraces of each crop. The mixed cropping allows for sequential harvesting, the first harvest of leafy vegetables, hill brinjal, cucurbits, pumpkin, legumes, tubers and chillies starting around end April or early May and continuing till July in northeast India. The second harvest of maize, millet, tubers, legumes, pumpkin and gourds starts in August. While certain crops are harvested throughout the year, cereals such as paddy and commodity crops like ginger and oilseeds are harvested at the end of the year (end of October or first half of November). This practice makes a wide variety of food available throughout the different seasons of the year, ensuring dietary diversity for the household (Rerkasem and Rerkasem 1995; Choudhury 2012).

During the growing season, weeding is conducted thrice, with weeds heaped across the field. Farmers retain a thin weed cover, which is done to prevent splash erosion during rains. The weeds are heaped across the field and, as they decompose, leachates from the heap provide nutrients for the crops which mop up the same, thus preventing loss of nutrients from the fields. Recent research studies from Manipur, India, indicate that the growing plants mop up the leachates and use very little of the soil nutrients, which help to ensure that the soil nutrient pool is not exhausted (Singh 2009).

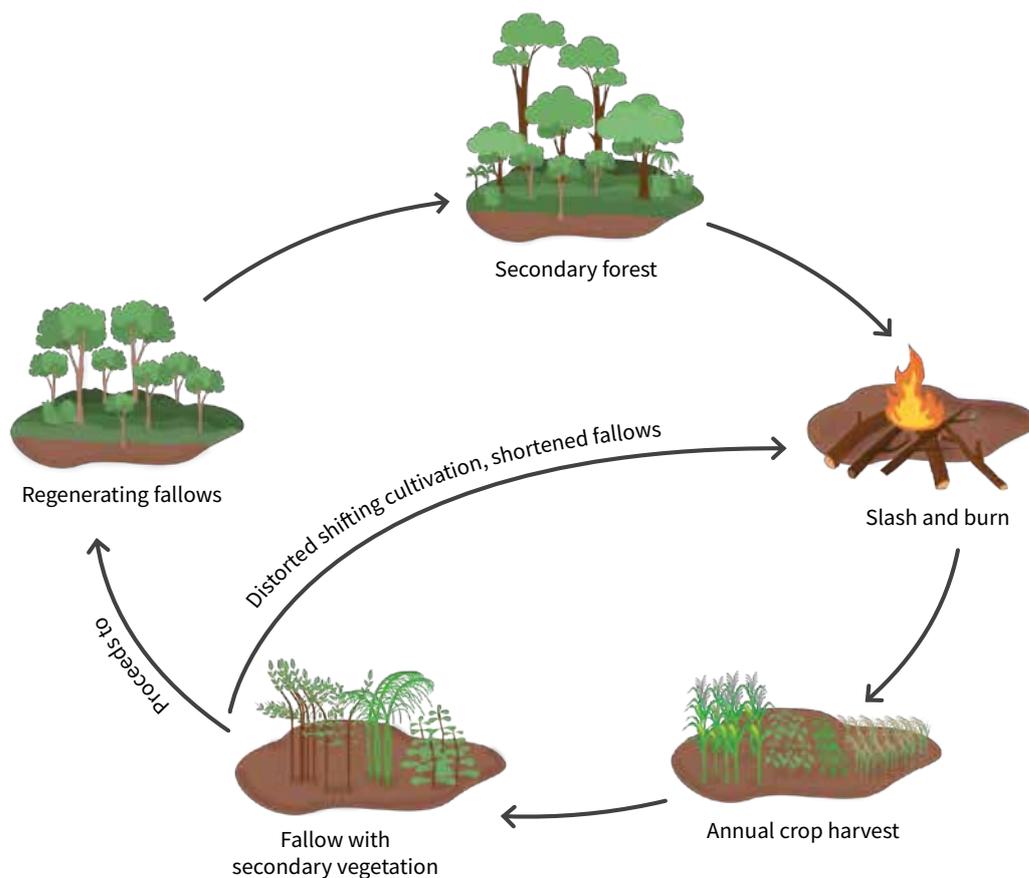
SHIFTING CULTIVATION: THE PRACTICE (CONTD.)

Cropping in shifting cultivation is typically for two years after which the family moves to a new plot. Researchers have attributed the necessity for shifting to a new plot to depletion and loss of soil fertility, which force the farmer to move. Field interactions with shifting cultivators contradict this view, with farmers insisting that they move to new plots after two years to prevent depletion of soil fertility; as farmers put it, continuing any longer would be like ‘milking Mother Earth dry’. The Tangkhuls of Manipur move to new plots after cultivating a plot for 4 or 5 years not because of soil fertility depletion but because of unmanageable weed growth. In all cases, even after farmers move to new plots, they can still harvest chillies, hill brinjal, colocasia, tubers and some oil seeds for the next year or two from the young fallows.

POST-CULTIVATION PHASE

Following the completion of the cultivation phase, farmers move to the next patch leaving the previous fields fallow to rejuvenate and regenerate into mature secondary forests given a sufficiently long fallow period. Shifting cultivators know that fallow forests are the backbone of shifting cultivation and, hence, diligently observe strict fallow management practices even as they clear a plot for cultivation (Singh 2009; Singh and Choudhury 2015). The fallow period is dependent on the size of the village and the land available and has been known to stretch to over 25 years in the past. This, however, has reduced drastically in present times to between 7 to 10 years in most areas (and, with intensification, to below five years). The progress of sedentarisation and increased pressure on land result in shorter cycles and the onset of land degradation. A schematic representation of the practice is given in Fig 1.

A SCHEMATIC DIAGRAM SHOWING THE DIFFERENT STEPS IN SHIFTING CULTIVATION



Vegetation clearing and burning, followed by cultivation. Post-cultivation, the plot is fallowed to allow recuperation, rejuvenation and regeneration to secondary forests before being cleared again for the next cultivation. With increased pressure on land, fallow cycles have shortened and regeneration of the fallows proceeds to shrubs and bushes at best

for the year to those households that may not have a plot in that patch. This is a crucial attribute of such arrangements and important for ensuring universal access while rationalising labour requirements.

- A plot will not revert to the clan or village common pool if it is under cultivation making these plots *de facto* privatised. This provision, with adequate safeguards, opens opportunities for settled agriculture – a goal that most development projects strive to pursue. However, since it has also encouraged elite capture giving rise to landlessness among many ethnic groups across the region, authorities should remain vigilant against such dispossession.
- The uniqueness of shifting cultivation lies in the two distinct landuses of the practice – agriculture and fallow forestry - that alternate in sequence on the same plot of land. This is because shifting cultivation is not just an agricultural practice, but also involves forest management. In fact, shifting cultivation can be said to be a sequential (rotational) agriculture and forest management practice, practised at the landscape level. Thus, unlike settled agriculture, which results in a permanent change of landuse and land cover, shifting cultivation can claim to be the only agricultural practice that practises land degradation neutrality, allowing the addition of a new fallow to compensate for every parcel of land

cleared for annual cultivation which subsequently regenerates into secondary forests under a sufficiently long fallow cycle, thus contradicting a popular misconception that it is a cause of deforestation and environmental degradation. This unique character needs to be given due cognisance in any interventions for transition.

Among all the attributes listed above, the dual characteristic of shifting cultivation – two distinct landuse types alternating temporally on the same piece of land – has been the least understood and never considered when formulating programmes or policies for managing shifting cultivation. It is also the most challenging to address during transition. It is perceived either as an agricultural practice and brought under the purview of agriculture or, as forests, and, therefore, under forest regulation and management. The regenerating fallows are perceived as forest land and never acknowledged as arable land undergoing fallowing. In fact, shifting cultivation landuse has never been captured in landuse surveys and has always been clubbed under ‘other agricultural landuse’ categories or as ‘shrubland or temporary unstocked land, or open-canopy forests, or unclassified state forest’. The consequent difficulty in generating accurate statistics on the extent of shifting cultivation leads to the failure to formulate effective policies or programmes to manage change in such systems (Schmidt-Vogt et al. 2009).



Unlike settled agriculture, which results in a permanent change of landuse and land cover, shifting cultivation can claim to be the only agricultural practice that practises land degradation neutrality (Laos PDR)

BOX 2

CUSTOMARY LAWS GOVERNING SHIFTING CULTIVATION

Customary laws governing shifting cultivation (and other natural resource management) vary for each ethnic group (or tribe) and may even vary among neighbouring villages. Although the description below is drawn from the system practiced by the Ao tribe of Mokokchung district, Nagaland, India, the basic principles remain similar among almost all tribal groups (Choudhury et al. 2003; Choudhury 2006; Erni 2021).

Each village has multiple land parcels or blocks earmarked for shifting cultivation – one less than the length of the fallow cycle; thus, if the fallow cycle is 15 years, the village practising cultivation of one year in a plot will have 14 land parcels. The cycle (length of the fallow period) is determined by the extent of their shifting cultivation land and the length of cultivation in each plot. The larger the area available for shifting cultivation, more the number of land parcels and, hence, longer the fallow cycles. The village, under the guidance of the traditional institution and village elders (often the clan elders), decides which parcel would be used for the current year's cultivation. This is usually pre-determined given the length of the fallow cycle though exceptions happen when a particular patch is deemed not to have rejuvenated enough, or a patch is deemed to have matured faster. The choice of plot clusters within a parcel is fixed in most communities as this is pre-determined based on clan hierarchy at the time of founding the village (Choudhury et al. 2003; Choudhury 2006; Erni 2021). In some communities where this is not the case, the choice of plots follows clan hierarchy and age. Elders are allowed first choice, followed by widows and other households. Even among communities that have chieftains or tribal sovereigns, allocation of plots usually follows the same logic, with minor variations, though exceptions are not uncommon as is the case among the ethnic groups in northern Chin state, Myanmar, and Mizoram in NE India.

PLOT ALLOCATION AND TENURIAL ACCESS ARRANGEMENTS

Traditional land access and tenurial arrangements work on the basic principle of universal access to land and resources – in other words, within a Common Property framework. Although the right of first choice of the land parcel and plots is traditionally hierarchical (based on clan hierarchy), each household within the village is ensured access to a plot and, hence, has assured tenurial rights. This

tenurial right holds true for all the plots that the household cultivates in the different parcels of shifting cultivation land. In practice, a household will normally hold tenurial rights in as many land parcels as the length of the fallow cycle prevailing in the village. Landlessness, thus, is unknown in such systems as is the need for formal land title deeds. An important point to note here is the fact that such tenurial rights of a family, though inheritable by the next generation, are inalienable and non-transferable to outsiders. In other words, a family does not have ownership of the land bestowed on them as is the case in Private Property regimes but has access and user rights and cannot sell the land to anyone. Tenurial rights are inherited, hence children have rights of access and use to a plot that the parents had although they do not have the right to transfer ownership (or to sell the land). It is important to make this distinction and recognize that customary rights guarantee tenure but do not award ownership – the ownership remaining a community right held by the clan or village. Exceptions are made only when the family gets into extreme debt and is unable to pay off the debt. In such rare instances, the family land can be transferred to pay off the debt but only to another family within the clan, or to the clan itself, or the village as collective owner. Among tribes with chieftains or tribal sovereigns (the Angs among Semas or Noknis and Maharis among Garos), the Ang or Nokma (husband of the Nokni) are custodians of the land and tenurial access, though usually assured, depends on the discretion of the Chief in consultation with clan elders (or the Hungvu as among the Tangkhuls of Manipur).

As mentioned above, despite minor variations between tribes or even villages, the basic principles remain the same across communities in NE India with parallels found among communities in Southeast Asia as well (Erni 2021). A departure from this common framework is seen, however, among the upland shifting cultivation communities in the northern Chin state of Myanmar and in Mizoram in India's northeast region. The customary practice among the villagers of these communities for access to plots is by way of lottery with all households having annual access to a plot (GRET 2019; Field surveys by ICIMOD 2015-16). The lottery determines where the family would have a plot for the year and, hence, although the right of access to a plot is guaranteed, it does not necessarily result in continued access to the same plot every year for any family. Any family moving into the village from outside for permanent residence is included in the lottery but any family moving out of the village loses their right of access. Rights of women (female-headed households or households where the male has migrated for work) and widows are recognized within this arrangement.

CUSTOMARY LAWS (CONTD.)

This practice is probably designed to ensure equitable access to all irrespective of a household's socio-political or economic status and may have been developed to change a discriminatory feudal arrangement prevalent among such groups in earlier times that prevented access to land for the marginalised households resulting in class discrimination and deprivation (see GRET 2019).

PLOT SIZE DETERMINATION: THE BASIC MECHANISM FOR ENSURING UNIVERSAL ACCESS TO LAND

A fundamental attribute in customary access and tenure regimes is the flexible plot size – this flexibility being central to an equitable access framework and crucial for the effective functioning of the traditional access framework in Common Property Regimes. Among almost all ethnic communities, the size of family plot ('among's' among the Aos) is not fixed – unlike in private property regimes where the plot size and boundaries need to be well defined. The size of the plot depends on family size or, as the shifting cultivators put it, 'the number of mouths to feed'. If the family size is big (hence with sufficient family labour), the size of the plot is large; if the family is small, the plot size is reduced accordingly. In case members of a large family leave the village for work outside (or migrate out of the village), their plot size is reduced proportionately. The family plot size, thus, changes every year within the clan's land parcel (or 'kitong bok') based on the number of members resident in the house that year. This flexibility results in surplus land in each clan's land parcel every year and, cumulatively, in the village land parcel ('bok'), allowing such surplus lands to be then allocated for the year to those households who may not have a plot in that particular land parcel. Such households usually are from

clans who were later migrants in the village. In this way, all households are assured of access to land every year while equitable, universal access is ensured. This is a crucial attribute of such tenurial arrangements and is important for ensuring universal access to land (Choudhury et al. 2003; Choudhury 2006).

ACCOMMODATING THE CONCEPT OF 'PRIVATISATION' WITHIN CUSTOMARY TENURIAL FRAMEWORKS

A third attribute of traditional access and tenure frameworks that needs highlighting is the accepted norm that a plot will not revert to the clan or village common pool if it is under cultivation. If a family starts horticulture, they can continue to retain the plot as long as the horticulture continues. The plot reverts to the common pool only if the family stops cultivation. The same applies when a plot has been converted to wet terraces. In such cases, tenurial rights remain with the family as long as the terraces are under cultivation making these plots, de facto, permanently privatised. This point needs to be noted as this is a provision used by the elite to establish and expand plantations. Given provisions under existing legal regulations in some countries, such land can be registered under their names by the concerned authorities without any hindrance. This has encouraged elite capture of the commons and is rapidly giving rise to landlessness among many ethnic groups across the region. However, this provision, with adequate safeguards to prevent elite capture, can also create opportunities for settled agriculture with perennial crops – a goal that most development projects and governments strive to pursue. During the fallow period, the household retains ownership and user rights on any trees planted by the household.

The failure to recognise the dual landuse practice on the same piece of land causes such land to be subjected to different laws, regulations and management, many of which are self-contradictory and negatively affect the farmers, restricting control, decisions and investments on such plots, often stripping them of their customary rights and ownership. These failures, in turn, have resulted in second-generation issues of forest cover depletion and the accompanying erosion in ecosystem services

as well as the loss of security of tenure. If efforts at replacing shifting cultivation with settled agriculture are aimed at arresting deforestation, increasing forest cover, and preventing environmental degradation, they have become counter-productive, resulting instead in the rapid depletion of forest cover and ecosystem services as fallows are replaced with agricultural plantations. This needs to be corrected and the trend reversed where possible.

Changing shifting cultivation landscapes in the uplands of South and Southeast Asia: The trade-offs

Shifting cultivation landscapes across the uplands of South and Southeast Asia are under transition as shifting cultivators gradually adopt alternative forms of agriculture (Thongmanivong and Fujita 2006; Fox et al. 2009; Mertz et al. 2009; Choudhury 2012; Heinimann et al. 2017; Mertz and Bruun 2017). Although the practice persists, terrace cultivation and plantations have become prominent features of the village landscape (Thongmanivong and Fujita 2006; Rambo 2007; Choudhury 2012; Singh and Choudhury 2015). Transitions seem to have brought positive changes linking shifting cultivators to markets resulting in enhanced incomes. Despite such positive outcomes, shifting cultivators, especially women, also express concern at the loss of crop variety and the depletion in agro-biodiversity. The upland landscapes also indicate that fallows are being converted to plantations, resulting in drastically reduced forest cover. It has an immediate impact on shifting cultivation with long term implications for land and forest resources and resultant consequences for ecosystem services, especially the hydrology and carbon sequestration capability of the area (Bruun et al. 2009; Cramb et al. 2009; Mertz et al 2009; Xu et al. 2009; Ziegler et al. 2009).

The encroachment of fallows effectively reduces the total area available for shifting cultivation, thus marginalising and distorting the practice (Choudhury and Sundriyal 2003). As sedentarised systems expand, fallow cycles are reduced, preventing the natural process of land recuperation. This not only contributes to declining productivity and growing food insecurity but also prevents the regeneration of fallows into secondary forests (Choudhury 2012; Ducourtieux 2015). As landuse pressure increases, shifting cultivators are forced to return to their plots at shorter intervals, disrupting the regeneration of fallows and the long-term recuperative capability of the land leading to land degradation. In addition, the changes in landuse also impact tenurial access, eroding universal access to resources and depriving the poor and marginalised of tenurial security, impoverishing them further, with most of them thus unable to harness the full benefits of transformations. In several areas, landlessness is an emergent new trend often forcing marginal farmers to become wage labourers (Ewers 2019). Transitions thus entail costs

that need to be recognized for their implications on the food, nutrition and tenurial security of shifting cultivators with significant ramifications for achievement of the SDGs.

The fundamental aim of Agenda 2030 is to 'leave no one behind'. Shifting cultivators are among the most marginalized and impoverished communities and remain on the margin of mainstream development even today. Development approaches to managing shifting cultivation have predominantly focused on different forms of settled agriculture but they have proven to be inadequate, thus demanding frameworks that go beyond settled agriculture and include the management of fallows if transitions are to be successful. Development alternatives, therefore, need to be holistic, inclusive, and welcoming of community innovations (Omar 2019). Hence, the critical questions for those designing programmes facilitating transitions in shifting cultivation and those implementing them should be: 'What impact and implication will the proposed intervention – or approach – have on seasonal food availability and dietary diversity, on forest cover and ecosystem services, and on universal access to land and customary tenurial arrangements? Will these be compromised because of the intervention? How will the intervention affect labour dynamics? Are there ways in which the negative fallouts can be avoided?' The programme monitoring framework must incorporate these concerns among outcomes monitored. What is critical is not what interventions are introduced, but how they are tailored to suit local conditions and culture.

The subsequent chapters of the book examine the impact of transition on seasonal food availability and dietary diversity, ecosystem services, and security of tenure with the intent of helping shape future programme and policy designs and to provide insights that would support project implementation. Each chapter discusses potential approaches that could form templates for designing interventions that help navigate negative fallouts and lists recommendations that need to be kept in focus during programme design and project implementation. The final chapter suggests a framework for transition outlining critical milestones that are fundamental to avoiding the pitfalls of transition, which may be useful in developing programmes for transitioning from shifting cultivation to resilient farming systems.



Terraces promoted as alternatives to shifting cultivation contribute to depletion of agro-biodiversity found in shifting cultivation (Kachin, Myanmar)

CHAPTER 2

Ensuring seasonal food availability and dietary diversity during and after transition: Navigating the pitfalls

The universal strategy for replacing shifting cultivation with settled agriculture has basically adopted a two-pronged approach – promotion of wet terraces for addressing staples security and cash crop plantations for enhancing cash generation and income opportunities. The latter assumes that plantations would result in an increase in the purchasing power of shifting cultivators and, thereby, increase their food security. This assumption overlooks the fact that increased incomes alone do not automatically translate to better diets and nutrition (FAO 2016). Proponents of the strategy also overlook the challenges that terrace establishment in upland areas entail, which have either retarded

or hindered the pace of terrace establishment in most areas with some unaddressed issues even today. Apart from those arising out of physiography and terrain, the prohibitive capital and labour investments required for developing terraces in upland slopes make this option feasible only for the rich. Wet terraces are thus not an option for the poor shifting cultivators unless fully subsidised and supported through government schemes or development programmes.

Establishment of terraces by itself does not ensure full functionality of the system as terraces require a steady water supply and an accompanying,

KEY ISSUE

Terraces and plantations, as replacement for shifting cultivation, have been assumed to guarantee food security, improved nutrition, and enhanced income for upland communities. But it has resulted in wide-scale land-use change and consequent erosion of the diverse resource base that upland communities are dependent on for their food and nutritional needs. It has also depleted crop diversity depriving shifting cultivators of sequential harvesting, thereby adversely affecting seasonal food availability and dietary diversity with potentially serious negative effects on nutrition that would translate into hidden hunger. This has implications for meeting the targets of Sustainable Development Goals, particularly those linked to SDG 2 on Zero Hunger. Programme designs for transition thus need to be designed and implemented with utmost care and with a holistic socio-ecological approach, failing which even well-intended interventions and programmes could very well backfire resulting in seasonal food scarcity with implications for nutritional security and hidden hunger in the long term.

functional irrigation system. This is equally capital intensive adding to the costs and, therefore, requiring an approach that benefits a larger section of the community rather than a handful of individuals. Terraces, thus, cannot be established without community cooperation and the support of government schemes or development programmes. Land preparation in terrace cultivation requires both skilled labour and draught animals for ploughing. Shifting cultivation communities in the uplands, particularly in Northeast India, who are used to rain-fed agriculture and the rearing of small animals such as pigs and poultry, lack the skills and expertise in both terrace cultivation and rearing of draught animals. They are, therefore, largely dependent on labour from the lowlands for both these purposes. While the well-off may be able to afford hired labour, this remains out of reach for the poor. In addition, upland communities do not have paddy varieties bred for wet rice cultivation and are wholly dependent on agricultural extension or the market for sourcing suitable seeds bred for the purpose. Together, these factors make terrace cultivation a choice predominantly for the rich making the option non-inclusive and potentially elitist. Finally, the prohibitive investment costs restrain even governments from stepping in where the number of households to be benefitted is small or where physiographic challenges inflate costs unacceptably, thereby limiting the spread and pace of terrace promotion.

Despite these constraints, upland farmers in some areas have not been unamenable to adopting terrace cultivation. Among upland farmers in Kayin, Shan and Chin of Myanmar, it showed a steady adoption rate initially as paddy cultivation offered many households year-long staples security and, with surplus, a pathway to improve their economic lot. A similar trend, largely policy driven, was also evident in the uplands of Laos though paddy cultivation in this case was confined to upland valley bottoms. With time, paddy cultivation has declined in popularity in Kayin and Shan as opportunity costs have risen with the spread of cash crops. As more areas were brought under plantations, grazing lands reduced drastically leading to shortages in the fodder supply. As maintaining draught animals became difficult, a largescale shift from paddy cultivation to exclusive market-oriented cash crops occurred rendering terrace cultivation economically unattractive (GRET 2019). Terrace cultivation as a means of ensuring yearlong staples security thus gradually proved to be

ineffective in achieving its intended outcome as the option remained out of reach of the poor and failed to be inclusive.

The expansion of plantations has been at the cost of regenerating fallows resulting in shortened fallow cycles which in turn lead to marginalisation of shifting cultivation (Choudhury and Sundriyal 2003) and a drastic decline in crop diversity, productivity and yield, significantly affecting seasonal food availability (Peroni and Hanazaki 2002; Cramb et al. 2009; Rerkasem and Rerkasem 1995; Rerkasem et al. 2009; Behera et al. 2015). Domination by commodity crops in such systems has a similar effect: reduction in crop diversity and a proportionate decline in food crops (Choudhury et al. 2003; Thongmanivong and Fujita 2006). These changes have implications for seasonal food availability and dietary diversity with serious ramifications for women's and children's health, particularly that of nursing and expectant mothers, potentially giving rise to incidences of hidden hunger (Kadambot et al. 2021).

The most profound – and routinely overlooked – impact of cash crop expansion, however, has been the rapid loss of different-aged regenerating fallows and the resultant depletion in wild edibles, wild fruits, tubers, animal produce and other resources harvested from fallows (Delang 2006; Cramb et al. 2009; Rodericks 2020) due to the wide-scale land-use change associated with it. The diverse plant species supported by different-aged fallows, in turn, provide conducive habitats for a wide range of insects and other wild animals as they age. The Agro-Biodiversity Initiative (TABI), a joint initiative of the Government of Laos PDR and the Swiss Agency for Development and Cooperation, provides a detailed account of the wide diversity of produce harnessed from fallows (Rodericks 2020). It highlights their critical role as a rich resource base of food and nutrition for upland communities and, hence, for food and nutritional security. Delang (2006), similarly, offers a detailed account of the role of non-timber forest products in the shifting cultivators' subsistence economy. Transformation of fallows to plantations thus permanently erase a resource base critical for food, nutritional security, and income of the community. For shifting cultivators, replacement of the practice with cash crops, despite the promise of cash generation, therefore, implies the eradication of their risk management strategy and resilience, signifying an increased vulnerability to food



Fallows provide a wide diversity of wild edibles contributing to nutrition and dietary diversity (Chin, Myanmar)

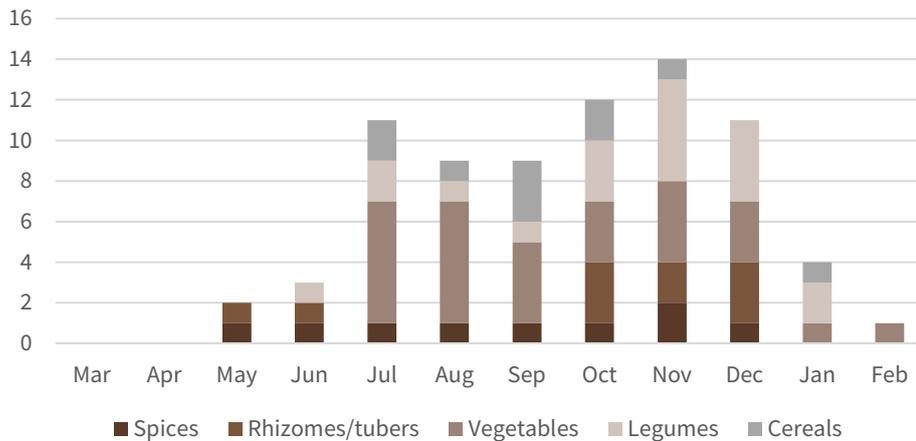
insecurity and poverty, thereby potentially increasing incidences of hidden hunger. This also increases the pressure and stress on women to meet the daily dietary requirements of the household, deteriorating the quality of their well-being. This is one of the fundamental causes of the hesitancy among shifting cultivators to change (Choudhury 2012). Transitions thus must be designed and implemented with utmost care to avoid the pitfalls outlined above.

The trade-offs of transformations: Implications for seasonal food availability and dietary diversity

Despite its subsistence character, shifting cultivation allows farmers a harvest of a wide variety of crops throughout the year while enabling them to avert risks. Even in its distorted, short-cycled form, shifting cultivation has a rich diversity of crops that offers households the opportunity of sequential harvesting throughout the year. Although rice yields may not have year-long availability, other food crops – leafy vegetables, legumes, spices, tubers, and cereals such as maize and millet – are available throughout the year, thus ensuring seasonal food availability. The mixed cropping, which allows sequential harvesting, not only ensures food availability but also year-long dietary diversity and nutritional security (Fig. 1). The variety in crops (and the diverse landraces within crops) means that even if crop failures happen due to adverse weather (unusually heavy monsoon showers, hailstorms, or drought) or pests and pestilence – which is extremely rare in this system – some of the

FIGURE 1

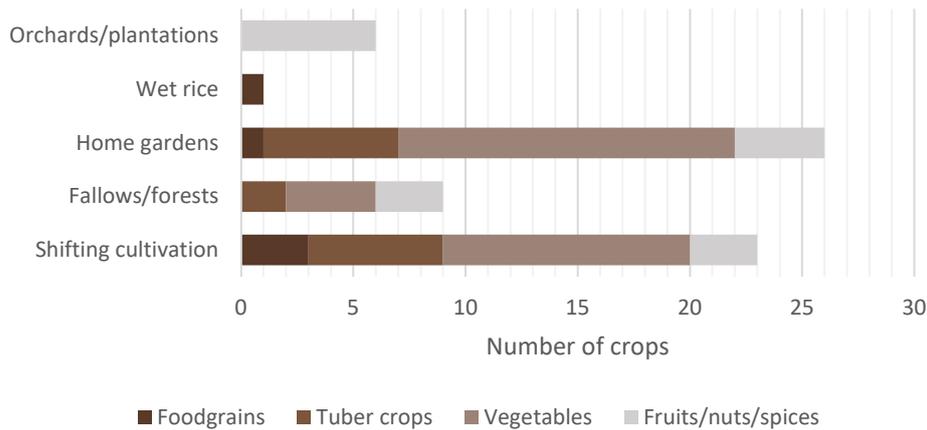
SEASONAL RESOURCE AVAILABILITY FROM SHIFTING CULTIVATION (Y-AXIS REPRESENTS NUMBER OF CROPS)



Source: Choudhury 2012

FIGURE 2

THE DIVERSITY OF RESOURCES ANNUALLY AVAILABLE TO THE UPLAND FARMER FROM DIFFERENT SYSTEMS



Source: Choudhury, 2012

landraces of each crop will have the resilience to perform and, hence, farmers will not be faced with total crop failure. Indeed, the rich agro-diversity equips shifting cultivators with the ability to avoid or spread the risk of crop losses and, thus, possible starvation, and enhances their adaptive capacities to weather induced stress. In addition, regenerating fallows provide them with diverse edibles, meat and medicinal plants as well as several utility products that generate cash incomes. With the expansion in settled agricultural systems, this diversity is lost as the alternative systems offer, at best, two to three crop varieties as opposed to the multiple crops found in shifting cultivation (Fig. 2), depriving the cultivators,

thus, of dietary diversity (Peroni and Hanazaki 2002; Choudhury 2012; Behera et al. 2015). While cash crop plantations hold the promise of enhanced incomes once they mature, they do not address the issue of food availability, particularly during the gestation period, thus severely compromising the household's food and nutrition security as well as women's and children's health, with long-term ramifications for the health of the community.

To ensure seasonal food availability and the dietary diversity required by the household, shifting cultivators continue with the practice simultaneously with wet terrace rice cultivation or cash crop



Home gardens: Relocating crops from shifting cultivation (Garo Hills, India)

plantations (or both) that they may have adopted in their efforts to transform their agricultural pursuits. Effectively, therefore, a typical shifting cultivator household that has taken measures for transition will have two or three agricultural fields, one of which is under shifting cultivation, thus transforming their practice into a 'composite shifting cultivation system' (Rambo 2007).

Facilitating an inclusive transition: Potential approaches to avoid the pitfalls

As the preceding sections show, transition from shifting cultivation to settled agriculture as currently promoted has significant trade-offs, particularly for the poor and marginalised. In addition to their inability to adopt terrace cultivation for growing staples for reasons outlined above, there are other reasons the poor have difficulty in taking up plantation crops (principal among them being tenurial access), which increases their vulnerability to food and nutritional insecurity. The necessity to find approaches that can avoid the negative fallouts while ensuring a smoother transition to more settled systems is, therefore, obvious. Not too many examples are available that facilitate transition while avoiding the fallouts, but the following sections discuss a few promising approaches currently practiced that hold the potential for an all-inclusive solution, which ensures seasonal food availability and a year-long dietary diversity.

Home gardens : A simple, innovative solution for ensuring seasonal food availability and dietary diversity during transformation

A simple, but potentially promising solution to the issue of seasonal food availability during transition is homestead gardens developed by shifting cultivators of Chandigre, a village located in the buffer zone of the Nokrek Biosphere in the West Garo Hills, Meghalaya. They relocated many of the crops grown in shifting cultivation fields to these gardens – including cereals such as maize, leafy vegetables, legumes, varieties of gourds, spices, and tubers such as tapioca – and enriched the gardens with 'modern' crops such as tomatoes, peas, carrots, cabbages and cauliflower. On the margins and spread across the homestead, they introduced fruit trees and spices such as black pepper, bay leaves and cinnamon as well as several NTFPs from fallows, some of which have a high market demand (Barthakur Roy and Choudhury, unpublished). Although similar relocations from fallows to home gardens have been reported from Yunnan, China (Fu et al. 2003), the Chandigre example is unique in that the relocations combine crops from shifting cultivation fields and forest species from the fallows.

Taking a cue from the Chandigre home gardens , the North Eastern Region Community Resource Management Project (NERCORMP), supported by the Government of India and the International Fund for



Shifting cultivation allows a harvest of a wide variety of crops throughout the year

Agricultural Development (IFAD), promoted home gardens across its project districts in three states of NE India. NERCORMP promoted this approach with an initial outlay of about INR 500 per household (approximately 7 USD at present conversion rates) and the initiative proved to be a runaway success. Even after home consumption of the produce, returns per season from the initial investment on average were over 20 times the investment. Reports suggest that home gardens have not only helped in ensuring seasonal food availability but have improved household nutrition and incomes, contributing to the continuation of household dietary diversity. According to female household members, home gardens have helped reduce their drudgery and improved the health of household members. Complemented by animal husbandry and/or fishery, home gardens can thus be promising production systems that improve food availability, maintain dietary diversity and enhance income.

While home gardens may not eradicate the dependency on shifting cultivation, they set in motion the process of a gradual transition to a more settled form of agriculture. Interactions with farmers across the Eastern Himalayas – particularly, Northeast India – suggest that with more food crops brought into cultivation in home gardens, space can be freed up in the shifting cultivation fields for

growing either upland paddy or commercial crops (Choudhury et al. 2003). Although commodification of shifting cultivation fields could increase due to home gardens, that is not, necessarily, undesirable as, with careful facilitation, they could then be used to introduce commercially important tree crops, particularly spices, thereby making these fields gradually sedentarised while increasing the tree cover simultaneously. Such approaches have been reported from Baoshan, China, (Liang et al. 2009) and Sumatra, Indonesia (Suyanto and Otsuka, 2001; Hariyadi and Ticktin 2012) as well as elsewhere in Southeast Asia. Similar approaches can be adopted that promote permanent tree crops mixed with food crops along with commercially important herbs and shrubs as undergrowth, which also consciously include locally valued species of consumption and commercial importance, leading to a multi-tiered, multi-crop system providing a comparative advantage to the growers.

There is a need, therefore, to develop focused, dedicated programmes for promotion of home gardens and to lobby governments to formally recognize home gardens as an agricultural landuse category with funds specifically earmarked for their promotion and support. When doing so, programme designers should make efforts to keep the gender dimensions to food and nutrition in mind as

commercialization for enhancing incomes may not ensure nutritional security though it may ensure food security, thus potentially widening the gender divide by increasing the nutritional insecurity of pregnant and lactating mothers. Home gardens represent a unit where women can have control, and they should be empowered to take decisions on the choice of crops and perennial species to be introduced in the garden, thus offering an additional pathway for empowering women.

Conserving the multi-functionality of fallows: A participatory perspective on landuse planning

While Home gardens have proved to be a promising alternative system on many fronts, they cannot reproduce the multi-functionality of different-aged fallows and conserve the significant diversity in wild edibles, animal produce and other resources that upland communities depend upon for their food and nutritional needs. This requires promoting conservation and management at the landscape level while enhancing access to wild edible resources for food and nutrition. A successful implementation of the concept is evident in the uplands of Laos where the Agro-biodiversity Initiative (TABI) has introduced the participatory Forest and Landuse Planning and Management Approach (FALUPAM), which has improved both the management of and access to diverse food and nutritional resources available in the regenerating fallows and other forest systems. This has also positively impacted ecosystem services and holds promise for strengthening tenurial security (Rodericks 2018). Participatory Landuse Planning and Mapping is also being introduced through the IFAD-supported Fostering Climate Resilient Upland Farming Systems (FOCUS) project in India and those proposed under both the Eastern State Agribusiness Project (ESAP) and Western State Agribusiness Project (WSAP) in Myanmar. Careful study of these efforts could yield important insights on the role of innovation in ensuring seasonal food availability and dietary diversity.

Ensuring staples security: Encouraging women-managed village granaries

While home gardens and participatory landuse planning may ensure better resource management and improved access to diverse food resources, they

have limitations in ensuring staples security. In the uplands where arable land for staples cultivation is limited and constraints exist on irrigation, a practical approach is to strengthen staple procurement, storage, and distribution. A first step is to establish women's groups, federations and cooperatives and, once established, programme designers need to explore ways in which such community organisations can be effectively harnessed to set up village or cluster granaries as well as an institutional mechanism for the distribution of food grains linked to existing public distribution systems.

Community organizations will ensure that access to and affordability of staples are ensured for even the remotest of clusters. Finally, agricultural policy for the uplands must support upland crops that are recognised as nutritionally rich such as millet, buckwheat and other coarse grains with a strategy drawn up for ensuring a minimum support price. Steps should also be taken for their procurement and distribution under the public distribution system. These measures need to be linked as incentives for better management and conservation of natural resource systems in the uplands.

Primary considerations in designing programme and project interventions for transition

Ensuring seasonal food availability and dietary diversity during transition is challenging, requiring a multi-pronged approach. While few effective solutions to this challenge are available yet, programme designers and project implementers could formulate a viable strategy by combining elements from the three approaches discussed above, which complement each other, for the purpose of ensuring seasonal food availability and dietary diversity during and after transition. The key elements that need to be included in programme designs are summarised as recommendations in the box that follows

BOX 3

PRIMARY CONSIDERATIONS IN POLICY AND PROGRAMME DESIGNS FOR ENSURING SEASONAL FOOD AVAILABILITY AND DIETARY DIVERSITY DURING AND AFTER TRANSITION

- An essential component of all programmes aimed at transforming shifting cultivation must be home gardens (carrying traditional and locally valued cereals, vegetables, horticulture and spices, complimented with animal husbandry) with focused interventions to promote them and formal recognition granted to them as an agricultural landuse category. Adequate annual budgetary provisions in developmental planning must be allocated for their promotion.
- In addition to home gardens, every development programme aimed at facilitating transition must include mixed, multi-tiered plantations with intercropping as an essential component of projects to encourage, promote and maintain crop and dietary diversity. Crop selection should be based on topography and local suitability and must not be driven by market considerations alone. Choice of crops should be based on community consensus derived through participatory consultation processes and such mechanisms must be accorded high priority in programme design. Combination of crops, horticulture, spices and animal husbandry should be locally contextualized ensuring that these are culturally acceptable and build on community good practices. Consultations with local communities, particularly women, are vital during designing and before implementation of interventions. The project design should enable and support community resource persons in the selection, management and conservation of such resources.
- As home gardens alone will not ensure food and income security, development programmes must take steps to promote integrated farming systems where home gardens are an integral part of a comprehensive NRM plan. Settled agriculture options such as plantations should be designed to promote multi-tiered, mixed cropping (described in 2 above) allowing for sequential harvesting throughout the year, thus ensuring seasonal food availability, dietary diversity and resilience of the system. What must be avoided is reliance on a single crop (e.g., rice) or a few crops.
- A participatory perspective in landuse planning for each village should be an essential element of a programme or project intervention to earmark land for forests and catchment areas, fallows, permanent crops and shifting cultivation and to draw up management plans that also specifically spell out access and tenure arrangements to ensure gender and social inclusion.
- Village or cluster granaries managed by women's groups or their federations that are linked to the formal public distribution system of governments should be promoted for storage and distribution of food grains at the village or cluster level to ensure staple security. Projects should encourage governments to harness these organisations as essential extensions of the existing public distribution mechanism.
- Local crops, traditionally grown for their nutritional value, should be encouraged and included in the list of food grains/food items drawn up by the government for distribution through the public distribution system (PDS). Relevant government agencies should procure them from farmers for distribution through PDS, providing a minimum support price to farmers. Community organisations mentioned in above should be enlisted for procurement, storage and delivery of essential food grains at the village level.
- Action research on rainfed agricultural crops, particularly for selection of resilient varieties and for improving the productivity and yield of rainfed agricultural crops, must be made an important component of the development programme. Validation of traditional practices in crop, soil nutrient and water management should be important areas of research supported by such programmes as well as extensive scientific studies on the nutritional value of traditional crops and wild edibles.
- Based on such participatory action research, community seed banks and seed exchange mechanisms should be promoted and supported to establish a local seed access mechanism.
- Agencies must take complementary steps to raise awareness on nutritionally important indigenous crops and the importance of maintaining dietary diversity with village nutrition schools established as an implementation strategy.
- Capacity building and skill development for improved farming techniques, value addition and dietary diversification should accompany such interventions. These should then be synergised with value chain development efforts promoting 'niche' products and health food produce.



Tea replacing a shifting cultivation fallow. As cash crop plantations replace fallows, bringing about a permanent change in landcover, they disrupt the natural process of fallow rejuvenation and forest regeneration negating the land degradation neutrality process (Garo Hills, India)

CHAPTER 3

Safeguarding ecosystem services: Implications of transformations for land, forest and ecosystem services

Fuelled by market forces and policy action, the spread of settled agriculture as an alternative to shifting cultivation has been rapid and expansive across landscapes in South and Southeast Asia over the last decades (Fox et al. 2009; Mertz et al. 2009; van Vliet et al. 2012). This transition has not been without cost and the trade-off has been at the expense of regenerating fallows. As terraces, orchards and cash crop plantations replace fallows, they disrupt the natural process of land recuperation, eroding the capacity of the land to regenerate into forests leading to a drastic depletion in forest cover. This alarming reduction has long term implications for ecosystem services, particularly hydrology and carbon sequestration (Bruun et al. 2009; Ziegler et al. 2009).

Transition to settled agriculture: The social and ecological trade-offs

Several studies have indicated the high potential of young fallows in shifting cultivation for carbon uptake and sequestration (Kleinman et al. 1995; Tinker et al. 1996; Hashimoto et al. 2000; Albrecht and Kandji 2003; Bruun et al. 2009) suggesting that the fallows could act as C-sinks contributing to the mitigation of the global warming impacts of deforestation. Fearnside and Guimaraes (1996) opine that secondary forests derived from shifting cultivation grow faster and, hence, could sequester carbon at higher rates in the early years when young, thus offsetting the carbon lost at burning much faster making shifting cultivation

KEY ISSUE

Transition to settled agricultural systems has been at the expense of regenerating fallows resulting in a permanent change in land use and land cover and a drastic depletion of forest cover. Transitions also result in the depletion of agro-biodiversity and a wide range of wild edibles and animal produce with long-term implications for the food and nutritional security of shifting cultivators. As fallows get converted to settled agriculture both the land use and the land cover undergo a permanent change affecting ecosystem services. While shifting cultivation allows fallows to regenerate into secondary forests following a short cultivation phase, settled systems permanently erase the chances of such plots regenerating into forests affecting an irreversible change. For every hectare of shifting cultivation transformed to settled agriculture, a proportionate area of forests is lost permanently, negating the land degradation neutrality process inherent in shifting cultivation. This has serious implications for the provisional and regulatory services available in shifting cultivation landscapes with a significant reduction in biological diversity, hydrological services and the ability of such landscapes for sequestering carbon. The long-term ramifications for the sustenance of ecosystem services and, therefore, for global warming and climate change are only too obvious. It also defeats the very purpose for which the transition was introduced: arrest deforestation, increase forest cover and prevent environmental degradation. Programmes designed to facilitate transitions in shifting cultivation must therefore take measures to reverse the trend and to ensure the sustenance of ecosystem services while drawing lessons from community innovations available across the region.

landscapes net-sinks of carbon. Aryal and Choudhury (2015) argue that while fallow regeneration in shifting cultivation act as C-sinks, old-age, mature forests could be C-sources. This potential associated with the practice of fallow regeneration, which can help mitigate global warming and combat climate change, would be permanently erased with the replacement of fallows with settled agricultural systems.

The conversion of fallows also results in an irreversible change in the vegetal cover of the plot. While conversion to terraces permanently denudes the undergrowth and tree cover, conversion to plantations, which are predominantly monocultures or at best mix a few, result in a drastic depletion of the diversity of vegetation. This reduction in vegetal cover has serious long-term consequences for soil dynamics, soil carbon sequestration, nutrient cycling, and the hydrological regime of such systems. As litterfall (or leaf-fall) determines the efficacy of soil nutrient dynamics and influences moisture retention of soils, the depletion in vegetal diversity of plantations results in a reduction in the volume and diversity of leaf litter inputs to the soil. This reduction strongly influences the diversity of soil biota – soil micro-arthropods and microflora – and their functioning, affecting litter breakdown and, consequently, the quality of nutrient inputs to the soil and their subsequent availability for crop uptake influencing, thereby, the nutritional quality of crops. This adversely affects soil nutrient cycling, moisture retention, carbon sequestration and, hence, productivity of the plot and the quality of the ecosystem services it provides. In the long-term, this would be reflected in the deterioration of soil fertility and the water retention capacity of soils in such plantations.

Shifting cultivators and upland communities, as mentioned in previous chapters, harvest a substantial proportion of their food from regenerating fallows (Delang 2006; Rodericks, 2020). Among other resources are fuelwood, house-building material, medicinal plants, and fibre and dyes (Ducourtieux 2015). The conversion of fallows to permanent agricultural systems therefore carries far reaching implications not only for the food and nutritional security but also livelihoods of communities (Xu et al. 2009; Cramb et al. 2009; Rerkasem et al. 2009). Moreover, with significant erosion in the provisioning services (such as food, water and fuelwood) offered by fallows to the community, the drudgery for women



Shifting cultivation landscapes, with their mosaic of different aged fallows, could potentially act as carbon sinks, mitigating the impacts of global warming (Garo Hills, India)

is likely to increase who would now have to gather these from farther afield, adversely impacting their wellbeing. Thus, while replacement of shifting cultivation may increase income opportunities, it carries adverse long-term consequences for the environment and sustainability of ecosystem services, among them, carbon sequestration in both above- and below-ground biomass as well as soils (Hashimoto et al. 2000; Albrecht and Kandji, 2003; Bruun et al. 2009; Aryal and Choudhury, 2015). In turn, these severely restrict the local and national capacities to arrest global warming.

Safeguarding ecosystem services during transformation: The fundamental issues

Safeguarding ecosystem services needs a three-pronged approach – acknowledging the issues identified above, consideration of examples of good practice, and development of recommendations in light of the first two. Of paramount importance here is the worldview of shifting cultivators. Shifting cultivators perceive fallows as a source of several provisioning and regulatory ecosystem services. In addition to the services identified in the previous

chapter, they see water as ensuring the flow in streams that allows them to harbour fishes, crabs and snails (Delang 2006; Cramb et al. 2009; Rerkasem et al. 2009; Darlong 2019).

Two fundamental issues underpin the challenges arising from shortened cycles and depleting fallows. The first is the non-recognition of fallows as productive, regenerating arable land and a distinct landuse which over time develops into forests (Schmidt-Vog et al. 2009). Instead, the misleading classification of fallows as ‘abandoned’ or ‘wasteland’ expedites their conversion into plantations or non-agricultural use, permanently changing the landuse and land cover. The second issue, arising from the first, is how to safeguard the ecosystem services provided by fallows.

What then are the ‘good practices’ that provide insights into or examples of how to safeguard ecosystem services during (and after) transition? The following section discusses both traditional, community-based approaches as well as innovative ones developed by projects, elements from which can be incorporated into programme design to avoid the fallouts of transition.

Traditional fallow management practices, agro-forestry, forest gardens and community conserved areas

Safeguarding ecosystem services requires a twin approach targeted at the individual plot as well as the landscape in general. While approaches at the landscape level are primarily landuse and systems management interventions, those at the individual plot or field level are targeted towards better management of soil, moisture, and crops. There are several examples of good practices that can be replicated with adequate modifications to suit local contexts. Among them are traditional landscape management approaches practiced by several upland communities in Northeast India and elsewhere in Southeast Asia. Among those initiated by development projects are the Government of Nagaland and IDRC-supported Nagaland Environment Protection and Economic Development Project (NEPED); the Government of India- and IFAD-supported North Eastern Region Community Resource Management Project (NERCORMP); and the participatory Forest and Landuse Planning and Management Approach (FALUPAM) supported jointly by the Swiss Development and Cooperation Agency and the Government of Laos PDR.

Good practices supporting ecosystem services at the individual plot level include mixed cropping with a strong emphasis on legumes and cover crops and controlled weeding and heaping of weed biomass dispersed across the fields. They help to improve nutrients and moisture retention capacity of the soil as well as carbon sequestration. Organic matter is an essential ingredient in maintenance of soil health (and quality) and contributes to improved nutrient and moisture retention capacity of the soil. The weed heaps and the periodic decomposition of plant parts add to the soil organic matter providing the required environment for supporting soil biotic activities, thereby contributing to carbon sequestration by soil biota and the maintenance of soil quality.

The mulching of slashed biomass along contours practiced in 'yamkui', and fireless shifting cultivation among Tangkhuls of the Ukhru district, Manipur, are other examples of approaches to safeguard soil dynamics and ensure the continuance of ecosystem services (Singh 2009; Singh et al. forthcoming).

Another example of a traditional approach that safeguards ecosystem services at the individual plot level as well as the landscape level is the alder tree (*Alnus nepalensis*)-based agro-forestry system evolved over generations by the Angamis of Khonoma, Nagaland (Cairns 2007; Cairns et al. 2007).



Safeguarding ecosystem services at the plot and landscape level: Alder pollards in shifting cultivation fields (Nagaland, India)

The Alder's ability to fix nitrogen in association with a root microbe, which also contributes to phosphorus availability, makes the tree important for ensuring soil fertility. The alder trees are regularly pollarded to allow sufficient sunlight to penetrate the crops grown as undergrowth. Interestingly, contrary to standard practice, the Tangkhuls have a shifting cultivation phase of five to six years and this extended cultivation phase is made possible by the wide diversity of legumes cultivated complemented by alder trees.

A traditional good practice among upland communities in Northeast India that can form a basis for designing management approaches to ensure sustainable ecosystem services at the landscape level is earmarking certain forested areas as 'utility' forests, with regulated access to households to draw forest produce for household consumption. The Aos of Nagaland have forest patches called Sunu for such purposes (Amba Jamir, personal communication) while in Mizoram, villagers traditionally designate forested areas as 'ramhuai' or 'ngaw' and 'mauhak rezaps' with well laid out customary norms describing the access rights of households (J. Zorema, personal communication). A majority of the upland communities in Northeast India subscribe to such practices. The forested patches, by virtue of their diversity, also provide several regulatory services, particularly in regard to hydrology. Similar landscape management systems to ensure a sustained flow of ecosystem services, including hydrological services, through strictly managed catchment forests can be found among the Apatanis of Arunachal Pradesh (Kumar and Ramakrishnan 1990; Ramakrishnan 1992) and the Chakesangs of the Phek district of Nagaland (Agarwal and Narain 1995; FOCUS undated). Among the latter, furthermore, surface runoff from grazing land supplies water enriched with nutrients from animal dung to the rice terraces through intricate, gravity-based irrigation channels.

A good example of assisted regeneration of forest cover and restoration of ecosystem services that should be encouraged in other areas is that among Tangkhul farmers in Manipur's Ukhrul district in Northeast India. Here, farmers begin their fallow management practices at the commencement of vegetation clearing for shifting cultivation fields where they retain several plant species, either simply lopped or felled at waist height, when they slash the vegetation. Farmers also retain root stock and root stubs of several species to allow regeneration from

decomposing stumps. These retained species serve several utility purposes ranging from household needs to ecosystem restoration and they allow the fallow vegetation to regenerate and mature subsequently into secondary forests faster. A study conducted among the Tangkhuls of Manipur showed that a total of 71 species is retained at clearing (Singh 2009; Singh and Choudhury, 2015). Farmers also introduce certain species with ecological or economic value into their fields during the cultivation phase, thus enriching future fallows.

An innovative fallow management approach among farmers in Karbi Anglong in Northeast India is the introduction of broomgrass, bay leaves, cinnamon and local tree species in the fields prior to fallowing. Farmers harvest broomgrass in the first few years of fallowing, followed by bay leaves and cinnamon, allowing the plots to develop into agro-forestry plots in later years. They also cultivate pigeon pea (*Cajanus*) which, in addition to nitrogen-fixation, can be a protein source as green pods and a source of cash income as mature seeds. Some use it as a host for rearing lac which has good market value (Chakraborty and Choudhury forthcoming). A similar innovative practice among farmers in Indonesia and China has been the introduction of diverse cash crops. Among the Serampas in Sumatra, Indonesia, it is a mix of cinnamon and upland rice that is harvested sequentially with the system maturing to mixed cinnamon agro-forests. Some farmers add coffee to the mix (Hariyadi and Ticktin 2012). Elsewhere in Indonesia, shifting cultivators have introduced rubber in their early fallows, developing these into what has come to be known as 'rubber jungles'. The Damar agroforests of Krui are epitomes of such gardens, mimicking natural forests to near perfection (Michon et al. 2007). The mix of crops in China is different. In Baoshan province, China, shifting cultivators have developed 'relay cropping' of upland rice followed by rattan and bamboo, finally culminating in tree crops for timber (Liang et al. 2009). Among the Hani upland farmers of Yunnan, China, it is tea- and rattan-based fallow management (Xu 2007). Incorporation of rattan into fallows is also reported from among the Benuaq-Dayak of East Kalimantan, Indonesia (Sasaki 2007).

Other examples of innovative fallow management strategies developed by indigenous groups of shifting cultivators across the South and Southeast Asian landscapes are provided by Cairns and Garrity (1999), Burger et al. (2005) and Cairns (2007). The strategies

offer excellent templates for transformation even in areas with short cycled shifting cultivation. One such among the Dayak people of East Kalimantan, Indonesia is the practice of nurturing ‘forest gardens’ in their home gardens, forests and swidden fallows (Mulyoutami et al. 2009), where they tend a wide diversity of wild edibles, fruit trees and timber, sustainably harvested and managed over generations. Such approaches help in ensuring access to various bio-resources while conserving the biodiversity of the area.

Worthy of note among project innovations are the encouragement of shifting cultivators to add tree crops in their fields by Nagaland Environment Protection and Economic Development Project (NEPED), which introduces agro-forestry to the practice, and the introduction of horticultural species by NERCORMP in the fallows and community conserved areas. The enrichment of fallows with commodity crops in the context of short-cycled shifting cultivation, however, carries a risk as it could permanently change the land cover preventing forests from regenerating back. But others have used fallows for growing short-gestation horticultural crops, followed by perennial spices, thus effectively giving rise to agro-forestry systems.

The establishment of Community Conservation Areas (CCAs) in villages in the project districts of NERCORMP is an example of a project innovation that builds on traditional landuse practices across the northeast for addressing consumption needs or for ensuring the sustainability of water and other resources. NERCORMP has succeeded in setting up CCAs in around 1350 villages covering approximately 2000 km² to date. Called Catchment Reserves by the villagers, the ownership of CCAs lies with communities under the supervision of traditional institutions. NERCORMP has set up Natural Resource Management Groups (or NaRMGs) with rules and regulations for CCA management that are gender equitable. Communities have even come together to establish wildlife corridors to reduce crop depredation and human-wildlife conflicts. CCAs can be expanded to involve neighbouring villages so that inter-village CCAs can be set up. Examples of such CCAs are already found in parts of Myanmar (Erni 2021). With good principles of governance, CCAs can ensure inclusion of the poor and marginalized, equitable benefit sharing, and a socially acceptable and socially owned process. Such efforts are excellent pathways to conserve forests and safeguard ecosystem services.

Participatory Perspective Landuse Planning: An effective tool for fostering co-management of ecosystem services

Participatory Perspective Landuse Plans (PPLUPs) is an innovative approach to operationalise the concepts outlined above. They engage the community – including women – to map present and future landuse at the village level, clearly demarcating areas for settled agricultural use, shifting cultivation, settlements and utility, and reserve forests. The PPLUPs thus generated should be ratified by the relevant traditional and state authorities (particularly Revenue and Forests) so that any future allocation of land for settled agricultural purposes, including that by line departments such as Agriculture, Horticulture and Soil Conservation as well as agencies promoting cash crops, would be strictly confined to areas earmarked for such purposes in the PPLUP. In fact, PPLUPs should be mandated for all rural development activities so as to place the safeguarding of ecosystem services at the centre of all such initiatives. The uplands of Laos PDR offer an example of participatory landuse planning through the participatory Forest and Landuse Planning and Management Approach (FALUPAM). Field appraisals suggest that the approach is widely appreciated by the community as well as the government agencies and is an effective approach to managing natural resources while safeguarding ecosystem services.

Participatory landuse planning is in the process of being introduced in the states of Nagaland and Mizoram and is planned for introduction in Shan and Chin states of Myanmar through IFAD-funded projects, namely, the Fostering Climate Resilient Upland Farming Systems (FOCUS) and Eastern State Agribusiness Project and Western State Agribusiness Project, respectively. These projects would do well to learn from the numerous examples of community managed resource conservation in practice and develop approaches that would help streamline land-based activities and facilitate the smooth transition of shifting cultivation to settled practices while minimizing the adverse impacts of transformation outlined above.

Several studies have investigated the effectiveness of the traditional and modern methods for ecosystem conservation and resource management described above. A study by Porter-Bolland et al.



Participatory perspective landuse planning is an effective tool for co-managing the conservation of natural resources and ecosystem services (Garo Hills, India)

(2011) found community-managed forests to be effective in reducing deforestation and safeguarding ecosystem services. In their study based on a CIFOR-implemented initiative in Indonesia, Wollenberg et al. (2009) recommends co-management of resources involving the community and government to foster effective forest resource management. Such approaches would pave the way for introducing Payment for Ecosystem Services (PES) mechanisms, in turn, incentivising community-managed resource management and landuse practices. Programme designs would do well to incorporate such approaches to ensure sustenance of ecosystem services.

Essential elements in designing programme and project interventions for transition

Programmes and projects that seek to facilitate transition of shifting cultivation to resilient farming systems need to incorporate effective landuse planning that lead to land zonation in designing project components and preparing implementation strategies. Three basic principles that need to be recognised as fundamental for safeguarding ecosystem services are listed below:

- (i) Recognition of fallows as regenerating arable land, not as abandoned wasteland, that are a distinct landuse and an integral part of the larger landscape critical for the continuity of ecosystem services. Programme designers and project implementers should therefore exercise caution in decisions to convert fallows into agricultural landuse in order to avoid the pitfall of second-generation issues;
- (ii) Avoid approaching the conversion of fallows to plantations solely from an economic point of view as that would permanently disrupt or erode the ecosystem services provided by fallows. There is a need for economic models that do not compromise but safeguard the ecosystem services provided by fallows;
- (iii) Build on the local knowledge of shifting cultivators for co-designing and co-developing landscape level resource management approaches that facilitate transitions harnessing local high value resources while simultaneously safeguarding ecosystem provisioning and regulatory services.

Keeping the above principles in mind, programme designers and implementers should consider the recommendations given in the following box during the design phase as well as the development of implementation strategies.

BOX 4

PRIMARY CONSIDERATIONS FOR INCLUSION IN POLICY AND PROGRAMME DESIGNS FOR SAFEGUARDING ECOSYSTEM SERVICES DURING AND AFTER TRANSITION

- Incorporating Participatory Perspective Landuse Planning and Mapping as an integral part of project implementation, ensuring that catchment forests, utility forests and other traditionally recognised systems are strictly conserved and kept out of the purview of conversion to agricultural landuse, including shifting cultivation. PPLUPM should be mandated as a prerequisite in each project village before proposals for establishment of plantations or other settled agricultural activities are approved. The PPLUPM, ratified by the villagers and the relevant authorities, should be effective proof of a Free and Prior Informed Consent process and should be strictly adhered to by all departments promoting land-based agricultural development programmes with no concessions granted under any circumstance.
- Factoring into the design gender-responsive participatory perspective landuse planning at the village/cluster level involving communities. PPLUPs should clearly demarcate different landuses (ongoing and planned), including those for conservation and safeguarding of ecosystem services, particularly hydrological services. This should be recognized by all concerned departments, particularly those dealing with revenue, landuse and forest management.
- Supporting the establishment and expansion of Community Conserved Areas and utility forests that build on traditional practices of fallow management and access frameworks of forest management, to safeguard forest cover and ecosystem services, drawing lessons from traditional CCA management regimes such as those in NE India and SE Asia.
- Introducing a Payment for Ecosystem Services (PES) model based on traditional community-based PES arrangements to incentivise the establishment and expansion of Community Conserved Areas and utility forests as they would promote community-led conservation of fallow forest resources and safeguarding of ecosystem services.
- Obtaining free and prior informed consent of the concerned community/village for all development interventions requiring conversion of fallows to other agricultural landuse. In addition, local/traditional resource governance mechanisms should be strengthened to prevent elite capture and privatization of fallow lands while promoting cash crop plantations.
- Encouraging multi-tiered mixed crop plantations, composed of species with staggered gestation periods, so that households are able to sequentially harvest produce that give them an early return. Emphasis must be put on shortening the gestation period of plantations or in ensuring sequential harvesting.
- Introducing local tree species with recognised ecological functions and value as essential components in mixed plantations to establish a balance between ecologically and economically important species. The concept of 'Forest Gardens' that promote sustainable management and harvesting of wild edibles and forest produce from fallows should be introduced while simultaneously fostering community management of fallows and forested areas. This should be complemented with 'Tree Farming' concepts that will nurture agro-forestry and sustainable forestry practices. Strategies should be designed for the gradual establishment of agro-forestry systems and the promotion of 'farm forestry'.
- Introducing improved soil and crop management practices blending traditional practices with modern scientific approaches at the plot level as an essential component of project intervention to ensure soil health and ecosystem services accruing from soil dynamics.
- Developing indicators based on the desired outcomes as essential elements of the Result-based Monitoring Framework.



Conversion of arable land to terraces are at the expense of fallows and lead to de facto privatization of commons (Phonsaly, Laos PDR)

CHAPTER 4

Transformations and their implication for tenurial access frameworks: Ensuring tenurial security during and after transitions

Lessons from poverty alleviation programmes across continents suggest that security of tenure is an essential requisite for alleviating household poverty. A secure tenure lays the required pre-condition for investment in land enhancing its capability to increase productivity and, thereby, returns and income to the household. Land tenure and governance are considered ‘game changers in sustainable development’ and ‘key catalysts for multiple benefits in poverty eradication, food security and nutrition’ (IFAD 2020). This is a perception widely shared by and forms an important strategic objective of many development agencies and international funding agencies. Land tenure security is an important factor in peoples’ ability to invest in land and natural

resource management and for achieving equitable access to these resources (IFAD 2020). In ‘combination with ... social inclusion and cohesion,’ land tenure is ‘a major contributor to climate change resilience’ (IFAD 2020). Growing recognition of the centrality of tenure security for sustainable development has led governments to endorse the Voluntary Guidelines on Responsible Governance on Tenure of Land, Fisheries and Forests in the context of Food Security by the Committee on World Food Security (FAO 2012). Recognising that land tenure for the rural poor is key to delivering Sustainable Development Goals 1 and 2 for eradicating poverty and hunger, specific targets have been designed for both the SDGs as well as for SDG 5 that form the framework for attaining Agenda 2030 (IFAD 2020).

KEY ISSUE

Shifting cultivation is a rotational agriculture and forest management practice having a short cultivation phase followed by a long fallow that allows the regeneration of secondary forests resulting in a sequential dual landuse on the same plot of land. Shifting cultivation is managed and governed by customary tenurial arrangements that work on the basic principle of universal access to land and resources – in other words, within a Common Property framework. The lack of awareness of the practice and the customary norms governing this indigenous farming system has resulted in fallow plots being perceived as abandoned, wasteland, unstocked land or unclassed forest land, free of tenurial encumbrances and open to conversion as plantations. In their effort to ‘stabilise’ and transform shifting cultivation, development planners and policy makers have consistently promoted settled agricultural systems to replace shifting cultivation, unaware of (or overlooking) the fact that settled systems introduce a de facto Private Property arrangement contradicting the Common Property framework under which the practice functions. This contradiction results in a breakdown of customary land tenurial arrangements and dilutes the functioning of traditional institutions governing customary land management. In some countries, regenerating fallows have been assumed to be vacant or virgin land having no tenurial encumbrances and therefore open for state appropriation and subsequent allotment to private investors for agricultural development, mining, or other purposes. This has resulted in shifting cultivators being deprived of their access rights, rendering them landless and illegal occupants in their own land. In all cases, transition to settled agriculture has resulted in tenurial insecurity for the poor depriving them of access to land and other resources, impoverishing them in the process. Programmes facilitating transformations need to be better informed about customary norms governing access to land and resources and take sufficient care not to compromise or contravene tenurial arrangements when facilitating transitions.

Poverty alleviation programmes have invariably included interventions promoting settled agriculture with the assumption that this will pave the way to gradually vesting land ownership with the beneficiaries and provide them security of tenure. While this holds true for Private Property Regimes, the same cannot be said of land governance systems functioning under a Common Property Regime or following principles of Common Property, as is the case among shifting cultivation systems practised in most of South and Southeast Asia.

According to IFAD, while formal land titling is important, it is also important to ‘promote the recognition of group and customary tenure systems in ways that work for the poor’ as ‘land tenure systems of indigenous and tribal people are either only partially recognised by governments and legal systems or not recognised at all. Challenges specific to these people include a lack of recognition of their customs and traditional concepts of territory, especially for pastoralists, shifting cultivator communities and hunter-gathers’ (IFAD 2020). IFAD’s policy on tenure, therefore, unambiguously states that ‘... land tenure systems are critical in determining who benefits and who loses from programmes and projects. A full understanding of these systems is thus a pre-requisite for designing effectively targeted programmes and projects ...’ (IFAD 2008). Development programmes in shifting cultivation areas have had mixed results in so far as security of land tenure is concerned, with the poor and marginalised often deprived of benefits rendering them more vulnerable than they hitherto were under customary arrangements. If the SDG goals on poverty and hunger are to be attained, concerted efforts must be made to arrest this trend.

How does settled agriculture compromise security of tenure among shifting cultivators?

Settled agriculture has been designed to ‘stabilise’ (or replace) shifting cultivation so as to stimulate agricultural development for alleviation of poverty and facilitation of tenure security but these remain elusive targets to date. The reason is lack of awareness among policy makers, programme designers and implementers about customary tenurial arrangements leading to undermining of universal tenurial security with the introduction of settled systems and the Private Property framework. In some countries, entire



Largescale commercial agriculture encroaches shifting cultivation fallows depriving upland communities of tenurial rights on ancestral territories (Laos PDR)

upland shifting cultivator communities have been denied access to their ancestral territories, rendering them illegal occupants in their own land. Adequate attention to customary tenurial arrangements could have avoided such unfortunate situations.

Conversion of arable land for wet rice cultivation and cash crop plantations is invariably at the expense of shifting cultivation fallows as they are *de facto* privatized. Customary laws allow tenurial rights to community land as long as such land is under cultivation. It reverts back to the common resource pool only if the family declines or is unable to use it and keeps the land unattended for more than a certain period (Choudhury et al. 2003; Choudhury 2006). However, when rice terraces or plantations are established, community rights cease to exist over the land if it is under cultivation. In many countries, legal provisions under different state legislations provide for the registration and titling of such land. Thus, households holding terraces and/or plantations can attain legal ownership even if the parcel of land had been originally considered common property. The legal title allows the owners, if they so desire, to even sell the land, thus moving the land out of a Common Property framework into that of a Private Property Regime. Such changes gradually contribute to the

breakdown of customary tenurial arrangements, encouraging eventually the elite capture of the commons. The acuteness of the issue in some areas of the region is evident in new owners auctioning annual access to wet terraces to the highest bidder, thus effectively depriving the poor of access to terraces for cultivation (Choudhury 2012). Terraces and plantations established on fallows (which, in effect, are community land) reduce the total area available for use under a common property regime. This especially affects households belonging to clans that are late entrants to the village. Universal access to land enjoyed under the customary access arrangements is thus disrupted, depriving many households of their rights to land and customary entitlements, impoverishing them in the process.

There are other subtle means by which the transit of poor and marginal households to settled systems is hindered. For households to access the support provided by government programmes for transition to settled agriculture or access credit to help them invest in such options, a 'No Objection' certificate from the village authority is mandatory. In many cases, this has been denied to poor and marginalised families, particularly those that are female-headed or aged and have few or no able-bodied male members,

on the pretext that such households lack the labour force and capability required for managing terraces or plantations. Such households have no option but to continue with shifting cultivation. In contrast, the better-off families and those with sufficient labour become beneficiaries of schemes supporting settled agricultural alternatives, often increasing the area brought under terraces or plantations at the cost of the deprived households. Instances are also known when the rich buy off the rights from the poor for paltry sums as has happened among the Serampas in Indonesia (Hariyadi and Ticktin 2012). This has resulted in economic disparities and the emergence of elites and landless in societies which were previously egalitarian in resource access. The poor, therefore, view transformations as a process that increasingly marginalizes their cultivation practice and diminishes the productivity of their fields, thus depriving them of their entitlement for equitable access to land and a livelihood. In some societies such as those in Kerinci, Sumatra, the transformations affect age-old traditions, replacing matrilineal inheritance with a dual inheritance system benefiting both daughters and sons and, in some cases, with a patrilineal system (Suyanto and Otsuka 2001). Female dispossession is seen among the Garos of Meghalaya, too, where traditionally women had been custodians of the land. As transformations progress, the proportion of the deprived – and the consequent disparity - will likely increase, giving rise to a growing proportion of ‘tomorrows’ poor’, unless development programmes adopt radically different paths.

Land governance legislation to foster largescale investment in agriculture, too, adversely affects tenurial security in several countries in the region. In the absence of formal recognition of traditional rights to such land, governments in several countries have been allocating large tracts of shifting cultivation fallows to elites, corporates or their associates often as concessions for setting up or expanding plantations for agribusiness, stripping the traditional shifting cultivators of their rights to their ancestral land in the process. A case in point is Myanmar, which enacted the Vacant Fallow and Virgin (VFV) Lands Act and the Farmland Law in March 2012 (with an amendment to the former in 2019). While the VFV Land Act paved the way for allocation of vacant, fallow or virgin (VFV) land to rich individual investors and government entities or domestic and overseas corporates for commercial agriculture, mining, hydropower installations and related purposes, the Farmland

Act put in place a mechanism designed to secure the tenure of farmland through a landuse certificate and registration system, conferring property rights to sell, exchange, access credit, inherit or lease. The twin legislations have exacerbated land confiscations leading to expropriation and displacement of existing users, particularly smallholders practicing shifting cultivation (Thein et al. 2018). This negative fallout is primarily a direct consequence of an extremely narrow definition of what constitutes ‘farmlands’ under the Farmland Act that fails to encompass upland production systems such as shifting cultivation and rotational agriculture, rendering these lands ineligible for the issuance of Land Use Certificates.

Agricultural lands in the uplands of Myanmar are predominantly under shifting cultivation operated within customary tenure arrangements, with temporary fields that shift annually or every two years leaving the previously cultivated fields fallow for gradual regeneration into forests. Policy makers have found this dual landuse difficult to comprehend and it has given rise to the ambiguity of land governance in the uplands. As they mature and regenerate into woodlands or secondary forests, the same lands are perceived as forest land belonging to the state and assumed to be free of tenurial encumbrances and, hence, legally coming under vacant wastelands. This alienates customary land rights holders from their ancestral lands which are subjected to appropriation for subsequent award of agricultural or mining concessions, thus depriving the upland farmers of their ancestral rights and rendering them illegal occupants in their own land (ICIMOD, forthcoming). The tenurial complexity arising from the limitation of definitions, the lack of understanding of customary arrangements, and the poor handling of the issue has not only resulted in deprivation of land rights for upland and ethnic nationalities and made them illegal occupants in their own land, but on some occasions turned them into wage labourers in the new plantations set up in what were hitherto their ancestral land for generations (Ewers 2019).

Promising approaches by projects and communities promoting security of tenure for the poor

For governments and development agencies working for the upliftment of shifting cultivators, the fundamental challenge is ensuring security of tenure and customary rights for the poor and



Participatory landuse planning can provide potential solutions to challenges in harmonizing settled agricultural practices with customary tenure arrangements (Garo Hills, Meghalaya)

marginalised while facilitating transition to settled agriculture. Although successes are not plentiful, a few notable examples can be found that have succeeded in balancing agricultural transformations with tenurial security. These range from specific interventions designed to ensure secure tenure for the poor to community-led innovations harmonising settled agricultural systems with customary tenurial arrangements.

One such approach is home gardens that individual households have built on to create 'extended home gardens' producing high value cropping that also ensure tenurial security. Another is collective plantations managed by Self Help Groups (SHG) introduced by NERCORMP where land ownership remains with the traditional village authority while collective user rights are accorded to the concerned SHG. Despite initial challenges relating to labour arrangements and benefit sharing, it has allowed members to transit partially to a settled agriculture option without upsetting customary ownership arrangements. Community Land Banks based on traditional practices where plots are earmarked

for different landuses is an innovation introduced by NERCORMP promoting wet terraces. Aimed at uplifting the poor by earmarking 80% of the 'collective terraces' for the poor on a cost-sharing basis, the project initially faced attempts at privatization and elite capture, which are now resolved. The Meghalaya Livelihood Improvement Project funded by IFAD has come up with a refined Land Bank concept which is more inclusive.

A community-led approach that harmonises settled agricultural options with customary tenurial arrangements has been initiated in Mopungchuket village in Nagaland, India, which has seen a rise in unutilised land due to families moving out of the village for various reasons. The Village Council has demarcated such land near roads for cash crops and plantations and makes them available to any member who wants to take up cash crops following a consultative process and adhering to customary tenure norms (Amba Jamir, personal communication). The Mopungchuket model is worthy of emulation and needs to be assessed for incorporation into

policy at the larger level. Since any village practising shifting cultivation will have several parcels of land that are used for the practice at any given point in time, as in Mopungchuket, the villagers can earmark one or two parcels (or more, if the fallow cycle is over ten to fifteen years) which are easily accessible and nearer roads for promoting settled agricultural pursuits. Allocation of plots, or access to plots within these parcels should be on the same arrangements as traditionally followed for shifting cultivation. Such an approach can facilitate transition that is inclusive while ensuring security of tenure to the households and prevent, thereby, the transformation of common property resource management to private property regimes.

Buttressed by participatory landuse mapping and participatory Forest and Landuse Planning and Management Approach (FALUPAM), discussed in previous sections, the model can provide a potential solution to the challenges in harmonising settled agricultural practices with traditional land tenure arrangements. The maps capture the extent of ancestral territories as well as traditional landuse practised on such territories, thus providing evidence for claims of ancestral landuse on such land. The CIFOR experience reported by Wollenberg et al. (2009) suggests that a participatory approach can pave the way for harmonising customary tenurial arrangements with statutory frameworks. Ratification of such maps by the concerned authorities can provide interim recognition of these rights until such time as formal legal recognition and protection of rights are granted through relevant land reform legislations.

Promising approaches to protecting customary security of tenure within statutory frameworks: Examples

The dispossession of the Serampas in Indonesia of customary rights over their ancestral territories, rendering them illegal occupants on their own land, due to the establishment of the Kerinci Seblat National Park in 1999 is a case in point. An initial compromise worked out after protracted negotiations was to allow the communities to carry out agricultural activities provided they respected and adhered to the forest regulations. But a recent Presidential Decree restoring and protecting ancestral rights of ethnic communities has paved the way for recognition of community ownership and management rights for all indigenous peoples.

In Myanmar, the Government has introduced the National Landuse Policy (NLUP) to remove the inconsistencies and injustices resultant from the VFV Land Act and the Farmland Act and formally recognise customary land tenure arrangements under which shifting cultivation and rotational agriculture function. While the development of a National Land Law based on the NLUP is ongoing, the challenge remains harmonization of customary tenure arrangements with statutory frameworks (ICIMOD, forthcoming).

While some countries in South and Southeast Asia, including India, have enacted legislation recognising customary tenure arrangements, Cambodia's Land Law of 2001 and sub-decree enacted in 2009 offers the most unambiguous legislation pertaining to the subject. It provides for collective ownership and immovable property of indigenous communities; defines who is recognized as indigenous; and qualifies which land is eligible for collective ownership and management by traditional institutions under customary laws. Most importantly, it spells out clearly that traditional agricultural land includes not only land that is currently under cultivation but also that which is deemed necessary for shifting cultivation, thus bringing shifting cultivation fallows under the ambit of the Article. The Law allows the concerned village to develop its statutes and apply to the Ministry of Interior for recognition of its status as a legal entity. Once recognized as a legal entity and collective ownership is accorded, the Ministry of Land Management surveys the land and its boundaries and produces a cadastral index map which gives legal recognition to the boundaries of the ancestral land. This also results in the codification of the village's Internal Rules that articulate the village's customary tenure by the authorities. The mapping pre-empts the threat of encroachment by outsiders and, hence, protects the rights and tenurial security of members for posterity.

Combined with participatory landuse planning, cadastral mapping can cut down on the time and effort required for such exercises and reduce disagreements. Cambodia's Land Law thus provides an excellent template for adoption by other countries to follow in formulating strategies that can safeguard community tenurial arrangements while transitioning to alternative agricultural options. Although programmes and projects on their own cannot draft necessary legislation, they can include advocacy and policy engagement interventions to influence the formulation of legal instruments where required.



A recently fallowed shifting cultivation field (Laos PDR). The classification of such fields as ‘abandoned’ or ‘vacant wastelands’ expedites their conversion to plantations, resulting in a permanent change in landuse and landcover, reducing forest cover and adversely impacting the tenurial rights of the shifting cultivator

Primary considerations in designing programme and project interventions for safeguarding security of tenure during and after transition

Three important considerations that policy makers and programme designers must keep in mind when attempting to harmonise customary tenure with statutory provisions and a fourth specifically pertaining to transitions are as follows:

- The ancestral collective rights of communities over their shifting cultivation land must be recognized and registered as customary land, irrespective of whether these lands are under cultivation currently, lying fallow, or have regenerated into woodlands and forests. This recognition should include rights over all land parcels and respect, especially, the fallow period practiced.
- Interventions to facilitate settled agriculture should similarly recognize existing customary tenurial arrangements irrespective of the current condition of the land. This recognition means that the present condition of the plot should not

be grounds to alienate households from their ancestral tenurial rights.

- Fallow lands should not be deemed vacant or wastelands but recognized and registered as regenerating arable land the appropriation of which for other uses would not only negatively impact tenurial rights and shifting cultivation but potentially contribute to a reduction in forest cover, thus negatively impacting the ecosystem services provided by them.
- Decisions relating to any significant conversions in landuse should, firstly, be done by the present users of the plot with, preferably, accompanying measures for intensifying landuse and ensuring sustainable land management. Secondly, conversion to settled practices should only be done following consensus at the village level applying the principle of “free, prior and informed consent”.

The recommendations for facilitating transition to settled agriculture, listed in the accompanying box, keep the above principles centrestage. A companion box provides recommendations for consideration at the operational level by project implementers.

BOX 5

PRIMARY CONSIDERATIONS FOR INCLUSION IN POLICY AND PROGRAMMES DESIGNS FOR ENSURING SECURITY OF TENURE TO LAND AND RESOURCES DURING AND AFTER TRANSITION

- While facilitating agricultural transitions, care must be taken to safeguard Common Property arrangements so that interventions do not dilute, erode or replace them with Private Property regimes.
- Traditional shifting cultivation areas should be mapped and access and tenurial rights formally recognised to safeguard the user rights of indigenous communities to their ancestral land.
- Elite capture and privatization of fallow lands should be prevented while promoting cash crop plantations by empowering local/traditional governance mechanisms and introducing safeguards where necessary to protect the rights and entitlements of the poor, marginalised and women.
- Internal rules of access and tenure, based on customary norms, should be formally recognised and registered where necessary to pre-empt alienation of land from community members and award of concessions to outsiders and to guarantee access and tenurial rights for all households within a village.
- Community land banks should be established to guarantee access and tenurial rights of the poor and marginalised.
- Constitutional protection of such rights (and practices) where they exist must not be compromised because of project interventions. Where they do not exist, programmes and projects should include advocacy and policy engagement to facilitate formal recognition and protection of customary tenurial rights and practices.
- Programme components should be introduced that empower communities to partake in policy engagements to develop formal legislation for recognition and registration (where necessary) of traditional shifting cultivation landuse, including shifting cultivation fallows (as in Cambodia's Land Law, 2001).
- Mechanisms to reduce multi-agency governance of shifting cultivation lands must be introduced and efforts made to streamline convergence and synergies between the different agencies.

PRIMARY CONSIDERATIONS FOR POLICY AND PROGRAMME DESIGNS AT THE OPERATIONAL LEVEL WHEN DEVELOPING IMPLEMENTATION STRATEGIES TO ENSURE SECURITY OF TENURE TO LAND AND RESOURCES DURING AND AFTER TRANSITION

- Participatory Perspective Landuse planning should be adopted at each village level to clearly demarcate areas for agricultural use, plantations, and forest conservation now and in future. Once formally endorsed by the village institution and the revenue and forest authorities, no exceptions should be permitted unless agreed to by the villagers and all concerned authorities. Ideally, the village

should initiate designation of parcels from their shifting cultivation land for conversion but such decisions should adhere to traditional access practices to ensure the inclusion of the poor and marginalised in such ventures.

- Internal rules for access and tenure within each village, based on customary rights, should be formally recognised and the traditional institution or community institutions should be formally recognised as the legal entity for land governance.
- Project interventions must consciously ensure that individual tenurial rights of a household or family are governed as per customary tenurial arrangements in practice within the community, which should be managed by the Village Authority (TVA) or Village Society (RVS) to retain the flexibility inherent in customary tenurial arrangements. The project implementers must ensure that the TVA or RVS codify such rights of each household and family belonging to the village in every parcel of shifting cultivation land, giving details of location and register this information as a Statute or Internal Rules with the relevant authorities. Changes in rights of a household should be discussed and ratified at a meeting involving all households called by the Village Authority or Village Society, as the case may be, with due intimation to concerned agencies of the modification in rules. Awarding collective owners this recognition and responsibility will help harmonise traditional customary tenurial norms while bringing them under the ambit of the statutory framework through registration of such rights.
- Recognising that transition to settled agriculture, i.e., predominantly commercial cropping, has become a regular feature in many areas, the project implementers should facilitate an institutional mechanism that regularly encourages the Village Authority or Society, as the case may be, through a general meeting involving all households and families, to adopt a resolution to retain collective ownership of the land that has been transformed to permanent crops and prevent the privatization of shifting cultivation land. As provided in most customary tenurial arrangements, tenurial rights to the land should be recognized and awarded to the family or household, and remain inheritable, as long as the family or household continues with cultivation of the permanent crop but should revert to the community if the household ceases to continue cultivation. This would prevent conversion to private ownership or elite capture while providing the necessary tenure security for long term investment to smallholder farmers in the community who wish to undertake commercial production. The Village Statute or Internal Rules should duly record the award of such rights, with the relevant authorities duly apprised.
- Land Banks should be introduced to assure access and tenurial rights, on a long-term basis and inheritable, to poor and marginalised households, thereby ensuring equal opportunities for the poor in the transition process.
- Joint ownership of the wife and husband of a household should be formally recognized and registered, with such rights for widows or female-headed households especially ensured.
- Mechanisms must be introduced to reduce multi-agency governance of shifting cultivation lands and efforts made to streamline convergence and synergies between the different agencies.



Home gardens can strengthen household nutritional security and may supplement income as surplus produce can be sold locally (Kachin, Myanmar)

CHAPTER 5

Transforming shifting cultivation systems: A suggested framework for facilitating transitions and concluding thoughts

Despite concerted efforts and substantial financial outlays by governments and development programmes to replace shifting cultivation, the practice persists in many parts of South and Southeast Asia even today. Its persistence, however, does not imply that transitions have not taken place. Numerous studies across the region suggest that shifting cultivators have been adjusting their livelihood and landuse systems to make use of new opportunities offered by settled agricultural practices and expanding market integration (Erni 2015), giving rise to a ‘dual or composite economy’ where shifting-cultivation-based food production for consumption is combined with cultivation of cash

crops (Dove 1998, 2011, cited in Erni 2015) resulting in ‘composite swidden agro-systems’ (Rambo 2007). If settled agriculture is being adopted, why does shifting cultivation persist? The answer requires an empathetic understanding of the ‘why’ as it is key to scaling transition. Leduc and Choudhury (2012) suggest that limited access to markets and support programmes coupled with a lack of appropriate technical options underlie its persistence. A more fundamental reason, as indicated in previous chapters, is the drastic reduction in seasonal food availability and food security – particularly staples security – during and after transition. Concerns about food security coupled with the lack of market linkages

KEY MESSAGE

Recognising that present-day shifting cultivation has undergone irreversible distortions and needs to adapt to community aspirations for change, the approaches we suggest accommodate pathways to blended systems for agricultural transformation as desired by communities and governments while retaining the strengths of the traditional practice and safeguarding resource management, ecosystem services and security of tenure associated with it.

This concluding chapter therefore, outlines an approach for designing programmes and an implementation strategy that could facilitate transition of shifting cultivation to composite systems in a more inclusive manner, enhancing resilience of farming systems and communities in the process, while minimising the negative trade-offs and avoiding the second-generation issues identified in the previous chapters.

and the uncertainty of returns due to market fluctuations make shifting cultivators continue with the practice despite gradual adoption of settled agriculture. Policies and programmes aimed at transiting from one to the other should, therefore, include focused interventions addressing these factors.

As shifting cultivation cannot be replaced overnight, programmes need to learn from community initiatives on transition and accept the co-existence of traditional farming systems with market-oriented, sedentary systems till such time that communities are ready to transit completely to settled agricultural systems or develop a blend of both. Programmes need to recognise that as aspirations increase among upland communities, particularly the youth, and new needs emerge such as education and health, development approaches must ensure growth resulting in an increased per capita productivity and income per unit of land. Thus, they need to adopt a holistic, long-term perspective, addressing issues such as productivity enhancement, access to markets, and appropriate technology and credit, and take steps to enhance capacities and empower communities, all packaged in a programmatic mode based on the principle of sustained engagements, rather than the short-term project interventions practised presently, to bring about an inclusive rural transformation.

A long-term strategy, with a clear roadmap and well-identified milestones to monitor progress and quickly respond to challenges while simultaneously safeguarding food and nutritional security, sustenance of ecosystem services and security of tenure has become imperative. This is especially so as international agencies such as FAO and some countries have revised their outlook towards the practice, clearly expressing interest in effecting a transformative change. Among such countries are India (FAO, IWGIA and AIPP 2015; NITI Aayog 2018), Laos PDR (ICIMOD, in preparation) and Myanmar (ICIMOD, forthcoming). This concluding chapter will, therefore, outline an approach for designing programmes and an implementation strategy that could facilitate transition of shifting cultivation to composite systems in a more inclusive manner, enhancing resilience of farming systems and communities in the process, while minimising the negative trade-offs and avoiding the second-generation issues identified in the previous chapters.

Transforming shifting cultivation to settled agricultural systems: A potential approach and operational framework

A common misconception about shifting cultivation assumes that its short, temporary cultivation phase requires shifting from plot to plot resulting in deforestation and that replacement of shifting agriculture with settled agriculture would prevent it. The previous chapters make it amply clear that this is far from the case. Nevertheless, recognising that present-day shifting cultivation has undergone irreversible distortions and needs to adapt to community aspirations for change, the approaches suggested below accommodate pathways to blended systems for purposes of agricultural transformation as desired by communities and governments while retaining the strengths of the traditional practice and safeguarding resource management, ecosystem services and security of tenure associated with it.

The first step in a strategy to facilitate transition requires the prolongation of the cultivation phase of shifting cultivation from one or two years to more than two. If cultivation is prolonged, it would allow semi-sedentarisation, making the shifting cultivator remain in the same plot for more than the usual period and, with productivity maintained to afford satisfactory yields, encourage the farmer to consider further continuation and gradually move towards sedentarisation. This would also add additional years for rejuvenation to regenerating fallows, thus strengthening the process of forest regeneration and recovery. Projects and programmes should therefore aim at prolongation of the cultivation phase as the first milestone in facilitating transition and design interventions to meet this objective.

How can the cultivation phase in shifting cultivation be prolonged?

The 'two-year plus' shifting cultivation practised by Tangkhuls in some parts of the Ukhrul district of Manipur offers useful lessons, where the cultivation phase lasts at least four to five years with farmers shifting to new plots thereafter. According to the farmers, their reason for moving is not soil fertility but uncontrollable weeds. Mixed cropping dominates this form of cultivation with a large diversity of legumes, a low dominance of cereals, including paddy, traditional

weed management practices and the presence of nitrogen-fixing trees interspersed in the fields to, probably, provide the necessary soil conditions that allow a longer cultivation phase (Singh 2009). The fireless shifting cultivation or 'yamkui' practised in a few villages in Ukhrul is another. As in two-year plus, the cultivation phase is four or five years and the crop combination mimics that of the former except in the first year. However, the farmers do not burn the slashed vegetation but mulch in biomass in contour bunds which subsequently serve as nutrient banks as the vegetation decomposes and slowly leaches nutrients that are immediately mopped up by the growing crops (Singh 2009; Singh et al. forthcoming). Similar systems have also been reported from parts of Southeast Asia.

Soil fertility management measures such as the use of leguminous cover crops, mulching practices, application of FYM (farm-yard manure) and the use of biochar and microbial inoculants (such as EM amendments) complemented with mixed cropping will enhance the soil health of plots, allowing farmers to cultivate for more than two years. Crop management – reducing nutrient demanding crops and increasing the proportion of legumes, ensuring a good mix of emergent and runner crops - is a measure that can improve soil fertility, moisture retention and weed management. For weed control, shifting cultivators in the Mokokchung district of Nagaland periodically use a dilute solution of common salt and water. Traditional practices such as these, blended with modern scientific approaches (such as EM amendments, soil priming with sugars, vermicompost and mulching), can help in improving soil fertility and moisture retention, allowing the prolongation of the cultivation phase. This approach needs to promote local resources on the principle of low external input sustainable agriculture (LEISA) with minimum dependence on external inputs such as chemical fertilizers and pesticides. Such a step will build the farmers' confidence as it would minimise their dependency on external suppliers while drawing on their empirical knowledge and practices. A blend of modern scientific methods and technology should be brought in to complement and improve farmers' practices, introduced and implemented in a participatory learning and co-development spirit.

BOX 6

WHY IS SALT NOT ACCEPTED BY SHIFTING CULTIVATORS? A CAUTIONARY NOTE

Many agencies have promoted the Sloping Agriculture Land Technology (SALT) as an approach to improve soil fertility, moisture retention and soil erosion control in the uplands. SALT centres around the use of leguminous species as contour hedgerows and promotes the use of the pruned leaves and twigs as mulch to the soil, thus adding to the organic manure and nitrogen amendments, complementing nitrogen inputs added through nitrogen fixation by the plants. Nitrogen-fixing hedgerows, consisting of leguminous shrubs, are planted along contours and, in addition to ameliorating the soil with nitrogen, also act as barriers trapping soil carried down with surface runoff. Advocates of SALT claim that, over time, this helps in the formation of terraces, thus dispensing with physical labour otherwise required for the same. Technically, SALT is a robust approach for soil quality and health improvement in upland terrains and has proved to be an effective technology in parts of the Philippines. Drawing from experiences and personal observations as part of the team piloting SALT models in Northeast India since the early '90s and subsequently testing the approach in NERCORMP villages, the author's considered opinion is that SALT is inappropriate and unsuccessful in the context of transitions in shifting cultivation systems because the approach does not take into consideration the socio-cultural aspects of the practice. For SALT to be accepted by shifting cultivators, there is a need, therefore, to adapt the approach to local conditions, practices and context. Shifting cultivation has a short cultivation phase lasting a year or two. In most systems, not only are fields of all households located in the same parcel, but the shift to new plots is conducted collectively as a community and not as individual households. SALT is aimed at prolonging the cultivation phase and ultimately settling the farmers permanently in their plot. With cultivation confined to a year or two at the most and all plots in one parcel, shifting cultivators are hesitant to invest labour and time for interventions that exceed the cultivation period or adopt any technology that does not include all households as individual households will not remain in a location when the rest of the community shifts to another and, therefore, will not accept such technologies irrespective of the projected benefits. For farmers such as those in Mizoram and Chin where access to plots is by lottery and the chances of returning to the same plot unlikely, interventions such as SALT make no sense. Farmers also feel that

the hedgerows of leguminous shrubs have little or no utility for them and take up a substantial portion of their fields that could have been put under crops that are useful to the household. In addition, the regular pruning and mulching puts more pressure on labour with no tangible returns. Prunings from the hedgerows are promoted as fodder for livestock; but in northeast India (and elsewhere in SE Asian uplands) where upland households rear poultry and pigs, they see no immediate utility for the prunings. Thus, while SALT may have proven successful in sloping agricultural land with settled agricultural practices, in shifting cultivation, it needs to be tailored to prevailing conditions. Prolonged discussions are thus needed with upland farmers by project teams promoting SALT to convince farmers of its advantages.

MAKING SALT ACCEPTABLE: BUILDING ON LOCAL INNOVATIONS BY KARBI FARMERS

Experience under NERCORMP and in Shan state, Myanmar, suggests that once farmers grasp the usefulness of the concept, they replace the leguminous species promoted (Tephrosia, Flemingia, etc.) with legumes that they value and judge to be appropriate for SALT. In Myanmar, together with pigeon pea (Cajanus) as hedges, farmers have introduced soybeans, groundnut and other legumes to improve soil fertility. Farmers in Karbi Anglong in NE India have modified the SALT concept and adapted it in home gardens utilising seasonal legumes for constructing contour bunds. A few farmers in a Karbi village have used Cajanus in short-cycled shifting cultivation systems as a host plant for rearing lac insects. Lac has several commercial uses, with the lac sticks having a high market demand. Since sericulture and weaving have been a traditional practice among women in much of the uplands of South and Southeast Asia, this can easily be developed into a workable approach in short-cycled shifting cultivation. In addition to soil fertility amelioration and erosion control, Cajanus hedgerows could thus become part of high-end value chains (see Chakraborty and Choudhury forthcoming). Hence, project teams aiming at introducing SALT should mobilise farmers and set up demonstrations for a 'proof of concept' trial and conduct such demonstrations on a participatory action research mode to gain the confidence of farmers on the technology and gather lessons to refine the approach subsequently. Till then, project teams should explore approaches that enhance soil fertility and plot productivity through interventions other than SALT.

From shifting cultivation fields to home gardens : Preparing for transition to settled systems

Home gardens is another strategy that facilitates transition from shifting cultivation to settled agricultural practices. The NERCORMP experience suggests that home gardens can be adopted even by communities with no previous experience. Among the benefits of home gardens, apart from providing a farming sub-system that allows for the cultivation of most crops grown in shifting cultivation fields, is easy access for households to vegetables, crops and fruits in all seasons, which improves food and nutritional inputs. Where there is surplus, they constitute a supplementary income for the household and, combined with animal husbandry (or fisheries), they can significantly improve nutritional security. In many parts of northeast India, in addition to poultry and piggery, households have introduced host plants of silkworms allowing them to augment income from sericulture. Silkworms additionally constitute a protein source in areas where they are part of the regular diet.

Home gardens also can be a means of addressing gender issues as they reduce women's drudgery by reducing the time spent on collecting vegetables and other edibles from the fields by making them available at the homestead within easy reach. Women also have more say on crops to be grown in home gardens and they can better control the income generated from surplus. Home gardens also allow

household members to experiment with new crops and management practices, thus preparing them for settled agricultural practices and diversifying their livelihood pursuits while reducing dependency on shifting cultivation. Access to water for meeting irrigation needs will require attention, and rainwater harvesting and waste water harnessing can provide options, ensuring that women's drudgery is not increased. Home gardens, therefore, form the second milestone in the roadmap for transition to settled agriculture and should be promoted as such. Government agencies, particularly the agricultural ministry, must formally recognise home gardens as a distinct landuse category and identify an annual budgetary allocation for their promotion, thus laying the ground for scaling up.

From annual crops to perennials: Transforming shifting cultivation fields to agro-forestry, forest gardens and forest farming

With the translocation of crops from shifting cultivation fields to home gardens , households generally devote that space in their fields to upland paddy or commodity crops. This change can be used to persuade households to gradually transform their shifting cultivation fields into agro-forestry and tree farming systems as has happened with farmers in Karbi Anglong, Assam, the Serampas from Sumatra, the Dayaks from East Kalimantan and the Hani in Yunnan. Key considerations in this transformation are



Shade coffee and black pepper cultivated in fallows: the transition to forest gardens (Garo Hills, India)

avoiding monocultures and encouraging inclusion of food crops; promotion of species diversity ensuring sequential harvesting; and mimicking multi-tiered mixed forest systems. Since several crops from shifting cultivation as well as produce from fallows have high market demand and are traded in the unorganised sector, species choice for agro-forestry and tree farming should encourage a good mix of locally valued species and commercially viable ones with provision for staggered, sequential harvesting. Crops such as tea or coffee can be introduced as the shrub layer in the undergrowth. With shade coffee gaining high demand in global markets, such systems can develop into commercially viable ventures yielding high-end products. Gestation periods for the crops should not exceed two years and the majority should be non-perishable perennials. In addition, as with the Dayak of East Kalimantan (Mulyoutami et al. 2009), forest gardens should be encouraged in regenerating fallows to nurture wild edibles, spices and other non-timber forest products to meet consumption and commercial demands.

As the success of such systems depends largely on their financial viability, strong market linkages need to be nurtured so that farmers get a fair return for their efforts. Programmes and projects, therefore, must simultaneously include interventions that support value addition by processing raw produce to semi-processed or finished products. The promise of regular returns and an assured income would make such interventions feasible and attractive to farmers, opening up opportunities for agro-based entrepreneurship involving the youth, thus paving the way for transition to permanent farming, making it the third milestone that programmes should strive for in efforts to facilitate shifting cultivation transition to settled agricultural systems.

Improving access to appropriate technology and extension services: Fostering community-led extension and technical backstopping

Access to technology and reliable extension services assume critical importance in building confidence of farmers to continue with efforts to transit from shifting cultivation to settled, market-oriented production systems. Since agricultural extension suffers from inadequate human resources in most countries and this inadequacy becomes accentuated in upland and mountain areas, approaches to service

BOX 7

BRIDGING THE LAST MILE GAP: COMMUNITY-LED VETERINARY HEALTHCARE SERVICES

In northeast India, ICIMOD, in collaboration with the erstwhile Meghalaya Rural Development Society (MRDS) implementing the Meghalaya Livelihood Improvement Project, supported a community-led para-vet pilot to address access to veterinary healthcare in the rural Garo Hills of Meghalaya. The pilot was part of an IFAD-funded Regional Grant to strengthen the adaptive capacities of upland communities in the Hindu Kush Himalayas. Rural farmers across the Himalaya were investing in animal husbandry as a response to climate change impacts as they found such investments to be lucrative with high returns and easy liquidation in times of emergency. The risk, however, was the vulnerability of the animals to disease and poor access to veterinary healthcare. Villagers selected volunteers as community resource persons or para-vets, recommending those who were already into animal husbandry or showed keen interest in animal rearing. These volunteers, after a series of trainings in regional veterinary institutions, were embedded with the government veterinary clinics available at the sub-district level for practical training. Over a short period, the community resource persons gathered enough skills, knowledge and experience to begin working as para-vets. A system of communication linking the para-vets with veterinary technicians and doctors of the clinic was set up and this served as the first communication network for tele-consultations on veterinary healthcare. With refreshers and further training, the para-vets became capable of administering vaccines with the administration accepting them as resource persons capable of vaccinating animals. The network of para-vets also served as frontline detectors of animal diseases and proved to be an effective 'early warning mechanism' during an outbreak of avian flu. This innovative approach in community-led veterinary healthcare delivery can be replicated and can prove to be an effective community extension to bridge the 'last mile gap' in extension service delivery and is, therefore, highly recommended for inclusion in programme designs facilitating agricultural transition.

delivery must be modified to ensure technical outreach to the remotest communities. Furthermore, the perception among extension agencies that shifting cultivation is a practice that must be replaced ill-equips them to provide the advice and technical backstopping required to improve shifting cultivation. Yet, as shown above, many traditional practices in shifting cultivation have evolved through empirical experience and are not without scientific logic. Thus, programmes need to design approaches that encourage participatory technology development and community-led extension models.

Technology outreach and learning can be effectively conducted through participatory learning methods encouraging a peer-to-peer learning mode. Farmer field schools (FFS) blended with technical outreach have been effective in such approaches. ICMOD's experience in Shan state, Myanmar, suggests that Farmer Field Schools and Farmer Field Days are useful and efficient approaches for disseminating technical knowledge, providing the necessary technical outreach and encouraging peer-to-peer learning and sharing of experiences. Farmer Field Schools are not new and have been used in numerous agricultural projects and programmes across the region. FFS is open to innovation and can be tailored to suit the need and context. Knowledge Centres established under IFAD's Fostering Agricultural Revitalisation in Myanmar (FARM) project offers a similar model in participatory extension and learning and it seems poised for scaling out to other IFAD projects in Myanmar.

In efforts to facilitate transitions from shifting cultivation, FFS and Knowledge Centres constitute useful approaches for participatory technology development, technology demonstration and peer learning for each of the system changes suggested in the preceding sections if adequate provisions are made in project and programme designs for their adoption. They should also encourage the validation of traditional and local practices for technology improvement, blending modern scientific approaches with local practices and evolving ones that are appropriate in the context of shifting cultivation transformations. Simultaneously, community-led extension services such as para-vets should be encouraged as a co-managed technical backstopping mechanism, promoting partnerships between community resource persons and the technical departments. These constitute the basic ingredients of the fourth milestone in the roadmap for transition.

Resource management at the landscape level: Participatory Perspective Landuse Planning and Mapping to safeguard ecosystem services

As mentioned in preceding chapters, the promotion of settled agricultural systems which encourage plantation crops has trade-offs, particularly in regard to ecosystem services. Participatory



A three-dimensional model used for landuse mapping can be an innovative, participatory tool for landuse planning, conservation of natural resources, and safeguarding ecosystem services and security of tenure (Garo Hills, India)

perspective landuse planning and mapping, involving the community, their institutions and relevant government agencies, is an effective tool for co-management of resources and continuance of ecosystem services. Experiences from NERCORMP where participatory landuse planning and mapping was piloted, including the Participatory 3-Dimensional modelling (P3DM), suggest that such exercises can catalyse landuse planning and resource management at the grassroots. Introduction of the P3DM in Sasatgre, a NERCORMP project village in the Nokrek Biosphere Reserve in Meghalaya's West Garo Hills, resulted in the villagers consolidating their shifting cultivation fields, avoiding wasteful clearing and optimising plot sizes according to needs and labour capabilities. It allowed the villagers to accommodate all households in half the area previously cleared for cultivation, thereby increasing the fallow cycle and enabling rejuvenation and regeneration into secondary forests (Choudhury et al. 2006). Participatory Landuse Planning and Mapping enhances transparency in land governance and management and significantly enhances the advocacy capacities of communities to negotiate resource management, territorial and tenorial claims, and landuse issues with the relevant authorities, thus empowering them in the process. The approach also helps communities to identify areas that need to be conserved to ensure continuance of ecosystem services. PPLUPM should, therefore, be the next milestone in the roadmap to transition in programme designs.

Access to markets and credit and building institutional capacities that empower communities

An important step in facilitating transition is building the capacities of shifting cultivators to access markets and credit so they can act as strong players in the relevant value chain. As the success of the suggested changes for the various farming sub-systems will significantly depend on the effectiveness of identifying and establishing market linkages, strengthening value chains and accessing credit when required, programmes and projects must address these in their designs and interventions.

A basic step would be to encourage and support alliances of shifting cultivators, organising them into producer groups and building their capacities so that they become effective players in the value chain of produce that their systems support. Value chain development is a critical constituent in the roadmap for transition. ICIMOD's experiences from Himalica, an EU-supported programme implemented in Myanmar, indicates that organising producers around a value chain that they are involved in provides the foundation for transforming producers into strong players in the chain. As a final step, programme designs need to adequately support access to markets for farmers to enable them to obtain satisfactory returns for their produce, thus convincing them of the benefit of pursuing the new practice. To ensure this, value chain development as well as value addition and processing focusing on local and niche crops from shifting cultivation areas – nutritional crops, seeds, forest produce, handicrafts, wickerwork, dyes, garments – should be explored and supported. As alliances are important in such ventures, programmes must invest substantially, in both time and money, to enhance farmers' negotiating capacities, thus empowering them for advocacy and protection of their rights.

A critical constraint on shifting cultivators is their limited ability to generate cash. This significantly retards their ability to graduate out of poverty. As credit needs of shifting cultivators in transition may not be sufficiently large for lending institutions such as banks to show interest, programmes must look to micro-credit, encouraging the formation of saving and credit groups, building the required capacities in financial literacy and related aspects, and making provisions to set up revolving funds that can be

BOX 8

VALUE CHAIN DEVELOPMENT: BRINGING MARKETS TO VILLAGES – HIMALICA'S EXPERIENCE IN MYANMAR

The strength of the Himalica pilot – and its innovation – lay in the promotion of simple, but novel, approaches to value chain development, a basic thread in which was mobilizing producers into groups and introducing the concept of aggregation and collective marketing through the establishment of collection centres. The pilot established Seed bBanks – single-point seed collection and distribution centres in each village – for improving access to quality crop seeds (ginger, in this particular case) which also doubled as aggregation and collection centres post-harvest. They were also supplied with weighing scales, which dramatically increased transparency during transactions, helping to build credibility and trust among the producers and buyers, thus cementing relationships between the value chain actors. These two innovations also helped in attracting traders, who found collection from such centres to reduce transaction and procurement costs sufficiently to allow offering prices higher than at the weekly market. Himalica's innovation was in bringing the buyers – or the market – into the producers' villages, and in encouraging entrepreneurship among the locals, thus helping the farmers to become active participants in the value chain while simultaneously helping them to save time, money and labour in accessing markets while erasing exploitation by traders that they were hitherto subjected to at local markets. With a network of collection centres across the villages, traders found it profitable to establish business ties on a long-term basis, which was viable enough to broaden their transaction with the villagers to include other agricultural commodities produced in the villages. Aggregation and collection centres also allowed the traders to motivate the farmers in sorting and quality control, thereby infusing quality assurance which otherwise required additional effort by and costs to the former. With producer groups from neighbouring villages coming together, an informal alliance of producers emerged which gave them sufficient numbers (and product volume) to start negotiating prices and other benefits. Together, these efforts helped to diversify livelihood options and encouraged local entrepreneurship to obtain better returns, enhancing, thereby, the incomes of participating households by over 30% and contributing to resilience-building and poverty reduction.

harnessed to set off microcredit facilities catalysing income-generating activities. Once the functioning of groups reaches acceptable standards improving their credit rating, support must be provided to link them up to micro-finance institutions and banks to access credit to start micro-enterprises.

Addressing staples security: Improving access and strengthening research on upland crops and farming systems

While the approaches discussed above could bring about changes in the way settled agriculture and agricultural development are introduced in areas where shifting agriculture is practiced as well as resource management at the landscape level, they still leave the challenge of meeting staples security unaddressed. With insufficient arable land in the uplands and mountains, food self-sufficiency for mountain communities cannot be guaranteed by agriculture in the uplands unless cultivation is done along the slopes as in shifting cultivation. Upland communities, therefore, will always remain dependent on the lowlands for meeting their staple needs. Addressing the challenge of staples security in uplands therefore requires a multi-pronged approach with a mixture of technical interventions as well as changes in institutional mechanisms requiring a certain degree of social engineering.

Upland communities, particularly those that inhabit remote areas, are largely dependent on their own production to meet staple needs, which they do through a multi-cereal resource base, composed predominantly of upland rice, maize, millet and other coarse grains. In recent years, they have been unable to produce enough to meet their year-long needs. Where accessibility is better and government outreach possible, public distribution systems help to bridge this gap through making available staples at affordable prices. With improved accessibility, markets, too, have stepped in but this requires households to have the necessary purchasing power. This necessitates cash generation options and satisfactory links to markets.

A model that could address the issue of staples needs in times of scarcity in shifting cultivation areas undergoing transition can be formulated by emulating traditional and modern practices in the region. An almost-extinct tradition among remote upland communities is maintaining community granaries with each household contributing a small part of their annual production. The collected food grains are used in times of scarcity to meet staple requirements of households, especially important in addressing needs of the poor. A modern-day version of this practice, seen particularly among communities that have converted to Christianity, has each



Produce from shifting cultivation fields are sold in local markets. The development of value chains to promote value-added food products as well as fresh produce as safe, healthy and nutritional can enhance household incomes and returns from such farming systems (Garo Hills, India)

household making an annual offering of cereals and vegetables to the church post-harvest at Thanksgiving. Drawing on this practice, villagers could be encouraged to establish community granaries. Government agencies managing public distribution systems could partner with Self-Help Groups or their federations and harness their services to manage community granaries at cluster levels as extensions of their formal institutional network to ensure regular, year-long access to staples at an affordable price. These Federations should also be given the necessary support to run Fair Price shops and outlets that store and sell other consumer items and agricultural inputs in addition to the government-supplied staples. The IFAD-funded Meghalaya Livelihood Development project, which has successfully set up such SHG-managed outlets, is one among many other similar initiatives from other countries. Linking community-run enterprises to the formal PDS should not pose a major challenge and, once harnessed, could prove to be a feasible solution to the issue.

Despite such innovations, outreach to remote, insular and inaccessible communities will still



Upland rice is a staple that strengthens food security for poor, marginalized shifting cultivators. Agricultural research must look into increasing the productivity of upland, rainfed rice systems if zero hunger is to be attained by 2030 (Wokha, Nagaland, India)

be difficult, particularly during monsoons when communication and connectivity get disrupted due to landslides and other hazards. In addition, poor households may not be able to access staples made available through public distribution systems either because of the lack of ready cash or difficulty in reaching the outlets due to the remoteness of their hamlets. Shifting cultivators and upland farmers in such conditions will have to depend on their own production for staples security, including the cultivation of upland paddy in their shifting cultivation fields. A long-term solution, more fundamental and requiring policy action, therefore, is re-orienting agricultural research to focus on improving productivity of rainfed farming on slopes and marginal systems, technology development, and improving technology backstopping mechanisms.

This calls for focused research. However, agricultural research and development policies – whether at the national or global level, which are overseen, respectively, by National Agricultural Research Councils or the CGIAR institutions – have not, so far, adopted a mountain-focused and -appropriate approach for the development of

mountain agriculture. Instead, they have followed a ‘one-size fits all’ logic laying emphasis on a ‘Green Revolution’-type, crop-focused, research thrust suitable for the lowlands, ignoring the need for strengthening indigenous food systems such as shifting cultivation. Governments and development agencies supporting agricultural research must, therefore, emphasise the need for more attention to mountain agriculture, particularly, rainfed agriculture on sloping lands and on upland, rainfed crops, including upland paddy. Research on enhancing productivity of upland farms, improving crop varieties of upland and mountain crops, and value addition and product development of mountain niche crops must be encouraged, and special funds made available to support such research on a mission mode as these can go a long way in improving productivity in mountain farming systems and, hence, help improve staples security and returns from agriculture for upland farmers. Programmes developed for transformation of shifting cultivation areas must, therefore, make provisions in their design to support research on mountain crops and farming systems conducted in a participatory technology development mode to improve productivity of upland farming systems.

Concluding thoughts and final reflections

Managing change in shifting cultivation and facilitating transitions to settled systems has been somewhat like the story of the blind men and the elephant. The unfamiliarity with the farming system has contributed to this situation, contributing in turn to the emergence of second-generation issues. Undoubtedly, transitions in shifting cultivation are inevitable but as long as the basic issues of staples security, seasonal availability of traditional food crops and wild edibles, tenurial security, and an adequate income are not addressed satisfactorily, the dependence on these systems by the upland poor will continue. Recognising this reality, policy makers must accommodate a blending of traditional practices with settled agriculture in their efforts at transition, fostering composite farming systems and a dual economy arrangement, with shifting cultivators given the choice to organically evolve settled systems over time. Shifting cultivators across the region have already imbibed new crops and cropping practices, taking advantage of emerging opportunities and adapting their traditional farming systems accordingly and the approaches suggested in the preceding sections of this chapter can contribute significantly to this organic evolution. The interventions, however, should be regarded as non-linear, to be introduced and implemented as and when required in an inter-connected, mutually complementary manner with traditional systems (and with each other) and phased in as the absorption capacity of the targeted communities matures.

Transitions will bring about changes in landuse, influencing resource availability and the provisioning and regulatory services of ecosystems as well as access to resources and tenurial relations of shifting cultivators. The challenge will be retaining the desired attributes of the traditional system while facilitating change such as ensuring the continuity of the dual landuse of shifting cultivation that alternates between cultivation and fallow forestry. Settled agricultural practices cannot accommodate this attribute as landuse and land cover will change permanently. A compromise until such time that transitions to settled agriculture take place is to encourage prolongation of the cultivation phase which will lengthen the fallow phase. Special attention needs to be given to this approach as it can satisfy the needs of all stakeholders to a large extent, especially

relevant for countries where rotational agriculture has been permitted, with suitable modifications to increase plot allocations and enhance access rights to fallows. Retention of dual landuse, in other words, requires government sanction for its continuance under regulated conditions supporting composite shifting cultivation systems.

Agroforestry and forest gardens as developed by different communities across the region with enriched traditional fallow systems incorporating high value forestry species and nurturing such systems to mimic natural forests can help retain the utility value of fallow forests, thus addressing the diverse requirements of upland households. While emulating such approaches can address the utilitarian needs of communities to a large extent, they cannot replicate the rotational practice found in shifting cultivation. The examples of participatory landuse planning described in previous chapters can, however, facilitate resource management at landscape levels to ensure the safeguarding of ecosystem services – a crucial trade-off during transition.

Ensuring the security of tenure to land and other resources, particularly for women and the poor, is another critical challenge that must be kept in focus. Lessons from IFAD's programmes across continents suggest that gaining an in-depth understanding of land tenure systems and their functioning is a crucial pre-requisite for designing 'effectively targeted programmes and projects' (IFAD 2008). As tenure insecurity is a driver of poverty and a threat to food security and nutrition, the resource book has attempted to provide a basic understanding of the customary tenure arrangements in shifting cultivation in the hope that it will help guide future designing of programmes and project interventions in a way that is more sensitive to these issues. Tenure and access to resources are also inextricably linked to gender relations and women are particularly vulnerable and disadvantaged under most tenure systems (IFAD 2008). As transformations in shifting cultivation can adversely impact women's access to resources, nutrition and security of tenure in subtle ways and is often the cause of women's disempowerment in such contexts, recommendations provided in the book suggest ways in which gender dimensions to tenure can be addressed. Strengthening women's rights to land and resources will not only contribute to gender equality but will have important ramifications for poverty reduction (IFAD 2008).

Transformations have had adverse effects on food availability and dietary diversity - hence nutrition - with ramifications for women's and children's health. The same is true for women's work. The resource book suggests pathways to address seasonal food availability and dietary diversity issues. Hence, a conscious effort should be made in both programme design and implementation to adopt a holistic livelihood development strategy in facilitating transition from shifting cultivation rather than one that narrowly focuses on changes in crops and cropping patterns.

Despite all efforts at making transition equitable, a section of shifting cultivators, particularly those that inhabit remote, difficult-to-access locations will either miss out on the transition process or will not be able to partake in it fully. Programme designers and policy makers must try their best to devise means to bring these communities within the folds of transition. They must also keep in mind that despite all efforts at a gradual change in shifting cultivation to more settled agricultural systems, upland communities will continue with the practice as long as the issue of staples security remains unaddressed. In other words, enhancement in household financial security alone will not stop the practice. Therefore, complementary steps to enhance the productivity of upland systems and support the development of technologies specific to rainfed agriculture, particularly on sloping lands, should be undertaken as they would help increase

productivity, thus preventing the need to expand cultivation further into fragile upland systems.

The infusion of appropriate technologies, however, must not be confined to productivity enhancement measures alone but must be expanded to include processing and value addition of products from the composite food systems, thus opening opportunities for entrepreneurship that can attract the youth to engage in the sector, potentially reducing the need for them to migrate elsewhere.

Attention cannot be diverted from safeguarding tenurial rights to other resources such as forests and water if trade-offs and negative fallouts of transition are to be avoided as tenurial rights determine who benefits and who loses from programmes and projects. An all-inclusive approach is therefore key. Hence, it is hoped that the issues raised in the resource book and the approaches outlined in it will help programme developers, policy makers and project implementers in designing interventions that take adequate steps to avoid the pitfalls of the second-generation issues of transition that have been highlighted, namely, diminution of seasonal food and dietary diversity, depletion of ecosystem services and tenurial insecurity, and help transitions move towards resilient, inclusive pathways.

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About ICIMOD

The International Centre for Integrated Mountain Development (ICIMOD), is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalaya – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalisation and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.

**International Centre for
Integrated Mountain Development**
GPO Box 3226, Kathmandu, Nepal
T +977 1 5275222 | **E** info@icimod.org

www.icimod.org

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