

Shifting Cultivation Livelihood and Food Security



New and Old Challenges
for Indigenous Peoples
in Asia



Food and Agriculture
Organization of the
United Nations



Shifting Cultivation, Livelihood and Food Security

New and Old Challenges for
Indigenous Peoples in Asia

Editor
Christian Erni

Published by
the Food and Agriculture Organization of the United Nations
and
International Work Group For Indigenous Affairs
and
Asia Indigenous Peoples Pact

Bangkok, 2015

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO), or of the International Work Group for Indigenous Affairs (IWGIA) or of the Asia Indigenous Peoples Pact (AIPP) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO, or IWGIA or AIPP in preference to others of a similar nature that are not mentioned. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO, or IWGIA or AIPP.

978-92-5-108761-9 (FAO)

© FAO, IWGIA and AIPP, 2015

FAO, IWGIA and AIPP encourage the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO, IWGIA and AIPP as the source and copyright holder is given and that FAO's, IWGIA's and AIPP's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org.

Cover design and layout: Nabwong Chuaychuwong
Cover images: Christian Erni

Acknowledgements

The Asia Indigenous Peoples Pact (AIPP) and the Food and Agriculture Organization of the United Nations (FAO) would like to acknowledge the International Work Group for Indigenous Affairs (IWGIA) as well as the concerned dedicated colleagues in FAO and AIPP for their support and effort to publish this important document.

In particular, we are grateful for the full support and contributions of Dr Christian Erni of IWGIA for coordinating and editing the case studies, as well as Mr Yon Fernandez Larrinoa, Ms Gina Geal, Ms Yoshiko Ishihara, Ms Justine Cherrier, Ms Kaori Abe and Ms Soojin Kim of FAO for their contribution.

We also extend our acknowledgement and appreciation of the contributions of the case study researchers namely:

- Dr Krishna Bhattachan, Researcher, Nepal
- Dr Jeremy Ironside, Researcher, Cambodia
- Ms Satomi Higashi, Researcher, Lao People's Democratic Republic (Lao PDR)
- Mr Amba Jamir, Researcher, India (North East)
- Mr Sudibya Kanti Khisa, Researcher, Bangladesh
- Dr Christian Erni and Mr Prawit Nikorn, Researchers, Thailand
- Mr Ben Efraim, Researcher, Indonesia

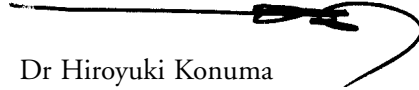
Likewise, we appreciate the peer reviewers for their critical feedback and suggestions on the research findings.

We would like to also acknowledge the contributions provided by government officials of Bangladesh, Lao PDR, India, Indonesia, Philippines (National Commission on Indigenous Peoples – NCIP), Nepal (National Foundation for Development of Indigenous Nationalities – NFDIN), Malaysia, Thailand; representatives of civic society organizations such as the Center for International Forestry Research (CIFOR), The Center for People and Forests (RECOFTC), Non-Timber Forest Products Exchange Programme for South and South East Asia (NTFP-EP), World Agroforestry Center (ICRAF) in the multi-stakeholder consultation on the case studies held in Chiang Mai, Thailand in August 2014.

Finally, we would like to sincerely thank and dedicate this publication to the indigenous communities, including women and youth for their support utmost cooperation in the conduct of case studies and their continuing practice of shifting cultivation as part of their cultural heritage and well-being.



Ms Joan Carling
Secretary General
Asia Indigenous Peoples Pact (AIPP)



Dr Hiroyuki Konuma
FAO Assistant Director-General and
Regional Representative in Asia and the
Pacific

Table of Contents

	<i>Page</i>
Executive Summary	vii
Contributors	xiii
 Part I: Introduction	
Shifting cultivation, livelihood and food security: New and old challenges for indigenous peoples in Asia <i>Christian Erni</i>	3
 Part II: Case Studies	
Chapter 1 Shrinking <i>Jum</i> and changing livelihoods in the Chittagong Hill Tracts of Bangladesh <i>Sudibya Kanti Khisa and Mohammad Mohiuddin</i>	41
Chapter 2 The changing face of swidden agriculture: a case study of two villages in Ratanakiri Province, Cambodia <i>Jeremy Ironside</i>	97
Chapter 3 Shifting options: a case study of shifting cultivation in Mokokchung District in Nagaland, India <i>Amba Jamir</i>	159
Chapter 4 Food security in the farming system of the <i>Dayak Jalai</i> in Ketapang District, West Kalimantan, Indonesia <i>Institut Dayakologi</i>	203
Chapter 5 An alternative approach to land and forest management in Northern Lao PDR <i>Satomi Higashi</i>	253

Table of Contents (*continued*)

	<i>Page</i>
Chapter 6	
‘Post-shifting cultivation’: struggles for livelihood and food security among Tharu people displaced by the Chitwan National Park in Nepal	
<i>Krishna B. Bhattachan</i>	291
Chapter 7	
The lizard on the tree and the Tailor Bird village: 21 st Century livelihood challenges among Karen swidden farmers in Thailand	
<i>Christian Erni and Prawit Nikornuaychai</i>	327

Executive Summary

The United Nations Declaration on the Rights of Indigenous Peoples was adopted by the UN General Assembly on 13 September 2007, which was drafted with the active participation of indigenous peoples. Since then, the importance of the role that indigenous peoples play in economic, social and environmental conservation through traditional sustainable agricultural practices has been gradually recognized. The contributions of indigenous peoples to ecosystem management and sustainable development in the form of in-depth knowledge on the natural environment and time proven practices in hunting, gathering, fishing, pastoralism and agriculture, are increasingly understood and appreciated. It is also recognized that the traditional knowledge, innovations and practices of indigenous peoples and local communities make an important contribution to the conservation and sustainable use of biodiversity.

Consistent with the mandate to eradicate hunger, poverty and malnutrition and based on the due respect for universal human rights, the Food and Agriculture Organization of the United Nations (FAO) adopted in August 2010 a policy on indigenous and tribal peoples in order to ensure the relevance of its efforts to respect, include, and promote indigenous people's related issues in its general work.

During the last session of the UN Permanent Forum on Indigenous Issues (UNPFII), a joint meeting between the UN agencies and indigenous people's representatives was held in May 2013 in New York. The newly elected member from the Asia Indigenous Peoples Pact (AIPP) of the Forum representing Asia, expressed their interest to engage with the FAO Regional Office in Asia and the Pacific (RAP) in relation to indigenous peoples' concerns. In response, a regional consultation on 'Ways Forward: FAO and Indigenous Peoples' was successfully held on 19-20 November 2013 in Bangkok, Thailand. The Consultation updated the status of policy and initiatives on indigenous peoples in the region and identified key challenges, gaps and needs as a basis for future collaboration.

One of the key conclusions of this consultation was the need for an in-depth reflection on the challenges faced and opportunities offered by adaptive responses and good practices which respect to sustainable livelihoods and food security, sustainable resource management and biodiversity conservation of and by indigenous peoples and their communities. It was recommended to conduct case studies focusing on good practices as well as policy constraints, in particular in relation to land tenure and other collective rights of indigenous peoples.

As a follow up to the recommendation, FAO, AIPP and IWGIA jointly carried out case studies. A researcher, or a group of researchers, who is familiar with the selected indigenous community and its most important livelihood — shifting cultivation — prepared each country case study. Based on field studies, which included surveys, focal group discussions and individual interviews in indigenous communities and careful analysis of the collected information, the case studies provide in-depth insights into this important topic of livelihood and food security among selected shifting cultivator communities in Asia.

The case studies, although set in different social, economic, political and environmental contexts of the seven countries (Bangladesh, Cambodia, India, Indonesia, Lao PDR, Nepal and Thailand), highlight that shifting cultivation continues to be an important livelihood system for the indigenous communities studied (except for the Tharu in Nepal who were forced to discontinue the practice after being resettled outside their ancestral land in a national park). The studies illustrate how shifting cultivation was and still remains a suitable and for some communities indispensable form of land use in upland areas in Asia, and that it can continue to be managed sustainably from the viewpoints of both natural resource management and household food security under conditions of sufficient and legally recognized access to land. Each study is rich with descriptions of indigenous peoples' knowledge on land use and natural resource management, customary institutions governing access and use of land and resources, collective action and other aspects of the social and cultural heritage linked to the time-honoured farming system.

All case studies document the process of adaptation the indigenous communities have been making to their livelihood systems in response to external and internal changes over the past decades. Such changes, among others, include population increases and resultant alterations of the land use patterns, government policies, laws and regulations, integration into the market economy through introduction of cash crops, and shifts of social and cultural values, especially among the younger generations.

Some of the changes brought about opportunities to the indigenous communities to improve their social and economic well-being. For example, the case study from Thailand revealed that market integration of the Karen means more food security for them because of better access to food from the market to compensate for shortfalls in their own food production and opportunities for cash income from surplus production (p. 388). The Cambodian case study on Tampuan communities in Rattanakiri Province also found that 'villagers feel their livelihoods are easier compared with the past' (p. 135). Both cases point to the potential livelihood improvements of indigenous peoples on the basis of a 'dual economy', which combines swidden-based food

production for home consumption and the cultivation of cash crops (such as corn, cassava and cashew) for the market. The Ao Naga in India's Nagaland are strengthening this dual economy which has existed in the form of sales of surplus vegetables from swidden fields by increasing and diversifying cash crops, and converting some shifting cultivation land to permanent cropping of cash crops. These cases, however, also point to potential risks of increased reliance on cash crops, which arise from price fluctuations and the use of agrochemicals. In this regard, the authors emphasize the important role shifting cultivation continues to play for household food security. As the authors of the Thai case study point out, '[i]n this 'dual economy', shifting cultivation and paddy fields are providing a safety net that allows engagement in more risky, cash-oriented production' (p. 389).

Other case studies highlight more challenging processes of livelihood transition of indigenous shifting cultivators. For example, indigenous communities in the Chittagong Hill Tracts in Bangladesh have been faced with land scarcity due to population pressure and policy-triggered losses of land, which resulted in worsening food security among those who have not diversified their sources of income into other activities, such as cash crop cultivation and off-farm employment. For the Dayak Jalai of West Kalimantan in Indonesia, the transition involves an increasing number of the shifting cultivators leaving the main livelihood system of food production combined with rubber tapping, and taking up jobs as labourers in rubber and oil palm plantations. The Tharu communities in Nepal, which some of them were evicted from their ancestral land, was designated as part of a national park, lost food security and faced immense problems in their livelihoods (p. 309). They produce food from small plots of government allocated land, which does not satisfy the consumption needs of the families, and they rely on wage labour for additional income. The 'post shifting-cultivation livelihood' of the Tharu illustrates the hard price communities have to pay for forced livelihood transition if there is no prior consent and proper compensation unless planned and implemented carefully with utmost consideration to providing sufficient land suitable for farming. Another example of difficulties caused by forced changes is seen in the case of Kmhmu communities in Lao PDR where a government policy to protect forests led to involuntary resettlement of shifting cultivators and the loss of access to land for shifting cultivation. Facing serious food insecurity as a result and lacking promising, alternative livelihoods, some community members had no choice but to continue using land in their old settlement areas in 'violation' of the government policy (p. 276).

All case studies highlight the need to assist indigenous shifting cultivators by improving their agriculture-based livelihood systems for better food security. One of the priority areas relates to security of land tenure. Except for Nagaland in India, where the state recognizes the communities' rights over the land and shifting cultivation

based on customary law, indigenous communities in all other case studies continue shifting cultivation without legal recognition and protection of their rights to land. Accordingly, these case studies recommend the recognition of customary land rights.

Another important recommendation of the case studies relates to the need to improve farming systems and natural resource bases both for shifting cultivation-based food production and cash crop cultivation. Productivity increases through soil fertility improvements, crop diversification – both for own food and cash crops, better fallow management and combination with agroforestry are mentioned as priority areas of future support.

Many authors also emphasize the need to help the shifting cultivation communities operate better in the new environment of market integration in order for them to capture opportunities and reduce potential negative impacts. Desired supports include linking indigenous producers with buyers (Cambodia), provision of market information (Lao PDR) and storage facilities (Bangladesh), and market exploration of high value crops, such as organic vegetables (Thailand).

From the case studies, a clear picture emerges that indigenous shifting cultivators are bravely tackling new challenges while external supports are necessary to help them make use of emerging opportunities and reduce risks in the face of changing socio-economic environments. It is also clear from the case study recommendations that such supports will be best provided with the spirit of collaboration and constructive engagement of all relevant stakeholders, while prior consultations with indigenous shifting cultivators and their informed participation in priority settings must be at the centre of any interventions.

It was with the intention to put this spirit into action that a multi-stakeholder consultation workshop was organized as part of the same FAO supported programme where case study findings and recommendations were presented in Chiang Mai, in August 2014. The two-day meeting discussed the above mentioned issues and more, and came up with a comprehensive set of recommendations which are aimed at to guide the future engagement and dialogue among the key stakeholders. The recommendations are in five broad thematic areas: (i) strengthening policy advocacy at all levels on land tenure, food security and livelihood; (ii) awareness raising on indigenous peoples' rights and their capacity building; (iii) biodiversity conservation and protection against bio-piracy; (iv) research and documentation on shifting cultivation; and (v) support services to enhance indigenous peoples' livelihoods.

The summary recommendations of the Regional Multi-Stakeholder Consultation Workshop were as follows;

- (i) Strengthening policy advocacy at national, regional and global levels on land tenure, food security and livelihood based upon the principle of equal partnership between states and indigenous peoples and adherence to the right to free, prior and informed consent (FPIC) of indigenous peoples in relation to protection of shifting cultivation, sustainable resource management and cultural integrity;
- (ii) Awareness raising on indigenous peoples' rights addressing consequences of industrial mono-cropping, large-scale land investments and plantations; capacity building on innovations especially for women and youth; and skills development for agroforestry.
- (iii) Biodiversity conservation and enhancement against bio-piracy, unfair and illegal patenting;
- (iv) Research and documentation on shifting cultivation and related studies; and
- (v) Support services, social protection and safety nets such as credit service, market support, and insurance.

As an immediate result of this effort, a briefing paper on shifting cultivation was produced and distributed at the occasion of the High Level Plenary Meeting of the 69th Session of the UN General Assembly known as World Conference of Indigenous Peoples (WCIP) in New York, September 2014, and at the 12th Conference of Parties of the Convention on Biological Diversity (CBD COP 12) in Pyeongchang, Republic of Korea in October 2014.

Contributors

Bangladesh

Sudibya Kanti Khisa is a Chakma from the Chittagong Hill Tracts of Bangladesh. He holds a Master of Science degree from Dhaka University, Bangladesh. He has 36 years working experience in forestry research, farming practices and rural development. He is currently working as the Watershed Management Specialist for the second Chittagong Hill Tracts Rural Development Project, funded jointly by the Government of Bangladesh and the Asian Development Bank.

Mohammad Mohiuddin obtained his Master of Science degree in Biocomposite Technology from the University of Wales, UK, and did his Ph.D. in Forestry at Chittagong University, Bangladesh. He has 29 years of experience in forestry research and is currently working as the Division Head of the Forest Botany Division of the Bangladesh Forest Research Institute, Chittagong, Bangladesh.

Cambodia

Jeremy Ironside has lived and worked on and off in Cambodia since 1994, advising and consulting on community livelihoods, sustainable agriculture, community resource management, and land and tenure issues for indigenous communities. His Ph.D. studies explored the process of land privatization underway in Ratanakiri Province, Cambodia and the communal land ownership alternative. He presently works as a consultant for the McKnight Foundation, which supports indigenous and local communities in Cambodia, Lao PDR and Viet Nam, to secure and protect their land and natural resources.

India

Amba Jamir is an Ao Naga from Nagaland state in Northeast India. He is working as an independent policy analyst, community convener and development consultant. He has for almost 19 years extensively worked with and researched shifting cultivation issues in the eastern Himalayan regions of Nepal, Bhutan, Bangladesh, and more specifically in the northeastern region of India. He is currently associated with the Sustainable Development Forum Nagaland (SDFN) and the Integrated Mountain Initiative (IMI), a network covering the Himalayan states in India.

Indonesia

Institut Dayakologi (ID) is an indigenous non-governmental organization doing research, documentation and publications on the challenges facing the indigenous

Dayak peoples in Kalimantan. These are the basis of its various advocacy and empowerment initiatives with the Dayak communities. ID is located in Pontianak, West Kalimantan, Indonesia.

Lao PDR

Satomi Higashi holds a Ph.D. in social sciences from Hitotsubashi University, Japan. She is Lao Programme Director of Mekong Watch, a Japanese environmental NGO. She is also a research fellow at Graduate School of Social Sciences, Hitotsubashi University, Japan and visiting fellow at the Mekong Research Group (AMRC), University of Sydney, Australia. From 2005 to 2013, she was engaged with the community-based watershed management project in Oudomxay Province, Lao PDR, in cooperation with the Faculty of Forestry, National University of Laos.

Nepal

Krishna B. Bhattachan is Nepali belonging to the Thakali indigenous people. He holds a Ph.D. in Sociology from University of California at Berkeley, USA. He is one of the founding faculty members and former Head of the Central Department of Sociology and Anthropology at Tribhuvan University, Nepal, founded in 1981.

Thailand

Christian Erni holds a Ph.D. in Social Anthropology from Zurich University, Switzerland, where he was teaching economic and ecological anthropology. He has been coordinator of the Asia Program of the International Work Group for Indigenous Affairs (IWGIA) for the past 17 years and is now advisor to the Asia Program and the Environment and Climate Change Program of IWGIA.

Prawit Nikornuaychai is a Pgae k'nyau (Sgaw Karen) from Chiang Mai province in Northern Thailand. He is a farmer, indigenous rights activist and social worker. He currently works for the indigenous organization Inter Mountain Peoples Education and Culture in Thailand (IMPECT) as coordinator of the project "Collaborative Management Learning Network," which promotes a collaborative approach in protected area management.

Part I

Introduction

Shifting cultivation, livelihood and food security: New and old challenges for indigenous peoples in Asia

Christian Erni

Indigenous peoples are represented disproportionately both among the world's poor and the extremely poor people. Numbering about 370 million, indigenous peoples constitute approximately 5 percent of the global population, yet about 15 percent of the world's poor and about one-third of the world's 900 million extremely poor rural people (United Nations Department of Social and Economic Affairs 2009: 21). Disaggregated data for Asia are not available, but data for individual countries or provinces confirm that in this region too, indigenous peoples are generally poorer than the rest of the population (Plant 2002). In addition, a series of reports published by the Asian Development Bank (Asian Development Bank 2001, 2002a, 2002b, 2002c, 2002d, Plant 2002) around the turn of the millennium clearly show that there is a correlation between ethnicity and poverty in Asia. The indigenous peoples in Asia have rich and diverse cultures; and these cultural differences set them apart from the mainstream society and are the cause of their marginalization, discrimination and impoverishment.

Rather than simply stating that indigenous peoples are *poor*, it is more appropriate to refer to the process of *impoverishment*. Indigenous peoples have been or are being impoverished by a number of forces which are beyond their control and often irreversible. Among the main causes of impoverishment are dispossession of their traditional lands, the denial of access to forests and other natural resources, or the prohibition of some livelihood practices, such as shifting cultivation (ibid.) Faced with declining land and resources on one hand, and an increasing need for cash income to make up for the loss of natural resources and to cover for education and other needs on the other, many indigenous communities are finding it increasingly difficult to make ends meet. This carries the risk of short-term economic interests prevailing over long-term concerns. As a result, unsustainable resource-use practices are becoming more common and are adding pressure on resources, thus threatening the very basis of their livelihoods.

Sustainable livelihood and food security

The concept of sustainable livelihood emerged around the mid-1980s. Its origin is generally attributed to Robert Chambers, then working at the Institute of Development Studies (IDS), and Gordon Conway working at the International Institute for Environment and Development (IIED). It was adopted by the World Commission on Environment and Development (WCD – the Brundtland Commission) in its 1987 report ‘Our Common Future’ and it was introduced in 1992 at the United Nations Conference on Environment and Development (UNCED) (Solesbury 2003: 3ff).

In 1992, Robert Chambers and Gordon Conway co-authored what became probably the most widely quoted article on the subject. They introduced the concept of ‘sustainable livelihoods’ as a holistic approach to address the challenges of rural development in the context of a rapidly increasing global population.

“When so many millions are already trapped in totally unacceptable poverty, it would be massively difficult simply to enable just them alone to gain adequate and decent levels of living; but when the huge anticipated population increases of the future are added, the prospect is daunting indeed.” (Chambers and Conway 1992: 1)

The challenge, they continue, is both practical and analytical and they found that while changes are accelerating globally, there has been a considerable resistance to change in development thinking and teaching (ibid.). Three modes of thinking have been proven to be particularly resistant to change: production thinking (that a problem like hunger is simply a result of insufficient production rather than entitlement); employment thinking (that the problem of the poor is a lack of employment); and poverty line thinking (that deprivation is measured in terms of income, thus ignoring the fact that deprivation and wellbeing have many dimensions) (ibid.: 2f). The sustainable livelihood approach that Chambers and Conway propose is a holistic approach going beyond these limited modes of thinking with the aim of gaining a better understanding of poverty and how to address it.

For Chambers and Conway, in its simplest sense, a livelihood is a means of living (ibid.: 5), and according to their more elaborate definition:

“A livelihood comprises people, their capabilities and their means of living, including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access. A livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which livelihoods depend, and has net beneficial effects on other livelihoods. A livelihood is socially sustainable which can cope with and recover from stress and shock, and provide for future generations.” (ibid: i)

What sets the sustainable livelihoods approach apart from the conventional approaches of that time is that it recognizes the importance of the ability to have access to resources, services, material, technology, information, employment, food or income (ibid.: 8); to make claims in the form of demands and appeals “for material, moral or other practical support and access” (ibid.). In addition, it emphasizes that the poor have assets, skills, knowledge and creativity, that they have options and strategies and are decision-takers.

As Eswerappa (2007: 22) observed, “Its concern with ‘getting below the surface’ to informal institutions and processes is particularly important. It offers the prospect of identifying entry points for pro-poor change, and of sequencing activities in such a way as to minimize the danger of appropriation of benefits by local elites.”

As a comprehensive, practice-oriented approach that links poverty reduction with empowerment and sustainability, the sustainable livelihoods approach was quickly adopted by major bilateral and multilateral development agencies. Only a few years after its introduction, agencies like Care, Oxfam, the UK Department of International Development (DFID) and the United Nations Development Programme (UNDP) made it the basis for their development programmes and practices. (Knutsson 2006: 90).

FAO applied and promoted the Sustainable Livelihood Approach (SLA) in its Livelihood Programme, which was supported by DFID, from 2001 to 2007. A thematic briefing paper published by the FAO under this programme states that several components of the Sustainable Livelihood Approach “could reinforce indigenous peoples’ aspirations for food and livelihood security, and for their overall poverty reduction” (Kalafatic n.d.: 6). It was also found that the SLA could help identify and prioritize issues and the knowledge gained could be used to “help indigenous peoples address their challenges regarding land, territory and natural resources, as well as the increased pressures on their traditional knowledge systems and cultures,” and to “increase opportunities for diversification of livelihoods strategies, which in turn could bolster resilience in the face of various shocks or threats” (ibid.).

Recognizing that biodiversity conservation is inseparably tied to poverty reduction, sustainable livelihoods are now promoted in indigenous peoples’ territories to serve a dual purpose—to address poverty and to reduce pressure on natural resources – by providing alternative sources of income – and thus help conserve biodiversity.¹

In addition to a more sustainable use of the natural resource base, increased food security is another key outcome expected from the application of the sustainable livelihoods approach.² One of the earliest definitions of food security by the United

Nations was formulated for the World Food Summit of 1974. Since then, the concept has evolved and become more complex. The definition given in the World Food Summit Plan of Action, which was adopted along with the ‘Rome Declaration on World Food Security’ at the World Food Summit of November 1996 (FAO 1996), reads as follows:

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.”

And in an FAO publication of 2003 (FAO 2003: 29) it is further specified:

“Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.”³

Shifting cultivation: Livelihood misunderstood

Across South and Southeast Asia, a large number of people depend fully or partly on shifting cultivation for their livelihood and food security. The actual number of these people is not known. Mertz *et al.* (2009) tried to estimate the number of shifting cultivators in Southeast Asia, but found that regional estimates in literature are not very useful, and that country-level data are also not reliable. They concluded that the ‘real’ number of shifting cultivators in Southeast Asia lies within the range of 14 to 34 million people (*ibid.*: 286). For South Asia no such estimate could be found in the literature but they must be numbering at least several millions.

The majority of the people practicing shifting cultivation in South and Southeast Asia belong to ethnic groups that are generally subsumed under categories like ethnic minorities, tribal people, hill tribes, aboriginal people or Indigenous Peoples.⁴ In South Asia, shifting cultivation is practiced particularly by Adivasis in Central and South India and by indigenous peoples in the Eastern Himalayas, i.e. Eastern Nepal, Northeast India, the Chittagong Hill Tracts of Bangladesh and the adjacent areas across the border in Myanmar. In mainland Southeast Asia, shifting cultivation is or has until very recently been the predominant form of land use in all the mountainous areas. The same holds true for the remote interior and uplands of Insular Southeast Asia.

The form of land use we are concerned with here is sometimes also called rotational farming, swidden farming/agriculture or slash-and-burn agriculture. ‘Swidden’ is an old English term meaning ‘burnt clearing’.⁵ ‘Slash-and-burn’, as it is commonly used, carries a negative connotation, reflecting the widespread prejudicial view that it is a destructive and wasteful form of agriculture. Rotational farming is a term that has emerged in Thailand and has been coined to counter such prevailing prejudices and to stress the fact that most shifting cultivation systems are based on

a cyclical use of farm land. Throughout this text and in all other articles in this book, the terms shifting cultivation and swidden agriculture/farming are used interchangeably.

Shifting cultivation comes in variations that are as diverse as the people practicing it. The characteristics that these forms of land use have in common, and which may constitute the elements of a basic definition, are:

1. *The removal of the natural vegetation (usually forest or shrub land) in most cases (though not exclusively) by cutting and subsequent burning*

Burning the cut and dried vegetation not only clears the field but the resulting ash also adds valuable nutrients to the soil (e.g. phosphorous, which is often scarce in upland soils of the humid tropics). This is also particularly important in the acidic soils of the humid tropics; it raises the pH level and thus the cation-exchange capacity⁶, i.e. the ability of soils to retain nutrients.⁷

2. *An alternation between a short duration of cultivation and a comparatively long duration of bush or forest fallow*

Where access to land is not limited, the length of the cropping and the fallow period depend on the nature of the soil and the microclimatic conditions which determine how fast forest fallow grows. On fertile soils like the basaltic red soils of Northeast Cambodia, fields are cultivated for three to four years and left fallow for 10 to 15 years (see case study by Ironside). More commonly, fields are used just for one or two years. Fallow periods can be as long as 20 years or more, however, most areas do not have enough land for such long fallows. Generally, fallows of medium duration are preferred (7 to 10 years) because that is a good compromise between the amount of labour needed for clearing a field on one hand and the level of soil fertility and labour needed for weeding on the other hand because one of the main functions of fallow is not just to restore soil fertility but to eradicate weeds. Older fallow have more fertile soils and less weed but it takes a lot more work to cut, burn and prepare the field properly.

3. *The regular, in most cases cyclical, shifting of fields*

The alteration between cultivation and fallow is done mostly in a cyclical manner in a more or less fixed area of land – thus the term ‘rotational farming’ (in Thai *rai mun wiang*), which is now commonly used in Thailand. These cyclical or rotational systems of shifting cultivation are characterized by a conscious and often very sophisticated fallow management ensuring a sustainable land use.

Shifting cultivation is probably one of the most misunderstood, and thus a controversial form of land use. In 1957, FAO declared shifting cultivation as the most serious land-use problem in the tropical world (FAO 1957). For more than a century, colonial and post-colonial governments in Asia have devised policies and laws to eradicate shifting cultivation, in the name of forest conservation and development. The popular prejudices against shifting cultivation common in Asian countries are conflated with other negative attributes ascribed to indigenous peoples throughout the region: that they are backward, primitive, a hindrance to national progress, disloyal to and a security problem for the state etc.⁸

Arguments brought forward against this form of land use – that it is an economically inefficient and ecologically harmful practice – have been proven inaccurate or outright wrong. Shifting cultivation was actually found to be “an ideal solution for agriculture in the humid tropics [] as long as the human population density is not too high and fallow periods are long enough to restore soil fertility. This agricultural system is ecologically sound and meets a variety of human needs with great efficiency, particularly with regard to labour and other agricultural inputs” (Christanty 1986: 226). Studies conducted decades ago showed that there are swidden systems which are highly productive in terms of total annual yields measured in calories produced per hectare (like that of the Hanu’noo Mangyan, described by Conklin in 1957), others may have comparably low outputs per hectare but may still be very labour efficient (for an early detailed discussion on the productivity of swidden farming see Dove 1985; on energetic efficiency Rappaport 1971; a critique of Rappaport by McGrath 1987). Some swidden cultivators are practicing refined fallow management and their systems are known to be highly sustainable (like those common among the Karen in Thailand; Kunstadter *et al.* 1978; Mischung 1980, 1984, 1990). There are only few shifting cultivators who can be considered what Condominas called ‘*mangeurs de bois*’ (‘eaters of forest’, Condominas 1954), i.e. whose practice transfers forest into barren grassland (for Northern Thailand see Mischung *op.cit.*).

In more recent years, our knowledge on land use and management practices among shifting cultivators has been further enriched by innumerable studies by researchers of a broad range of disciplines encompassing social and natural sciences (see e.g. the compilations by the International Fund for Agricultural Development (IFAD) *et al.* 2001, Cairns 2007 and forthcoming, van Noordwijk *et al.* 2008). However, notwithstanding all evidence, attitudes of decision makers and, consequently, state policies have hardly changed. The current climate change discourse has taken the debate on shifting cultivation to a global level: now they are blamed for causing too much carbon emissions, and thus for contributing to global warming. For example, the Readiness Plan Idea Note submitted by the Lao government to the Forest Carbon Partnership Facility in 2008 (FCPF 2008: 6) lists ‘Shifting cultivation by local farmers

for both subsistent and commercial purposes’ as the first of the four main causes of deforestation and forest degradation mentioned. This contradicts findings published the same year (FAO, UNDP, UNEP 2008: 3) that the main causes of deforestation, and thus carbon emission in Asia are the intensification of agriculture and large-scale direct conversion of forest for small-scale and industrial plantations (like oil palm, rubber etc.). In Thailand, shifting cultivators have even been arrested for causing ‘deforestation and rise in temperature’ (Network of Indigenous Peoples in Thailand *et al.* n.d.).

Times of changes

In many parts of Southeast and South Asia, shifting cultivators are currently confronted with a resource crisis as the population-land ratio has reached critical levels. While natural growth of local populations has contributed to increasing land scarcity, state-sponsored or spontaneous in-migration and resettlement are the more common cause (Cramb *et al.* 2009: 325). However, population growth is only one of the factors that lead to resource crisis among indigenous shifting cultivators. Government restrictions on shifting cultivation and large-scale alienation of indigenous peoples’ land have in many cases been the main cause of land scarcity. However, against predictions by concerned policy makers and environmentalists,

“[] rather than collapse, swiddeners around the world are modifying their practices. Many shifting cultivators have developed cultivation cycles that more closely resemble crop rotation systems and agroforestry operations than what has conventionally been called swidden, or they may have always done such things but it was overlooked by researchers who focused on the more dramatic “slash and burn” image (Padoch et al. 2007: 30).”

There are only few cases where shifting cultivation has crossed the critical threshold and led to serious environmental degradation (Cramb *et al.* 2009: 326). It happens in areas where the adaptation of livelihood systems to increasing land scarcity is difficult due to the absence of alternatives like tree-crops, irrigated rice cultivation, off-farm employment or temporary or permanent outmigration.

Even in regions where land resources are yet to reach critical levels, shifting cultivators have changed their livelihood and land-use systems and have opted to make use of new opportunities offered by expanding market integration. For example, rubber has been adopted by indigenous farmers in Indonesia and integrated into their land-use systems since the late 19th century (Van Noordwijk *et al.* 1995: 86ff, Burgers and Boutin 2001: 149). Such ‘dual economies’ (Dove 2011: 5ff) or ‘composite economies’, in which smallholders “cultivate food crops – usually by extensive swidden agricultural technology – to meet their subsistence needs, while gathering or cultivating export commodities like rubber to meet their market-oriented needs” (Dove 1998: 24)

have existed there and elsewhere in Southeast Asia since centuries. However, what presently can be observed throughout Southeast Asia – and this also applies to many shifting cultivation areas in South Asia – is that other forms of land use are often not just complementary but are rapidly replacing shifting cultivation. New forms of land-use practices are readily adopted when they promise a higher income and living standard, as recent studies in northern and central Lao PDR (Vongvisouk *et al.* 2014) and in Sarawak, Malaysia (Mertz *et al.* 2013) show.

While shifting cultivators have adapted their land-use practices over time in response to changing conditions and new opportunities, many are now undertaking drastic changes not so much out of choice but as a result of external pressures. Fox *et al.* (2009) have identified six external factors that contribute to the profound transformation or complete replacement of shifting cultivation:

1. Classifying shifting cultivators as ‘ethnic minorities’ in the course of nation building, and the concomitant denial of ownership and land-use rights;
2. Dividing the landscape into forest and permanent agriculture, the claim over the former by forest departments and the transfer of use rights to logging companies and commercial plantations;
3. The expansion of forest departments and the rise of conservation, which have further expanded and strengthened state control over forests;
4. Resettlement of shifting cultivators out of upland and forest areas and the dispossession of their lands as a result of the non-recognition of collective or individual rights over land and forests;
5. Privatization and commoditization of land and land-based production, resulting in dispossession of shifting cultivators and giving rise to commercial agriculture and industrial tree-farming by private companies, state enterprises as well as entrepreneurial farmers and small-holders;
6. Expansion of infrastructure (roads, electricity, telecommunication) and subsidies for investors supporting markets and promoting corporate and private industrial agriculture.

The authors also note “a growing trend toward a transition from rural to urban livelihoods and expanding urban-labour markets” (ibid.: 305). As shifting cultivators are losing their land or for other reasons cannot live from shifting cultivation alone, many (particularly the youth) are seeking employment in urban centers in the lowlands, along the coast or abroad. Cramb *et al.* (2009: 326) also refer to cases where shifting cultivation is disappearing because of population decline as many young people temporarily or permanently leave their villages to seek employment in the cities. With fewer people left in the villages, there is less demand for shifting cultivation on

one hand; and on the other hand, there is a reduced labour force available for shifting cultivation (ibid.). Modern education contributes in several ways to the abandonment of shifting cultivation. Schooling of children in boarding schools away from their villages prepares the way for outmigration, prevents them from acquiring the necessary skills for shifting cultivation, and implants negative stereotypes about shifting cultivation (ibid.: 326, 329). Exposure to urban life styles and mass media brings about changes in attitude and aspirations, and conversion to mainstream religions undermines the ritual significance of shifting cultivation (ibid.: 329).

The rapid current changes in indigenous shifting cultivation communities are part of the fundamental transformation of the wider society for which the term ‘agrarian transition’ has been coined. De Konnick (2004: 286) defines agrarian transition as:

“...the transformation of societies from primarily non-urban populations dependent upon agricultural production and organized through rural social structures, to predominantly urbanized, industrialized and market-based societies.”

De Konnick (2004: 285) considers agrarian transition “perhaps the most profound process of social change of the last three centuries.” He points out that while in “the wealthier countries of the global North” this transformation is largely completed, “in the developing societies of the global South it is still very much underway.”

In addition to the broader socio-economic transformations and the state’s rural development, infrastructure and conservation programmes that are impacting shifting cultivators, some Asian countries had and still have specific policies and laws directly targeting shifting cultivation. In Indonesia, a law banning shifting cultivation on Java was passed by the Dutch colonial government as early as 1874 (Fox *et al.* 2009: 316). In the Philippines, a similar law, providing for punishment and eviction of shifting cultivators from forests, was enacted by the US colonial government in 1901. It was replaced by the so-called ‘Kaingin La’ in 1963 (Pulhin *et al.* 2005: 86).⁹ The Government of Lao PDR has an official policy to stop shifting cultivation. It had originally planned to completely eradicate shifting cultivation by 2005. Failing to achieve that, the deadline was moved to 2010. In February that year, the Lao government recognized the distinction between rotational and pioneer shifting cultivation and issued an instruction for the eradication of pioneer shifting cultivation in 2010. (IWGIA 2007: 360; IWGIA 2011: 312).¹⁰

The combined impact of all these factors appears to lead to a rapid decline of shifting cultivation throughout the region. Fox *et al.* (2009: 319) conclude that “the conditions necessary for swiddening, both the availability of land and the aspirations of people, simply no longer exist in many parts of Southeast Asia”. And Padoch *et al.*

(2007: 37) predict: “Indeed, it appears that swidden is gradually disappearing in most parts of Southeast Asia, and only remains stable in few areas. But we do not know precisely how fast, or where these changes occur.”

The negative consequences of restrictive policies against shifting cultivation are well documented (see e.g. Maniratanavongsiri 1999 and Laungramsri 2005 for Thailand, Asia Development Bank 2001, Alton and Rattanavong 2004, Mi Dze 2005 for Lao PDR) and include the loss of livelihood and food security, deteriorating quality of nutrition and the loss of domestic and natural plant diversity. Forceful relocation to the lowlands, for example in Lao PDR or Thailand, has generally led to increased poverty and malnutrition, deteriorating health and higher mortality rates (Mi Dze 2005: 37, Anonymous 2007: 26ff).

However, what is often overlooked is that for Indigenous Peoples, shifting cultivation is not simply a farming technique but a way of life. Harold Conklin in his seminal study on the shifting cultivation system of the Hanun’oo Manyan in the Philippines distinguishes between two fundamentally different types of shifting cultivation: Partial systems which “... reflect predominantly only the economic interests of its participants (as some kinds of cash crop, resettlement, and squatter agriculture),” and integral systems which “stem from a more traditional, year-round, community-wide, largely self-contained, and ritually-sanctioned way of life” (1957: 2). The former is typical for migrant settlers in frontier areas while the latter is the kind of shifting cultivation practiced by indigenous peoples. Shifting cultivation is so closely interlinked with the lives and cultures of indigenous peoples that state policies aimed at restricting or even banning it have great impact on indigenous communities that goes far beyond mere economic intervention.

Policies and prospects

It was basically after Harold Conklin’s path-breaking publication, commissioned by FAO in 1957, that decades of research were able to correct the prevalent misunderstandings and prejudices surrounding shifting cultivation, particularly those regarding its sustainability. A project by the International Centre for Integrated Mountain Development (ICIMOD), supported by the International Fund for Agricultural Development and conducted in the Eastern Himalayas in the early 2000s concluded,

“The careful documentation and validation of shifting cultivation practices has helped to show that the common stereotype of shifting cultivators as engaging in wanton destruction of forest ecosystems is more the result of misunderstanding and misinterpretation than a real truth. The results of the study suggest strongly that shifting cultivators are more accurately portrayed as forest planters and managers.” (ICIMOD 2006: 11).

While agronomists, foresters and development workers have begun to recognize shifting cultivation as a form of agroforestry that has for centuries provided secure and sustainable livelihoods to millions of people, all the knowledge and better understanding gained in recent decades seems to have had little impact on policy making at national level so far. Most governmental and non-governmental rural development programmes in Asia still either explicitly or implicitly seek to replace shifting cultivation. Obviously, it is not the lack of knowledge about shifting cultivation but the inability or unwillingness of both state policy makers and decision takers in relevant government line agencies to base their decisions and actions on factual knowledge rather than deep-seated prejudices. The broader policy context for agriculture and rural development has not been conducive for such a reorientation either. For decades, priority has been given to large-scale industrial farming rather than smallholder agriculture.

It has been estimated that more than 70 percent of the populations of low-income countries live in rural areas, and 97 percent of rural populations are engaged in agriculture (UNEP 2012: 180). Disaggregated data is hard to get even at national levels, but in Asia it is certain that the vast majority of indigenous peoples are still living off the land. Industrialization, liberalization of trade, industrial mining, modernization of agriculture and the promise of 'alternative employment' for small farmers or pastoralists who are pushed out of their land by agro-industrial corporations, are currently considered the way to lift people out of poverty. However, alternative industries that provide as much employment as small-scale agriculture or animal husbandry are not easily created. In fact, it is questionable whether the agrarian transition in the global south will ever be as complete as it is in the already industrialized countries where only a few percent of people make a living from agriculture and forestry. Already now: "The level of materials consumed by the human population is of the same scale as major global material flows in ecosystems, such as the amount of biomass produced annually by green plants" (UNEP 2012: 10). It is therefore all too obvious that there are simply not enough resources for all countries to become as industrialized and reach the level of consumption of natural resources as Europe or the United States. As Colin Tudge (2005: 722) pointed out almost a decade ago, "Only agriculture can employ the vast numbers of people who need employment. Only agriculture can do so sustainably." Thus, many people will continue to directly live off the land, indigenous peoples in particular.

There are signs for a much needed reorientation of priorities in agricultural development, at least within the United Nations system. The Green Economy approach of the United Nations Environment Programme (UNEP) (UNEP 2011) recognizes that a fundamental transformation of agriculture toward Green Agriculture is indispensable if food security for a growing population is to be ensured in the long

run. Green Agriculture is not only a move toward organic agriculture but also puts priority on small farmers. It is expected to have the potential for contributing considerably towards poverty eradication among the world's rural people. And the Green Economy report stresses that secure land rights is one of the "critical enabling conditions for success [of Green Agriculture], especially in the rural sector and particularly in developing countries" (ibid., p. 65).

A reorientation of priorities toward small farmers is also indicated by the UNO's declaration of 2014 as the International Year of Family Farming (IYFF).¹¹ The decision is based on the recognition that

"Family farming is inextricably linked to national and global food security. Both in developing and developed countries, family farming is the predominant form of agriculture in the food production sector. Family farmers carefully manage their lands to sustain remarkably high levels of productivity despite having less access to productive resources such as agricultural inputs and support (most research shows an inverse relationship between land size and productivity)." (FAO 2014)

According to FAO, the world's estimated 500 million family farms comprise over 98 percent of farm holdings and are responsible for at least 56 percent of the global agricultural production (ibid.). In Asia, family farms have even a bigger share with 85 percent of all land being tilled by family farmers (ibid). And in mountainous areas, globally, farming is almost exclusively family farming (Wymann *et al.* 2013: 10). "Mountain areas, with their dispersed patches of useable land at different altitudes with different climates and with their often highly fragmented landscapes and narrow limits for mechanization, are most efficiently and effectively managed by family farms." (ibid.) Needless to say that among indigenous shifting cultivators, farming is exclusively a family and community affair, as the case studies in this volume illustrate.

One of the objectives of the International Year of Family Farming is to support the development of agricultural, environmental and social policies conducive to sustainable family farming (FAO op. cit.). Remote and mountainous areas and thus most of the ancestral territories of indigenous peoples have indeed been low on the priority list of agricultural development programmes. A reorientation of policies and priorities in line with the objectives of the International Year of Family Farming and UNEP's Green Economy approach may also create the conditions for a more rational and culturally appropriate approach to supporting livelihoods among shifting cultivators.¹²

In 2004, participants in a Regional Policy Dialogue on shifting cultivation in the eastern Himalayas representing government agencies, farmers, NGOs, academia, development agencies and the private sector adopted the Shillong Declaration (ICIMOD 2006: 78f) which contains concrete policy recommendations based on the

findings of research conducted prior to and the discussions during the policy dialogue. The recommendations for the eastern Himalayas pretty much applies to the situation elsewhere in Asia. Among others, the declaration concludes that “it is imperative to provide an enabling environment in order to address the urgent livelihood and ecological concerns arising out of rapid transformations driven by development and other externalities including market forces” (ibid.: 79). While the declaration refers to the necessity “to recognize the traditional institutions and intellectual capital generated from traditional practices relating to shifting cultivation and ensure its protection in the legal and policy regime” (ibid.), it falls short of clearly addressing one of the most critical issues—land and resource rights.

Nine years later, indigenous peoples’ representatives from Asia participating in a regional dialogue with FAO again had to draw attention to the fact that indigenous shifting cultivators are still widely neglected and discriminated and that in most countries their land and resource rights are not recognized and protected. Subsequently, the FAO Regional Office in Asia and the Pacific and the Asia Indigenous Peoples Pact (AIPP) signed an agreement on the project ‘*Regional Support to Indigenous Peoples for Livelihood and Food Security.*’ The objective of the project was to identify and address key challenges and opportunities of the indigenous peoples in the region to achieve and maintain livelihoods and food security. *This was to be done by means of two activities: Conducting* case studies during the first half of 2014, and organizing a two-day regional multi-stakeholder consultation in August 2014.

Taking stock of challenges and opportunities – The AIPP-FAO initiative

Seven case studies were conducted in Bangladesh, Cambodia, India, Indonesia, Lao PDR, Nepal and Thailand to take stock of the changes in livelihood and food security among indigenous shifting cultivation communities in South and Southeast Asia against the backdrop of the rapid socio-economic transformations currently engulfing the region. The case studies identify external – macro-economic, political, legal, policy – and internal – demographic, social, cultural – factors that hinder and facilitate achieving and sustaining livelihood and food security. The case studies also document good practices in adaptive changes among shifting cultivation communities with respect to livelihood and food security, land tenure and natural resource management and identify intervention measures supporting and promoting good practices in adaptive changes among shifting cultivators in the region.

The case studies conducted under the AIPP-FAO initiative confirmed many of the findings of recent studies already referred to in this introduction (e.g. Padoch *et al.* 2007; Fox *et al.* 2009), especially with regard to the general trajectory of change

and the driving forces behind them. However, the findings of some of the case studies point at the possibilities of reversed or alternative trends, like with regards to land scarcity and the relationship between shifting cultivation and market orientation.

On August 28 and 29, 2014, these and other findings of the case studies were discussed in a multi-stakeholder consultation in Chiang Mai, Thailand. Fifty-one participants attended the consultation, representing UN agencies and indigenous peoples, civil society organizations, research institutes and governments from Bangladesh, Cambodia, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand and Viet Nam. The participants agreed on a number of recommendations addressing the key issues and concerns raised during the consultation.

The remainder of this introductory chapter provides a brief summary of these recommendations as well as the main findings of the case studies. The summary of findings is structured in four parts: The first gives an overview of the main changes documented in the seven study areas and the driving forces behind them. The second summarizes the challenges communities are facing in adapting their livelihoods and the constraints and opportunities encountered. The third part compiles brief descriptions of good practices in adaptive changes encountered in the study areas, and the fourth identifies intervention measures supporting and promoting good practices in livelihood and food security among shifting cultivators. The chapter concludes with the recommendations that emerged from the multi-stakeholder workshop.

Livelihood changes: the drivers

Generally, livelihoods in indigenous communities have become more diversified, partly out of necessity and partly out of choice. Scarcity of land is one of the main external driving forces behind current livelihood changes. The case studies show that restrictive laws and policies, population pressure and, partly, market integration lead to a reduction of land available for practicing shifting cultivation and other forms of land use (e.g. raising cattle). Another main driving force is market integration as indigenous farmers are seizing new opportunities to increase their income and improve their living conditions. Furthermore, education and mainstream media bring about changes in views and values, thus livelihood preferences, particularly among the youth.

Land loss, laws and policies

Loss of land is most frequently the result of outright dispossession because indigenous peoples' rights to their land and resources are not recognized and land is given to concession holders for plantations or resource extraction (see case studies on Cambodia, Indonesia). Loss of land also occurs when communities are resettled or

prevented from continuing to use their traditional land by restrictive policies on shifting cultivation in the name of environmental conservation (Lao PDR case study).

Government development policies that favour large-scale resource extraction and agro-industries on one hand and strict nature conservation on the other hand leave many indigenous communities ‘between a rock and a hard place.’ As companies are taking over community land and villages are relocated from protected forests and nature conservation areas, livelihoods and food security are severely deteriorating in the affected communities (see case studies from Cambodia and Lao PDR). Non-recognition of land rights and, consequently, either outright dispossession or widespread tenure insecurity, are the main hindering factors for many indigenous communities to maintain or regain, and to sustain livelihood and food security. This includes the possibility to adapt to changing needs and conditions and to seize emerging opportunities for economic diversification.

Furthermore, throughout the region, government policies and programmes directly aim at eradicating shifting cultivation. Rural development programmes are promoting or imposing a radical change of land use toward market-oriented production. Often, such programmes fail because they do not build on existing practices and knowledge and do not take social, cultural or even environmental factors sufficiently into account.

Ultimately, policies and programmes by national governments and bilateral or multi-lateral organizations often negatively impact indigenous communities because they are not brought in line with international legal standards such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) or the International Labour Organization (ILO) Convention No. 169 and thus, for example, do not respect indigenous peoples’ right to free, prior and informed consent regarding all development interventions affecting them.

Privatization of land

Where land rights are recognized, the respective laws and policies favour individual private ownership over communal land rights (see e.g. case study from Cambodia), and likewise, rural development programmes offering and promoting alternative farming practices are targeting individual producers and not communities. This weakens – or at least fails to recognize and support – community-level land and resource governance and other institutions crucial for maintaining basic livelihood and food security for all.

Generally, growing populations add pressure on land resources. There are cases where a reverse trend can be observed (see more on this below), but in many areas, land scarcity has reached critical levels making it difficult to sustain sufficiently long

fallow cycles. Land scarcity can be exacerbated for some households with the adoption of cash-cropping in the community. Community members with more resources and better connections often take the lead in adopting cash cropping and convert parts of common property land to individual private holdings. The ensuing fragmentation of common property land reduces the land available for traditional forms of land use like shifting cultivation (case studies from India, Thailand).

Counter current: easing pressure on land

Outmigration of a considerable number of the youth reverses the so far prevailing trend of increasing land scarcity at least in some of the study areas. In some districts of Nagaland state, Northeast India, or in some villages in Mae Hongson province, Thailand, outmigration and off-farm employment opportunities have reduced the pressure on shifting cultivation land and allow for longer fallow periods. Fewer people mean not only a reduction of land needed to feed them, but also less labour to maintain swidden fields.

Market integration, diversification and the 'dual economy'

Access to markets both for selling products and buying goods has helped to improve livelihoods and food security in many indigenous communities. In the context of the increasing scarcity of land and of wild resources (fish, game, wild vegetables etc.), which used to be crucial not only for food security in general, but also for a more balanced diet. Better access to the markets helps farmers bridge minor seasonal food shortages as well as more extensive and severe food scarcities. Better access to the market for selling goods and the labour market has increased the opportunities for cash income.

Engagement in market-oriented production and the adoption of the respective new forms of land use is often done in addition to traditional forms of land use, including irrigated rice and shifting cultivation. In these 'dual economies', shifting cultivation (or irrigated rice production) is self-sufficiency oriented, and thus allows for a high degree of food security. This provides a safety net for households since market-oriented production is considered more risky due to the fluctuating prices of commodities or insecure markets. Many indigenous farmers explicitly stressed the importance and their willingness to maintain self-sufficiency in rice (e.g. case study from Thailand, Lao PDR). The emergence of such 'dual economies' is not everywhere a recent phenomenon. As the case study from Indonesia in this book shows, in West Kalimantan Province, the combination of shifting cultivation and small-holder rubber gardens has been practiced since many decades.

Generally, where indigenous farmers have sufficient land for diversification in the form of such ‘dual economy’, market integration has helped considerably to strengthen their livelihoods, i.e. to improve food security and increase income, and thus their overall living standard.

The modernization discourse

In addition to economic and policy pressures, changing views and values are also contributing to transformation in livelihood practices. Education, government propaganda and mainstream media have led to a change of expectations and priorities, especially among the youth. Traditional livelihood practices, shifting cultivation in particular, are considered ‘backward’ and preference is given to ‘having a job’. Therefore, it is possible that in some areas, like in West Kalimantan Province, shifting cultivation will almost completely disappear in the foreseeable future. A majority of the households of the study area in West Kalimantan Province are now already employed in plantations and mines and are not practicing their traditional dual economy of shifting cultivation and rubber tapping anymore. Government policies are favouring large-scale oil palm plantations that compete for land and attract the younger generation with job offers. In the context of the ready acceptance of ‘modernization’ in remote and ‘underdeveloped’ villages, time-proven practices like the dual economy with swidden and rubber are often all too readily discarded.

Addressing challenges: constraints and opportunities

The capacity of indigenous farmers to address the challenges encountered when changing their livelihoods varies considerably between the communities in the seven case study areas. Government laws and policies have been found to be the constraint for them to make use of new opportunities.

Uncertainties of the market

The combination of self-sufficiency-oriented and market-oriented production in a ‘dual economy’ has been found to provide a high degree of livelihood and food security in indigenous communities. However, indigenous farmers do not have the possibility to establish such a ‘dual economy’ in all the study areas. In some countries (e.g. Lao PDR, Thailand), they are not allowed to continue with the traditional form of land use, shifting cultivation in particular. They are forced to radically change their form of land use, and thus their livelihood system. In areas where they have sufficient land and the capital needed, they engage in the production of cash crops like vegetables, tea, cashew and fruit trees etcetera and are able to obtain a decent income (see case studies from India, Thailand, Cambodia). However, due to the volatility of

commodity markets, they are faced with new uncertainties and the risk of ending up in debt (see e.g. case from Thailand).

In other areas again, like in Nagaland state in Northeast India, where indigenous farmers are not under pressure from restrictive policies and still have sufficient land, some of them voluntarily abandoned rice cultivation and switched fully to cash-crop production. To them, marketing their products is the main challenge. While they are confronted with the same risks and uncertainties as those who were forced to make this transition, they are more flexible as they are at least in the position to resume subsistence-oriented farming if market conditions for their products are not favourable.

Risks of high-input farming

Cash cropping of vegetables and corn (for animal feed) that demand high inputs of agrochemicals have been promoted in upland areas like northern Thailand to replace shifting cultivation. Farmers can get a decent income when prices are high but may even get into debt when prices drop. Furthermore, permanent cultivation on the same plots of land and the extensive use of agrochemicals have a negative impact on the soil, but even more so on the health of farmers. Both economically and environmentally, these cultivation practices are considered to be unsustainable in the long run.

Credit constraints

Limited access to credit is another challenge for farmers who want to diversify their farming practices and engage in market-oriented production. Since most indigenous farmers do not have any proper individual land titles, they are not able to obtain credit from formal financial institutions because they do not have any collateral to offer. The need to provide land or other property as collateral when taking loans, and thus the possibility to actually lose the land or property when farmers are not able to pay back loans has been identified as a major problem with individual land titles and an additional reason why communal titles are considered more appropriate for poor indigenous communities. The challenge is to find alternative credit options.

The case study from Thailand shows that alternatives are possible. The Thai government has over the past years successfully implemented several credit schemes targeting poor farmers, also those without land titles. For example, the Bank for Agriculture and Agricultural Cooperatives provides loans to farmers without land titles if they form a group of 5 to 10 members who guarantee for each other. The group's application is scrutinized and decided on by the district office of the bank. Of course, more important is that indigenous communities have their land rights recognized. Since many prefer to have communal titles (see case study from Thailand) such credit schemes could be applied in these communities.

Labour and landlessness

In addition to partial or full engagement in cash cropping, many indigenous farmers take up seasonal or temporary on-farm or off-farm employment in order to increase their cash income (see case studies from Thailand, Bangladesh, India). This happens more where possibilities for cash cropping are limited. Such temporary employment opportunities exist on farms of other villagers, plantations, in local government infrastructure schemes or government rural employment programmes like in India.

Economically, most vulnerable are indigenous farmers who do not have enough land to make a living either as subsistence or market-oriented farmers. In cases where communities have been resettled and have not been provided with sufficient land (like in Lao PDR, Nepal and Bangladesh), the overall living conditions became worse and food security has been lost. There are cases where resettlement, dispossession and privatization of land and the subsequent accumulation of land in the hands of a few have left other farmers landless or with land holdings too small to make a living, no matter what form of land use they practice. These (former) farmers have no choice but to seek employment as labourers for other farmers and in plantations or to migrate to cities or even abroad.

Migration, education and employment

Partly in response to the increasing difficulties to make a living in the village, and partly because of better access to education and opportunities for off-farm employment, many of the young generation are abandoning farming and are leaving the villages temporarily or for good. In West Kalimantan Province, a large number of people in the study area have abandoned farming altogether and are working for oil palm companies or in mining. Urban migration is increasing throughout the region, and parents invest considerably in the education of their children. Education expenses often pose a heavy burden on parents. However, even with higher education, chances for getting a good job in the government or the private sector are small and most end up doing low-paid jobs with payments barely enough to make a living. The trajectory of this development is difficult to assess. It is likely that outmigration continues, but some villagers predict that after some time, many will return because life in the cities is also not easy (see e.g. case study from Thailand).

Good practices in adaptive changes

Diversification of land-use practices to meet both subsistence and cash needs is occurring among shifting cultivators throughout the region and there are numerous examples of innovative practices, such as combining shifting cultivation with new

agroforestry practices (fruit and cashew orchards in Cambodia, rubber gardens in Indonesia), growing high-value cash crops in shifting cultivation fields (various vegetables and herbs, ginger, turmeric etc. like in India and Bangladesh), establishing separate, permanent fields for cash crops (tobacco, corn, flowers, pineapple, vegetables etcetera, like in Thailand, India or Bangladesh), improving fallow management through planting of specific trees, or domesticating wild plants that are in high demand (e.g. the India case study). Market access can improve food security and the overall living standard in communities, but only where farmers have sufficient land and tenure security. Innovation and diversification is further enhanced where possibilities exist to access credit under affordable conditions.

Conducive legal framework

Therefore, it does not come as a surprise that successful adaptation of shifting cultivation (not its replacement) and diversification of land use toward more market-oriented production has been particularly successful in Nagaland state in northeast India, where customary land ownership in this state is recognized under the Indian constitution. In Nagaland, shifting cultivators have been able to change their farming practices to suit the changing needs and conditions, especially to respond to opportunities offered by better access to the market. Farmers have innovatively adapted crop selection and planting strategies to maintain food security as well as increase income.

Traditional knowledge, biodiversity and value from fallow

A key facilitating factor for maintaining sustainable livelihood and food security is the rich traditional knowledge of the natural environment, and land use and management practices that have been developed over generations and are well adapted to the environment.

The strength of traditional land-use systems, shifting cultivation in particular, lies in the diversity of the locally adapted practices and crops grown. A large number of the local varieties of domesticated plant species that are adapted to the local environmental and climatic conditions are grown in traditional shifting cultivation. The diversity of local domesticated plant varieties and also the biodiversity of fallow forests represent a rich genetic pool of useful plant species. This can play a critical role in adapting local livelihoods to the human-induced changes that our climate is currently undergoing. However, as several of the case studies in this book show, traditional knowledge and agro-biodiversity are disappearing fast, thus reducing the cultural capital on which these communities can draw when addressing future challenges.

In Nagaland, farmers have started to domesticate certain varieties of wild plants which they used to gather from fallow land and forests and which are in high demand in urban markets. Examples are *Clerodendrum cordatum*, which is called Amrem by the Ao Nagas, *Pterococcus corniculatus*, called Aochisang, or *Zanthoxylum rhetsa* known as Mongmong. The domestication of these plants has also helped to conserve the wild resources which otherwise would be threatened with overexploitation.

There is a large unexploited potential to generate value from fallow forests, both during the fallow period (sale of non-timber forest products), as well as when fields are cut and before they are burned (the sale of timber and poles or making charcoal instead of just burning all).

Adding value

A broad range of agricultural and non-timber forest products are traditionally being processed in traditional crafts and for food preservation. In some communities, farmers have started to develop these into small family enterprises and others have developed new ways to add value to their products by processing them. However, as the case study from Nagaland shows, many are facing considerable challenges, especially in marketing their products. Although such artisanal specializations have a considerable potential for improving poor people's living standard, there is very little, if any, government support for developing and improving small entrepreneurship, product processing and marketing.

Smallholder rubber

The 'dual economy' of combining shifting cultivation for self-sufficiency of rice and rubber gardens for cash income has provided a secure and sustainable livelihood to Dayak communities in West Kalimantan Province. Cash income has fluctuated in accordance with the ups and downs of rubber prices, but the 'dual economy' provided the flexibility needed to ensure at least a high degree of food security. Throughout the Mekong region, large-scale rubber plantations are currently being established, supported by government policies and programmes. However, in Indonesia, smallholder rubber production has proven to be more economical than estate rubber production (Dove 2011: 5ff). Above all, it is more beneficial for local people.

Governance and the management of transition

Shifting cultivation is resource and land management at landscape scale. Customary institutions like village councils have been responsible for and have successfully managed land and resources at the communal level (which does not mean that all land and resources were and are communally owned). This has enabled the sustainable use of and equitable access to land and resources, thus ensuring livelihood

and food security for all. However, these institutions are challenged in times of transition like today, when there is pressure on or dispossession of land, or when government policies and market integration favour individual private land ownership. In Nagaland state, communities in Mokokchung district have reportedly been able to ensure a collective process of decision making on land use for different purposes, thus creating better conditions for a continuation of both sustainable and equitable use of land and resources. However, traditional governance institutions not just among the Nagas but throughout the region are weakening as communities are integrated into the state's political-administrative system and parallel and more resourceful institutions are imposed on them.

Intervention measures supporting and promoting good practices

Few are the intervention measures that have successfully promoted good practices in livelihood and food security among indigenous shifting cultivators. They are usually the initiative of non-governmental organizations, and in some cases with the cooperation of local governments and government line agencies.

An alternative way of Land and Forest Allocation

As described in the case study from Lao PDR, in Pak Beng district of Oudomxay province in Northern Lao PDR, Mekong Watch cooperated with the district government in redoing the Land and Forest Allocation which previously had created severe problems for the livelihood and food security of the communities involved. A watershed management committee was established with representatives from eight villages that own land in watershed forests and local officials from offices in charge of watershed forest management. For the first time, this allowed communication and cooperation between villagers and the government. While previously, shifting cultivation was banned in watershed forests without exception, it is now possible to cultivate in some parts of watershed forests if other villages and the district authorities approve the land-use plan. Villagers no longer have to cultivate their fields 'illegally' as long as they follow the rules jointly drawn up by villages and the district government.

Direct support to improve shifting cultivation

Alternatives for land use to generate cash income, taking shifting cultivation as a point of departure rather than aiming to eradicate it are lacking in all study areas except Nagaland state in northeast India. The Nagaland Environment Protection and Economic Development (NEPED) project was an exceptional initiative because it

explicitly aimed at the improvement of traditional shifting cultivation and not at replacing it (see case study from India). This included, among others, incorporating tree planting during the first year's cropping and undertaking minor land shaping activities which have proven to have a considerable positive impact on farming practices as it lead to better soil fallow management practices. The incorporation of fast growing trees, slow growing but high-value trees, and shade loving cash crops like cardamom in the fallow forests have not only helped to improve forest regeneration during fallow but have also increased the income through selling of fuel wood, timber and other forest products. Marketing has been identified as the main challenge.

The way forward: conclusions and recommendations

The case studies and the sharing of experiences during the multi-stakeholders consultation confirmed that despite profound changes taking place in indigenous communities across Asia and the overall decline of shifting cultivation, this form of land use still plays an important role in providing livelihood and food security in many communities.¹³ For these communities, the importance of shifting cultivation goes beyond mere economic concerns. It is the pivot around which their annual work and ritual cycles revolve, and thus forms an intricate part of their way of life and is closely tied to their cultural identity.

Discussions during the multi-stakeholder consultation focused particularly on the role of indigenous women in sustainable resource management and food security. Researchers and participants estimated that indigenous women perform about 70 percent of the work done in shifting cultivation. Women are responsible for the selection and preservation of seeds and have extensive knowledge of cultivated and wild plants grown and gathered in the fields, fallow and forest. They face considerable challenges when they are prevented from practicing shifting cultivation or when displaced from their territories. Their roles in and contribution to food security, sustainable resource management and health care are severely weakened and their traditional knowledge is being lost.

The case studies and discussions during the consultation also confirmed what has been pointed out by researchers and indigenous farmers for many years, namely that shifting cultivation per se is not a driver of deforestation. As long as a minimum cycle of seven to 10 years can be maintained (with up to two or three years cultivation and at least five years fallow), shifting cultivation is a sustainable form of land use that does not lead to deforestation unless land scarcity forces farmers to clear new land in forest areas.

Ill-informed policies that tried to stop shifting cultivation in the name of environmental conservation and poverty eradication have not only often failed to achieve what they were supposed to, but have often resulted in the opposite. For example, experiences from Lao PDR have shown that relocation and land and forest allocation programmes have increased poverty and food insecurity among the target communities, and even caused environmental degradation. Even though shifting cultivation is decreasing throughout the region, it still plays an important role in the livelihood systems in general and for food security in particular of many indigenous communities. There are also positive experiences both with autonomous adaptation of shifting cultivators as well as supportive outside intervention that have increased food security and the overall living standards of indigenous communities.

In order to support indigenous communities that depend on shifting cultivation, it is first and foremost necessary to recognize that it is more than just farming, that it is a form of landscape management that is closely connected to the culture and the way of life of the communities practicing it, and that contrary to widespread misconceptions prevailing in government and multilateral agencies, it is providing sustainable livelihoods and food security. Support for shifting cultivation as a comprehensive indigenous landscape management practice requires the recognition and protection of the right to all land, including fallow and other forest areas, which are part of the territory, and thus the basis on which the communities' livelihood rests. Equally important is the recognition of the governance institutions that regulate land use and ensure basic equity in access to land and resources, and thus ensure the livelihood security for community members. Finally, it should be recognized that indigenous peoples' livelihoods has proven to be most secure in a 'dual economy', a livelihood system which combines self-sufficiency-oriented food production with a cash-oriented production of crops and/or small enterprises and off-farm employment.

In recognition of these and other conclusions drawn by the case studies and during the regional consultation, the 51 participants of the multi-stakeholders consultation, comprising representatives of government agencies, UN agencies, international NGOs, indigenous peoples' organizations, indigenous communities and local governments, agreed on the following recommendations addressing key concerns and needs that were identified:

1. *Strengthening policy advocacy at national, regional and global levels on land tenure, food security and livelihood based upon the principle of equal partnership between states and indigenous peoples and adhering to the right to free, prior and informed consent (FPIC) of Indigenous Peoples/tribal peoples/indigenous cultural communities in relation to sustainable management of shifting cultivation (SC), sustainable resource management and cultural integrity.*

- a. Review and amend laws, policies and programmes to guarantee indigenous peoples' rights over their lands, domains and forests including shifting cultivation land based on customary laws and forest rights and the right to FPIC
 - b. Publication of policy briefs on shifting cultivation as a sustainable form of land use to ensure food security and livelihoods, and to dispel the myths on shifting cultivation as a driver and cause of deforestation
 - c. Institutionalization of national multi-stakeholder dialogues and consultations in the context of lands and forests, based on the experiences of the United Nations Forum on Forests (UNFF) and United Nations Conference on Environment and Development (UNCED) processes, with the support and assistance of FAO and other UN agencies
 - d. Collaboration/partnership between indigenous peoples/indigenous cultural communities/organizations, UN agencies, Civil Society Organizations (CSOs), research and academic institutions and relevant governments agencies/bodies in sustainable land-use planning and policy development and implementation at national and local levels
 - e. Joint monitoring and collaborative research between indigenous farmers and researchers and government agencies on issues related to shifting cultivation, such as changes in forest cover, crop diversity and food security, including soil fertility regeneration, fallow management etc.
 - f. Promotion of the inclusion of shifting cultivation and/or related indigenous agricultural practices in the Globally Important Agricultural Heritage Systems (GIAHS) through supporting proposal(s) formulation by FAO, indigenous peoples, research institutions advocacy organizations and others.
2. *Awareness raising on indigenous peoples' rights addressing consequences of large-scale mono-cropping, large-scale land investments and plantations, capacity building on innovations especially for women and youth, skills in agroforestry, non-timber forest products etc.*
- a. Establishment of learning exchange platforms on good practices, knowledge and innovations, including animal husbandry at national and regional levels with the support of FAO, governments and UN agencies
 - b. Production, translation and sharing of information and educational materials, including advocacy materials such as videos, reports, etcetera by governments, CSOs, FAO and other UN agencies

- c. Development of curricula to address misconceptions on shifting cultivations, promote sustainable shifting cultivation practices and the rights of indigenous peoples with the support of governments, FAO and academic institutions
 - d. Training programmes for youth, women, government officials, staff and communities
 - e. Resource mobilization to support youth and women to practice and implement what they have learned from training and similar activities
 - f. Recognition and promotion of traditional knowledge of indigenous peoples, including the roles and contribution of women, in sustainable shifting cultivation and biodiversity enhancement by governments, FAO and other UN agencies
 - g. Transfer of traditional knowledge to the younger generation by indigenous peoples
 - h. Use of media, including community radio, for awareness raising and capacity building
 - i. Supporting and strengthening indigenous institutions and leadership
 - j. Enhancing finance literacy and management and business skills of the stakeholders, including indigenous peoples
 - k. Consumer advocacy, particularly focusing on natural and cultural sensitivity of shifting cultivation, e.g. its normally chemical free production
3. *Biodiversity conservation and enhancement and protection against bio-piracy and unfair and illegal patenting*
- a. Seed conservation and establishment of seed banks and seed exchanges for improving crop diversity and enhancing traditional food diversity and knowledge systems
 - b. Protection of medicinal plants
 - c. Protection of mother trees/seed trees
4. *Research and documentation on shifting cultivation and related studies*
- a. Research on the nutritional value of wild and cultivated food in shifting cultivation to be conducted by Center for International Forestry Research (CIFOR), Non-Timber Forest Products Exchange Programme and AIPP

- b. Research on shifting cultivation and other land-use forms (with a landscape and ecosystem approach to be conducted by AIPP in coordination with CIFOR and others)
 - c. Study on and mapping of credit facilities appropriate for indigenous communities to be conducted by local governments, civil society organizations and others
 - d. Further research on the carbon footprint of shifting cultivation, complementing existing studies (e.g. Japan International Cooperation Agency in Lao PDR)
5. *Support services for indigenous peoples to enhance their livelihoods, provided by governments with support from FAO, other UN agencies and CSOs.*
- a. Access to appropriate credit facilities for specific purposes for livelihood support
 - b. Marketing support mechanisms
 - c. Community mapping and demarcation
 - d. Crop insurance
 - e. Appropriate and sufficient provision of basic social services
 - f. Value chain development
 - g. Promotion of a sustainable “creative economy”, i.e. the sustainable production and marketing of indigenous handicrafts, designs and other creative products and innovations as means of livelihood and promotion of indigenous peoples’ diverse cultures

Concrete follow-up action agreed on for 2015

- 1. To conduct participatory assessments with indigenous peoples, at different levels as appropriate, of the impact of past and existing programmes on food security and poverty reduction, to be coordinated by AIPP, FAO and governments
- 2. To hold a regional consultation/dialogue on food security and poverty reduction in September 2015 in Lombok, Indonesia, to be hosted by the government of Indonesia.

References

- Alton, Charles and Houmphanh Rattanavong 2004. *Service Delivery and Resettlement: Options for Development Planning*. Final Report Livelihoods Study. Lao/03/A01 UNDP/ECHO
- Anonymous 2007. *Development-induced Resettlement and Social Suffering in Lao PDR*. Indigenous Affairs 4/07. Copenhagen: IWGIA
- Asian Development Bank 2001. *Participatory Poverty Assessment – Lao People’s Democratic Republic*. Asian Development Bank, Manila, Philippines
- _____ 2002a. *Indigenous Peoples/Ethnic Minorities and Poverty Reduction*. Cambodia. Environment and Social Safeguard Division, Regional and Sustainable Development Department, Asian Development Bank, Manila, Philippines
- _____ 2002b. *Indigenous Peoples/Ethnic Minorities and Poverty Reduction*. Indonesia. Environment and Social Safeguard Division, Regional and Sustainable Development Department, Asian Development Bank, Manila, Philippines
- _____ 2002c. *Indigenous Peoples/Ethnic Minorities and Poverty Reduction*. Philippines. Environment and Social Safeguard Division, Regional and Sustainable Development Department, Asian Development Bank, Manila, Philippines
- _____ 2002d. *Indigenous Peoples/Ethnic Minorities and Poverty Reduction*. Viet Nam. Environment and Social Safeguard Division, Regional and Sustainable Development Department, Asian Development Bank, Manila, Philippines
- Burgers, Paul and Dominique Boutin 2001. *Rubber in Sumatra. From Jungle Rubber to Rubber Agroforests*; in: IFAD, IDRC, CIIFAD, ICRAF and IIRR 2001. *Shifting Cultivation: Towards Sustainability and Resource Conservation in Asia*. International Fund for Agricultural Development, International Development Research Center, Cornell International Institute for Food, Agriculture and Development, International Center for Research in Agroforestry and International Institute for Rural Reconstruction
- Cairns, Malcolm. *Voice from the Forest. Integrating Indigenous Knowledge into Sustainable Upland Farming*. Washington: REF Press
- _____ Forthcoming (2015). *Shifting Cultivation and Environmental Change: Indigenous People, Agriculture and Forest Conservation*. London and New York: Routledge

- Chambers, Robert and Gordon Conway 1992. Sustainable Rural Livelihoods: Practical Concepts for the 21st Century. IDS Discussion Paper 296. Brighton: Institute of Development Studies
- Christanty, Linda 1986. Shifting Cultivation and Tropical Soils: Patterns, problems and Possible Improvements; in: Gerald G. Marten, Traditional Agriculture in Southeast Asia: A Human Ecology Perspective. Boulder, Colorado: Westview Press
- Christanty, Linda *et al.* 1986. Traditional Agroforestry in West Java: The Pekarangan (Homegarden) and Kebun-Talun (Annual-Perennial Rotation) Cropping Systems; in: G.G. Marten (ed.): Traditional Agriculture in Southeast Asia. A Human Ecology Perspective. Boulder/London: Westview, S. 132-158
- Condominas, Georges 1977. We Have Eaten the Forest: The Story of a Montagnard Village in the Central Highlands of Vietnam. New York: Harmondsworth. Original in French, Paris 1954 at Mercure de France
- Conklin, Harold C. 1957. Hanunoo Agriculture. A Report on an Integral System of Shifting Cultivation in the Philippines. Rome: Food and Agriculture Organization of the United Nations
- Cramb, R.A. *et al.* 2009. Swidden Transformations and Rural Livelihoods in Southeast Asia. *Human Ecology* 37: 323-346
- De Koninck, Rodolphe 2004. The Challenges of the Agrarian Transition in Southeast Asia. *LABOUR, Capital and Society* 37(2004), pp. 285-288
- Dove, Michael R. 1985. The Agroecological Mythology of the Javanese and the Political Economy of Indonesia; Indonesia No. 39. Cornell Southeast Asia Program
- _____ 1990. Smallholder rubber and swidden agriculture in Borneo: A sustainable adaptation to the ecology and economy of the tropical forest. *Economic Botany* 47(2): 136-147
- _____ 1998. Living Rubber, Dead Land, and Persisting Systems in Borneo. Indigenous Representations of Sustainability. *Bijdragen tot de Taal-, Land- en Volkenkunde* 154-1, p. 20-54
- _____ 2011. *The Banana Tree at the Gate. A History of Marginal Peoples and Global Markets in Borneo.* New Haven and London: Yale University Press
- Duncan, Christopher R. ed. 2004. *Civilizing the Margins. Southeast Asian Government Policies for the Development of Minorities.* Ithaca and London: Cornell University Press

- Eswerappa, Kasi 2007. An Anthropological Study of Livelihoods: The Case of Two Sugali Settlements in Anantapur District of Andhra Pradesh. Ph.D. Thesis, Department of Anthropology, School of Social Sciences, University of Hyderabad
- ETC Group 2011. Who Will Control the Green Economy? <http://www.etcgroup.org/content/who-will-control-green-economy-0>
- FAO 1957. Shifting Cultivation. *Unasylva* 11:1
- _____. 1996. World Food Summit Plan of Action. World Food Summit 13-17 November 1996. Rome: FAO; accessed at: http://www.fao.org/wfs/index_en.htm
- _____. 2003. Trade reforms and Food Security. Conceptualizing the linkages. Rome: FAO; p. 29. <ftp://ftp.fao.org/docrep/fao/005/y4671e/y4671e00.pdf>
- _____. 2014. Family farmers. Feeding the world, caring for the earth. Brochure. Rome: Food and Agriculture Organization of the United Nations. www.fao.org/family-farming-2014
- FAO, UNDP, UNEP 2008. UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD). Framework Document 20 June 2008
- FCPF (Forest Carbon Partnership Facility) 2008. Readiness Plan Idea Note, submitted by the Lao People's Democratic Republic, June 12, 2008. https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/LAO_FCPF_R-PIN.pdf
- Fox, Jefferson *et al.* 2009. Policies, Political-Economy, and Swidden in Southeast Asia. *Human Ecology* 37: 305-322
- Heinimann, Andreas *et al.* 2013. Socio-Economic Perspectives on Shifting Cultivation Landscapes in Northern Laos. *Human Ecology*, Volume 41, Issue 1, pp. 51-62
- Hoffmann, Ulrich 2011. Some Reflections on Climate Change, Green Growth Illusions and Development Space. UNCTAD Discussion paper No. 205. Geneva: United Nations. http://unctad.org/en/PublicationsLibrary/osgdp2011d5_en.pdf
- ICIMOD (International Centre for Integrated Mountain Development) 2006. Debating Shifting Cultivation in the Eastern Himalayas. Farmers' Innovations as Lessons for Policy. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD)

- IFAD, IDRC, ICRAF and IIRR 2001. *Shifting Cultivation: Towards Sustainability and Resource Conservation in Asia*. International Institute of Rural Reconstruction, Cavite, Philippines
- IWGIA (International Work Group for Indigenous Affairs) 2007. *The Indigenous World 2007*. Copenhagen: IWGIA
- _____ *The Indigenous World 2011*. Copenhagen: IWGIA
- Kalafatic, Carol n.d. *Indigenous peoples' sustainable livelihoods*. Thematic brief. Rome: FAO. Accessed at: <ftp://ftp.fao.org/docrep/fao/010/aj033e/aj033e02.pdf>
- Knutsson, Per 2006. *The Sustainable Livelihoods Approach: A Framework for Knowledge Integration Assessment*. *Human Ecology Review*, Vol. 13, No. 1, 2006
- Kunstadter, Peter, *et al.* (eds.) 1978. *Farmers in the forest: economic development and marginal agriculture in Northern Thailand*. East-West Center, Honolulu
- La-orngplew, Wasana 2010. *Civilising the uplands: development of rubber plantations in remote areas of Lao PDR*. Paper presented at the RCSD International Conference 'Revisiting Agrarian Transformations in Southeast Asia: Empirical, Theoretical and Applied Perspectives', 13-15 May 2010 Chiang Mai, Thailand. http://rcsd.soc.cmu.ac.th/InterConf/paper/paperpdf1_371.pdf
- Laungaramsri, Pinkaew 2005. *Swidden Agriculture in Thailand: Myths, Realities and Challenges*. *Indigenous Affairs 2/05*. Copenhagen: IWGIA
- Maniratanavongsiri, Chumpol 1999. *People and Protected Areas: Impact and Resistance among the Pgak'Nyau (Karen) in Thailand*. Ph.D. Thesis, University of Toronto (mimeo)
- McGrath, D.G. 1987. *The role of biomass in shifting cultivation*. *Human Ecology* 15(2): 221-42
- Mertz, Ole *et al.* 2009. *Swidden Change in Southeast Asia: Understanding Causes and Consequences*. *Human Ecology* 37: 259-264
- Mi Dze 2005. *State Policies, Shifting Cultivation and Indigenous Peoples in Laos*. *Indigenous Affairs 2/05*. Copenhagen: IWGIA
- Mischung, Roland 1980. *Meo und Karen: Die Umwelt-Anpassung zweier hinterindischer Bergvölker*. *Paideuma* 26
- _____ 1984. *Sesshaftigkeit und Intensivierung beim Brandrodungsfeldbau. Eine Fallstudie aus Nordwest-Thailand* *Paideuma* 30

- _____. 1990. Geschichte, Gesellschaft und Umwelt. Eine kulturökologische Fallstudie über zwei Bergvölker Südostasiens. Frankfurt a.M.: Mimeo
- Menzies, Nicholas 1988. Three Hundred Years of Taungya: A Sustainable System of Forestry in South China. in: *Human Ecology* 16(4)
- Mertz, Ole, Kelvin Egay, Thilde Bech Bruun, Tina Svan Colding 2013. The Last Swiddens of Sarawak, Malaysia. *Human Ecology* (2013) 41
- Network of Indigenous Peoples in Thailand (NIPT) *et al.* n.d. Global Warming Scapegoat: A New Punishment Measure Imposed on Indigenous Peoples for Practicing their Sustainable Traditional Livelihood Activities in Thailand. Briefing paper
- Padoch, Christine, Kevin Coffey, Ole Mertz, Stephen J. Leisz, Jefferson Fox & Reed L. Wadley 2007. The Demise of Swidden in Southeast Asia? Local Realities and Regional Ambiguities. *Danish Journal of Geography* 107(1): 29-41, 2007
- Plant, Roger 2002. Indigenous Peoples/Ethnic Minorities and Poverty Reduction. Regional Report. Environment and Social Safeguard Division, Regional and Sustainable Development Department, Asian Development Bank, Manila, Philippines
- Pulhin, Juan M., Marcial C. Amaro, Jr. and Domingo Bacalla 2005. Philippines Community-based Forest Management 2005; in: RECOFTC 2005. First Regional Community Forestry Forum – Regulatory Frameworks for Community Forestry in Asia – Proceedings of a Regional Forum held in Bangkok, Thailand, August 24-25, 2005. retrieved at: http://www.recoftc.org/site/fileadmin/docs/publications/The_Grey_Zone/2006/CF_Forum/policy_philippines.pdf
- Rappaport, Roy A. 1971. The Flow of Energy in an Agricultural Society. *Scientific American* 224: 116-133
- Soemarwoto, Otto/I. Soemarwoto 1984. The Javanese Rural Ecosystem; in: Rambo, A. Terry/P.E. Sajise: *An Introduction to Human Ecology Research on Agricultural Systems in Southeast Asia*. University of the Philippines, Los Baños/East-West Center, Honolulu, S. 254-287
- Solesbury, William 2003. Sustainable Livelihoods: A Case Study of the Evolution of DFID Policy. Working Paper 217. London: Overseas Development Institute
- Tudge, Colin 2005. Feeding people is easy: but we have to re-think the world from first principles. *Public Health Nutrition*: 8(6A), 716-723

- UNEP 2011. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. www.unep.org/greeneconomy. ISBN: 978-92-807-3143-9
- _____ 2012. GEO (Global Environment Outlook) 5. Environment for the future we want. United Nations Environment Programme
- United Nations Department of Social and Economic Affairs 2009. State of the World's Indigenous Peoples. New York: United Nations publication ST/ESA/328
- Van Noordwijk Meine, Thomas P. Tomich, Renato Winahyu, Daniel Murdiyarso, Suyanto, Soetjipto Partoharjono and Ahmad M. Fagi (eds.) 1995. Alternatives to Slash-and-Burn in Indonesia. Summary of Report of Phase 1. ASB-Indonesia Report Number 4. Bogor
- Van Noordwijk Meine, Elok Mulyoutami, Niken Sakuntaladewi, Fahmuddin Agus (eds.) 2008. Swiddens in transition: shifted perceptions on shifting cultivators in Indonesia. Occasional Paper No. 9. Bogor, Indonesia: World Agroforestry Centre
- Van Vliet, Nathalie *et al.* 2012. Trends, drivers and impacts of changes in swidden cultivation in tropical forest-agriculture frontiers: A global assessment. *Global Environmental Change* 22 (2012)
- Vongvisouk, Thouthone, Ole Mertz, Sithong Thongmanivong, Andreas Heinemann, Khamla Phanvilay 2014. Shifting cultivation stability and change: Contrasting pathways of land use and livelihood change in Laos. *Applied Geography* 46 (2014)
- Wyman von Dach, S., R. Romeo, A. Vita, M. Wurzinger, T. Kohler (eds.) 2013. Mountain Farming Is Family Farming: A contribution from mountain areas to the International Year of Family Farming 2014. Rome, Italy: FAO, CDE, BOKU

Endnotes

- ¹ Examples are WWF's Langtang National Park & Buffer Zone Area Support Project in Nepal (<http://wwf.panda.org/?201318/BIODIVERSITY-CONSERVATION—SUSTAINABLE-LIVELIHOODS#>) or the 'Sustainable Livelihood Systems for Indigenous Peoples in Indonesian Heart of Borneo' supported by the Asian Development Bank (<http://www.adb.org/projects/44413-022/main>)
- ² DFID identified five 'livelihood outcomes': increased food security, more income, increased wellbeing, reduced vulnerability and more sustainable use of the natural resource (Knutsson 2006: 90)
- ³ In the mid-1990s, the concept of 'food sovereignty' was developed in response to dissatisfaction with the global discourse on food security, which has been criticized as promoting market and corporate-centred food production and distribution. The concept of food sovereignty advocates for an approach that puts "the people who produce, distribute and consume food at the centre of decisions on food systems and policies, rather than the demands of markets and corporations" (World Development Movement web-site: <http://www.wdm.org.uk/food-sovereignty>).
- ⁴ See Erni 2008 for a compilation of articles on the use of the concept of indigenous peoples in Asia, and overviews of common designations and state policies in various countries of the region. In recognition of the increasing number of people in Asia who self-identify as belonging to indigenous peoples and of the general acceptance of the concept by some Asian governments, many bilateral and all UN agencies, I will use this term throughout the text.
- ⁵ According to the Merriam-Webster on-line dictionary it probably derives from the Old Norse word *svithinn*, past participle of *svitha*, to burn, singe. <http://www.merriam-webster.com/dictionary/swidden>
- ⁶ Cation-exchange capacity (CEC) refers to the amount of exchangeable cations (positively charged ions) per dry weight that a soil is capable of holding at a given pH value, and which are available for exchange with the soil water solution. It is commonly used as a measure of soil fertility.
- ⁷ See e.g. Christanty 1986 on the effect of shifting cultivation on tropical soils.
- ⁸ See e.g. various contributions in Duncan ed. 2004.
- ⁹ Republic Act 3701 of 1963, known as Kaingin Law, provides for severe punishment of 'kaingin' (shifting cultivation). The law is not very strictly enforced though.
- ¹⁰ To what extent the Lao government achieved this goal is not known. According to Lao Ministry of Agriculture and Forestry, the area under shifting cultivation fell from 148 000 hectares (156 720 households) in 1998 to 79 559 hectares (48 225 households) in 2009 (La-orngplew 2010: 7). In any case, a large number of people still depend on shifting cultivation. In a recent study on shifting cultivation on northern Laos, it is estimated that over 550 000 people live in shifting cultivation regions (Heinimann *et al.* 2013: 51).
- ¹¹ Its implementation is facilitated by the Food and Agriculture Organization (FAO), in collaboration with Governments, International Development Agencies, farmers' organizations, other relevant UN organizations and non-governmental organizations.
- ¹² While welcoming the focus on organic farming and small farmers in UNEP's Green Economy, this should not be understood as a blanket endorsement of the concept. Green

Economy has been heavily criticized among others for using market mechanisms for environmental conservation which will expand the control of land and natural resources by private companies (ETC Group 2011). Some critics consider it insufficient for coping with the complexities of climate change and just give “false hope and excuses to do nothing really fundamental” (Ulrich 2011: 1).

- ¹³ This is much in line with the findings of a recent multi-disciplinary global assessment which concluded, among others, that “swidden remains important in many frontier areas where farmers have unequal or insecure access to investment and market opportunities, or where multifunctionality of land uses has been preserved as a strategy to adapt to current ecological, economic and political circumstances”. (van Vliet *et al.* 2012: 418)

Part II

Case Studies

Chapter 1

Shrinking *jum* and changing livelihoods in the Chittagong Hill Tracts of Bangladesh

Sudibya Kanti Khisa and Mohammad Mohiuddin



Acronyms and glossary

ADB	Asian Development Bank
BFIDC	Bangladesh Forest Industries Corporation
CHT	Chittagong Hill Tracts
CSO	Civil Society Organization
DC	Deputy Commissioner
FGD	Focus Group Discussion
HYV	High Yielding Variety
Karbari	Village chief
IP	Indigenous People
Jum	Shifting/Swidden cultivation
Jumia/jumma	Shifting cultivators
Mouza	Lowest tier of revenue units consisting of more than two paras
NGO	Non-government Organization
Para	A hamlet synonymous with village
UNDP	United Nations Development Programme
Upazila	Sub-district
USAID	United States Agency for International Development
USF	Unclassed State Forest
VCF	Village Common Forest
WFP	World Food Programme

Title page photo: Jumia women selling their products at the local market. Photo: S.K. Khisa

Shrinking *jum* and changing livelihood in the Chittagong Hill Tracts of Bangladesh

Sudibya Kanti Khisa and Mohammad Mohiuddin

Even though shifting cultivation, locally called '*jum*'¹, has considerably declined in recent years, it is still an important source of livelihood for the majority of the indigenous peoples and a dominant land-use system in the hilly areas of the Chittagong Hill Tracts (Roy 2000: 24). It is a traditional, low external input-based cultivation system. *Jum* plots are selected based on the inherent traditional knowledge of the *jumias* (shifting cultivators) who still consider the *jum* system as one of the best livelihood options to ensure food security because rice, different vegetables and cash crops are available from *jum* and fallow *jum* fields. There are no dependable statistics about the area of land under *jum* and the number of households practicing *jum* in the Chittagong Hill Tracts (CHT). In 1901, out of a total population of 124 762 persons of the CHT, 109 360 were estimated to live on *jum* (Roy 2000: 24, cited from Hutchinson, 1906: 50). In the district gazetteer published in 1971, it was reported that about 41 485 hectares (102 468 acres, or 4.3 percent of the total area of the CHT) of land are cleared every year for *jum* cultivation (Ishaq 1971: 80). According to another estimate in 2000, the proportion of people depending on *jum* has decreased, and the area under *jum* was estimated to be around 40 000 hectares (ha) (ADB 2001: 26). Mohabbatullah *et al.* (2012: 2) estimated that about 40 000 households are currently involved in *jum* cultivation.

I. Objective of the case study

The ever-increasing demographic and environmental pressures coupled with unfavourable government policies that do not take into consideration the lives and livelihood issues of the indigenous peoples of the CHT – like the government sponsored settlement programme, construction of the hydroelectricity dam at Kaptai, monocropping afforestation programmes, and extension of reserve forest area to community owned lands – have created increased pressures on the limited land resources in the CHT. This resulted in the scarcity of suitable land for *jum* cultivation, which compelled the *jumias* to shorten the *jum* cycle and intensify the cultivation system with the introduction of annual and perennial cash crops. As such, some *jumia*

farmers in the CHT have been changing the traditional cultivation system in order to adapt to these ecological stresses and external pressures. These changes and adaptations have implications for their livelihood and food security, which have been studied and documented in this research. The case study is expected to generate some knowledge for policy planners and decision makers in the country that will help to prepare appropriate programmes and projects for the improvement of the livelihood and food security of the *jumias* in the CHT.

The main objective of the case study is to document and analyze the autonomous adaptive response of the *jumias* to land scarcity, the changing ecology, and other associated socio-economic and political pressures over time. The specific objectives are:

1. To study the adaption strategies of the *jumias* in addressing the challenges of food and livelihood security in the context of increased population pressure and land scarcity;
2. To identify the key challenges in achieving and maintaining livelihood and food security and how they address these challenges;
3. To find out the opportunities for achieving and maintaining livelihood and food security of the *jumias*; and
4. To identify the good practices in adaptive responses in *jum* to address the challenges of livelihood, food security and environmental sustainability.

II. Methodology

The methodology applied includes exploring secondary information by reviewing relevant literature, field visits, focus group discussions in the communities covered and interviews with key informants.

Fieldwork was conducted with the help of the three indigenous field assistants Shimul Chakma, Tuhin Chakma and Aung Shwe Sing in two *paras* (villages) in Rangamati District, two *paras* in Khagrachari District and four *paras* in Bandarban District. The study included communities from the Chakma and Tripura indigenous peoples living near the district township of Khagrachari, the Chakma and Tanchangya. The areas are near the lake waters of Rangamati, the Marma, Mro, Khyang and Tanchangya, which are well connected by road in Bandarban District.

A study team was constituted and discussions among the members of the study team were held prior to fieldwork. Reconnaissance field visits were conducted in the three hill districts in order to identify accessible and representative *jumia paras*. Brief profiles of the *paras* and the communities are provided in Appendix 1.

The selections of case study areas and communities were based on the following criteria:

1. *Jumias* living very close to markets with heavy pressure on their *jum* lands from outsiders; the two *paras*, Goai Ma Aat Para and Paltan Joy Para under Khagrachari district, representing the Chakma and Tripura communities respectively;
2. *Jumias* who were displaced by the Kaptai dam and settled on the hillsides above the lake water that submerged their valley bottom lands (one *para* settled inside the Reing Kyong Reserve Forest by the Forest Department). Here the only transportation is waterways; the two *paras*, Digol Chari Deva Matha Para and Gash Kaba Chara Para from Rangamati District, representing the Chakma and Tanchangya communities respectively;
3. *Jumias* living along the roadside where marketing opportunities of their *jum* produce are available: Long Thang Para, Mrolong Para, Paglachara Para and Mong Nu Headman Para in Bandarban district representing the Marma, Tanchangya, Mro and Khumi communities.

The study is mainly based on field observations and discussions with the communities during March and April 2014. Therefore, seasonal variations of the *jum* cropping system and the changes in the livelihood activities of the *jumias* could not be captured by direct observation during this short period of study. Furthermore, *jumia* communities in the remote areas could not be visited and/or consulted due to security reasons.

III. The context

The Chittagong Hill Tracts region, lying between 21°25' and 23°45' north latitude and 91°45' and 92°50' east longitude in the southeast of Bangladesh (Ishaque 1971: 1, Brammer 1986: 3) comprises three hill districts: Rangamati, Khagrachari and Bandarban. The region covers an area of 13 294 square kilometres, which is about 10 percent of the country's land surface. The region is bordered by the Indian State of Tripura in the north, by the Arakan State of Myanmar on the south and southeast and the Lushai Hills of the Mizoram State of India in the east, and the Chittagong and Cox's Bazar district in the west. Eleven indigenous peoples live in the region, namely, *Chakma*, *Marma*, *Tripura*, *Tanchangya*, *Mro*, *Bawm*, *Khyang*, *Khumi*, *Pangkhua*, *Chak* and *Lushai*. They have been practicing shifting cultivation for generations, and it is a part of their way of life, culture, traditions and livelihoods. Once, it was the only source of livelihood for all the indigenous communities of the region (Roy 2000: 24).

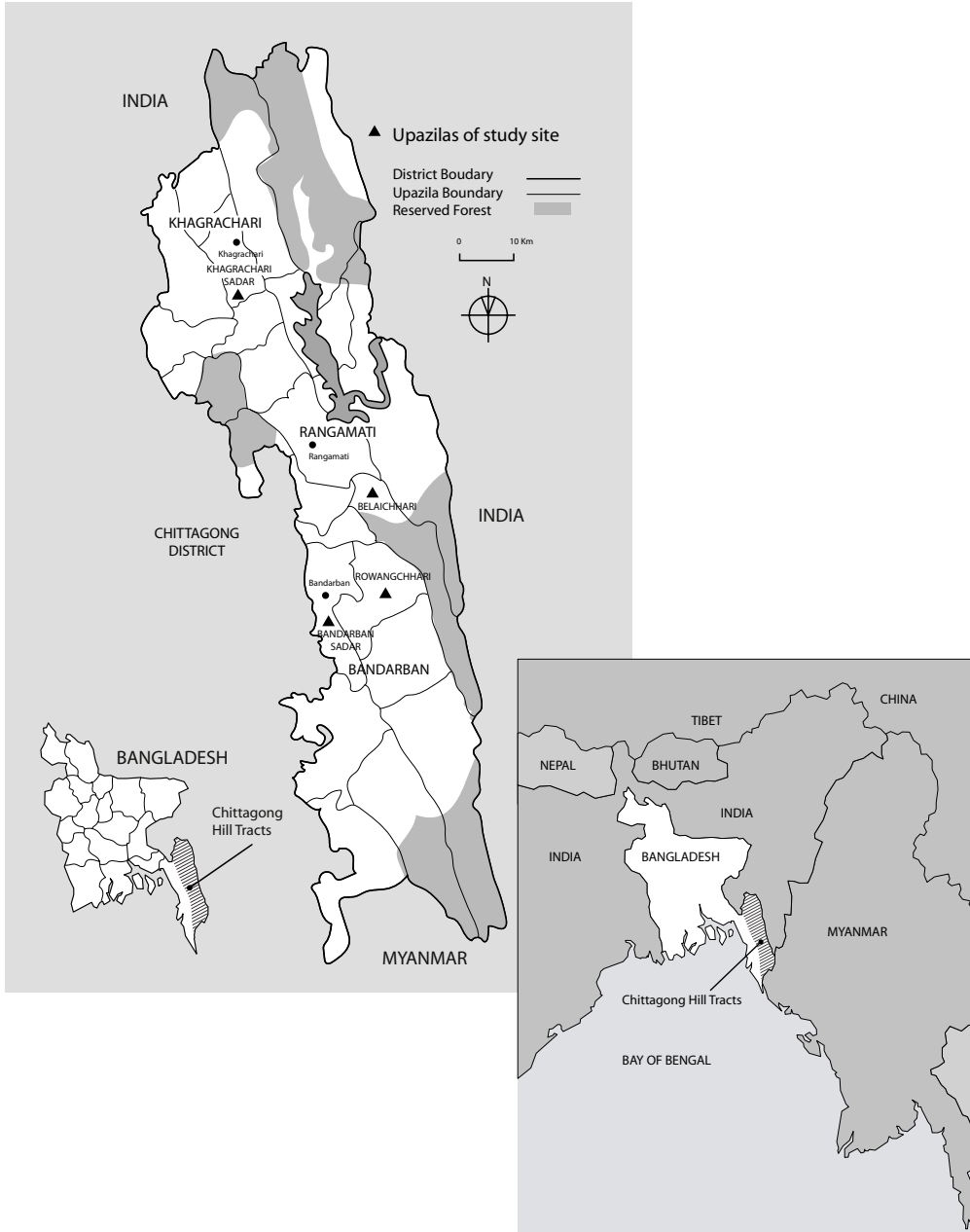


Figure 1. Map of the Chittagong Hill Tracts and the research locations

The region is predominantly a hilly area (about 80 percent) with a very small area of valley bottom lands (ADB, 2001; Brammer 1986), occupying approx. 7 percent, about 209 262 acres of the area. The region comprises 28 percent high hills (above 300 m), 22 percent medium-high hills (150-300 m) and 31 percent low hills (below 150 m). The region is under sub-tropical climate characterized by a warm wet monsoon season from April to October and a cool dry season from November to March with the annual average temperatures ranging from 25° to 35° Celsius (C), but dropping to less than 10°C during winter. Annual total rainfall increases considerably from north to south with about 2 000 mm in the northern district to 3 750 mm in the most southern districts of the region, 80 percent of which occurs between May and September. The maximum rainfall occurs during July to August and the minimum from January to February (ADB 2001: 19). The hill ecosystems of the region are fragile, marginal and are changing rapidly due to heavy population pressure.

In 1960, the dam at Kaptai under Rangamati District was constructed for hydro-electricity generation with funds from United States Agency for International Development (USAID). The reservoir created by the dam inundated about 1 000 square kilometres (km), about 40 percent of the arable land in the CHT. Approximately, 100 000 people, mostly indigenous, who used to cultivate the plain lands, were displaced by the lake water. Most of them moved to higher hills of the region and had to adopt *jum* cultivation for survival. This has tremendously affected the livelihood and food security of the *jumias* due to a reduced *jum* cycle with reduced yields.

From 1972 to 1997, a low intensity guerilla war was waged in the CHT in reaction to violations and suppression of the rights of indigenous peoples. As a counter-insurgency measure, the government implemented a transmigration policy to settle massive numbers of Bengali people in the CHT, forcibly changing the demographic composition and land distribution of the CHT (Adnan and Dastidar 2011, p. 42). The impact of the government's policy of sponsored settlement of plain-land Bengalis on the land right of indigenous people is far-reaching, and problematic; and is a major factor contributing to the prevailing unrest in CHT (Roy 2000: 114). Smith and Janani (2007: 16) reported that about 400 000-600 000 Bengali people moved to CHT, where they cleared trees on the steep hillsides and began farming, resulting in soil erosion. The conflict was brought to an end in 1997 by the signing of the CHT Accord between the Government of Bangladesh and the indigenous political party, Parbaty Chattagram Jana Sanghati Samity (PCJSS). However, the Accord remains only partially implemented with many of the most critical provisions remaining unimplemented, including the settling of land conflicts. The indigenous peoples, who are part of the hill ecosystems, are marginal in the sense that they are deprived of their decision-making powers and are engulfed by a vicious

poverty cycle. Productivity of land is also marginal because it is not at par with that of plain areas.

IV. Land rights situation of the *jumia* communities in the CHT

The land ownership of most of the indigenous peoples is based on customary ownership rights. The *jumias* usually do not have any private land for *jum* cultivation, but they consider the *jum* land as '*de facto*' property of the *para* (village). The plough cultivators in the valleys enjoy individual ownership titles unlike the *jum* cultivators, very few of whom have individual land titles (Roy 2002: 12-13). The traditional administrative system of the indigenous peoples in the CHT comprises *Karbaries* (village chiefs, elders), Headmen² (*mouza* chiefs) and Raja³ (circle chiefs). They are responsible for land and other resource management, revenue collection, maintenance of law and order, and administration of justice, particularly concerning customary matters of the indigenous peoples (Roy 2002: 19, 2005: 54).

The majority of the 297 households (94 percent) in the study areas are practicing *jum* with only customary land rights, i.e. they do not have title deeds. The communities of the three study areas (Paglachara Para of Bandarban District, and Gaach Kaba Sora Para and Digholsori Dheba Madha Para of Rangamati District) were affected and displaced by the Kaptai dam. The oldest *para* is the Paltan Joy Para of Khagrachari District (established in 1910). Afforestation programmes of the Forest Department on their *jum* land also affected the communities of this *para*. The communities of this *para* do not have land titles since their *jum* lands are claimed by the Forest Department. However, the communities took over the possession of the afforested land during the insurgency period (1975-1997) when the afforestation programme failed. The communities of the three *paras* (Mrolong Para, Mong Nue Headman Para and Long Thang Para) were allotted five acres of hilly land supported by local non-governmental organizations (NGOs), but they did not get the registered deeds of ownership since the registration process was stopped by the government after signing of the 1997 CHT Peace Treaty. It is usually assumed that at least two hectares (five acres) of hilly land per family is needed to meet the daily subsistence food needs. But the majority of households in the study areas own less than this minimum requirement (see figures on land holdings in the profile of the livelihood status of the communities in Appendix 2).

1. The impact of land and forest laws on land use

The CHT region has a unique legal and administration system that has no parallel in other parts of Bangladesh; many laws that apply in the rest of the country

have no manner of application in the region, and conversely, there are many laws that apply only to the CHT (Roy 2000: 35). Roy (2000: 54) provides a detailed account of the land tenure system in CHT and argues that the concept of land rights for the hill people is inextricably linked to collective rights based on customs and usages, and is held in common by the community as a whole, i.e. common right. Some customary land rights of the indigenous peoples in the CHT have been directly acknowledged by formal legislation. The customary laws are also to some extent acknowledged by the judiciary system.

The CHT Regulation of 1900 both restricts and confirms the primacy of customary rights of the indigenous peoples of the CHT with regard to the legal status of *jum*. These include the right to 'occupy' homestead land by the indigenous people (Rule 50, CHT Regulation) and the right to use forest resources (CHT Forest Transit Rules, 1973). Some customary rights are indirectly acknowledged by the CHT Regulation, such as the right to engage in *jum* cultivation (Rule 41), and the right to use forest resources for domestic purposes (Rule 41A). However, most of the customary rights over the land of the indigenous peoples remain largely unrecognized, thus impacting the lives and livelihoods of the *jumias*.

The CHT Regulation-1900 (41 Article A) recognizes that the Headman and Deputy Commissioner (DC) are the legal authority to give permission for *jum* cultivation (Roy 2000, 2002, 2005). The District Council chairpersons are empowered to control and regulate *jum* cultivation and may, for sufficient reason, declare any area to be closed to *jum* (CHT Regulation, 1900). Usually, *jumias* pay *jum* tax/revenue to the headman (chief of a *mouza*) annually for *jum* cultivation and the circle chief/Raja collects all *jum* tax/revenue from *mouza* headman on a particular day, locally called *Raj Punnya* (Ishaq 1971).

Apart from the formal rules, administrative orders of the local authorities affect the lives and livelihood of the *jumias*. In addition to the civil administration, the military administration occasionally issued orders, which affected the livelihood of *jumias* (Khisa *et al.* 2004). In 1988, *jum* cultivation was banned by the General Officer Commanding (GOC), Chittagong Cantonment by his office order No. 1033/CA/7/education-1/88/442 dated 27 August 1988. It was stated that the vast areas of land of reserve forest and unclassed state forest were destroyed by *jum* cultivation. Legal action would be taken if anybody practices *jum* after 30 August 1988. However, the ban of *jum* cultivation was eased in 1991, by the GOC, Chittagong Cantonment, by his office order No. 1033/CA/21/miscellaneous/99/754, dated 4 September 1991. It was stated that considering the livelihood of hill people, the ban of *jum* cultivation is relaxed under the following conditions:

1. *Jum* cultivation is prohibited within 15 km of border areas. In special cases, *jum* cultivation can be practiced with the permission of security force and local authorities.
2. *Jum* cultivation is prohibited within 2 km of reserve forests.
3. *Jum* cultivation cannot be practiced in any area which is demarcated by the *Jum* Control Division.
4. *Jum* cultivation can be practiced in areas other than mentioned above, by informing the appropriate authority.

The existing forest policies violate the traditional land and resource rights of the indigenous people of CHT (Roy 2000: 92). However, the indigenous people have been managing the forest according to their customs and practices. From time immemorial, the indigenous peoples of the CHT have been enjoying the right to use and extract forest produce, including the right to *jum* and the right to reside therein (Roy 1996). The indigenous peoples devised mechanisms and modalities to preserve and protect their resource base. According to Roy (1996, 2000: 86) *mouza* authorities were responsible for the overall use and management of the forest and their produce, including their conservation and regeneration.

The then British government declared large tracts of forest and *jum* land as reserved forests and management of these lands and forests were fully entrusted to the Forest Department. Motivated largely by its industrial needs, the then British Government in 1871 declared more than 80 percent of the area of CHT as 'government forest' under section 2 of Act VII of 1865 (Indian Forest Act). This declaration for the first time established some authority of government on vast areas of CHT.

Just four years after that, in 1875, the British Government again made provision of 'reserve forest' and declared about one-fourth of the forest area as reserve forest. *Jum* and other customary forest user rights, such as collection of fuelwood, bamboo and grasses, by local indigenous people were prohibited in the reserve forest.

In 1967, the then Pakistan Government created protected forest, another class of forests in addition to the two already created by the British Government. *Jum* cultivation was also banned in this type of forest.

In 1992, the Bangladesh government decided to expand the area of reserve forest in the CHT and decided to declare 48 897 ha (120 776 acres) of unclassified state forest (lands used for *jum* and *jumias'* homesteads) as reserve forest (30 769 ha in Rangamati, 15 136 ha in Khagrachari, and 2 991 ha in Banderban) (Mohsin 1997), which deprived the indigenous people of their user rights and created further pressure

on their livelihoods. In 1977, the government decided to promote commercial rubber plantations in the CHT and consequently, more than 12 458 ha of hilly land (former *jum* fields) under Bandarban District were brought under rubber plantations by Bengali businessmen. Mohsin (1997) reported that the government leased out 3 757 hectares of grove land in 373 plots allotted to outsiders for horticulture development.

The implementation of all these government policies, in addition to the construction of the Kaptai Dam, the transmigration programme and the continuous in-migration of Bengalis from the plain districts substantially decreased and continue to decrease the area for *jum* cultivation.

A number of development programmes have been undertaken by the Bangladesh government to settle the *jumias* with a view to improve their deplorable socio-economic conditions. However, the programmes failed as little or no initiative was taken to improve the *jum* system, such as increasing the resilience of the system by improving soil fertility and conserving soil by improving management and cultural practices. Moreover, little attention was given to involve the *jumias* in planning and implementing the development projects and empowering them by developing their traditional institutions. Consequently, Rasul (2005) concludes that governmental policies and programmes aiming at promoting alternative land-use practices in the CHT have largely failed to achieve the desired goals. Thapa and Rasul (2006) have stressed that attempts to replace *jum* with more productive types of sedentary agriculture have failed due to the absence of security of land rights, supportive trade policies, and the required support services and facilities, including infrastructure. Hence, Roy (2000) argued: "Externally-conceived development planning for the CHT has done more harm than good to the indigenous people, and to their traditional occupational practices."

2. Coping with restrictive laws and policies

The *jumias* in the CHT have now learned to raise their voices against the restrictive laws and policies of the government with the support of local and national NGOs and 'civil rights groups'. The legality of the policy of the Forest Department for the extension of reserved forests has been challenged in the High Court with the support of the Civil Society Organization (CSO), *Movement for the Protection of Forest and Land Rights in the CHT*.

In order to cope with the restrictive laws and policies, some *jumias* are compelled to abandon their *jum* fields and change their traditional occupations and livelihoods and take up other occupations, such as small traders, fire wood/timber suppliers, brokers, etc. Some *jumias* are converting their *jum* plots to teak, Gamari and other timber species plantations to establish their rights to their land. Some *jumias* are

working as day labourers in private rubber plantations and fruit orchards in their own *jum* plots, now owned by outsiders. In places where security camps are established close to their *paras*, the *jumias* have moved to remote areas in order to cope with the restrictions imposed on *juming* by the security forces. There are instances where the vacated lands were later occupied by outsiders, particularly migrated Bengali settlers, who used the land for commercial cultivation of timber species.

V. Current livelihood systems

Four types of *jum*-based livelihood systems can be distinguished in the CHT:

1. *Jum* only,
2. Mainly cash crop cultivation along with usual *jum* crops,
3. Mixed farming system with both *jum* system and plain land agriculture combined with cultivation of fruit and timber trees in the homesteads,
4. Sequential conversion of *jum* to horticultural cropping.

Poultry and livestock are also important components of the livelihood systems of the *jumias* in all studied *paras*; fishing is also practiced in Kaptai Lake in the two *paras* in Rangamati District. Data on the main components and variation of the livelihood systems is provided in Appendix 3.



Figure 2. *Jhum* landscape in Khagrachari District in 2000. Photo: Christian Erni

The present livelihood systems within the *jumia* communities vary depending on the infrastructure, availability and size of different land types, including plain land, *jum* land and the off-farm employment opportunities. From the field studies, it is seen that households that have a large area for *jum* cultivation, plain land (including fringe land⁴ in Rangamati District) for paddy cultivation, as well as the households who cultivate annual cash crops in *jum* along with fruit/timber trees are better-off than the households who have smaller area for *jum* and are dependent on *jum* only. However, very few households have all these types of opportunities in the study areas (see data in Appendix 2 and 3).

The factors for the livelihood variations among the communities of study areas are location specific and also dependent on outside pressures and support. The *paras*, which are close to towns and have market access (as in Paltan Joy Para and Goai-ma-aaat Para), are facing tremendous pressure to sell their lands to people who have money and are offering to buy their *jum* lands to develop mixed fruit orchards or timber plantations. The *jumias* who can afford it are also converting their *jum* lands to mixed fruit gardening.

In the two study areas of Rangamati, Gaach Kaba Sora Para and Dighol Sori Dheba Madha Para, the *jumias* have alternative sources of income from fishing in the lake. These *paras* have little pressure from outsiders, except the Forest Department, because they are within the proximity of reserve forest areas. In Bandarban District, the *para*-dwellers have access to roads connecting their village to local markets; therefore, they can sell their produce within their village because buyers visit their *paras*.

1. *Jum* in the livelihood systems of the CHT

The present *jum* system

The *jum* rotation cycle varies with location and the availability of hilly land for *jum* cultivation. *Jum* cycles have now contracted to two to three years of fallow period as a result of various factors listed below:

- Loss of plain agricultural land due to unfavourable government policies like the construction of the Kaptai dam for hydro-electricity generation;
- The expansion of reserve forest areas since the colonial period, and;
- Leasing of unclassified state forest land for rubber, tea, industrial (pulpwood) plantations and infrastructure development, including the government sponsored population transfer programme that resettled the Bengalis from the plain districts of different parts of the country to the CHT.

The field situation confirmed the farmers' views that the *jum* cycle is now reduced to two to three years. The vegetation characteristics, like the size of the seedlings of different trees or other plant species of the fallow, clearly supported this observation. The majority of the *jumias* now find it difficult to fulfill their subsistence needs from *jum* due to the declining rice productivity associated with the deteriorating soil fertility. In *jum* systems in the CHT, all vegetation is cut in the months of January and February and kept in the field for sun drying. Adequately dried vegetation is burnt in the months of March and April, and then the fields are cleared of charred debris and prepared for sowing.



Figure 3. Increasing land scarcity: *Jhum* field on steep slope. Photo: S.K. Khisa

Jum fire, if not managed properly, may sometimes lead to damage of fields and fallow and other properties of neighbouring areas. However, the *jumias* in the CHT have their own rules for fire control. They ignite the fire in the daytime and try to control the fire jointly. If the speed of the wind is very high, they do not set fire in the *jum*. Sometimes fire lines are cut to control the fire. Brauns and Löffler (1990: 111) gave a detailed account of the indigenous fire management. According to them, in order to prevent the fire from jumping uncontrollably from one field to another, the exact days for burning are agreed upon, not only within a given hamlet itself, but also among the various settlements in the neighbourhood. The *Karbari* decides the dates in advance. Around the concerned area, wide lanes are cleared of everything

ignitable and bundles of long split bamboo canes are laid ready to serve as torches. Outside the boundary of the field, a small fire is finally made and the torches are lighted; then men torch around the area as quickly as possible, setting fire in several places on the outside edges. The burning is done either in the morning or evening because wind is normally still during this time. If the plot to be burnt is very close to the village, people may even wait until it has become completely dark, so that flying spark can be more easily observed. "Generally, by choosing a calm day, and keeping down the fire at the edges of the *jum* by beating with boughs, the hill people manage to keep the firing within certain prescribed limits." (Hunter 1876: 72).

In the month of May, with the initiation of the first rain showers, different seeds are sown together using *dao* (a flattened knife with sharp edge) for dibbling. The *jum* fields are weeded two to three times to reduce the competition for nutrients by the weeds.

Jum is a production system based on inter-cropping of many different crops on sloping land under rainfed condition. About 50 to 60 crop cultivars of cereals, vegetables, medicinal herbs, spices and ornamental plants have been reported to be grown together in a single plot of *jum* (Khisa *et al.* 2005). Species diversity of annual and perennial crops is an important aspect of the system. According to the communities, faunal diversity (birds, insects and some mammals) gets enhanced in the *jum* system. A list of some crops grown in the *jum* fields is given in Table 1 and a more comprehensive list of *jum* crops is provided in Appendix 5). Due to climate change, the rainfall is not following the usual pattern, which is also affecting the *jum* production. Some crop species and varieties have become extinct from the system due to lack of conservation initiatives.

The *jumias* have their own landform classification and nomenclature and use multi-zonal land-use systems compatible to the landscapes. They follow some sort of zoning in land use, which can be categorized as *para* or villages, farming sites, and fallow *jum* land. They also use streams and watercourses for multiple purposes. They select *jum* plot based on soil qualities and the presence of plant species, including bamboo. They prefer black soils with burrows of earthworms covered with vegetation, preferably bamboo. The fallow *jum* land is called *raiyna* in Chakma language, which means 'market'. They collect wild herbs, vegetables, fuelwood and a large number of commodities from the fallow *jum* land.

The communities of Paglasora Tanchangya Para and Long Thang Khumi Para have traditional management norms, which combines *jum* cultivation with the management of use of 'village common forests (VCFs). These VCFs are natural forests that provide ecosystem services to the communities and conserve biodiversity. In addition, they provide wild food, drinking water, timber and non-timber forest

Table 1: List of the main *jum* crops in CHT

Local name	English name	Scientific name
Dhan	Rice	<i>Oryza sativa</i>
Mokkya	Corn, Maize	<i>Zea mays</i>
Job Dhan	Barley	<i>Hordium vulgare</i>
Ghochya/Til	Sesame	<i>Sesamum indicum</i>
Kon Soal	Fox tail millet	<i>Setaria italica</i>
Joar	Sorgum/Broom corn	<i>Sorghum vulgare</i>
Sal Kumuro	Wax gourd, a variety of bottle gourd	<i>Benincasa hispida</i>
Sora Kozu	Aroides, Arum	<i>Colocasia esculenta</i>
Ool Kozu	Corm/Taro	<i>Amorphophallus campanulatus</i>
Matya-Alu	Yam	<i>Dioscorea alata</i>
SoochMorich	Chilli	<i>Capsicum annum</i>
JummoBagoon	Brinjal, Aubergine	<i>Solanum melongena</i>
Jum/Kem Sumi	Bean	<i>Vigna sinensis</i>
Karanga Sumi	Winged bean	<i>Psophocarpus tetragonolobus</i>
Shimei Alu	Cassava	<i>Manihot esculenta</i>
Sabereng	A basil like herb, a leafy spice crop	<i>Ocimum americanum</i>
Baghor Pada	Cilantro? A corinader like leafy spice crop	<i>Eryngium foetidum</i>
Amila	Roselle, a leafy vegetable with sour taste	<i>Hibiscus sabdariffa</i>
Arhar/Dumoor Sumi	Cowpea	<i>Cajanus cajan</i>
Holot	Turmeric	<i>Curcuma longa</i>
Ada	Ginger	<i>Zingiber officinale</i>

products (NTFPs), and also serve as the habitat for wild animals and birds. Taboos as part of the traditional belief system of the *jumias* (such as *Jum Dooch*, believing that spirits dwell in certain areas and keeping areas untouched) help in natural resource management and biodiversity conservation.

The traditional management system of *sora* (stream) protection by bioengineering measures like planting thick-walled bamboo species (*Bambusa vulgaris*) for maintaining water flow and managing watersheds in the CHT is also worth mentioning.

Jumias follow particular vegetation and tree management systems while practicing *jum*. Felling of trees by *jumias* is a bit different from those of plain land people. Usually *jumias* cut trees at about 1-1.5 metres above the ground. Apparently, it seems like a good portion of timber is wasted. However, the reason behind this practice is

that new sprouts grown from these stumps remain beyond the reach of the browsing animals and the new shoots come out straight. The coppice management system by the *jumias* (cutting the tree at a certain height that assists in coppicing from the tree stump) is a good practice in tree management (Khisa *et al.* 2006).

Social institutions, norms and values play an important role in regulating *jum* cultivation and managing natural resources. The traditional institutions of the *Karbari* (village chief) help the communities not only in maintaining social order but also in managing natural resources. Community members follow their leaders and set rules related to social and cultural affairs and natural resource management. The concept of labour sharing to overcome labour shortage—locally known as *lakcha* among Marma, *towai kinang* among Khumi, *maleya* and *bala suza-suzi* among Chakma communities—is also a good practice and maintaining these social and cultural values assists in maintaining the livelihoods and food security of the *jumias*.

Reasons for practicing *jum*

Many of the *jumias* in the CHT study *paras* are still in favour of continuing *jum*, even though some of them also opined that they would like to convert *jum* to mixed fruit gardens if they would get financial and technical support. They have been practicing *jum* for generations and it is an integral part of their culture and tradition. Since *jum* is a multi- and inter-cropping-based production system with the opportunity of sequential harvesting, they get rice and almost all types of vegetables from *jum*, which are otherwise not available from plain land agriculture and other farming practices.

The *jumias* enjoy a very simple life; they enjoy happiness and mental satisfaction during and after a good *jum* harvest. But, their happiness is now being shattered by several different problems. Most *jumia* households are poor and now face food shortages for at least three to six months a year. They try to cope with the situation by collecting fuelwood, bamboo shoots, wild food plants and other forest products, which they go and sell in the nearby markets and with the money earned, they buy rice and other food. But, in the remote areas, the *jumias* have poor market access.

Jum crops are generally used for household consumption, but surplus produce is taken to the market for cash when possible. Farmers have to wait for the market days to sell their produce. Therefore, they prefer to grow cash crops like turmeric or chilli, which can be preserved for a long time so that they can sell them whenever the price is good. These products are also supplied to different parts of Bangladesh. There are two more reasons for the prevalence of subsistence agriculture; firstly, for many farmers *jum* fields are the only source of rice and vegetables, and secondly, there are very few opportunities for off-farm income in remote areas.

Valley bottom plain lands are limited in the CHT, particularly in Bandarban and Rangamati study areas, and most of the available plain lands are now sold to or occupied by outsiders, particularly in the Khagrachari study *paras*. Moreover, a proper use of these limited lands requires financial and technical capital, which the poor *jumias* cannot afford. So they have no other options but to depend on *jum* on the available hill slopes for their sustenance. Furthermore, with the shortage of plain land as a result of population pressure due to government-sponsored settlement of Bengalis from the plains districts, the *jumias* are being pushed to the limits of *jum* as there are hardly any other options left.

The *jumias* are short of financial capital and have limited access to credit facilities because they cannot produce any deed of land titles as collateral. They often borrow money from Bengali moneylenders or from their relatives or neighbours with the promise of repayment from future harvests. The poor *jumias* have very limited cash income, so they sell their labour for their subsistence. They are also known to grow rice, or work as sharecroppers, on other people's *jum* land that is used for cash crop cultivation.

The *jumias* suffer from poor education and health conditions in the study *paras*. Some primary level education is available and managed by NGOs. High school facilities are available in *Upazila* (sub-district) towns. Proper healthcare service is not available in the villages and poor health results in low productivity of labour, and correspondingly low crop yields. Most *jumia* farmers are not familiar with the cultivation techniques of wetland rice cultivation and growing vegetables and other new crop species in the lowlands. Many also do not use fertilizers and other agrochemicals. Lack of awareness and suspicion are constraints to the capability of the *jumias* to embrace new farming technologies.

The immediate daily needs of the *jumias* are not met by other farming practices like horticulture and tree farming. The negative aspect of investment in horticulture and tree crop farming is long gestation period for maturity of horticultural and tree crops. Moreover, the Forest Transit Rules, 1973 and subsequent administrative orders regulate the harvesting and marketing of timber and other forest products available from their own land. These rules require people to obtain written permission from the Forest Department before harvesting and transporting forest products, especially timber, for marketing. Getting permission or licenses is often difficult and cumbersome for the poor *jumias*. Due to the difficulties of getting these permits, private tree growers are compelled to sell timber to local traders or traders from outside at a price lower than market rate, which is a disincentive for growing timber crops. Growers and traders have to pay legal and illegal taxes to different local organizations for transporting and marketing agricultural products. All these taxes lower the local price, which discourages farmers from opting for private tree farming.

As mentioned earlier, most of the *jumias* in the study areas in the CHT do not have land titles. Tenurial insecurity combined with frequent displacement due to land conflicts with the Bengali settlers give a feeling of insecurity of lives and livelihood of the *jumias*. Tenurial insecurity also limits access to formal credit for initial investment and procuring the inputs needed to improve land use and discourages long-term investment in better land and fallow *jum* management. Remoteness from markets and absence of off-farm employment opportunities are also among the causes of the continuance of *jum*.

Government support services to improve agricultural practices are not available. The non-availability of quality seeds or seedlings is a constraint for practicing other forms of agroforestry. Moreover, if there is any programme for the improvement of the lives and livelihood of the *jumias*, they are imposed without any consideration of their choices, resulting in their passive participation, if at all. *Jumias* mostly remain untouched by development programmes implemented by government and non-governmental agencies. Most of the development programmes are implemented by these agencies for the benefit of plain land farmers and their agricultural practices.

Advantages and disadvantages of *jum* cultivation

According to the *jumias*, there are many advantages of *jum* farming. *Jum* is an indigenous knowledge-based production system that helps to maintain the traditional culture and heritage of the indigenous peoples. *Jumias* get diverse seasonal crops from *jum* fields and it secures their rice, vegetable and other food needs for at least a few months of the year.

Jum is a zero tillage cultivation system with minimum soil disturbance and nutrient loss. *Jum* is rain-fed, so there is no need of watering or irrigation in a *jum* field. There is a higher agro-biodiversity in *jum* than in lowland agricultural systems. *Jumias* have their own seed preservation system for future cultivation. There is a great demand of seasonal and annual cash crops from *jum*, like ginger, turmeric, chili, cucumber (*jum marfa*), *kozulkocho* (arum/aroides) etc. in the local market.

Jum crops are acclimatized to local conditions and are usually resistant to pests and diseases. Therefore, the use of chemicals for pest and disease control is not required. *Jum* crops can be harvested sequentially without hiring outside labour. Traditionally, *jum* fields are cropped for only one year, and many food crops, spices, and medicinal and aromatic plants are harvested from the fallow *jum* fields locally known as *ranya* ('vegetable market'). Harvesting such crops from fallow *jum* without any cost helps farmers to earn extra income. Cassava and sweet potato, being the second year crops, act as food insurance crops. Finally, *jum* has a cultural significance because there are ceremonies and rituals connected to *jum* cultivation.

A number of features of *jum* farming act to ensure ecological stability. Resilience to variable weather conditions is obtained by staggered planting, the use of rice varieties with different maturing periods and by multiple cropping with crops having varying susceptibility to unfavourable climatic conditions. Thus crops such as cassava, sweet potato and yams are included as emergency food supply, although they are not a basic staple food in the CHT. Resilience to pests, diseases and weeds is ensured by multiple cropping, since crops differ in their susceptibility to these threats. Site-regenerating fallow vegetation is encouraged by suitable land preparation techniques, such as sparing useful natural trees and leaving high tree stumps for regeneration.

In spite of the many benefits from *jum*, the *jumias* in the study areas also see some disadvantages. The main disadvantage they identified is that *jum* can no longer ensure food security and sustain their livelihood because sufficient land for *jum* is now not available due to an increased population pressure in the CHT. Productivity of *jum* crops, particularly rice, has decreased because soil fertility has declined due to shortened fallow periods. Soil fertility recuperation capacity of the present *jum* has also decreased. Rice production in *jum* is now limited and not enough for ensuring rice security; it can sustain households only for about 3-6 months. *Jum* cannot be practiced every year in the same piece of land and requires at least 7-10 years of fallow period for soil recuperation. But in the CHT, the fallow period has gone down to 2-3 years due to various factors. The decline of the length of fallow and higher incidence of pests, weeds and diseases are constraints in *jum* system. As the vegetation cover in *jum* fallow becomes gradually thinner, *jum* land also becomes infertile due to nutrient lost from the system. Therefore, more and more fertilizer is required to sustain the system, but still with very low productivity. The weed problem gets bigger when there is no tree cover during fallow. Weed control is an alarming problem in shortened fallow *jums*.

The *jum* system is also largely dependent on weather and without timely sufficient rainfall, production gets hampered. When cash crop cultivation is introduced in *jum*, nitrogen fertilizers and herbicides are introduced. Use of fertilizers increases the cost of production of *jum*. However, use of herbicides reduces the cost of labour for weeding. One man-day of labour, if hired, will cost 300 Taka (US\$3.75). Today, shortage of labour is a major problem, especially during the period of peak activity such weeding and harvesting.

Jumia households that are totally dependent on *jum* as their source of income are known to face more problems and they are among the 'very poor' group in the category of livelihood status. Rice production from present *jum* does not meet the family needs when compared to the production in the past. According to the villagers interviewed, rice production was about 1 500 kg per hectare, per year in the past, but

now it has reduced to about 340 kg per hectare, per year. *Jumias* have also reported that they are now using fertilizers when cash crops like turmeric are included in the *jum* system. The fertilizers are more costly than in the plain land. The price of fertilizers also varies with the distances from city and district town. In the border areas, fertilizers are not easily available because of government restrictions. However, no fertilizers and pesticides are used in the *jums* in remote areas (known from the key informants of the remote areas). When they use chemical fertilizer (particularly urea for increase of production) in *jum* fields, *jumias* face the problem of preserving the annual crops like *marfa* (cucumber) or chilli for longer periods after harvest. *Jumias* also face problems with the Forest Department, which is implementing the so-called 'afforestation' programmes with monoculture, such as pulpwood species, in their *jum* fields.

VI. Livelihood and food security

As mentioned earlier, the livelihood pattern of indigenous peoples in the CHT is still dominated by subsistence agriculture, which is a combination of *jum*, plough cultivation and mixed fruit gardening. But *jumias* find it increasingly difficult to meet their food needs from *jum*. Food security is threatened by the declining productivity of *jum* because of shortened fallow period as areas available for *jum* is decreasing due to a number of factors, including forced occupancy of *jum* fallows by security camps, restrictions of *jum* surrounding the camps, afforestation programmes by the Forest Department, extension of 'reserve forest' to *jum* areas and homesteads of *jumias*, and commercial plantations by outsiders (World Food Programme 2005). *Jum* lands also were and continue to be forcibly occupied or taken over through intimidation by Bengali settlers.

Another reason why the *jumia* households in the CHT are highly vulnerable to food insecurity is their limited access to food from the market and the high prices of food grains in recent times (Mohabbatullah *et al.* 2012). Low yield in rice is another major cause of food insecurity reported by the majority of *jumia* respondents in the study areas. On the other hand, the demand for food is increasing day-by-day in the three hill districts along with the increasing population in the region (Figure 1). According to Jamaluddin *et al.* (2012: 28, 37), the annual per household rice requirement of the *jumias* is estimated at 1.26 tonne for the indigenous people. Food availability has been recorded to be 0.79 tonne, which constitutes 54.1 percent of the total requirements. Consequently, rice shortage is 0.49 tonne, which is a shortage of 45.9 percent.

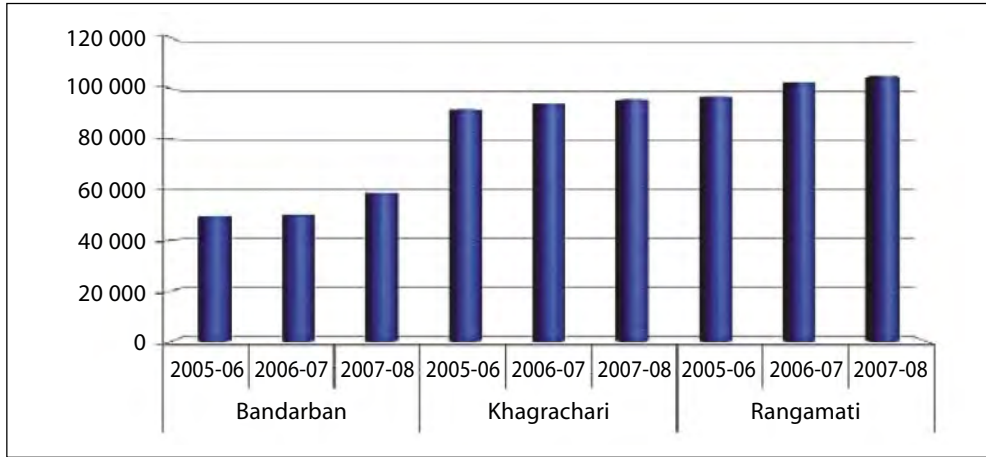


Figure 4. Increase of food demand in three districts with time due to increased population pressure (Source: Mohabbatullah et al. 2012, p. 3)

The World Food Programme (WFP) (2005) characterizes food security as “a situation in which all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Accordingly, the WFP considers the CHT as a highly food insecure area with regard to food, and all the three hill districts have pockets of food insecurity located in the remote and inaccessible areas. In addition, WFP (2005) reported that rapid growth of population in the region through transmigration of Bengali settlers has created tremendous pressure on the limited cultivable lands. The yields *from jum* have gone down substantially. This has put serious pressure on the livelihood of the *jumias*. In a study by the NGO, CARE-Bangladesh in 1999, it was estimated that most *jumia* households faced food shortage varying from three to six months due to the declining crop yields caused by land degradation (Sutter 2000). As there is very limited scope for alternative means of livelihood, *jumias* have to depend on wild food and sometimes face hunger (Sutter 2000).

The majority of the households in the study areas in Bandarban depend on *jum* cultivation for their livelihood. Yet, most of the *jumia* households (almost 90 percent in case of Paltan Joy Para in Khagrachari) were found to be dependent on daily wage earnings to support their livelihood. Collection and selling of fuelwood and NTFPs, including wild food plants, were found to be another important source of income. According to the *jumias* interviewed, it was estimated that these collection of wood and food from the forest contribute about 30 percent livelihood support to the *jumia* households in this study para (a list of wild food plants is provided in Appendix 4).

Now, the *jumias* can rarely afford to eat rich food like meat or fish from the market and they do not have sufficient cash in hand to buy required food from the market as reported during discussions with them. Limited available land per household for *jum* cultivation is one of the important bottlenecks, leading to food shortages. Livestock and poultry are also important sources of food and nutrition and income generation. In the study areas, *jum* crops were damaged mainly due to irregular rainfall (observed climate variability), attack of wild animals, particularly monkeys and rats (especially during the time of bamboo flowering), among others.

Food insecurity increased significantly among those who lacked flat valley lands or any paid employment. Rice production from plain agricultural land is better as compared with *jum*, therefore, supports better livelihood and food security. However, this option is available only to a few in the CHT, most *jumias* in the study areas (94 percent) lack flat valley lands (only 6 percent cultivate plain agricultural lands), and consequently they face food insecurity. Most of the food grown through *jum* is consumed at the household level, often some excess are sold to obtain disposable income. Food can be available in the market but accessing it depends on the purchasing power of a household, the transportation system and thus access to markets.

Market facility is not only an indicator of the food supply situation, but also indicates money transaction and economic vibrancy in an area. Traditional common food consumption of the *jumias* in the study areas includes rice with boiled leafy vegetables or chili paste mixed with dry fish or Sidol/Nappi (paste of marine shrimp/fish). In the study areas as reported during focus group discussions, *jumias* rarely consume milk and *dal* (lentils) because they are not used to them traditionally, and moreover, most cannot afford them. Their daily meals are merely meant to meet the hunger and lack in meat and fish. Very few *jumia* households take three meals a day and on an average, only 20-30 percent can afford three meals daily (WFP, 2005). *Jumias* also lack access to safe drinking water and sanitation. Existing health and sanitation facilities and services are known to be extremely poor in all the study sites. Health facilities are only available in district and sub-district towns and qualified paramedics/midwifery services are not available in the *paras*, so they mostly rely on traditional healers (*Baidyas*) except in the two *paras* in Khagrachari.

Women are also crucial in ensuring food and nutritional security of a *jumia* household. But they have comparatively less access to productive resources and economic opportunities than men. These inequalities result in less food production, less income earning, and higher levels of poverty and food insecurity. Gender disparities need to be addressed and effectively reduced. So, in any programme, involvement of women at all levels of decision making is absolutely necessary to attain food and nutritional security.

Critical gender analysis is absent in literature on *jum* in CHT. Khan and Khisa (2000) referred to clear division of work among men and women in upland agroforestry farming system in the CHT. In *jum* farming, there is also gendered division of labour like slashing is done by men, and women do the weeding. But dibbling of seeds, harvesting and marketing are done both by men and women. In plain land agriculture, men do the ploughing, and land preparation etc., but sowing of seeds/planting of seedlings, weeding, and harvesting are done by both men and women. It is known that women participate in *jum* system more actively than in plain land agriculture and have more work-load than men in *jum*.

3. Contribution of *jum* to livelihood and food security

Jum is a diversified culturally linked multi-cropping production system, and therefore, has a big contribution to food security of the *jumias* who do not have to think for rice and vegetables for at least 6-9 months of the year. *Jum* vegetables can be easily preserved by the *jumias* without using any preservatives. Diverse crops can be cultivated in the same piece of land without any extra inputs. Diversity of crop species within a small place is quite impossible in other lowland agriculture practices. *Jum* is known as a 'bazar' from where all the vegetable needs can be harvested. Therefore, the *jumias* do not have to worry about vegetables for their daily food.

Availability of tasty and chemical-free food can only be produced in *jum*. Seasonally varied subsistence and cash crops are produced in *jum*. *Jumia* women collect wild food plants from adjacent forests or cultivated crops from fallow *jum* fields. *Jum* also ensures availability of a variety of scented and tasty rice, including sticky rice. *Jum* seed preservation is easy for future cultivation. Different crops can be harvested sequentially from fallow *jums* and help in achieving food security. *Jum* crops are generally durable, particularly if fertilizers are not used. There is a high demand for seasonal and annual cash crops of *jum* like ginger, turmeric, chilli, cucumber, *kozu* (Aroides) etc. in the local market. Therefore, *jum* provides food for the family as well as some cash income.

VII. Livelihood changes

As mentioned earlier, the *jum* system can support at best 6-9 months food security depending on the size, location and quality of *jum* land plots. At the same time, the expenditure of the *jumias* for food, health care, housing, recreation, social ceremonies, and children's education has increased. Therefore, many *jumias* are depending on other alternative options of livelihood like horticulture, animal husbandry, collection and sale of fuelwood, timber, bamboo, and other NTFPs, running small trades (tea stall and grocery shop), working as day labourers on others

horticulture and farm forestry plots, fishing, small scale agriculture-based middleman or broker, including some other professions and trades. The scope for engaging in these trades and vocations varies with location and access to road networks and markets.

Market demand for fruits and availability of saplings in the market have motivated the *jumias* to opt for fruit orchards (particularly pineapple, mango, papaya and litchi) in the homesteads. Income and expenditure of some of the *jumia* households have increased because they are including market-driven cash crop cultivation like turmeric, chilli, ginger, aroides, and fruit trees like banana in their *jum* plots.

Demand of labour in well-off farmers' fields, increased rate of daily wages (at present Thaka 300 (US\$3.75), as well as increasing cash income from the sale of cash crops have brought changes in food habits among *jumias*. Nowadays, whoever can afford are getting used to eating more fruits and are developing the habit of taking three instead of two meals a day. However, incidences of poverty have also increased among some *jumia* households who are close to town areas (as in the studied paras in Khagrachari), where they are often lured into selling their *jum* land to local business people who are interested in fruit tree cultivation like mango, pineapple, litchi and plums.

In the study areas, an overall reduction in cases of starvation was observed along with a reduced intake of yams and bamboo shoots as substitute for rice during the lean period (particularly during the rainy season). In addition, *jumias* can now buy coarse rice at affordable price from the market with their wage earnings and income from selling cash crops or NTFPs, whose price has risen due to an increased demand in the local market. Accessibility to markets in the study areas in Bandarban has created off-farm employment like petty trading and village tea-stalls or grocery shops for a few of the *jumia* families. There is a strong shift towards market-oriented occupations and increased instances of multiple occupational patterns, a trend that is more than likely to continue in an accelerated manner in the near future. (Roy 2000: 101-105)

Jumias are now more aware about education and are sending their children to schools as the *jumia* paras have primary schools. Local and some national NGOs are working for awareness-building and providing support for the establishment of private educational institutions with free schooling facilities. But the *jumias'* educated children are no longer interested in *juming* and are changing to non-traditional occupations. Training and awareness-building by local NGOs with support from national or international NGOs have increased the expectations of life and livelihood.

Changes in housing patterns of the *jumias* are also observed. *Jumias* are using corrugated iron sheet instead of sungrass (*Imperata cylindrica*) as thatching material and

mud instead of bamboo for making walls. Use of herbicides for commercial cropping and more inclination towards fruit orchards and tree farming almost eradicated sungrass from the hill sides and flowering of bamboos caused scarcity of bamboo in the CHT.

In less remote areas, *jumias* now have access to mobile phone networks, leading to more social connectivity with increased communication with friends and relatives, increased access to market information and better contact with buyers.

There are also changes in livelihood patterns, such as changes in the clothes of men like shirts and use of *lungi* (sarong-like garment) instead of traditional dresses. Now, wearing of traditional dress is seen only on ceremonial occasions and more *jumias* are getting used to buying cheap (second hand) readymade garments from the market.

Because of the decrease in the populations of wild animals, *jumias* are now more used to consuming meat of domesticated poultry and livestock. This change is also related to market demand and awareness-building by NGOs for poultry and livestock rearing. *Jumias* are also taking initiatives in rainwater harvesting and fish farming due to drying up of streams, seepage in water sources, and non-availability of water during dry season in the CHT.



Figure 5. Jum plots converted to mixed fruit garden with rain water harvesting structure by a jumia household of Goai Ma Aat Para, Khagrachari. Photo: S.K. Khisa

1. Adaptation mechanisms addressing livelihood challenges

The *jumias* in the CHT are facing huge challenges in adapting to the changes brought about by increased population pressure, loss of *jum* land, unsustainable management of forest resources and various government policies and programmes. *Jumias* are now increasingly diversifying their livelihoods by cultivating cash crops in *jum*, horticulture or tree farming, or by petty trading of forest products.

As alternatives to solely subsistence-oriented *jum*, the majority of the households in the studied *paras* (69 percent of the 287 households in all eight study *paras*) are practicing *jum* combined with cash cropping and mixed fruit gardening. Cash crops like turmeric are now cultivated in *jum* fields, and the *jumias* are increasingly adopting non-*jum* techniques to grow cash crops as improved marketing conditions and outlets favour cash crop production. Access to market is a powerful stimulus for spontaneous adjustments in *jum* cropping systems and an important factor in judging the economic reliability of market-oriented improvement of *jum* system. Other than cash crops, the *jumias* are also motivated to rear goats, cattle, poultry and pigs for alternative income generation.

Some of those who can afford it are gradually converting a portion of their *jum* fields into fruit orchards of pineapple, banana, mango, litchi and other fruit trees and timber trees like teak and *Gmelina arborea* and *Albizia procera* for cash income. They are earning more income from the mixed fruit garden than from *jum* only.

Households that are cultivating cash crops along with *jum* (as in study *paras* in Khagrachari and Rangamati district) are earning more (Taka 100 000 to 120 000 or US\$1 270 to US\$1 520 per hectare per year) than from the *jum* system alone (Taka 50 000 to 70 000 or US\$635 to US\$880 per hectare per year). This production figure varies with location and quality of the soil. The income from horticulture and timber-based production system requires longer gestation periods than all other farming systems. The *jumias* in the study *paras* of Bandarban are also cultivating tobacco and cucumber for cash income in their limited available agricultural lowland and/or taking lease of plain land using advance loan facilities from tobacco companies and businessmen.

Sometimes, private landowners allow *jumias* to cultivate *jum* on their land in lieu of certain services. These services usually take the form of planting fruit seedlings in the *jum* field as per the advice of the landowner. During the time of *jum* and harvesting, the *jumia* is obliged to tend to the planted seedlings.

Only 6 percent of the households are cultivating plain agricultural lands and are thus not dependent on *jum*. About 25 percent of the households in the study areas

are totally dependent on *jum*. These *jum*-dependent households have a precarious livelihood situation and are living a hand-to-mouth life by getting engaged as daily labourers and collecting and selling fuelwood, NTFPs, etc. (as e.g. in Paltan Joy Para in Khagrachari District).

The *jumias* of Paglasora Tanchangya Para and Long Thang Khumi Para in Bandarban District are also managing common village forests for common use of forest resources near their *paras*, which provides NTFPs and wild vegetables at times of need.

There are reports of more incidences of pest and diseases because high yielding varieties (HYV) of rice instead of traditional rice varieties are used now. Increased cost of production of *jum* rice and other crops due to use of fertilizers and pesticides, is known to be minimized by increased production of cash crops, particularly turmeric. Where there is no use of HYV, if any incidence of pest and diseases is observed in traditional varieties, the *jumias* are known to control them by using an indigenous pest management system like using ash and water from tobacco pipes.

To overcome the seasonal food crisis, the *para* communities in Mong Nue Headman Para and Long Thang Khumi Para in Bandarban have established 'rice banks' with 500 kg of paddy. When a *jumia* faces rice shortage, paddy can be borrowed from the 'rice bank' and paid back after the harvest.

Some *jumias* also earn a seasonal income (March-April) from selling broom grass that grows naturally in fallow *jum* fields. Some *jumias* in Bandarban are getting involved in tobacco or cucumber cultivation in the low lands by taking land on lease instead of *jum* or paddy cultivation. Cotton, once an important *jum* crop, is now rarely cultivated because there is reduced market demand of the crop although extension activities are promoted by the Cotton Development Board.

As stated earlier, many *jumias* moved toward market-oriented horticulture and other cash crop production for cash income generation. For example, in Bandarban study areas, the production of horticultural crops of fruits like banana, pineapple, and papaya can get them a good income. So does planting bamboo, for which there is great demand.

It is remarkable to note that *jumias'* children, when educated, are changing their traditional occupations because they no longer see *jum* as an attractive option for a sustainable livelihood. They think that *jum* involves hard work and consider it unprofitable.

Some *jumias* took up alternative professions such as small trade (agro-entrepreneur or middle man on a seasonal basis). Some of them are getting involved in teaching professions in *para* schools managed by *para* management committees supported by

local and national NGOs; some are getting jobs in the garment factories in the export processing zones (EPZ) in big cities outside the CHT. Some are working on making handicrafts out of bamboo, wood, and cane; some collect wild medicinal plants from natural forests and sell them in the local market. Others, who are not educated, are working as rickshaw (tri-cycle) drivers in the sub-district and district townships. Some collect and sell seasonal fruits, bamboo shoots, mushrooms, snails, and wild vegetables in the local market as an alternative source of income.

From all the *paras* studied, it is evident that the households having other forms of livelihood options with plain land agriculture, mixed fruit gardening and cash crop cultivation are better off than those who are totally dependent on *jum* alone (see data on livelihood variations of the communities in the study areas in Appendix 3 (p. 38)). A financial analysis (Rasul 2009) reveals that annual cash crops are the most profitable short-term land-use practice, while agroforestry is the least profitable, with horticulture and farm forestry providing benefits intermediate between these two systems.

A few local NGOs have assisted indigenous communities by facilitating allotment and land titling of 2.5 hectares of hilly land for growing horticultural crops (as in the study areas of Bandarban). These NGOs have motivated the *jumias* to have their own private *jum* land. These *jumias* who have privately owned hilly land have converted a part of their land for horticultural use and other portions are kept for *jum* (as in the case of Mrolong Para in Bandarban, Gaach Kaba Sora Para, Dighol Sori Dheba Madha Para in Rangamati). In Goai Ma Aat Para in Khagrachari, one *jumia* totally converted his *jum* land for commercial cultivation of horticultural crops (photo 2).

2. Hindrances for achieving sustainable livelihood and food security

Among the external factors that hinder the *jumias* are the policies of the Forest Department on the expansion of 'reserved forest' and 'pulpwood plantation' by acquiring fallow *jum* land. This also includes the monoculture of timber species like teak and gamari. Another similar hindrance is the government policy of allotting *jum* land and fallow *jum* land by the Deputy Commissioners and the Ministry of Land to Bengali elite groups of people for rubber and horticulture plantations. One of the major political hindrance factors is the non-implementation of the CHT Peace Accord of 1997.

Militarization and transmigration programmes illegally settling Bengalis in the CHT from the plains have created extreme vulnerability and poverty among the indigenous peoples. Despite the signing of the Peace Accord, human rights violations like communal attacks, killing, torture, rape, and abduction of women and girls are continuing in the CHT and are linked to systematic land grabbing. The sexual assault

and rape of indigenous women and girls that was used as a 'weapon of war' during the so-called 'insurgency period' has now been turned into a tool for land grabbing.⁵

A recent report (D'Costa 2014) has also revealed that impunity has been the most important factor contributing to increased incidents of sexual and gender-based violence in the CHT and the biases of the administrative, political and judicial systems prevent the *jumias* from having access to equality and justice. There is a common allegation against the local administration and the police that they try to support Bengali perpetrators of rape cases.⁶

Communal conflicts instigated by Bengali settlers are used to encroach on *jum* and plain land because the *jumias* are temporarily or permanently displaced by violent attacks, often even with overt or covert support by the military. Again, there is no legal support from the administration.

Economic hardship is further aggravated by legal and illegal taxes and levies imposed on *jum* cultivation and marketing of *jum* produce by armed groups of regional political parties. Restrictions on *jum* cultivation in certain areas imposed by armed groups are also hindering the *jumias* to meet their livelihood and food security needs. There are also certain restrictions and taxation imposed by the regional political parties on the collection and sale of forest products like bamboo shoots.

The macro-economic hindrance factors include price escalation of essential food items and necessary agricultural inputs and non-inclusion of *jumias* in the national social safety net programmes, such as food subsidies, special employment packages, soft-term loans and credit.

During discussion with the communities and key informants, a number of internal factors that hinder sustainable livelihood and food security of the *jumias* were identified. During preparation of *jum* fields, some 'evil' signs (known as *jum dooch*), such as the presence of bamboo pipe-like narrow holes, caves, dead creatures (bird, snake and monkey), in the *jum* field are treated as the work of evil forces. It is believed that unless these *jum duch* are treated by the traditional shamans or healers, these *jum* fields are not usable for *jum* cultivation. If the *jum duch* remains unaddressed, prepared *jum* fields are totally abandoned (cultural) (Anon. 2007).

If a *jum* plot owned by someone from one *para* is prepared for *jum* by another person from another *para* without knowing about the first claimant, ownership conflict ensues. If the Karbaries and *para* elders do not settle conflicts of this nature amicably, the disputed *jum* field is abandoned.

Loss or shortage of seeds of *jum* crops (if not available from fellow *jumias*) can also cause problems in the proper use of *jum* fields (management, socio-cultural).

Many *jumias* tend to be reluctant to accept new technologies, which may be treated as a socio-cultural factor.

The traditional practices of free labour sharing to help each other in times of emergency labour needs (known as *bala dhar dhar/maleya* by the Chakma community) are on a decreasing trend (socio-cultural). Other socio-cultural factors include the habit of *jumias* to be excessively dependent on borrowing money from local or Bengali moneylenders in the hope of repaying the money after the harvest of *jum*. Many *jumia men* have the habit of improvidence in saving and are addicted to alcohol (mostly locally made liquor), which creates socio-cultural problems too. The other socio-cultural factor is the habit of lavish spending on religious, social, and cultural events without any consideration of future consequences.

3. The future of *jum*

What motivates people to continue with *jum* is that they have been practicing it for generations and it is an integral part of their culture and tradition. Moreover, they get rice and almost all types of vegetables from *jum*, which are not available from plain land agriculture and other farming practices. According to the opinion of some of the respondents, in the future, *jum* can provide niche products such as organic rice and vegetables. This would also help conserve germ plasma of a high diversity of field crops. *Jum* can support tourism promotion in the CHT by supplying rare food specialities. Medicinal plants can also be grown in *jum* field. But some of the respondents also opined that they would like to convert *jum* to mixed fruit garden if they would get financial and technical support services.

While many *jumias* would like to continue with *jum*, the study has shown that it is already difficult, and will continue to be increasingly so. The perception of *jumias* about the future of *jum* is that the area available for *jum* cultivation will get more and more limited as *jum* fields are gradually converted to cash crop horticulture and tree farming. Organic *jum* farming is already being converted to inorganic *jum* production due to the use of chemical fertilizers and pesticides for productivity enhancement. Consequently, the production costs in this type of *jum* systems will rise. Germ plasmas of traditional *jum* crops will be lost unless adequate measures of preservation are taken up. Conversely, HYV crops will be introduced for higher yield. Crop species diversity is already being narrowed. Yields of rice of HYV and cash crops (turmeric, ginger, corn, and chilli) will increase due to the use of fertilizers. Key informants are of the opinion that *jum* will be used only for the production of specific crops.

The study has shown that *jum* alone will not be sufficient to meet the livelihood and food security needs of the *jumias*. They are facing a rapidly deteriorating economic and social status. Engulfed by poverty, many are compelled to try out different professions and vocations and get engaged in casual manual labour.

It is not only the market forces, but also the pressure by governmental and non-governmental organizations to adopt fruit gardening and growing timber trees. The recognition of customary land and resource rights is one of the most crucial challenges faced by indigenous peoples in the CHT today (Roy 2005). The mindset of the mainstream population and the policy makers who blame *jum* cultivation for loss of biodiversity and forest degradation has not changed. Natural resource management policies are also not in favour of the *jumias* and as such, natural resources are rapidly deteriorating leading to soil erosion and the loss of biodiversity. These unsustainable management practices are creating challenges of availability of necessary livelihood support services. This also leads to decreased availability of wild food plants and subsistence livelihoods from the present *jum* system, which has compelled the *jumias* to extend and intensify their *jum* system with cash crop cultivation, particularly root crops like turmeric.

More and more *jum* lands are occupied forcibly or by intimidation by Bengali settlers who are converting the *jum* lands into tree plantations, or by the Forest Department for forestry, leading to more scarcity of land for *jum*. Climate change and the resulting irregular rainfall pattern pose another challenge, and there is even a shortage of labour for *jum* cultivation since the younger generations are losing interest in *jum*.

VIII. A few final words and recommendations

In Bangladesh, *jum* has been viewed, particularly by government officials and other mainstream observers who do not have an intricate knowledge of this farming system, as the main cause of deforestation and soil erosion in the CHT. Thus, government policies on *jum* have been mainly restrictive, prohibitive and punitive. This common misperception about shifting cultivation is based on a wrong focus, which centres on negative images, e.g. slashing, burning, and shifting and the image of fire (Kerkoff and Sharma, 2006: 4). But the fact is that on sloping lands, the traditional dibbling method of cultivation causes little soil erosion, compared with the plough, spade and hoe methods. The permanent conversion of swidden lands into plantation forestry and plantations of horticultural crops like pineapple, coffee, tea, rubber or other monocropping, inevitably results in permanent deforestation and biodiversity loss (Roy *et al.* 2012).

The *jumias* in the CHT have adopted many good practices in adaptive changes to address the challenges of livelihood and food security, biodiversity conservation, land tenure and natural resource management. However, some policy and extension interventions are needed to support the livelihood and food security of the indigenous peoples. Customary land and resource rights of the indigenous people should be

recognized and respected as per Rule 41A of the CHT Regulation, 1900 in addition to safeguarding their lives and livelihoods by the state. Otherwise, outsiders will continue to grab their land. Full implementation of the CHT Peace Treaty is also suggested.

As for extension service interventions, the improvement of their *jum* system should be supported, including necessary support for availability of good quality seeds and seedlings in time for developing mixed fruit gardening around their homesteads. Marketing and storage facilities should also be supported in order to get the fair price of their produce. It is also necessary to change the mindset of policy makers and to adopt a holistic view aimed at improving the *jum* systems and the livelihood of the *jumias*. The *jumias* should also be included under various governmental social safety net programmes, such as 'vulnerable group feeding,' 'vulnerable group development,' old age allowances, widow allowances, disabled allowances, etc. Based on discussions with the communities of the study *paras*, the following specific recommendations have been proposed:

1. The protection and preservation of village common forest by the communities need to be recognized and legalized.
2. Traditional management of sora (stream) protection by the indigenous communities for maintaining water flow and managing watersheds in the CHT should also be supported.
3. Necessary support services for *jum* system improvement based on action-research, the health of the *jumias*, education and food security should also be provided.
4. Improved natural resource management by the *jumias* should be initiated.
5. Livelihood and food security projects (agriculture, fruit gardening, animal husbandry, rice bank, etc.) should provide continuous support for the *jumias*.
6. Conservation of the natural forests by the *jumias* should also be supported as it is supplying food and water to the local communities in crises periods. Any programme on forestry development in the CHT should be taken in consultation with the *jumias* and in this regard, it is further recommended that there should be:
 - a. No further expansion of Reserve Forest areas by the Forest Department
 - b. In afforestation programmes by the forest department, participatory forestry practice in the unclassed state forest and denuded 'reserve forest' and 'protected forest' lands should be promoted
 - c. No further encroachment of *jum* land in the name of any development programmes

- d. Cessation of all environmentally degrading activities and practices by the Forest Department.

Above all, in order to ensure security of life and livelihood of the *jumias* in the CHT, there is an urgent need to

1. Respect and ensure traditional customary land rights,
2. Implement the CHT Peace Accord with a time bound 'road map' to ensure a proper and effective implementation,
3. Amend the CHT Land Dispute Resolution Commission Act 2001 in accordance with the 13-point amendment proposals which were agreed by CHT Affairs Ministry and CHT Regional Council and endorsed by CHT Accord Implementation Commission and the inter-ministerial meeting held on 30 July 2012 and chaired by the then law minister.

Appendix 1. Profile of the eight *paras* covered by the study

Name, location, population	Location and approx. land area (acres)	Distance to local market/health facilities	Village Common Forest	Road connection
Bandaraban District				
Long Thangpara, Betchara Mouza, Taracha Union. Rowangchhari Upazila 15 HHs, Khumi	1 000 Hill top and narrow valley bottoms	3 km	5 acres	Yes
Mrolong Para, Soulok Mauza, Soulok Union, Bandarban Sadar 17 HH mixed, but mainly Mro	500 Hill slopes	12 km	–	Yes
Paglachara Para, Rowangchhari Mouza, 01 No Sadar Union. Upazila: Rowangchhari 30 HH, Tanchangya	200 Sloping land with narrow valleybottom lands	3 km/1 km	50 acres	Yes
Mong Nu Headman Para, Balaghata Mouza, Bandarban Sadar Union 23 HHs, Marma	200 Hill top land and valley	8-12 km	–	Yes
Rangamati District				
Gaach Kaba Sora Para, Mouza: Kutubdia, Union: Kengrachari, Upazila: Belaichari 28 HHs mainly Tanchangya	300 Hill top and valleys	6 km	–	–
Dighol Sori Dheba Madha Para, Mouza: Belaichari, Union: Belaichari, Upazila: Belaichari 56 HHs, Chakma	1 000 Foothill	5 km	–	No
Khagrachari District				
Goai Ma Aat Para, Mouza: Golabari, Union: Golabari, Upazila: Khagrachari Sadar 42 HHs, Chakma	60 Ridges	8 km	–	+ Yes
Palton Joy Para, Mouza: Bangalkati, Union: Perachara, Upazila 85 HHs, mainly Tripura	100 Ridges	5 km	–	No

Appendix 2. Livelihood status of the communities of the eight *paras* of the study areas

Village Name/ Household numbers	School/ Location	Type of School	Educational status			Livelihood status and land holdings (acres)		
			Master/ Graduate	High school	Secondary school	Very Poor	Poor	Well-off
Bandarban District								
Long Thang Para 15 HHs of Khumi	+ In para	Primary	–	1	2	14 2.5	1 2.5 + teacher	0
Mrolong Para 17 HH mixed, mainly Mro	+ In para	Primary	–	1	1	3 0.5-1	9 0.5-1	5 0.5-1
Paglachara Para 30 HH, Tanchangya	+ In para	Primary	2	2	5	20 1-2	5 2-3	5
Mong Nu Headman Para 23 HHs, Marma	+ at distance	Primary	–	–	–	22 1-2	1 1-2	0
Rangamati District								
Gaach Kaba Sora Para 28 HHs mainly Tanchangya	+ In para	Primary	–	2	3	7 5	14 8	7 20
Dighol Sori Dheba Madha Para 56 HHs, Chakma	5 km outside para	High	–	–	–	15 7	27 10	14 25
Khagrachari District								
Goai Ma Aat Para 42 HHs, Chakma	+ In Para	Private primary	–	–	3	33 0.5	6 1	3 3
Palton Joy Para 85 HHs, mainly Tripura	+ In Para	Primary	10	12	15	70 0.5	10 1	5 1.5

Appendix 3. Variation in livelihood systems of *jumia* communities of the eight *paras* in the study area

Name of <i>paras</i> and district, including approx. area	Total households (HHs) and communities	Status of HHs			Area of hilly land for <i>jum</i>	Area of plain land available for paddy cultivation	HHs practicing <i>jum</i> without having plain land for paddy cultivation	Livelihood variations
		Very poor	Poor	Well off exceeding monthly income Tk. 15 000				
Long Thang Para, under Betchara Mouza, Union-Tarachar, Upazila-Rowangchari, District-Bandarban. Total area- Approx. 1 000 acres	15 (All HHs belong to Khumi community) with a population of 155	14		1	5 acres (each household)	Nil	15	<ul style="list-style-type: none"> • 2.5 ac for jum and 2.5 ac for fruit trees • 1 HH is involved in both teaching and jum cultivation. • No HHs have land registration deeds. • The communities are managing a common forest known as VCF of 5 acres
Mrolong Para, under Sualok mouza, Union-Sualok, Upazila-Bandarban Sadar, District-Bandarban. Total area- Approx. 500 acres	17 (15 HHs belong to Murong community, 1 HH belong to Tripura and 1 HH belong to Marma) with a total population of 80	3	12	2	0.5-1 acre	Nil	17	<ul style="list-style-type: none"> • 2 HH practice jum and have fruit tree • 4 HHs have tea stalls jum and fruit tree. • 5 HHs have registered deeds of land

Name of <i>parás</i> and district, including approx. area	Total households (HHs) and communities	Status of HHs			Area of hilly land for <i>jum</i>	Area of plain land available for paddy cultivation	HHs practicing <i>jum</i> without having plain land for paddy cultivation	Livelihood variations
		Very poor	Poor	Well off exceeding monthly income Tk. 15 000				
Paglachara Para, under Rowangchari Mouza, Sadar Union, Upazila-Rowangchari, District-Bandarban. Total area-Approx. 200 acres	30 (all HHs belong to Tanchangya community with a population of approx. 150)	20	5	5	0.5-1 acre	1-2 acres of paddy land (15 HHs)	15	<ul style="list-style-type: none"> • 6 HHs no longer practice <i>jum</i> • 2 HHs are engaged in teaching profession (no <i>jum</i>). • 14 HHs have deeds of registered lands. • The communities are managing a VCF of 50 acres
Mong Niu headman Para, under Balaghata Mouza, Union-Bandarban Sadar, Upazila-Bandarban Sadar, District-Bandarban. Total area-approx. 200 acres	23 (all HHs belong to Marma community with a total population of approx. 96)	22	1	–	1-2 acre hilly land for <i>jum</i>	Nil	23	<ul style="list-style-type: none"> • 23 HHs applied for land registration deeds

Name of <i>paras</i> and district, including approx. area	Total households (HHs) and communities	Status of HHs			Area of hilly land for <i>jum</i>	Area of plain land available for paddy cultivation	HHs practicing <i>jum</i> without having plain land for paddy cultivation	Livelihood variations
		Very poor	Poor	Well off exceeding monthly income Tk. 15 000				
Gaachkabasora Para, Kurubdia Muza, Union-Kengrachari, Upazila-Belaichari, under Rangamati district (Area-300 acres)	28 Mainly Tanchangya community	7 day labouring	14	7	5-20 acres of hilly land for <i>jum</i> (7 HHs)	25 with 0.5-1 acre of fringe land	3 5 HHs do fishing	<ul style="list-style-type: none"> This <i>para</i> is inside the Reingkyong Reserve Forest. Households were settled by Forest Department for planting teak under “Taungya” system (allowing <i>jum</i> and then planting teak) after timber extraction was leased out to Bangladesh Forest Industries Corporation (BFIDC). 6 HHs have grocery shop inside the <i>para</i>. 3 HHs live on timber trading. Almost (except very poor) all HHs have their own boats as their transportation system.
Digholsori Dhebamadha Para, Belaichari Mouza, Union-Belaichari, Upazila-Belaichari under Rangamati district (Area-Approx. 1 000 ac)	56 Chakma	15	27	14	25 acres (14 HHs) 10 acres (27 HHs)	20 HHs practice <i>jum</i> + fringe land (40 acres)	36	<ul style="list-style-type: none"> This <i>para</i> is 5 km away from sub-district town. 4 HHs have grocery shops. 3 HHs work as traders. 80% HHs have their own boats for their own transportation. 30% HHs have solar panels. 14 HHs have registered deeds of land

Name of <i>parias</i> and district, including approx. area	Total households (HHs) and communities	Status of HHs			Area of hilly land for <i>jum</i>	Area of plain land available for paddy cultivation	HHs practicing <i>jum</i> without having plain land for paddy cultivation	Livelihood variations
		Very poor	Poor	Well off exceeding monthly income Tk. 15 000				
Goai-ma-aat Para, Golabari Mouza, Union-Golabari, Khagrachari Sadar Upazila, under Khagrachari District	42 (all belong to Chakma community)	32	6	4 (trading, commercial cultivation of fruit trees)	0.5-3 acre	4 HH with 0.5-1 acre	38	<ul style="list-style-type: none"> • 4 HHs have plain land for paddy cultivation • 1 HH has tea stalls, • 4 HHs have land ownership deeds. • Some poor HHs are selling possession of their jum land to local elites who are going for commercial cultivation of fruit trees. • 1 HH has converted his jum land to commercial cultivation of mixed fruit trees and is known to be well off.
Paltanjoy Para, under Bangalkathi Mouza, Perachara union, Khagrachari Sadar Upazila, Khagrachari District	85 (80 HHs belong to Tripura community and 5 HHs belong to Chakma community)	70	10	5 HHs – timber trading, work as contractor	0.5-1.5 acre	0.5-1 acre 5 HHs have plain land for paddy cultivation	80	<ul style="list-style-type: none"> • 80 HHs cultivate jum in another Mouza (Badalchara Mouza)-other side of hill range facing Chengi valley • Some poor HHs are selling possession of their jum land to local elites who are going for commercial cultivation of fruit trees. • Poor HHs are practicing jum in the lands used for commercial cultivation of turmeric by others on conditions they will keep jum fields weed free

Appendix 4. Plants from forest and fallow land that support food security and some cash income

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Tara (Chakma), Ching yangang/ (Marma), Kom-Hing (Mro), Jhangmula (Tanchangya), Bring Thorai (Tripura)	<i>Zingiber nigrum</i> Gaertn.	Inner portion of aerial parts (pith) is cooked as vegetable and used in curry for flavoring	Collected from forest, grows along the stream side, now cultivated in CHT
Kekrock saak (Chakma), Segrabaong (Marma), Kluis Paw (Mro)	<i>Alternanthera</i> <i>glabra</i> Moq.	Whole plants are eaten as vegetable	Collected from fallow land
Unthamifi (Bawm), Kada Marheich Sak (Chakma), Aangpadi-kaligon (Khumi), Chuban, Hanuhuya, Krypayen (Marma), Kan-Chu-Poi (Mro), Raktashol (Tripura), Prickly Amaranth, Spiny pigweed	<i>Amaranthus</i> <i>spinosis</i> L.	Whole plant (removing the spines) is cooked as vegetable with dry shrimp	Collected from fallow land
Bhool Marheich (Chakma), Notey, Notey Shak, Marissag Unthamifi (Bawm), Ahu Mihim Ga (Marma), Aangpadi-kamseng (Khumi), Green Amaranth, Wild Amaranth	<i>Amaranthus</i> <i>viridis</i> L.	Whole plant is cooked as vegetable	Collected from fallow land
Alachengay/Chengey tara (Chakma)	<i>Amomum</i> <i>dealbatum</i> Roxb.	Inner pith cooked as vegetable	Collected from forest
Muraylla Ool Kuzu (Chakma), Engeiyea (Khumi), Krang Shi Agong (Marma), Bulung Batima (Tripura)	<i>Arum bulbiferum</i> Roxb.	Young petiole is eaten as a vegetable, corm is cooked as vegetable and leaves and young petioles are cooked as vegetable	Collected from forest
Kusumgula (Chakma), Tepangai (Bawm), Khuchumu Bathai (Tripura), Latkan (Bengali), Baccaurea	<i>Baccaurea</i> <i>ramiflora</i> Lour.	Ripe fruits with sour and sweet taste are eaten	Collected from forest, sometimes cultivated in homestead
Todegojil Saak (Chakma), Aangkho (Khumi), Tong Kang Mi (Marma), Kawting (Mro), Nuinna Shak, Bat Slai/Bat Sly (Tripura), Brammishak (Bengali), Indian Pennywort	<i>Bacopa monniera</i> (L.) Pennel.	The plants are eaten as leafy vegetables	Collected from fallow land
Monimujja Kher (Chakma), Fao Ma (Marma), Amai Sak (Tanchangya). Barakukshima (Bengali)	<i>Blumea lacera</i> (Burm.f.) DC.	Plants are cooked as vegetable	Collected from forest/fallow <i>jum</i>
Urmurpada (Chakma), Mrangna (Marma), Aruleng (Mro), Holemfray (Tripura)	<i>Boehmeria</i> <i>glomerulifera</i> Miquel	Leaves are cooked as vegetable	Collected from forest

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Semai Gaas (Chakma), Bhuchokh (Tripura), Ban Shimul (Bengali)	<i>Bombax insigne</i> Wall.	Flowers are eaten as vegetable	Collected from fallow <i>jum</i> or forest
Khorkoijja Bet, Karak Bet. Karath (Chakma), Riama (Mro), Hraika Bathai/Hrbichuk (Tripura), Cane	<i>Calamus viminalis</i> Willd.	Ripe fruit pulps are edible	Canes are collected from forest
Ketha Boitta Shak, Kedaboksha Sak (Chakma), Nala Maiachi (Marma), Kheda Batta Shak (Tanchangya), Phutka, Lataphutiki, Kapalphutki, Noaphutki, Kanphutki (Bengali), Baloon vine, Winter cherry, Hearts pea, Heart seed	<i>Cardiospermum halicacabum</i> L.	Leaves are cooked as vegetable	Collected from fallow <i>jum</i>
Kushum (Bengali), Angthokanay-kamse (Khumis), Safflower.	<i>Carthamus tinctorius</i> L.	Leaves and flowers are cooked as vegetable	Sometimes cultivated
Ludi Mallang (Chakma), Paranga Ludi (Tanchangya).	<i>Cayatia trifolia</i> (L.) Domin	Fruits are eaten	Collected from fallow <i>jum</i>
Mengoni (Chakma), Kaotung (Bawm), Ajingkrey (Khumis), Murang khoya, Mrang Khua (Marma), Ting Thai (Mro), Mrukhu (Rakhaing), Adagungoni (Tripura), Thankuni (Bengali), Indian Pennywort	<i>Hydrocotyle asiatica</i> L.	Leaves are taken as salad. Used in salad, chutney and cooked as leafy vegetable	Collected from lowland
Bathwa/Mathua Shag (Chakma), Aangpadi (Khumis), Bra Tho Aa (Marma), Buthak (Tripura), Lamb's Quarters, Goose Foot	<i>Chenopodium album</i> L.	Cooked as vegetables with or without small shrimp/shrimp paste or available small fish to make a tasty curry	Collected from fallow land
Chmna, Dhemna. Honga (Khumis), Warongkheya (Marma)	<i>Vitis elongata</i> (Roxb.) Wall	Leaves and tender stems are cooked as vegetable	Collected from fallow land
Mormoijya Amila (Chakma), Owa Rong Si (Marma), Pong Kryang Shi, Praw Ma, Rui-rep (Mro), Chibong ludi (Tanchangya), Pepo Mukhroi (Tripura), Marmarialata (Bengali)	<i>Vitis repens</i> (Lamk.) Wight & Arn	Leaves are cooked as vegetable. Leaves cooked with deer's meat are considered to be a special dish. Young shoots are used in curries. Sometimes used as additive to bring a sour taste especially in fish items	Collected from the forest
Noligaach (Chakma), Unfoi (Bawm) Narayanbaing, Narayamblue (Marma Bamanhati, Banchat (Bengali)	<i>Clerodendrum siphonanthus</i> Lindley	Young leaves are cooked as curry	Collected from fallow lands
Telakochu Shag (Chakma), Muss si (Mro), Kuchila (Bengali), Ivy Gourd	<i>Bryonia grandis</i> L.	Tender shoots and fruits are cooked as vegetables	Collected from fallow land

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Golak Bet, Golla Gola (Chakma), Choin (Marma), Soun pak (Mro)	<i>Daemonorops jenkinsiana</i> (Griff.) Martius	Fruits pulp edible. Inner pith of the stem is cooked with dry fish after boiling	Collected from forest
Ulugach, Ulu (Chakma), Thyfri (Khumi), Kra Aning, Jange bring (Marma), Thabru, Dabru, Ui-pia (Mro), Jhaipola, Thaiplaw (Tripura), Chalta (Bengali), Elephant apple	<i>Dillenia indica</i> L.	Fruits are used in curries as additives to make the curries sour and tasty. Used as salad. Fruits are cooked ascurry	Collected from forest, occasionally cultivated in homestead
Jharboa Koiang Alu (Chakma)	<i>Dioscorea hamiltonii</i> Hooker, f.	Tubers are boiled or cooked to eat	Collected from forest
Kanta Alu (Chakma), Tha Kon (Tripura), Bow Su Da Uo (Marma Jum-alu (Bengali), Yam	<i>Dioscorea pentaphylla</i> L.	Tubers are cooked and eaten	Collected from forest and fallow land
Bilati gub (Bengali), Velvet apple	<i>Diospyros blancoi</i> A. DC.	Fruits are eaten	Collected from forest, occasionally cultivated in homestead
Gab, Keth Gula (Chakma), Thysee (Khumi), Gab gaith (Tanchangya), Kar Pong (Mro), Gab (Bengali)	<i>Diospyros malabarica</i> (Desr.) Kostel.	Pulp of the ripe fruits is eaten	Occasionally cultivated in homestead
Dhangi Shag (Chakma), Mocokloma (Bawm), Moichuk Dalok (Tripura), Mukokjhik (Bawm) Dhekishak (Bengali)	<i>Diplazium esculentum</i> (Retz.) Sw.	The young fronds are eaten as vegetables	Collected from forest
Kalasona, Kalahuna (Chakma), Bahushi, Krongmy (Marma), Aang-kuntuei (Khumi), Bakcheine (Bawm), Kalokeshi (Bengali)	<i>Eclipta prostrate</i> (L.) L.	The whole plant is used to, prepare curry	Collected from fallow land
Hojottya (Chakma)	<i>Eichhornia crassipes</i> (Mart.) Solms.	Stalks are taken as vegetable	Collected from swamps
Dumur Gula (Chakma), Fah Shai Ba (Marma), Luhuk, Luhut Clang (Mro), Tammang Gaas (Tanchangya), Thainjang (Tripura), Dumur (Bengali)	<i>Ficus hispida</i> L.f.	Receptacles are eaten	Collected from forest
Shefung (Marma), Thiphi (Bawm), Ludi Dhumur (Chakma), Lata Dumur (Bengali)	<i>Ficus scandens</i> L.	Fruits are edible	Collected from forest
Thydu (Khumi), Jonua, Sodoi (Mogh), Ududui, Ui-Duth (Mro), Chorki Gula (Tanchangya), Jagadumur (Bengali)	<i>Ficus semicordata</i> Buch.-Ham.ex Smith	Ripe fruits are eaten	Collected from forest

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Riamcha (Bawm), Painnya Gula (Chakma), Thingrong (Khumi), Tamagry, Ne-Re-Shi (Marma), Puincha (Mro), Khoro Gola (Rakhaing), Painna Mola (Tripura), Paniala (Bengali), Indian-plum	<i>Flacourtia jangomas</i> (Lour.) Rausch.	Ripe fruits are eaten	Collected from forest
Kao-gula (Chakma, Tanchangya), Aangtrisabuee (Khumi), Tah Gala (Marma), Mang-tong (Mro), Kok Shomroi (Tripura), Kau (Bengali), Cow Tree	<i>Garcinia cowa</i> Roxb.	Ripe fruits are eaten, it is sour in taste	Collected from forest
Kalibans (Bengali), Kaliseri Baach (Chakma)	<i>Gigantochloa andamanica</i> (Kurz) Kurz	The young shoots are cooked and eaten	Collected from forest
Sikaming (Marma), Ching Ring-Pao (Mro), Botam Phul (Bengali) Bachelor's Buttonhole	<i>Gomphrena globosa</i> L.	Whole plant is cooked as a vegetable by Murang community.	Collected from forest and sometimes cultivated in homestead
Aachoroy (Khumi), Meliotrima (Marma), Ting-Tow (Mro)	<i>Bryonia cochinchinensis</i> Lour.	Tip of the climber is boiled to prepare pickle (Murang).	Collected from forest
Sik-aangtho (Khumi), Sureya (Mro), Sowa Amela (Tanchangya)	<i>Hibiscus surattensis</i> L.	Fresh leaves are cooked as vegetable. Sour curry is cooked from leaves and flowers. In addition, the flower is also cooked with pork	Collected from fallow <i>jum</i>
Siyon Saak (Chakma), Srakang (Marma), Ghandhiri (Tripura), Ghondul (Bengali)	<i>Homalomena coerulea</i> Jungh in <i>Schedula ex. Miquel</i>	The petioles are cooked as vegetables, some times with dry fish	Collected from forest
Songadana, Thomma (Chakma), Ky-sy-sheiyprang (Khumi), Sikalma, Chang Kasey (Marma), Moran Lumia (Murang), Thukma (Tanchangya), Tokma (Bengali), Pignut	<i>Hyptis suaveolens</i> (L.) Poit.	The seeds are used to prepare soft drink, which is taken to cool the body and to treat constipation. Juice is prepared from the root by crushing with stone (Khumi). The seeds are used in soft drink	Collected from fallow land
Conzoye (Rakhaing), Kangchoy (Khumi), Sadoi Morock (Marma), Kalmi Shak (Bengali), Swamp Cabbage	<i>Ipomoea aquatica</i> Forssk.	Leaves and tender stem are cooked or fried as vegetable (Khumi).	Collected from swamps
Pramuii-kanneyei (Khumi), Ada Kamala (Chakma), Miri Si Ga (Marma), Pa Sui (Marma), Chandumula (Bengali), Galanga (English)	<i>Kaempferia galanga</i> L.	Used to flavor curries	Collected from forest

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Kadam Gaach (Chakma), Aatran (Khumi), Hung Su, Mang Jaiah (Marma), Chutrapata (Bengali)	<i>Laportea crenulata</i> Gaud.	Fresh leaves are cooked as vegetable, young twigs are fried or cooked as vegetables	Collected from forest
Asialong (Khumi), Hantthal deng-e Shak (Chakma), Chorangkray (Marma), Kantha Bowchwak (Tripura), Taratu (Marma), Kattolii (Tanchangya), Kantakachu (Bengali)	<i>Lasia spinosa</i> (L.) Thw.	Fresh leaves are cooked or fried as vegetable. Tender stem is cooked with dry fish	Collected from forest
Thun (Mro)	<i>Lindenbergia Indica</i> (L) kuntze	Seeds are eaten as curry. Powder is prepared from the seeds and used as additive in curry (Murang).	Collected from forest
Samnigula (Chakma), Cham (Bengali)	<i>Artocarpus chaplasha</i> L.	Fruits are eaten	Collected from forest
Thingzokung (Bawm), Garey Aam (Chakma), Gosara (Marma), Jangliam (Bengali)	<i>Mangifera sylvatica</i> Roxb.ex Wall.	Fruits are eaten	Collected from forest
Koyi Ing Saw (Marma), Ak-Mio (Mro), Mogapittungula (Chakma), Datranga (Bengali), Indian Rhododendron	<i>Melastoma malabathricum</i> L.	Flowers are used as ear ring and the fruit is eaten	Collected from fallow land near the stream side
Tarak Eba; Eba Tarani (Marma), Yoria Sock, Weyash (Mro), Assar Gaas (Tripura), Bakong (Khumi), Patka (Bengali), Phalsa (English)	<i>Grewia microcos</i> L.	Fruits are eaten by the Murang community	Collected from forest
Khozutti (Chakma), Kenchuri Dalok (Tripura), kyu-Churi (Marma), Baranukha (Bengali), Arrow-leaf Monochoria	<i>Monochoria hastata</i> (L.) Solms	Leaves as eaten as vegetable	Collected from forest
Sengam (Khumi), Banla kung (Bawm), Bizi Kola (Chakma), Ramanigi-bela (Marma), Deng Ui (Murang), Ramkola (Bengali)	<i>Musa ornata</i> Roxb.	Spike and pseudo stem are cooked as a vegetable. The very young fruits are also eaten	Collected from fallow <i>jum</i>
Raktapordha (Tripura), Poddophul (Chakma), Poddoo (Bengali), Lotus	<i>Nelumbo nucifera</i> Gaertn.	Flowers and petioles are eaten as vegetables	Collected from marshy land
Sku-king (Khumi), Kodom (Chakma), Rang Khi (Marma), Long-thow (Murang), Kadam (Bengali)	<i>Anthocephalus cadamba</i> (Roxb.) Miq.	The ripe fruits are directly eaten, having fairly good-flavors, ripe fruits are often used in chutney along with tamarind, sugar, salt and mustard oil	Collected from forest
Bipanak (Bawm), Jharbuotulozhi (Chakma), Sang Haphoi (Marma), Midar Roshi Gaith (Tanchangya), Ban Tulsi (Bengali), Shrubby Basil	<i>Ocimum gratissimum</i> L.	Flowers are used as additive for cooking fish or meat and curry	Collected from forest

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Khona Gula (Chakma), Kering, Kharing (Garo), Kongsashi (Marma), Long Kock Sim (Mro), Khona (Bengali) Thakurung, Thakhurung Bathai (Tripura), Indian trumpete	<i>Oroxylum indicum</i> (L.) Vent.	Young fruits are cooked as vegetable	Collected from fallow <i>jum</i> . Sometimes cultivated in homestead
Marianthur, Sap Ann Khur (Bawm), Mring Blu; Pa Su (Marma), Amrul (Bengali), Indian Sorrel	<i>Oxalis corniculata</i> L.	Whole plant is used to prepare curry with nappee (Processed paste of fish/shrimp paste)	Collected from fallow land
Paadobaachludi (Chakma), Ghorbobaishak (Tanchangya), Clemra/Ambikku (Khumi), Kha Bu Noya, Noya Bock (Marma), Gandhabadhuli (Bengali), Chinese Moon-creeper	<i>Paederia foetida</i> L.	Leaves are cooked and taken as vegetable	Collected from forest and fallow land
Pokgula (Chakma), Thaplang (Khumi), Powmachi, Aanu Akma, La-Dywang (Marma), , Bulumgni Pukki (Tripura), Mathri gula (Tanchangya), Humkolata (Bengali), Passion-flower	<i>Passiflora foetida</i> L.	Ripe fruits are eaten	Collected from fallow land
Ichadar, Izhadar Saak (Chakma), Agunitita (Tanchangya), Nyoya loing biyong (Marma), Crongma, Athok Kaiching Dalok (Tripura), Yung krum (Mro)	<i>Persicaria chinensis</i> (L.) H. Gross	Young shoots are cooked as vegetables with small fish	Collected from fallow land
Orbori (Chakma), Dendalum (Marma) Arboroi (Bengali), Star Gooseberry	<i>Phyllanthus acidus</i> (L.) Skeels	Fruits are used in curries specially in fish curry to bring a sour taste	Collected from forest
Pyandhum (Marma), Omloki (Tripura), Ambari (Garo), Kadamhola (Chakma), Soi Sha (Marma), Sowan Lu (Bawm), Khulu (Mro), Amloki (Bengali), Emblic Myrobalan (English)	<i>Phyllanthus emblica</i> L.	Fruits are eaten	Collected from forest
Pitting Gula Gaach (Chakma), Pitus (Chakma), Tumplang (Khumi), Fwa-Lowk-Shi, Afang Falow (Marma), Pukki (Tripura), Faooma, Phutka (Bengali), Cape Gooseberry	<i>Physalis minima</i> L.	Ripe fruits are eaten	Collected from fallow land
Sammuo Ool (Chakma), Shifrang Mukhumu (Tripura)	<i>Pleurotus</i> sp.	Fruit body of this wild mushroom is cooked and eaten.	Collected from fallow land
Dhimetida Saak (Chakma), Goynga (Marma), Ghima Dalok (Tripura), Ghima (Bengali)	<i>Polycarpon prostratum</i> (Forssk.) Asch. & Schweinf.	The whole plant is cooked as leafy vegetable	Collected from fallow land

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Jangaillya Saak (Chakma, Tanchangya), Moia Bar (Tripura), Aruleng (Mro), Thurom (Bawm)	<i>Pouzolzia sanguinea</i> (Blume.) Merrill	Leaves are eaten as vegetable and used to make sauce too	Collected from fallow <i>jum</i>
Lelom Pada (Chakma), Lahana Shak, Krvk Hwoay Rowk, Kamra, Kramu-rauh, Lamur (Marma), Angkung-gam (Khumi), Unarei (Bawm), Orai (Tripura), Un Adehye Nah (Bawm), Kasobu (Mro), Lalong (Bengali)	<i>Premna esculenta</i> Roxb.	Leaves are used to prepare salad, chutney and cooked as vegetable. Leaves are cooked with Nappi (a fermented paste of varieties of marine fish and shrimp)	Collected from fallow <i>jum</i>
Gutguty (Murong), Gutgutiya, Gu-utya (Chakma), Shu Dui Shi (Marma), Thai Cherem (Tripura), Gutguty (Bengali)	<i>Bursera serrata</i> Wall. ex Colebr	The mature fruit is edible. Fruits are also cooked in curries	Collected from forest
Dhoop Jungalya Saak (Chakma, Tanchangya), Amthay (Khumi), Nahplanggi (Bawm), Jangira Buchuk (Tripura), Masdak, Ma Cha Da (Marma), Kan Leng (Mro), Birhati (Bengali)	<i>Sarcochlamys pulchirrima</i> Gaud.	Young leaves are cooked and eaten as vegetable and some times used as salad	Collected from fallow <i>jum</i> and forest
Ketrang Saak (Chakma), Kojojjya, Ka-ja-baong (Marma), Haru (Tripura), Rotha (Tipra), Kalkasunde (Bengali), Western Senna	<i>Cassia occidentalis</i> L.	Leaves are cooked with dry fish or small fish to eat as vegetable	Collected from fallow <i>jum</i>
Minjiri (Marma), Minjirio (Bengali)	<i>Cassia siamea</i> Lam.	Leaves and flowers are also eaten as vegetables by Marma community people	Collected from forest
Echi Heir (Chakma), Danggye Aa-rwk Dangibaong; Dang Geya (Marma), Lo Tho Dalok (Tripura), Rotha (Tripura), Echir Gaith (Tanchangya), Robay (Mro), Chakunda (Bengali), Sickle Senna	<i>Cassia tora</i> L.	The leaves of this plant are cooked to be eaten as vegetable	Collected from fallow land
Koroi gasch (Chakma), Koroi (Bengali)	<i>Albizia procera</i> (Roxb) Benth	Young shoots and leaves are cooked as vegetable or taken as salad	Collected from forest
Epychu (Khumi), Bor Tida Begul (Chakma), Tit Begun (Bengali)	<i>Solanum nigrum</i> L.	Fruits are cooked as vegetable	Collected from fallow land
Engfy-poi (Khumi), Kontakari, Borshiborduk (Tripura), Midha Begool Bichi, Begool Bizi (Chakma), Kajo-ba, Khaja, Kargola (Marma), Titar Berul (Tanchangya), Pley khauy, Kurkha, Kurka Plawo (Mro), Gotha Begun (Bengali)	<i>Solanum torvum</i> L.	Unripe fruits are cooked as vegetable. Fruits also used for chutney	Collected from fallow <i>jum</i>

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Ozonsaak (Chakma), Humdioai, Hamfoi (Marma), Athangdi (Khumi), Mangcasa (Bawm), Kun Dung (Mro), Jaba Achin Sak (Tanchangya), Marhatitiga (Bengali)	<i>Spilanthes calva</i> DC.	Boiled leaves are taken as vegetable and salad. Whole plant is boiled in water made chutney with dry fish and chili	Collected from moist land
Hamarang Gaach (Chakma), Chain-cha, Goda-kamarang (Marma), Dharmara (Bengali)	<i>Stereospermum chelonoides</i> (L.f.) DC.	Tender leaves are used in making rice cake, bark is used in country liquor	Collected from forest
Ek Dhajja Kuzu (Chakma)	<i>Steudnera colocasioides</i> Hooker, f.	Young petioles are eaten as vegetable	Collected from fallow <i>jum</i>
Lykkho (Khumi)	<i>Tacca integrifolia</i> Ker Gawler	Leafy stalk is cooked as vegetable by Khumi community people.	Collected from forest
Sacheng (Mro), Bora Gula-gach (Chakma), Ka Sing Ba, Cha Ching Ti, Soi Sing Si, Thaisingthe (Marma), Boya Gula (Tanchangya), Bahera (Bengali), Belaric Myrobalan (English)	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Endosperm of the fruits are eaten	Collected from forest
Ajubang, Kaho (Marma), Hoittal (Chakma), Oittal (Chakma), Haritaki (Bengali), Chebulic Myrobalan (English)	<i>Terminalia chebula</i> (Gaertn.) Retz.	Fruits are chewed	Collected from fallow <i>jum</i> /forest
Howngaya (Khumi)	<i>Tetrastigma serrulatum</i> (Roxb.) Planch.	Leaves and tender stems are cooked as vegetables by Khumi community	Collected from forest/fallow <i>jum</i>
Phuljharu (Bengali), Sorondora (Chakma), Broom grass	<i>Thysanolaena maxima</i> (Roxb.) Kuntze	Inflorescence collected and sold in the market	Collected from fallow <i>jum</i>
Crongnoyma (Mro)	<i>Torenia travancoria</i> Gamble	Whole plant (herb) is eaten as a vegetable by Murong community	
Apeeo (Khumi)	<i>Torenia violacea</i> (Azaola ex Blanco) Pennell	Boiled leaves of the herb are Eaten as vegetable. This is considered good for health and nutritiousby Khumi communities	Collected from forest
Kalobaich Gula (Mro)	<i>Trapa maximowiczii</i> Korshinsky	Fruits are eaten	
Bangal Sot-tha (Chakma), Chiapoung (Marma), Water Chestnut	<i>Trapa natans</i> L.	The greenish-yellow fruits are directly eaten.	Collected from forest

Local names	Scientific/ Botanical names	Parts used for own consumption/taken to the market for sale	Comment
Horinkan Shak, Faranga Ludi (Chakma)	<i>Trichosanthes anguina</i> L	Fruits and leaves are used as vegetables either boiled or in curries. The whole plant is cooked as a vegetable (Chakma).	Collected from fallow land
Gaash Ool (Chakma)	<i>Volvariella</i> sp.	The fruit body is cooked as vegetable and as soup	Collected from forest
Lengra (Chakma), Son Keng (Bawm), Burweed	<i>Xanthium strumarium</i> L	Leaves with young shoots are cooked as vegetable	Collected from fallow low land
Sammua Tha (Tripura), Jarbua Kochu boila (Chakma)	<i>Xanthosoma violaceum</i> Schott	Petioles and leaf blades are commonly used as vegetable	Collected from forest

Appendix 5. Crops cultivated in *Jum* in the Chittagong Hill Tracts

Local names with Bengali and English names	Scientific/Botanical Names	Comments
Dhaan (Chakma, Bengali), Paddy	<i>Oryza sativa</i> L.	Main crop 18 cultivars are used earlier
Metit (Khumi), Mukhya (Chakma), Badungni makka (Tripura), Ya moy kaPlenbong (Mro), Wal mum (Bawm), Mokka (Tanchangya), Bhootta (Bengali), Maize	<i>Zea mays</i> L.	Boiled and roasted cobs are eaten. Also cooked as pulse. Four cultivars are used now
Sooch Morich (Chakma), Sangring-pui (Khumi), Linkew (Mro), Lanka-marich, Marich (Bengali), Chillies	<i>Capsicum frutescence</i> L.	Green/ripe chilli used in curry
Holoth (Chakma), Halud (Bengali), Turmeric	<i>Curcuma domestica</i> <i>Valet</i>	Cash (spice) crop. Dried rhizome powder used in curry
Kheyan, Kyang (Marma), Kiching (Khumi), Ithing (Bawm), Ada (Chakma), Hyching (Tripura), Sapsa Mro), Ada (Bengali), Ginger	<i>Zingiber officinale</i> Roscoe	Cash (spice) crop. Used in curry
Rang Nao (Bawm), Oi Koju (Chakma/Bengali), Bye-tey (Khumi), Pring Faing (Marma), Punru (Mro), Batima (Tripura), Telinga Potato, Elephant's foot	<i>Arum campanulatum</i> Roxb.	Corms are cooked as vegetable. Boiled corms are also eaten. 14 species used
Guri Kuzu (Chakma), Chora Kochu (Bengali), Aroides (English)	<i>Colocasia esculenta</i> (L.) Schott	Corms are cooked as vegetable
Phelon (Chakma), Dainepe (Marma), Baising (Mro)	<i>Dolichos biflorus</i> L.	Young fruits and seeds are cooked as vegetable
Siro (Khumi), Nara Kaba sumi (Chakma, Tanchangya), Barbati (Bengali), Chinese Bean	<i>Vigna sinensis</i> Endl. & Hask.	Fruits are cooked as a vegetable
Khubi (Khumi), Bilap (Bawm), Lamba Shumi (Chakma) Shim (Bengali), Bean variety	<i>Dolichos lablab</i> L.	Pods are cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Keim sumi (Chakma), Horse bean	<i>Vicia faba</i> L.	Fruits are cooked as vegetable
Makhna shim, Moma Sumi (Chakma), Pay-Thak-Shi (Marma), Baikang (Tripura)	<i>Canavalia ylindri</i> (Jacq.) DC.	Fruits are cooked as vegetable
Aral (Chakma), Flaying (Mro), Arhar (Bengali), Pigeon Pea	<i>Cajanus cajan</i> (L.) Millsp	Young pods are cooked as vegetable. Seeds are eaten as pulse and roasted seeds are also eaten
Veroch/Dheroch (Chakma), Dheros (Bengali), Okra	<i>Abelmoschus esculentus</i> <i>Moen</i>	Fruits cooked as vegetable
Koida (Chakma), Paranga (Tanchangya), Yangisha (Marma), Koitha (Khumi), Snake Gourd	<i>Trichosanthes cucumerina</i> L.	Fruits are cooked as vegetable

Local names with Bengali and English names	Scientific/Botanical Names	Comments
Kui tetoi (Mro), Aaoi (Khumi), Omai (Bawm), Murong Kodugula (Chakma), Jum Lau/Kadu (Bengali), Bottle Gourd variety	<i>Cucurbita longa</i> Hort.	Immature fruits are used as vegetable. The shell of the mature fruit is used as a container and another variety is used as a water pot by the Murang community.
Chalkumra (Chakma, Bengali), Aamy-kaowling (Khumi), Kampen Wi (Mro), Jum Saal Kumuro (Tanchangya), Ash Gourd	<i>Cucurbita hispida</i> Thunb.	Young fruits are cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Khira (Chakma), Jum Sosha (Bengali)	<i>Cucumis sativus</i> L.	Fruits are eaten raw and also cooked as vegetable
Jummobegun, Bangal Begun, Bara Masya Begun (Chakma), Meto (Khumi), Jum-baigun (Tanchangya), Kajah She (Marma), Begun (Bengali), Eggplant	<i>Solanum melongena</i> L.	Fruits are cooked as vegetable
Chatong (Khumi), Kawn Chol (Chakma), Maishi (Tripura), Koin Dhan (Tanchangya), Kaon (Bengali), Italian millet	<i>Setaria italica</i> (L.) P. Beauv.	Grains are cooked and eaten
Kej Biji (Chakma), Job Dan (Bengali)	<i>Hordium vulgare</i> L.	Grains are cooked and eaten
Jedena Bizi (Chakma), Joar (Bengali), Sorgum (English)	<i>Sorghum vulgare</i> Pers	Grains are cooked and eaten
Kattheyi (Khumi), Ghoichya, Naga Ghoichya (Chakma), Ghoishya (Tanchangya), Til (Bengali), Sesame	<i>Sesamum indicum</i> L.	After making paste, it is cooked with dry fish and taken as curry. Some times fried seeds are also eaten. Two cultivars used
Korong-a-sumi (Chakma), Sangra (Marma), Kamranga Shim (Bengali), Winged bean	<i>Dolichos tetragonolobus</i> L.	Beans are eaten as vegetable
Fuzi (Chakma)	<i>Peliosanthes teta</i> Andrews	Used for flavouring curries
Sabarang (Chakma), Hon-Wong-shawy (Marma), Bana (Tripura), Bipanak (Bawm), Babui Tulshi (Bengali), Common Basil	<i>Ocimum basilicum</i> L.	Tender leaves are used as additive to bring aroma in vegetables. Cultivated both in <i>jum</i> and homesteads
Bileti baghorpada (Chakma), Bwhak Pata (Bawm), Bilati Danya Pata (Bengali)	<i>Eryngium foetidum</i> L.	Used as additives in curries
Misri fal (Chakma), Elachi lau (Bengali), Giant granadilla	<i>Passiflora quadrangularis</i> L.	Unripe, green fruit is eaten as vegetable and some times used in salad
Kangragula (Chakma), Achampol (Khumi), Kang-chaing-za (Mro), Kakrol (Bengali), Chinese cucumber	<i>Momordica cochinchinensis</i> (Lour.) Spreng.	Fruits are cooked as vegetable

Local names with Bengali and English names	Scientific/Botanical Names	Comments
Jhing-a (Chakma), Beyoi (Khumi), Khota-Shi (Marma), Pang Lai (Mro), Jhiya (Tanchangya) Jhinga (Bengali), Ribbed Gourd	<i>Luffa acutangula</i> (L.) Roxb.	Fresh fruits are cooked and fried as vegetable (Khumi). The tender fruit is used as vegetables. Leaves are cooked as vegetables when young. Cultivated both in <i>jum</i> and homestead
Phorol (Chakma), Sw-Bwoe-shi (Marma), Ui-Tha (Mro), Powgul (Tanchangya), Fwr Dalok (Tripura), Dhundul (Bengali), Sopnge Gourd	<i>Luffa yilindrical</i> M. Roem	Immature fruits are cooked as curry and vegetable. Young leaves are used as vegetable. Cultivated both in <i>jum</i> and homestead
Lekuie (Khumi), Edo tang alu (Chakma), Tw-Mrong ok (Marma), Tha Rom (Tripura), Shemia Batraj (Bengali)	<i>Pueraria tuberosa</i> DC.	Tubers are cooked and used as vegetable. Cultivated both in <i>jum</i> and homesteads
Mo alu (Chakma), Hu-apy (Khumi), Tha Maitok, Chang Foya, Ta Su Dhui (Marma), Kui Kai Rui (Mro), Vole Komra, Thaktoi (Tripura), Banalu (Bengali), Yam	<i>Dioscorea bulbifera</i> L.	Tubers cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Matya Alu (Chakma), Raing (Tanchangya), Mete Alu (Bengali), Yam	<i>Dioscorea alata</i> L.	Tubers cooked and taken as vegetable. Boiled tubers and bulbils are eaten.
Sora alu (Chakma), Hoai (Khumi)	<i>Dioscorea glabra</i> Roxb.	Tubers cooked as vegetable
Piley alu (Chakma), Huishudui (Khumi), Aapang (Marma), Kurma Budo (Marma), Tha Mamarwrak (Tripura), Maitya Alu (Bengali), Yam	<i>Dioscorea esculenta</i> (Lour.) Burkill	Tubers cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Thing bazik, Thingba (Bawm), Seme alu (Chakma), Akuho (Khumi), Asa Mrwak, Lapai Baou (Marma), Yam-wi (Mro), Kapela Alu (Tanchangya), Tha Bucchuk (Tripura), Shimal Alu (Bengali), Cassava, Tapioca	<i>Manihot esculenta</i> Crantz	Tubers are boiled and eaten and also cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Jooroalu (Chakma), Tha Kachang Ma (Tripura), Baibara (Bawm), China Alu (Bengali), Yam bean	<i>Dolichos bulbosus</i> L.	Fleshy tubers are eaten raw
Tida Gula (Chakma), Achamasi (Khumi), Titkorolla (Marma), Ching-che (Mro), Belati Tira Gula (Tanchangya), Karolla (Bengali), Bitter Gourd	<i>Momordica charantia</i> L.	Fruits are cooked as vegetable. Cultivated both in <i>jum</i> and homestead
Amila (Chakma), Puyng-shi, Un thun Sung Krak (Bawm), Aangtho (Khumi), Jang Gri Se (Marma), Kan Sur Ka (Mro), Mukhroi bathai (Tripura), Kharapata (Bengali), Indian Sorrel	<i>Hibiscus sabdariffa</i> L.	Leaves and young shoots are eaten raw or cooked. Sour in taste. Fruit coats are cooked as soup

Local names with Bengali and English names	Scientific/Botanical Names	Comments
Puzhok (Chakma), Cumbishi (Marma), Kantor (Mro), Jhum Poi Shak (Tanchangya), Meferai bukung (Tripura), PuiShak (Bengali), Indian Spinach	<i>Basella alba</i> L.	Leaves, young shoots, tender stems, fruits are cooked as vegetable. Cultivated both in jum and homestead
Kogeya, Koya (Chakma), Kamco (Bawm), Somphula (Khumi), Betca (Mro), Pepe (Bengali), Papaya	<i>Carica papaya</i> L.	Unripe fruits are cooked as vegetable. Ripe fruits are eaten raw. Cultivated both in jum and homestead
Kattoli/Samba/ Tonya Kola (Chakma), Anazi/ Bangla/Samba Kola (Bengali), Banana	<i>Musa sapientum</i> / <i>M. paradisiaca</i> L.	Ripe fruits are eaten. Unripe fruits of another variety are cooked as vegetable
Anaach (Chakma), Anaros (Bengali), Pineapple	<i>Ananus comosus</i> Merr	Ripe fruits are eaten and sometimes cooked as vegetable

References

- ADB (Asian Development Bank) 2001. Chittagong Hill Tracts Region Development Plan. Final Report No. 3: Agriculture and Marketing in the CHT. ADB TA No. 3328. Rangamati
- Anonymous 2007. Community Dialogue: Bangladesh; Natural Resource Management and Indigenous Peoples, Chittagong Hill Tracts, September – October 2007, UNDP Regional Initiative on Indigenous Peoples' Rights and Development
- Brammer, H. 1986. Reconnaissance Soil and Land Use Survey: Chittagong Hill Tracts, Soil Resources Development Institute, Dhaka, 206 pp. (9 volume reports of Forestall).
- Brauns, C. and L.G. Löffler 1990. Mru: Hill People on the Border of Bangladesh. Birkhäuser Verlag, Basel, Boston, Berlin
- D'Costa, Bina 2014. Marginalization and Impunity: Violence Against Women and Girls in the Chittagong Hill Tracts. Dhaka: Chittagong Hill Tracts Commission, International Work Group for Indigenous Affairs and Bangladesh Indigenous Women's Network
- Hunter, W.W. 1876. A Statistical Account of Bengal, Vol. VI, Chittagong Hill Tracts, Chittagong, Noakhali, Tipperah, Hill Tipperah. Tubner & Co., London, pp. 106.
- Hutchinson, S.R.H., 1906. An Account of the Chittagong Hill Tracts, The Bengal Secretariat Book Depot, Calcutta, India, pp. 32-63.
- Ishaq, Muhammad (ed.) 1971. Bangladesh District Gazetteers, Chittagong Hill Tracts, 1971. Ministry of Cabinet Affairs, Government of Bangladesh.
- Jamaluddin, Md., Hassan Kamrul Md. and Miah Monayem Md. 2010. Identifying Livelihood Patterns of Ethnic Minorities and their Coping Strategies, Different Vulnerability Situation in Chittagong Hill Tract, Bangladesh, Final Report CF# 7/08, National Food Policy Capacity Strengthening Programme
- Kerkoff, Elisabeth and Eklabya Sharma 2006: Debating Shifting Cultivation in the Eastern Himalayas: Farmers' Innovations as Lessons for Policy, ICIMOD, Kathmandu, Nepal, 92 pp.
- Khan, N.A. and S.K. Khisa 2000: Exploring Gender in a Participatory Agroforestry Project in Bangladesh: Some Ethnographic Reflections. Proc. International Workshop on Agroforestry and Forest Products, North Eastern Hill University, Aizawl, November 28-30, 2000, pp. 213-217.

- Khan, M.F.A., S. Mentel and E.H. Chowdhury 2007. State of the Environment of the Chittagong Hill Tracts. Charm Project Report 2. (Pro.no. BD/Asia-pro Eco/12/103-584
- Khisa, S.K.; Gafur, A.; Rasul, G.; Alam, M.K.; Mohiuddin, M; Zasimuddin, M. 2004. Farmers' Innovations in Different Shifting Cultivation Systems in the Eastern Himalayas: Case Studies from Chittagong Hill Tracts, Bangladesh. Report prepared for ICIMOD, Kathmandu, Nepal.
- Mohabbatullah Md. *et al.* 2012. A Report on Jhum Research in CHT. Hill Agricultural Research Station, Bangladesh Agricultural Research Institute, Khagrachari
- Mohsin, Amena 1997. The Politics of Nationalism: The Case of Chittagong Hill Tracts, Bangladesh, The University Press Limited, Dhaka, Bangladesh
- Rasul, G. 2005. State Policies and Land Use in the Chittagong Hill Tracts of Bangladesh. International Institute for Environment and Development (IIED), London, Gatekeeper Series, No. 119.
- Roy, R.C.K. 2000. Land Rights of the Indigenous Peoples of the Chittagong Hill Tracts, Bangladesh IWGIA Document No. 99 Copenhagen 2000, INTERNATIONAL WORK GROUP FOR INDIGENOUS AFFAIRS.
- Roy, R.D. 2000. Occupations and Economy in Transition: A Case Study of the Chittagong Hill Tracts, in Traditional Occupations of Indigenous and Tribal Peoples, ILO, Geneva, 2000, pp. 73-122.
- _____ 2002. Land and Forest Rights in the Chittagong Hill Tracts. International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal, ICIMOD Talking Points-4/02, 44 pp.
- _____ 2005. Traditional Customary Laws and Indigenous Peoples in Asia, Minority Rights Group (MRG) International, London.
- Roy, R.D., B.M. Xavier, S.W. Vidouboulou 2012. Study on Shifting Cultivation and the Socio-cultural Integrity of Indigenous Peoples, UN Doc: E/C.19/2012/8, dated 24 February 2012.
- Smith, Dan and Janani Vivekananda 2007. A Climate of Conflict: The Links between Climate Change, Peace and War (London: International Alert; November).
- Sutter, Phil 2000. Livelihood Security in the Chittagong Hill Tracts, CARE, Dhaka
- Thapa, Gopal B. and Golam Rasul 2006. Implications of Changing National Policies on Land Use in the Chittagong Hill Tracts of Bangladesh, Journal of Environmental Management, Vol. 81, No. 4, pp. 441-453.

World Food Programme 2005. Characterizing Food Insecurity in Chittagong Hill Tracts: A VAM Draft Report based on the consultations held in CHT in September 2003 and June 2004. VAM Unit, WFP

Endnotes

- ¹ *Jum* is commonly used in the CHT and Northeast India. It is pronounced as '*joom*' but with a short 'oo', as in 'bullet'. This word is used throughout this report
- ² Chief of a *Mouza*; A *Mouza* is composed of several villages. In the CHT, *mouza* is both revenue and a land administration unit and a unit of general and indigenous justice administration. Average size of a mouza is 10 square miles. The total number of *mouzas* in the CHT is 369.
- ³ Traditional head, also known as the 'Raja.' According to the CHT Regulation 1900, the circle chief heads a revenue and administrative unit in the CHT known as a 'circle.'
- ⁴ Lands that are generally submerged but surface out when the water level of Kaptai Lake falls
- ⁵ See cases studies of violence against women in the CHT by Kapaeng Foundation, www.kapaeng.org
- ⁶ The recent cases of violence against indigenous women are more frequent than at any other time in the past. In the last seven years since early 2007, 211 indigenous women have been either raped or sexually harassed in CHT but none of the perpetrators were punished. As the culprits are enjoying absolute impunity, violence against indigenous women is continuing. Indigenous girls and women now feel insecure when they go out to school, market or for work in the field as there is increased propensity of sexual violence committed against them.

Chapter 2

The changing face of swidden agriculture: a case study of two villages in Ratanakiri Province, Cambodia

Jeremy Ironside



Acknowledgements

It is important to firstly thank the families of Pierr, Beine and Kanat Thom Villages for their willingness to give their time and knowledge during visits to their villages. Two indigenous researchers, Lol Ting and Nong Rin, also deserve particular thanks and acknowledgement for assisting me to collect information. This paper also draws on ideas about improving swidden systems from an earlier paper written about swidden agriculture in Ratanakiri, and I would like to acknowledge ideas included in Chapters VII and IX from my co-authors for that paper, Gordon Patterson and Anne Thomas. I would also like to acknowledge the excellent support provided by Asia Indigenous Peoples Pact (AIPP) in organizing an interesting discussion in August 2014 in Chiang Mai, Thailand about the future of indigenous agricultural systems and related livelihoods in Asia. The support provided by the International Working Group for Indigenous Affairs (IWGIA) in coordinating the country case studies and this book documenting these is also greatly appreciated.

List of acronyms

AIPP	Asia Indigenous Peoples Pact
CHRAC	Cambodian Human Rights Action Committee
CLV-DTA	Cambodia, Lao PDR and Viet Nam Development Triangle Area
CPP	Cambodia Peoples Party
ELC	Economic Land Concession
ESIA	Environmental and Social Impact Assessment
IWGIA	International Working Group for Indigenous Affairs
MOP	Cambodian Government's Ministry of Planning
NGO	Non-Governmental Organization
OHCHRC	Office of the United Nations High Commissioner for Human Rights in Cambodia
UNDP	United Nations Development Programme

Glossary of Tampuan terms used

Miir	Upland swidden field
Poarnng	Clan or extended family
Pree sampar	Fallow with young regrowth
Pree kalar	An area where a particular type of bamboo is growing
Rieoo	Back basket used for transporting produce and for everyday use.
Sen	Religious ceremony to honour the spirits
Sen pree	Ceremony to the forest spirits
Sen srouwk ruom	Harvest ceremony, once the rice is in the rice storage area, in appreciation of the rice that will support the family over the coming year

Title page photo: Beine villagers clearing weeds in a cashew nut orchard. Photo: Jeremy Ironside

The changing face of swidden agriculture: a case study of two villages in Ratanakiri Province, Cambodia

Jeremy Ironside

I. Introduction

After 30 years of war lasting until the late 1990s, Ratanakiri Province in the far northeast of Cambodia is now undergoing rapid agrarian change. This paper explores this change process, its impacts on the livelihoods of indigenous communities that inhabit this region and on the swidden (rotational) agriculture systems, which has long been practiced in this region. Some of the factors driving this change and causing extreme stress on the traditional cultures and the agro-ecosystems in this area include:

- The promotion by the Cambodian government of the northeastern region of the country as a forth pillar of national economic development¹;
- Plans for a 'development triangle' to economically integrate the isolated regions of southern Lao PDR, central Viet Nam and northeast Cambodia²;
- Development of an economic corridor that will pass through Ratanakiri, eventually linking Bangkok by road with Viet Nam and China.

These changes underway in Ratanakiri are representative of similar processes in many parts of Southeast Asia and other areas (see Nevins and Peluso, 2008; Tsing, 2008; Akram-Lodi, 2005; Dove, 1985; Shiva, 2003 and 1991). Given the proximity of Ratanakiri to the Central Highlands of Viet Nam and the similarities with the indigenous groups, soils, topography and climate found there, the changes in Ratanakiri will likely resemble the transformation to plantation and cash cropping agriculture, which has occurred across the border in Viet Nam (see Saleminck, 2003). However, the change in Ratanakiri could also be more anarchic than that which has occurred in Central Highlands because of the mix of central level government planning, national and local elites co-opting these plans for their own ends, and the widespread lack of rule of law in Cambodia. As a result, the transformation of the indigenous communities of the province and their swidden systems is likely to be profound.

Given this particular anarchy found in a remote province coming out of a long period of war, I argue that livelihood adaptations and the development of culturally appropriate and environmentally sustainable land uses which build on existing knowledge and ensure food security necessarily depends on the establishment of some form of tenure security which recognizes these communities' rights to their communally owned lands. Building on this cultural base can allow for a broader conceptualization of land use in the province, which can encourage landscape diversity and can help to challenge the inexorable takeover of monoculture rubber plantations in Ratanakiri. Realizing a land-use approach, which builds on and adapts the swidden systems in this area depends also on changing the discourse of discrimination against these systems and the cultures associated with them.

This discussion of the changes underway in Ratanakiri highlights the need to understand the political context, to make sense of the cultural dynamics, the land tenure situation and the way 'economic development' is being implemented in this region. I begin this paper, therefore, with a discussion of the present political environment, followed by a discussion of the research methods used for this paper, and then I explore the cultural underpinnings of swidden land use in the province. Understanding this cultural worldview is important for developing adaptations to swidden land use that build on cultural perspectives and knowledge, which can support the development of land use adaptations and improvements to traditional land use focused more on landscape level integrated farm/fallow/forest approaches. Next, I explore the recognition afforded to swidden agriculture and communal land ownership in Cambodian legislation and how this is being undermined through land alienation and mass individual land titling campaigns. Following this, I briefly look at the traditional swidden systems, as they existed in the past and how these are changing. This leads into a discussion about the current land use and livelihood situation in the two villages in which research was carried out for this paper, particularly the ongoing transition to cash cropping. Then I look at the villagers' perceptions of their steady integration into the market economy, and explore some possible approaches for building on swidden systems to develop diverse land uses, which could satisfy both the subsistence and economic needs of local villagers. I conclude this discussion with a summary of the change of approach, which is needed and some brief indications for Cambodia interventions that could be tried.

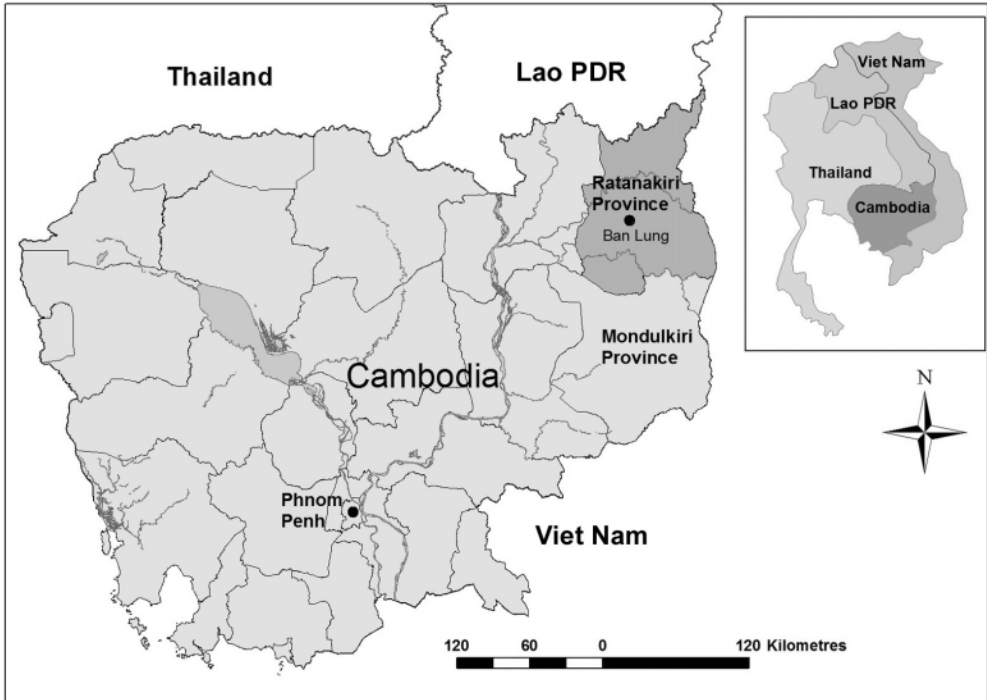


Figure 1. Ratanakiri Province, northeast Cambodia

II. Overview of the political aspects of agrarian change in Ratanakiri

As mentioned, understanding the political and power dynamics in Ratanakiri Province sheds light on the competition for resources underway, and also the ability of the indigenous swidden farmers of the area to influence these processes. In this chapter, I introduce Ratanakiri Province and explore these dynamics, which are driving land-use change. This helps to frame the discussion about swidden agriculture adapting to new circumstances to maintain livelihood security, the possibilities for strengthening and supporting this adaptation, the control of land which this requires, and some of the likely consequences of this present process of agrarian change.

Ratanakiri Province, situated in the northeastern corner of Cambodia (see Figure 1), has long been seen by lowland Cambodians as remote, wild and forested, and populated by people with distinct cultural differences (Bourdier, 1995; Meyer, 1979). It covers 10 782 square kilometres (sq km), with a total population of 183 699 based on the 2013 inter-censal survey, with an overall population density of 17 people per sq km (MOP, 2013). With large areas in the north and south of the

province relatively uninhabited, settlement and land use is concentrated along the main roads, around the main centres, along the two main rivers and on the fertile 2 000 sq km basalt plateau in the centre of the province.

Around half of the population of Ratanakiri Province is made up of eight indigenous groups which range in size from a few hundred to the largest group, the Tampuan, with an estimated population in 2013 of 56 800 (MOP, 2013).³ Partly because of its high percentage of indigenous peoples, poverty rates in Ratanakiri are among the highest in the country (UNDP, 2010). These groups share common cultural practices and livelihood systems, which, up until very recently, were based on swidden agriculture and collection of forest products. Although motorcycles, telephones and television are changing their lifestyles, most indigenous peoples in Ratanakiri live without running water or grid electricity and rely almost entirely on agriculture for their livelihoods. Therefore, in several villages, traditional swidden systems persist with varying degrees of recent adaptations.

In recent years, rapid population increase, largely from lowland Cambodians in search of cheap fertile land, has forced swidden farmers in this area to adapt and accommodate increased land pressure. From 2008 to 2013, the per annum population growth rate slowed slightly to 3.99 percent, but was still the third highest provincial growth rate in the country (MOP, 2013).⁴ This increasing land pressure has caused difficulties for swidden farming communities to protect their fallow lands. In addition to this, an influx of national and multinational agribusiness enterprises to plant large rubber plantations is also transforming land use in the province. The impact of this rubber plantation development can be seen in Figure 2. The light coloured bare land in this satellite image indicates the scale of the clearing of forest and fallow land that was underway in 2010.

De Konnick (2004: 286) defines agrarian change as;

“...the transformation of societies from primarily non-urban populations dependent upon agricultural production and organized through rural social structures, to predominantly urbanized, industrialized and market-based societies.”

As seen in Figure 2, part of this process is also an industrialization of the agriculture in rural areas like Ratanakiri. This process of replacing small farmers who are using land communally with industrial monoculture plantations throughout this region is often portrayed as progress and development (see MARD, 2007 in Dao, forthcoming; Master Plan for CLV-DTA, 2004).⁵ For example, the Master Plan for the Cambodia, Lao PDR and Viet Nam Development Triangle Area (CLV-DTA) justifies replacing the local indigenous farming systems in Ratanakiri, and in the provinces which link these three countries, by portraying them as backward and environmentally destructive.

Following this discourse, multilateral institutions like the Food and Agriculture Organization of the United Nations (FAO) and the World Bank have also played a significant role in portraying the practices of small farmers as backward, and in defining agricultural development based on high input, monoculture production for the market as modern and progressive (Bryant and Bailey, 1997). Driven by ideas of economies of scale and specialization induced by both mechanization and marketization, this embrace of large-scale monocultures has been referred to as the “gigantism of modern agriculture” (Watts, 2006; 453) and “the treadmill of technological fixes” (Weis, 2007 in Freidman, 2008; 619). As seen in Figure 2, the consequence of implementing this paradigm in areas like Ratanakiri is the clearing of forested areas and the diverse patchworks of secondary forest, which characterized the earlier swidden landscape. This is justified because plantations become defined as ‘forests’ (Alvares, 1992).⁶ For example, in a speech in 2013, the Cambodian Prime Minister commented that forest cover in the country of 9.2 million hectares (ha), or 54 percent of the total land mass, “shows that the government balances the need to create jobs for poverty reduction and the need to protect the environment due to the fact that rubber trees are considered part of the forest coverage” (Vannarin and Lewis, 2013; webservice).

However, underlying this rhetoric of creating jobs and ‘preserving forest cover’ is the desire of the political elites to control remote areas such as Ratanakiri for the substantial resources they contain. This process of strengthening control over these remote areas has been underway since the 1980s, particularly since the liberalization of the economy in 1989 (Hughes and Un, 2011). Gradually, through mass patronage, alliance building and ‘elite accommodation’, the Cambodia Peoples Party (CPP) has cemented its control over state resources (Milne *et al.* 2015). For example, the Forest Law (2002) reinforced state control over 60 percent of the nation’s territory, and the Protected Areas Law (2008) expanded this over an additional 21 percent, while at the same time annulling customary claims over land and resources (Milne *et al.* 2015). This process of state territorialization is also seen with the allocation of large areas for monocultural plantations over the past decade or more, replacing the much more difficult to control dynamic swidden landscapes in which fields are constantly changing in time and space. The appropriation and patronage which this process has enabled can be seen by the fact that five senators from the ruling CPP hold 20 percent of the total land area allocated to concessions (Milne *et al.* 2015).

Reports vary, but at the end of 2011, between 2 036 170 ha (Vrieze and Naren, 2012) and 2.5 million hectares (Naren, 2012) had been leased to 227 private economic land concessions companies.⁷ Eighty percent of the land allocated for concessions in Cambodia is for rubber plantations (Global Witness, 2014). An estimated 770 000 people have been adversely affected by land grabbing in rural and urban areas, many

of them forcibly displaced from their homes, with 20 000 new victims in the first three months of 2014 alone (Simms, 2014, also Global Witness, 2013; OHCHRC, 2012; CHRAC, 2010). The forest clearing which has accompanied the establishment of rubber plantations has also opened the door for widespread illegal logging, impacting particularly on the resource rich, forested upland areas of Cambodia (NGO Union, forthcoming; Peter, 2013).

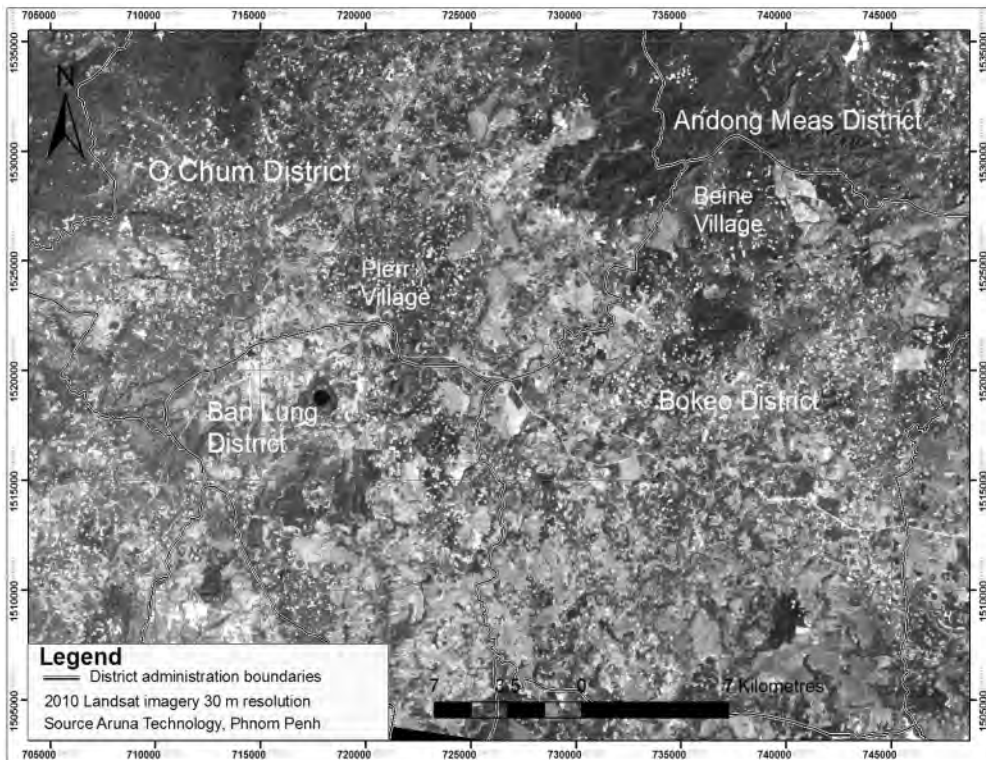


Figure 2. Conversion to (mainly) rubber plantations in Ratanakiri Province.

Source of map: Author

As mentioned, government plans for Cambodia's northeastern provinces, including Ratanakiri, involve the creation of a 'Development Triangle'. The Master Plan for this Development Triangle outlines an integrated programme of economic development apparently to make use of "under-utilized economic potential" in the "least developed territories" of each of these countries (Master Plan for CLV-DTA, 2004; 10). Mining, agro-industry and eco-tourism, hydroelectricity and infrastructure development are seen as the key drivers of growth (OHCHRC, 2007). This includes rapidly creating a "market-oriented commodity-producing economy" with agricultural and forestry development, including high-value cash cropping (of coffee, rubber,

cashew nuts and pepper, as well as livestock) on the red basalt soils of Ratanakiri and Mondulakiri Provinces (Master Plan for CLV-DTA, 2004; 92).

The indigenous inhabitants of Ratanakiri have never been informed about these plans, despite their existence since 1999. Therefore, unsurprisingly, there is little recognition of the land rights of indigenous communities in this Master Plan, thus making displacement and dispossession inevitable. The Master Plan envisages the identification of “land reserve” areas “in order to plan for population distribution along the lines of permanent cultivation and fixed settlement ... with an aim to stabilizing the lives of the ethnic minority people”, purportedly in order to mitigate deforestation and protect the environment (Master Plan for CLV-DTA, 2004; 148-149). This is because, according to the Master Plan, “ethnic minority groups’ ... practice of forest burning for cultivation of land and inconsiderate forest exploitation has rapidly decreased the forest area [and has had] serious negative impacts on the ecological environment” (Master Plan for CLV-DTA, 2004; 96).

In this way, dispossession and transforming groups of self-employed subsistence swidden farmers into producers for the market economy, and workers for large-scale commodity producers is being carried out in the name of bringing ‘civilization’ to the ‘backward’ ethnic minority groups.⁸ The fixed cultivation and settlement programmes implemented in the neighbouring Central Highlands of Viet Nam have also been justified by a discourse of mitigating the environmental ‘destructiveness’ of indigenous communities’ shifting cultivation practices and bringing development to these ‘backward’ groups (Cramb *et al.* 2009; Saleminck, 2003). However, in spite of the millions of dollars invested in poverty reduction by the Vietnamese government and international donors in the Central Highlands, fixed cultivation and settlement programme policies have been largely ineffective. After 30 years of state-sponsored development programmes, most of the ethnic minorities in the Central Highlands are under increasing pressure due to land scarcity and conflicts over forest resources (Cramb *et al.* 2009).⁹

Agrarian transition in the context of a remote borderland region—with fertile soils, a recent history of conflict, indigenous groups with relatively little exposure to the outside world, in an overall environment of weak governance—means that the local indigenous groups have considerable difficulty in defending their interests, in ensuring the titling of their traditional lands and in convincing outsiders of the merits of their swidden agriculture and resource management systems. In addition to the large-scale land grabbing by local and national elites and plantation companies, dispossession has been further exacerbated in this area through smaller scale land transactions. As a result of the lack of recognition of customary rights, indigenous landowners have competed with one another to sell their communal land, or they have

sold their land because they have been told they will lose it anyway (Ironsides, 2012). Displacement and forced relocation of villages during long periods of war and authoritarian control, has also had a major impact on the ability of villagers to defend their lands, with indigenous communities arguing among themselves over rights to pieces of land on their mutual borders (Ironsides, 2012). On top of this, a process of 'licensed exclusions' (Hall *et al.* 2011) through a private land titling campaign (see Chapter V), often conducted in an environment of deception and intimidation, has further denied the rights of villagers over their customary lands.

Only being able to claim individual titles for in-use land, as well as the general land insecurity has, therefore, had a significant impact on the ability of the villagers to maintain their fertility building fallow land. The fallow lands have traditionally provided the important natural regeneration processes, including the all-important nutrient recycling and soil building needed for sustainable swidden production. This fertility-building phase has been the basis for food security and also income generation, from the sale of surplus rice and other crops, among swidden farming communities (Guerin, 2001). The secondary regrowth following the abandonment of the swidden field has also provided food, animal feed and forest resources.

Due to land alienation, privatization and land insecurity, the only means of protecting land (which should normally be in fallow) has been to use it, very often by planting cashew nut trees on it and more recently cash crops like cassava. Ignoring the importance of this fertility regeneration in the process of transforming natural resources for commodity production (Shiva, 1993) has, as yet undetermined, but significant long-term consequences, most notably perhaps for the long-term food security in many Ratanakiri Villages.

From this brief description of Ratanakiri, it can be seen that addressing the politics of control and power in Ratanakiri is needed to deal with the environmental and cultural degradation underway and to accommodate managed adaptations of swidden systems. However, as Blaikie and Brookfield (1987; 166) long ago pointed out in their discussion of land degradation, "politics are only rarely in harmony with the needs of the land". Creating an enabling environment for local swidden systems to adapt to new contexts also requires questioning the underlying rationale that is driving development and change in this region. This change assumes an inevitable and uni-directional process of agrarian transition from the so-called 'backward' indigenous practices to 'modern' large-scale, high input, monoculture production for the market.

III. Methods

Ratanakiri Province provides an interesting case study of the adaptations underway within traditional swidden systems in the face of the above land-use dynamics. Over the past decade, while swidden systems have been adapting to new circumstances, there has also been a more modest process of communal land titling, ostensibly implemented to preserve the livelihood security of the indigenous communities in Cambodia. This creates an opportunity to analyse these overlapping, yet conflicting, processes of adapting to the outside world through cash cropping and greater market orientation, and attempts to secure traditional land and swidden land use before the land is alienated from local communities' control.

This study builds on Ph.D. research carried out by the author into communal land management in Ratanakiri Province during 2009-2010. As part of this study, research was carried out in five villages to understand land use, land ownership and livelihood changes, as well as to identify the possibilities for an alternative development process based on communal land ownership. This necessarily involved developing an in-depth understanding of swidden agriculture in these communities. These villages were chosen for study because they represented varying impacts from recent land alienation and land use change, which have affected all villages in the province. Research consisted of semi-structured interviews with key informants, including community leaders, government authorities, NGO staff and agricultural merchants, and randomly selected villagers. Focus group discussions with village leaders were also carried out to understand wider impacts on the villages' land and livelihoods. Two of these five villages (Beine and Pierr)¹⁰ were revisited in 2014 for this present paper. Pierr Village (Tampuan ethnic group) was one of the first of three villages in the country to receive its communal land title in 2012, covering 920 hectares for 110 families, or 493 people. One interesting aspect of this title is that it demarcates a contiguous piece of land. The fact that this is a watershed area for a hydroelectric reservoir, which feeds electricity for Ban Lung, the Provincial capital, means that a landscape approach to managing this area, while at the same time supporting the livelihoods of the villagers, offers some interesting possibilities for developing a multi-functional approach. In 2010, Beine Village (Tampuan with 423 people – 88 families with a village land area of 988 ha had maintained its land and its traditional swidden land use while also incorporating newer cash crops. Before a forced individual land titling process in 2012, this village had also completed the process for registration with the Ministry of Interior as a legally recognized indigenous community, allowing it to apply for a communal land title. The area that villagers wanted as a communal title is also a contiguous piece of land, again with possibilities for demonstrating the benefits of landscape-level management through the maintenance of traditional swidden farming systems. However, in 2014, Beine Village demonstrates how the traditional swidden systems are

under pressure with the demand for land to plant rubber and the government's pressure to individualize land ownership. In addition, as part of understanding the impacts of rubber concession development, Kanat Thom Village (Kachok ethnic group – 196 families), near Beine Village, was also visited. Research in 2014 consisted of updating information collected during earlier research through conducting five household surveys in each of Beine and Pierr Villages, to explore livelihood and agricultural strategies. Focus group discussions were also carried out in Beine, Pierr and Kanat Thom Villages to understand the impacts on the village and the swidden systems from rubber development, the government's mass land titling campaign, the increase in cassava production, as well as to understand the ongoing strategies villagers use to protect their land. It is hoped that the examples of these villages will serve to explain the more general change processes underway in Ratanakiri.

IV. The cultural context of swidden land use in Ratanakiri and the role of communal property rights

Several authors have pointed out the important cultural underpinning of swidden agriculture in societies where it is practiced (Cramb *et al.* 2009; Condonimas, 1977; Conklin, 1975; Boulbet, 1975). In this sense these land-use systems, need to be seen as part of a wider cultural whole. The cultural beliefs associated with swidden agriculture help to explain how practices have been adapted to the surrounding environment as well as how the environment has in turn been impacted. As a result of these cultural beliefs and long processes of adapting to and impacting on the environment, a diverse forested landscape has been preserved in Ratanakiri until the very recent past (Fox, 2002). An important part of this land management has been communal land ownership, which has allowed alternating management for periods of use and forest regeneration. Communal ownership has also been important in ensuring food and livelihood security, and for allowing the province's indigenous communities to adapt to changing contexts from their own cultural foundations. Understanding peoples' cosmology and beliefs, therefore, is important for developing other models of land use and livelihood improvements. This chapter explores the cultural importance of swidden agriculture systems practiced by indigenous groups in Ratanakiri.

A complex cosmological relationship with the local environment is the foundation of swidden land use in Ratanakiri. This relationship is maintained by paying respect through ceremonies to the guardian spirits of the village, the ancestors and the surrounding area, including spirits of water, forest, hills, certain caves and stones, the swidden field and the important rice varieties. Understanding swidden agriculture in this sense is more than simply a question of crops, cycles, land rights, social organization, et cetera (etc.) For example, during research on traditional beliefs in

2010, Beine villagers identified six ceremonies which were traditionally practiced during rice growing, beginning with asking the forest spirit to allow the villagers to use a particular area which has been selected for clearing (*Tampuan – sen pree*) and culminating with a ceremony after the rice has been harvested and is in the rice storage area in the house (*Tampuan – sen srouwk ruom*). These ceremonies are more truncated now, but generally Beine and Pierr villagers continue to *sen* their swidden fields three times a year. A Pierr villager commented that if these ceremonies are not performed there is a risk of family members becoming sick, or the rice not growing well.

Pierr villagers in 2010 also explained that their reason for having enough rice is because traditions and beliefs around rice varieties are still strongly adhered to. They said that they have always held ceremonies and conducted sacrifices (even of cows and buffaloes) to the spirits of their main rice varieties. Therefore, these rice varieties cannot just be discarded and replaced, because the villagers believe that doing so will cause a shortage of rice. Villagers pointed out their belief that other villages do not have enough rice to eat because they change their rice varieties too much.

These ceremonies for the swidden field and rice, along with the ceremonies conducted for the village and the surrounding environment indicates a different attitude to land use and the wider environment than is found in conventional cash cropping systems. Traditionally, in the swidden systems in Ratanakiri, the village land area has always been large enough to accommodate the rotational land use practices and the scattered family fields (see Cupet, 1891 in 1998; Lafont, 1963; Matras-Troubetzkoy, 1983; Baird *et al.*, 1996; Fox, 1998; 2002; Ironside and Baird, 2003; Ironside, 2006; Backstrom, *et al.*, 2006).¹¹ Even the village site was often periodically moved within the village's boundaries to avoid or evade disease build up (Gall, 1998). Within this village area, land was traditionally considered the property of the forest spirits who lived there. It was only with the agreement of these spirits, contacted through ceremonies and rituals, that the field could be temporarily cleared, always with the intention that the forest would be allowed to regenerate after cultivation had finished (Ironside, 1999).

This means that in customary law, private use rights were temporarily granted to the family who cleared the field, but once the field was no longer being cultivated, these private rights were relinquished in favour of another piece of land, and the old field reverted to community ownership and was allowed to regenerate. Given this mix of private and communal rights, it is perhaps more accurate to call these arrangements 'split property regimes', in which private rights are allocated within an overall communal management framework designed to ensure the proper management of local resources. In his discussion about 'communal' longhouses amongst the indigenous tribes in Kalimantan, Indonesia, Dove (1982) makes a similar point about the mix of

private and communal rights that govern the longhouse.¹² Contrary to the myths often held by outsiders of communal living within the longhouse, he points out that “a powerful and unmistakable sense of private property pervades the entire [longhouse] building” (Pringle, 1970 in Dove 1982; 30). In this sense, private rights serve to ensure that individual families have full rights to the fruits of their labour, and communal rights serve to ensure sound land and resource management for the good of all community members.

Belief systems and the management practices which stem from them have, therefore, resulted in and allowed a landscape management approach, as opposed to management of a single individual farm unit in privately owned cash cropping systems. This interlinked nature of the farm, the village, rice varieties, the forest, surrounding hills, water, etc. highlights the importance of property arrangements that allow for this landscape level management. As a result of this form of management, the overall forest cover (primary and secondary forest) in Ratanakiri has been maintained at around 80 percent for several centuries (Fox, 2002; Bourdier, 1995). In flatter areas of the central plateau, the basaltic soils could be cultivated for three to four years before being fallowed for 10 to 15 years (Ironsides, 1999). In other parts of the province, where the soils are less fertile, swidden cycles consisted of much shorter periods of cropping (one or two years) and regeneration periods of between six and 20 years, depending on the rate of fallow regrowth. Along the mountain streams in the extreme north of the province, indigenous farmers developed an effective short-rotation swidden system using bamboo as the predominant fallow species (Ironsides and Baird, 2003).

The swidden lands, therefore, are linked with and integrated into forest areas, which villagers maintain for both cosmological as well as utilitarian reasons. Beine villagers, for example, have delineated forest areas for protection as well as for use with the intention of including these areas in the communal land title (see Figure 3), including a two hectare bamboo area (*pree kalar*) which people believe if cut would result in villagers getting sick and dying. Certain animals, such as monkeys living in spirit forest hill areas, are also not hunted because of beliefs held by the villagers.

According to Fox (2002, p. 116), “in a swidden agriculture system the perceived dichotomy between agriculture and forest is for the most part artificial. Swidden fields, secondary forests, and mature forests are all part of the same agro-ecosystem.” Therefore, improving the swidden system needs to consider strengthening the functional interrelationships within the whole farm/fallow/forest environment. For example, Pierr villagers pointed out that deer are often attracted to fallow areas, and both deer and wild pigs are attracted to cashew apples when they are in season. A villager commented that he catches one wild pig per year in traps often during the period cashew apples are dropping. In this sense, swidden improvement strategies need

to recognize these other 'products' and the multi-functionality of these systems (see also Steinmetz, 1996). The fallow as a source of food and wild animals, which can be collected or trapped with relatively little extra labour, is an often-overlooked element of swidden-based livelihood strategies. The potential for intensifying fallows for animal food for domestic and semi-wild animals has perhaps not received the same attention as incorporating commercial tree and other cash crops.

In Ratanakiri swidden systems, animals are the basis for maintaining cosmological and also social relationships, and these cultural aspects in turn form the basis of communal land management. In indigenous communities, animals are raised for sacrifices and consumption as part of the many religious and family ceremonies and secondarily for sale (Irwin *et al.* 2004). Even though Beine villagers raise significant numbers of pigs, they said that a family might only sell two large pigs a year, with the rest eaten during ceremonies, or when a family has large numbers of people helping them during busy times. While the use of animals for ceremonies is changing in Ratanakiri, particularly due to their reduced numbers, assistance with developing low labour and self-feeding animal husbandry systems would contribute substantially to cultural survival, social cohesion, fertility building and livelihood security in these communities.

Maintaining these cultural relationships and the ceremonies they require also means paying attention to the social organization of the village and those in the village tasked with mediating the relationship between the material and spiritual domains. Very often these have been the very people who have been marginalized by outsider efforts to improve agricultural production. The work of the leaders in maintaining intra-village harmony, through systems of conflict resolution based on traditional beliefs, is essential for managing systems of individual and community rights and responsibilities that allow for alternating periods of cultivation and fallow. Social cohesion also permits negotiation and agreement between land users regarding the piece of land they intend to use, and the rights a particular family might have over a particular site.¹⁵

While all these factors are changing, building on the concept of landscape as both a place of human habitation and environmental interaction (Penker, 2009), I argue that swidden landscapes could be developed as multi-functional land use mosaics that not only provide multiple products for local livelihoods and markets, but also accommodate cultural beliefs and provide environmental benefits. In this sense, the swidden landscape needs to be seen as an integrated whole. This in turn requires attention to property arrangements that enable this integrated landscape level management, which are very different from the predominant discourse of private land ownership for agricultural efficiency (Deininger and Feder 2001; Demsetz, 2002).

V. The land tenure context and swidden systems in Ratanakiri

Following on from this discussion of the cultural underpinnings of swidden land use in Ratanakiri, I now explore the present context of communal property rights and the prospects for their formal recognition. The difficulties indigenous communities are having in holding onto their communal land, due to land concessions, migration into the area, a weak rule of law and weak recognition of customary land rights are resulting in significant adjustments in agricultural practices and livelihood strategies.

As seen with the communal land title in Pierr Village and the initial steps towards this in Beine Village, there is a reasonably favourable policy environment in Cambodia towards swidden agriculture as a land use. For example, as part of allowing indigenous communities to register their traditional agricultural lands as a collective title, Article 23 of Cambodia's 2001 Land Law recognizes and permits swidden cultivation "according to customary rules of collective use" (RGC, 2001). Article 25 of the Land Law further states that: "The lands of indigenous communities include not only lands actually cultivated but also reserves necessary for the shifting of cultivation which is required by the agricultural methods they currently practice, and which are recognized by the administrative authorities." (RGC, 2001). Swidden agriculture is also recognized in the 2002 Forest Law.¹³

The recognition given to swidden cultivation, particularly in the Land Law, is the result of advocacy and consultation with indigenous communities carried out while the Land Law was being drafted (Ironsides *et al.* forthcoming). During that time, community leaders argued that communal land was necessary to allow the swidden system to continue and this in turn would ensure food security in their communities. These leaders pointed out that communal land management is an essential part of the mobility required to enable the forest and soil fertility regeneration, which in turn permits the proper functioning of the swidden system. As Plant and Hvalkof (2001; 27) also point out with reference to South America, individual titling of indigenous lands freezes farmers in one location and reduces the "flexibility of the individual production unit to the detriment of productivity." They argue "communal titling in tropical-forest environments, apart from the social arguments, also proves to be the most viable approach for enhancing the productivity and full economic potential of the individual producer" (Plant and Hvalkof, 2001; 27).

Following the 2001 Land Law, in 2009, a Sub-decree on Indigenous Communal Land Registration was passed which outlined the procedure for achieving a communal title. According to this Sub-decree, obtaining a communal land title entails a three-stage process.¹⁴ This Sub-decree also describes the lands eligible to be titled as

“Residential land”, “Land on which the community practices traditional agriculture such as actual cultivated land, rice and farm land”; “Reserved land necessary for shifting cultivation which has been recognized by administrative authorities and agreed by the neighbours”; “Spiritual forest land” and “Burial ground forest land (cemeteries)” neither of which can exceed seven hectares in total size (RGC, 2009).¹⁵ Not included are any spirit or burial lands in excess of seven hectares; forests in which indigenous people traditionally gather forest products; water sources outside of titled lands; and formal easements between titled parcels that are landlocked.

Therefore, the approach to communal land titling in Cambodia is different from the Indigenous Peoples’ Rights Act in the Philippines, which gives indigenous communities collective title to all their customary lands and forests. In Cambodia, forest areas are considered state public property. The Sub-decree on Indigenous Registration states, “As for other state land on which indigenous communities have traditionally used, such as land for harvesting forest products and sources for water use, the community could continue to use and enjoy benefits according to its tradition; however, it shall enter into an agreement with relevant trustee institutions of state land.”¹⁶ By vesting ownership in the state, these agreements mean indigenous communities’ claims to these areas are much weaker than absolute ownership.

Despite this favourable policy environment allowing communal land titling, in practice, the implementation of these policies and legal frameworks has been weak and selective. The often illegal issuing of economic land concessions on the lands of indigenous peoples has been much more rapid than the very slow process of communal land titling (Subedi, 2012; OHCHRC 2007). For many villages throughout the northeast region of Cambodia, the process has been too slow and they have lost large areas of their land. In addition, and perhaps more tragically, several reports document the abuse of the rights of local villagers, the destruction of spirit and burial forests, the intimidation, coercion and misinformation which has accompanied land grabbing and the establishment of land concessions in Cambodia (Milne *et al.* 2015; Global Witness, 2013 and 2009; Subedi, 2012; OHCHRC, 2007 and 2004; CHRAC, 2010 and 2009; Ironside and Nuy, 2010). A further problem for the formal recognition of legal provisions recognizing communal land ownership has been a mass land titling campaign carried out in 2012 and early 2013 which forced or persuaded indigenous villagers (including Beine villagers) to forgo their wish for a communal title and accept individual titles over their in-use fields (Rabi, 2013; Milne, 2013).

Ultimately, the success of securing communal lands for indigenous communities will determine whether they will be able to build on their existing swidden agriculture systems and cultural norms to develop viable land use and livelihood strategies. However, to date, only 16 villages have received their communal title, six in Ratanakiri,

eight in Mondulkiri Province and two in Kratie Province. In some of these villages, reserve land of around 300 ha has been included. For Pierr Village, only a limited reserve area was included, because out of the 920 ha which were titled, 835 ha were zoned as in-use agricultural areas (including fallow areas), along with small areas of protected forest and bamboo areas, village residential land, etc. Even these small areas are now under pressure of conversion to agriculture as the village tries to cope with increasing population and the demand for land for cash cropping.

In addition to the 16 titled villages, a significant number of indigenous villages are at different stages in the process of obtaining a communal land title. As of January 2015, 19 non-governmental organizations (NGOs) were working through the process with 155 villages in seven provinces. One hundred and fifteen villages had completed the first stage of the process by submitting proof of their indigenous identity to the Ministry of Rural Development. Another 97 villages had completed, or nearly completed, the process of registering as legal entities with the Ministry of Interior. Forty four villages had submitted their application for a communal land title, or were in the final stages of doing so.

While all this work was underway, a mass land titling campaign (Order 01) was launched on 9 July 2012. Order 01 aimed to systematically issue private land titles across the country in areas where Economic Land Concessions (ELCs) had been allocated, very often over land used by local communities. This land titling campaign, carried out in the months prior to the 2013 general election, was intended to shore up support for the ruling CPP party in the face of widespread discontent over the scale of land alienation by concession companies and local and national elites throughout the country.¹⁷ Despite the stated intention of resolving land disputes, local commune councillors reported, during a 2013 study into the implementation of Order 01 in Ratanakiri, that they had been “instructed by higher levels not to ask villagers about their conflicts with companies during the students’ [land titling] process” (Rabe, 2013; 25). Thousands of student volunteers were deployed throughout Cambodia to demarcate these conflicted lands.

This further highlights the difficulties swidden farmers face in gaining recognition for their land rights, in resisting and maintaining their land and their swidden systems, and also the political nature of land rights in Cambodia. Significantly the reclassifying of 930 000 ha of land, surveying 710 000 parcel and the issuing of 400 000 titles (Grimsditch, 2014) was financed by Prime Minister Hun Sen’s ‘personal funds’ (Milne, *et al.* 2015), demonstrating the capture of state resources and their use for patronage and party political gain.

The 2013 study into Order 01 was carried out in 79 villages in Ratanakiri and found that 71 of the 79 villages were in varying stages of the communal land titling process before this Order was implemented (Rabe, 2013). Forty of these 79 villages had problems with 26 companies, including ELCs, small-scale concessions, and mining concessions, and 26 of these 79 villages had some or all of their land privately titled under Order 01 (Rabe, 2013).¹⁸ In these 26 villages, communities were forced to choose between accepting private land titles, which were immediately available or waiting indefinitely for a communal title. Even though villagers were told, and the Minister of Land Management publicly stated, that they could later easily convert their private titles to a communal title, villagers who received private titles had to sign a contract that forfeited their rights to use communal lands, including burial areas, reserve areas, etc. (Rabe, 2013). Many villagers reported not being able to read or understand the implications of signing this contract, and 25 of these 26 villages that had their land titled said they were unsatisfied because the land titling did not allow them to register their land as communal (Rabe, 2013).

The Order 01 study further found that land privatization had increased land loss in villages as companies denied access to the newly titled landowners whose lands were surrounded by company lands and then forced villagers to sell this land to them (Rabe, 2013). This was found to be the case in Kanat Thom Village, with around 30 families losing their newly titled land to the rubber company because the company did not recognize the title. Villagers reported that the company took the villagers' upland fields saying that even if they have a title, they had to take the land anyway. The company is also reported to have told several families that if they refused to give their land, the company would put a canal around it so that the families could not access their land. Families were told to take money for this land, but to date villagers have not accepted money, saying that if they do so they would say goodbye to any hope of getting this land back.

Therefore, the implementation of policies, ostensibly intended to improve land security and reduce land conflicts, has actually increased land loss and land and livelihood insecurity. Due to destitution, increased debt (partly due to land loss as a result of ELCs), land insecurity and other economic pressures, communities are now more vulnerable and at risk of selling their land to powerful and coercive companies and outsiders. As more villagers are driven to sell their land, the collective community efforts to resist outside encroachment over all the communities' land is weakened. During the Order 01 study, villagers stated that their communities are now 'broken' due to land privatization (Rabe, 2013). As a part of the opening up of communities' lands for takeover by companies and powerful individuals, the private land titling process has also identified community fallow lands that were not registered. These areas were also extracted from community control and it is now easier for companies to

encroach on them (Rabe, 2013). This increasing insecurity is not a strong base on which to build livelihood improvements and adaptations to the existing swidden agriculture systems.

A good example of the breaking of villages due to this individual titling and the opening up of land for allocation to concessions is seen in Beine Village, where over half of the village's land was allocated to a rubber concession company by the Ministry of Agriculture (see Figure 3). The villagers first came to know about this on 26 February 2010 when a company representative came to Beine and neighbouring villages to conduct an 'Environmental and Social Impact Assessment' (ESIA). Villagers said this ESIA lasted not much more than five minutes. Reportedly, the company representative told the villagers that they had the right to ask questions this time but not the next time, and that all the land two kilometres from the village will be taken for a rubber concession. To prevent the rubber company from claiming any 'unused' land (as discussed fallow areas are considered forest land and therefore 'unused') in the designated concession area, villagers cleared large parts of their fallow areas and planted cassava, soybeans and rice. When the student volunteers and provincial Land Department officials arrived in the village to implement the Order 01 land titling,

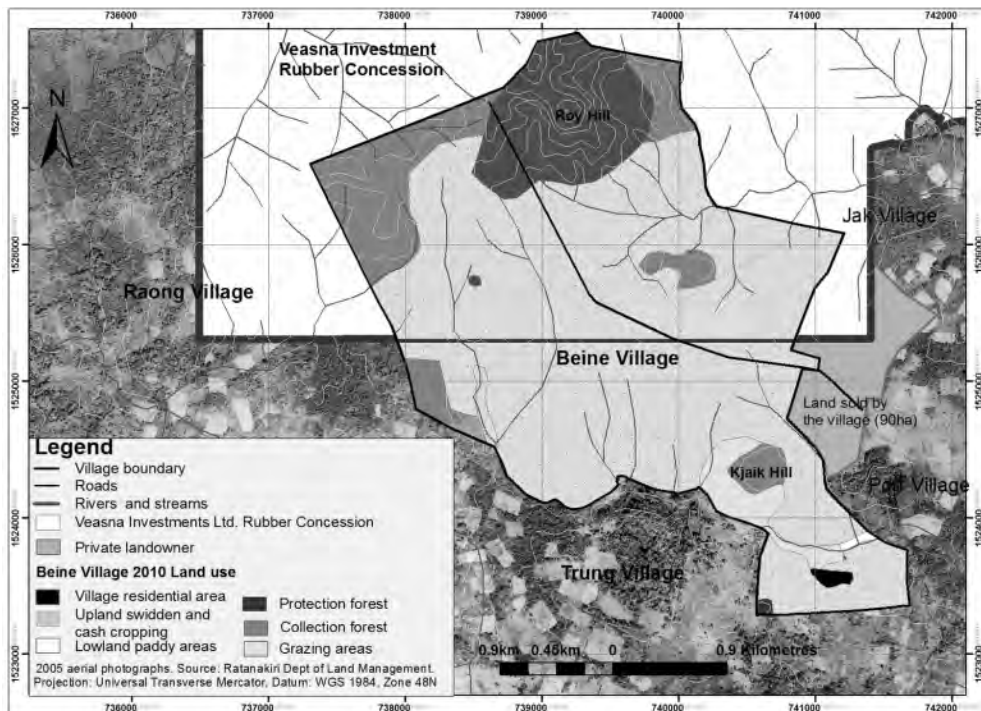


Figure 3. Beine Village land allocated to a rubber company. Source of map: Author. Source of Veasna Investment shapefile: Open Development Cambodia.

villagers were able to claim this 'in use' land as well as younger, also obviously 'in use' fallow areas. Thus, the villagers were able to claim relatively large areas of land per family. People interviewed during this research received between four and eight hectares as part of this land titling process, depending on the size of the family. The family that received eight hectares was made up of nine members, including a newly married couple.

When Beine villagers told the commune and district authorities and the student land titling 'volunteers' that they were more than half way through the process of registering their land under a communal title, the land titling team made fun of them. They said that this was like the Pol Pot (Khmer Rouge) era, and an individual title was better than a communal land title because the villagers could sell their land or could use it as collateral for a loan from the bank if a family member was sick or there was a family emergency. Rabe's (2013; 22) study also reports similar statements from an elder from Tiem Kraom Village who said the student volunteers compared her village's communal lands to the collective agriculture practiced by the Khmer Rouge. Students are said to have told this Tiem Kraom elder, "If you want to keep using your land in this way, you want our country to go back to Pol Pot times" (Rabe, 2013; 22). This is ironic, as even though the Khmer Rouge considered Ratanakiri's indigenous groups 'model communists' (Colm, 1996), communal land ownership and labour exchange as practiced by indigenous peoples in Ratanakiri is fundamentally different from the collective farms imposed during the Pol Pot regime. The Khmer Rouge, and outsiders in general, failed to understand the private rights that are strongly embedded within the overall communal ownership arrangements in indigenous communities.

Beine villagers were also told that if they didn't accept the individual land titles on offer, the authorities would not be responsible if the company bulldozers started clearing their land. These warnings were repeated in many villages during this Order 01 land titling campaign by Commune Councillors, District Governors, and the Provincial Governor (Rabe, 2013). The student land titling volunteers often told villagers that they have no legal right to their land, regularly repeating: "Your village is on public state land. If you do not accept the private land titles, the land will go back to the government" (Rabe, 2013; 22). Therefore, the Order 01 private land titling policy made villagers feel they had no choice but to accept the private titles, or they would lose all of their land to the company or the government.

Beine Village has fiercely defended its land and maintained its traditional farming systems. Beine villagers pointed out that in 2010, they have been able to buy motorbikes and build new houses from selling animals and produce from their land, and there was no need to sell land. Now as a result of the individual land titling campaign, around 10 families have begun to sell pieces of their individually titled

lands. The 10 families have sold around a hectare each, for around US\$2 000 a hectare. This is equivalent to what can be earned from that land with one to two good harvests of cassava. A Pierr Village leader noted this point, observing that his village wants to keep its land because most realize that money from selling land can only be used once, whereas keeping it means being able to cultivate it and thus benefit from it forever. Beine villagers also commented that it would now be difficult to get some families to agree to give up their individual titles for a communal one because the individual land titles have already been issued.

VI. Traditional land use and the changes underway in swidden systems in Pierr and Beine Villages

Following this discussion of the cultural and land tenure context in Ratanakiri, this chapter briefly introduces the traditional swidden systems in Pierr and Beine Villages and some of the land-use changes underway. I follow this with a brief discussion of the land to people ratios in these villages. This discussion leads to a discussion about current livelihoods in the next chapter.

1. Pierr Village

Pierr Village is situated on what remains of a much larger area which was occupied by three sister villages. These three villages lost some of their land in the 1980s when a hydroelectric reservoir was created to supply power to the newly established Ban Lung town. This reservoir flooded Pierr and the other villages' lowland rice fields, and also cut off access to their upland swidden fields (*miir* – Tampuan). As a result, Pierr Village was forced to move to its present upland site in 1992, leaving the former village site to be gradually swallowed up by Ban Lung town. The village is now situated on a plateau area above the hydro-electricity reservoir.¹⁹ The plateau is relatively flat but deep river valleys with steep slopes have been cut into it. The land flattens out in the north of the village where it meets the reservoir. Out of the 835 ha, which was designated as agricultural land in the communal land title, 190 ha have been planted with cashew nut trees.

Elders recalled that in the past before Pierr Village's land area was reduced, there was a lot of secondary forest and it was easy to find land for swidden farming. Those days money was not so important and people planted large swidden fields and sold their surplus rice, elders commented. With this they bought cows, buffaloes, elephants, gongs and jars for rice beer. Before the Khmer Rouge period, there were two elephants in the village. Now, there is not enough land to keep an elephant, they said.²⁰

In the recent past, swidden fields on the red basalt soils in Pierr Village were used for one to four years, depending on the slope of the land. However, fallow periods have been reduced from 10-15 years (when the land area was larger) to five to six years or less more recently. In 2010, a village leader felt that a five to six year fallow was still sufficient to allow for two or three years cropping. Swidden farmers have traditionally used the basalt soils on the central Ratanakiri plateau because they could sustain strong fallow regrowth.

Given the longer fallow periods in the past, families would start cutting a new swidden field in February. However, now there are no old fallows and people don't start clearing a new field until April and the work is now finished in three to four days. In the past when land was more plentiful, a villager could cut a swidden field anywhere within the village boundary. A family which had used the area in the past would have some rights to use that area again, but negotiations during the dry season would determine which family would use the area in the coming season, if it was time to clear it again. The village land area was, and to a certain extent still is, also divided up amongst the different clans, (extended families, *Tampuan – poarnng*), in the village. This is the basis of present labour exchange arrangements because families with fields in close proximity, who are generally from the same clan, help each other.

With the large area of the agricultural land now devoted to cashew nut trees and an increasing amount of what would otherwise have been fallow land being used for cassava, there are less and less areas able to be fallowed. For example, one woman explained that they try and allow for a three years fallow, and from her swidden last year she harvested 20 sacks of rice weighing 50 kilogrammes (kg) each, as opposed to the 30 sacks the year before when the land was recently opened. In the past she always had enough rice, but now out of the three hectares of land the family uses, one hectare is used for growing cassava and one hectare for cashew nut trees and only one hectare is left for growing rice. Therefore, she was worried about being permanently short of rice in the future. Others also mentioned that, where possible, fallow periods were between two to five years, and cropping periods of around two years on steeper land and three years on flatter land was the norm now.

In the case of another family, with the demand for land for cassava, plus their three hectares of cashew nut trees, they had not shifted their rice field for six years. The family head, who is also the head of the village Land Management Committee, questioned whether it was actually economically viable to continue to plant rice, and wondered whether it would be better to shift completely to cash cropping and buy rice. Another family commented that they will continue to plant rice despite the poor harvest, but they did not know what to do to get a better yield. One serious problem, which was at least partly addressed through rotating and fallowing rice fields, is what

villagers call *ntrung* (a grub which eats the roots of the rice plants). One family commented that *ntrung* can reduce yields by as much as 30 percent. People said that neither the agricultural NGO working in the village, nor the Department of Agriculture knew how to deal with this grub. The longer families keep planting rice in the same field, the greater the *ntrung* problem is likely to become.



Figure 4. View of Beine Village. Photo: Jeremy Ironside

2. Beine Village

Beine Village is located in Ke Chong Commune, which is made up of nine large Tampuan and Jarai Villages with a total population of 4 425. Given the proximity of Tampuan and Jarai Villages in the eastern part of Ratanakiri Province, the Jarai and the Tampuan ethnic groups have intermarried with each other and, as evidenced by the traditional housing which follows the Jarai longhouse style, there has been significant adoption of each groups cultural practices. Several villages in this commune have lost large areas of their land.

Beine Village is a Tampuan Village in the northeastern part of the commune, situated two kilometres off a district road, and 23 kilometres from the district town of Bokeo. The village comprises 988 ha of flat to rolling land with steep gullies, punctuated by four hill areas (see Figure 5). A small wetland area near the village is being used for lowland rice farming. The village has been located on its present site since 1988, and is actually situated on the edge of the land of a neighbouring village. This highlights the ongoing impacts of the earlier periods of conflict. During the 1980s, due to the danger posed by Khmer Rouge soldiers, and perhaps to deny them

getting any support, government authorities told Beine Village to move its residential area closer to the road. A villager with land on the other side of the village said it takes her two hours to walk to her farm.

Due to its relative isolation, good leadership and community solidarity, Beine Village has been able to retain most of its land. This means that up until two to three years ago, apart from planting around 45 ha of cashew nut trees, swidden cultivation was largely functioning as it always had. In 2010, the village landscape was a diverse mix of swidden rice fields, cashew nut orchards, grazing areas, forest fallows, hill forest areas and lowland swamps. Apart from the cashew nut areas, this diverse mosaic landscape is how all indigenous villages in Ratanakiri, especially on the central basalt plateau, have looked for centuries. The traditional swidden system, which existed in this village up to the very recent past, can be seen in the aerial photo below (see Figure 6). Approximately 100 ha in the Roy hill complex have been delineated for protection as a community forest (see Figures 3 and 6).



Figure 5. View of Beine Village land area – Kjaik hill is in the foreground and Roy hill farther away. Photo: Jeremy Ironside

Land use mapping carried out by the author in 2010 revealed 228 ha of forested areas in the village (see Figure 3). In addition, out of the 720 ha of agricultural land, only around 10 percent (70 ha) was being used as active swidden fields at the time, as well as the 45 ha of cashew nut orchards. This means 228 ha of forestland and 605 ha of fallow areas was available to villagers for collection of wild foods and other resources.²¹ In 2010, before the arrival of the rubber company and the private land titling, this diverse land use ensured livelihood security and potentially provides a solid foundation for adaptations and new strategies.

During a trend analysis conducted in 2010, villagers indicated that in the past there was plenty of land and forest and it was easy to find land for swidden fields.²² However, they commented that now cashew nut trees have been planted in the old *miir*, thus reducing the secondary forest areas available for growing rice. Cashew nut planting, however, was not being practiced to the same degree as in Pierr Village, and as a result there was more younger fallow (*pree samparr*).

The red soil is fertile in this area and can be cropped for three to five years, depending on its slope and the presence of weeds. Villagers indicated that a field was fallowed not generally because of a loss of fertility, but because of the increasing labour required for weeding. This demonstrates the delicate balance needed for successful swidden farming between planting an area sufficiently large to produce enough rice for the year ahead, while at the same time avoiding planting too big an area and thus running the risk of weeds overrunning the crop. Different rice varieties were planted depending on the age, topography, soil type and fertility of the swidden field.

Given the relatively adequate availability of land for swidden in this village, until recently, land was left fallow for 10-15 years. In the past anyone from the village could clear any fallow area within the village lands. Villagers said it didn't matter who used the piece of land in the past. All families cultivate a swidden field. Only four families plant wet rice in the small lowland area below the village.

As a result of clearing the fallow areas to protect them from rubber companies, fallow land has been much reduced and instead of rotating their swidden fields villagers are now rotating their crops including rice, cassava and soybeans. Right now, the extent to which yields will be maintained with this rotation of crops is not clear because in several cases old and thus fertile fallow land was cleared for planting rice and cash crops, and the long-term nutrient depletion resulting from the omission of the fallow period may not yet be evident. Villagers are also not using any fertilizer, and, for the time being, the natural fertility of the soil is giving adequate yields. To make up for the limited amount of land in fallow, villagers explained that they grow rice for around three years until it is not possible to do so anymore. Then they grow cassava for around two to three years before planting soybeans for two years or more. When the planting of soybeans is no longer possible, they grow rice again. The key, they said, is to avoid planting the same crop for too many years in a row. However, when crops are poor and if they have enough land, farmers try to allow for a short fallow period of two to five years. These practices of rotating crops are widely used by swidden farmers in Ratanakiri now and need further investigation, particularly regarding the long-term maintenance of soil fertility.

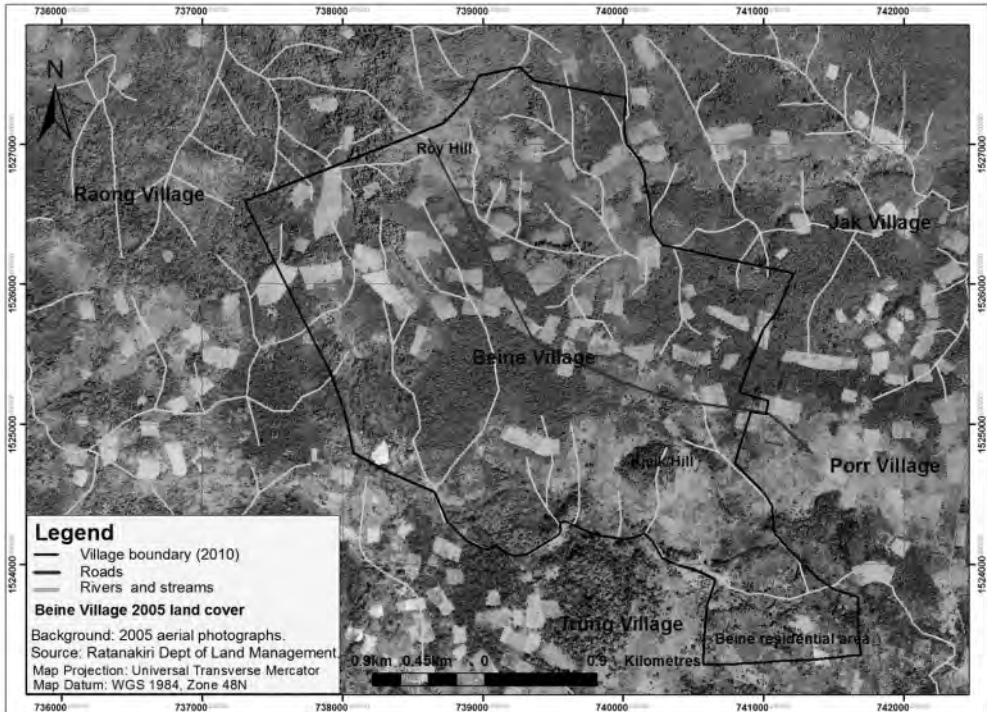


Figure 6. Land cover in Beine Village 2005. Source of map: Author.

3. Land availability in Pierr and Beine villages

Table 1 below presents the population densities in the two villages, which are higher than the overall density of Ratanakiri but less than the population density of Cambodia as a whole. Fox (1997) found a fairly constant ratio of 30 people per square kilometre in Kreung indigenous villages under traditional land use in Ratanakiri. This density appeared to balance swidden land use with healthy forest regeneration.²³ The densities in Pierr and Beine Villages are higher than this ideal density reported by Fox, resulting in the shortened fallow periods discussed above. Clearly, methods for intensification (such as more intensive soil fertility building rotations including integrating animal production, more intensive cropping on more fertile flatter sites, etc.) are needed to allow these systems to adapt to new pressures. The next chapter discusses how these systems are adapting under the present political and economic environment.

Table 1: Land/People ratios in the research villages

Village	Population	Land area (km ²)	Land available for agriculture (km ²)	Land/people ratio (people/km ²)
Pierr Village	493	9.20 (titled)	8.35	53.6
Beine Village	423	9.88	7.13	42.8
Ratanakiri*	183 669	10 782 km ²		17
Cambodia*	14 676 591	181 035 km ²		82

*Source 2013 Intercensal survey (MOP, 2013).

VII. The current livelihood system and the changing face of shifting cultivation systems in Ratanakiri

Following the discussion about the changes in swidden land use, I will now explore the current livelihood changes, particularly the move towards cash cropping, in Pierr and Beine villages. These adaptations are satisfying the villagers' needs for income in a more market-oriented society. However, as mentioned, from an agronomic viewpoint, the fertility which has been built up over long periods of rotational land use may in many cases be being mined much more quickly because the fertility building rotations are more and more being abandoned. Villagers often commented that farming the same field for longer periods is leading to decreasing rice yields and increasing labour input. Therefore, while the livelihoods of the villagers in these two villages are adequate in the short term, in the long run the continuing planting of rice, cassava, soybeans, etc. may not be sustainable, with as yet unforeseen consequences for livelihoods in these communities.

1. Pierr Village

With a communal title, this village offers an interesting model of communal land development. During a trend analyses in 2010, villagers reported that around 70 percent of the families were largely food secure with enough rice for the whole year. Families who were short of rice were able to borrow from community members who had a surplus, or bought rice from the market. Villagers argued that they could sell village-grown produce in the market and collect and sell cashew nuts and get money any time they needed to buy rice. However, they preferred to grow rice because, if after putting a lot of effort into growing cash crops like soybeans or other annual crops, and there is no rain, they will have no money to buy rice. In 2014, however, families said they were growing only enough rice for about six months due to the pressure on land for cash cropping (cassava, soybeans and cashew nuts) and the declining fertility of the rice land.

In 2014, there has been a significant livelihood change to short term cash crops, particularly cassava (between 0.5-1.5 ha per family), and smaller areas of soybeans and even smaller areas of peanuts. Families are now using less than half their land, which is not already planted in cashew nuts, for growing rice. They are being attracted by the potential income from cassava, with variable returns from one hectare of between US\$375-US\$1 500, depending on the crop, climatic conditions and the price of cassava. In one case, a family with only 0.5 ha of land of their own (because they only came to the village in 2005) were renting a 1 ha field in the village for US\$100 per season to grow cassava. From this they earned a US\$375 two years ago and US\$500 (gross) last year. This same family harvested four 80 kg sacks of rice off their 0.5 ha of land, which would add up to an approximate monetary value of around US\$280/ha last year and US\$420/ha two years ago when six sacks were harvested.

The increase in the number of months villagers are short of rice is being made up with the increased incomes from cash cropping. Among the people interviewed in 2014, the annual incomes from cash cropping, including selling produce in the Ban Lung market, varied from US\$1 250-US\$3 000 per year. In general, families were now spending between US\$20 and US\$35 a week, particularly during the dry season, buying meat and other household items. In other words, families were often earning only enough to pay for their needs. The most significant expenses were food (particularly rice) and petrol, followed by education, mobile phone and health expenses (see Appendix 1 for more details of rice yields and incomes from cash cropping).

As mentioned, family incomes are also made up by regular ten kilometre trips to the Ban Lung market to sell bananas, papayas, vegetables (eggplants, gourds, chilies, sweet potato, corn, wild vegetables, bamboo shoots, etc.), herbs, ginger, chickens and fish to earn money to buy household items. Bananas, in particular, are an important cash crop for villages that are near the towns. Income from these sales is on average US\$5 per back basket (*rieoo*). This implies a changing distribution of labour for swidden farmers living near provincial and district towns. The labour commitment involved in walking to the market has been partly offset by motorbikes, but the time spent walking is still a significant element in the labour allocation of several villagers, for women in particular. With its dependency on marketing produce, Pierr Village is different from Beine Village, which is too far from the district town to bring produce to the market.

In addition to the income from annual cash crops and selling swidden products in the market, the income from the 190 ha of cashew nut trees, which have been planted in over the past 20 years, is also significant. This has served to both protect the land from alienation and provide income in the dry season when rice can be short. However, this has considerably reduced the area of land available for fallow. All families

have an area of cashew nut trees, generally between one to four hectares in size. Two to three families who acquired cashew tree seeds early have six hectares.

Villagers reported that yields can vary, but cashew nut trees can generally yield 500 kg/ha (unshelled). Often, people in this village sell their crop when it is still on the tree to outside Khmers who harvest and sell the fruit. This is because villagers are often busy planting cassava or preparing their rice field so they do not have time to harvest the cashew nuts. Table 2 presents a conservative estimate of the income to the village from cashew nut trees.

Year	Estimated Yield	Ave Price/kg – in Riels (Unshelled)	Total Village Income (Riels)	Total Village Income (US\$)	Yield/ha (Riels)	Yield/ha (US\$)
2011	60 tonnes	6 000 (US\$1.50)	360 000 000	90 000	1 894 800	473.7
2012	67 tonnes	3 000 (US\$0.75)	201 000 000	50 250	1 057 894	264.5

US\$1 = 4 000 Riel

Source: Pierr Village (2012)

On a two-year average, a family with one to two hectares of cashew nut trees would have received an annual income of between 1 476 347-2 952 694 Riels (US\$369-US\$738). This can be compared with an average GDP for Cambodia as a whole in 2010 of US\$830.

Given the importance of cashew nuts in replacing swidden agriculture, the planting of cashew nut trees provides a lens for changes in this and many villages, particularly in understanding the changes in intra-village property and wealth distribution. In terms of property rights, cashew nut trees have resulted in a more individualized land use. At the same time the village land area for growing food crops had been reduced and in 2015 villagers reported they are being forced to clear areas formerly reserved for bamboo and other uses for agriculture. In this village, those who were able to access cashew nut seed earliest were able to claim more land. The fact that a particular clan had a member who was able to access seed from Viet Nam in the early 1990s, highlights the role of the clan (*paorng*) in providing advantages for its members, and in explaining wealth differentiation within the village. The limited land area available for swidden agriculture also made the village members more conscience of increased land pressure and made them more resistant, though not immune, to the attempts by outsiders to alienate their land. In other words, cashew nut trees assisted in securing land for families who planted them, and they also diminished the land

available for swidden, thus making holding on to the remaining land more valuable than selling it.

In contrast to the past where fallow land was freely available to anyone to clear within the village territory, now as a result of cashew nut plantation, it is not possible to cut a new *miir* anywhere because people claim the land as theirs. A woman commented that communal land no longer exists in the village. It wasn't like this in the past, she said. Leaders explained that instead of allowing the fallow to regrow, people have planted cashew nut trees because they want money. Land began to be claimed as a result of cashew nut planting around 2006. The village woman explained that because there is so little young fallow land (*pree samparr*), now people are planting swidden fields (*miir*) so close to the village that the village pigs eat the rice. Several villagers were worried that there will not be enough land for their children. With the planting of cashew nut trees, the custom of communal land freely available to anyone in the village has become subservient to the custom of individual rights to the planter of long-term trees.

Given the increasing cash cropping of short- and long-term crops, paid labouring, largely within the village, also makes up an important part of the income of some families. People earn US\$5 per day planting and harvesting cassava, and can earn more than this collecting cashew nuts. In addition, four to five families raise buffaloes; around half have cows (65 head in total), most raise pigs and chickens, and some raise ducks. These animals are occasionally sold or eaten as part of religious and community ceremonies. Selling weaving products to visiting tourists also supplies important income for some families.

Wild foods also contribute to family livelihoods to a certain extent. Rats and squirrels are trapped and wild vegetables, bamboo shoots, and mushrooms are collected from the forest, fallow areas and along the banks of the streams. Fish are also caught in streams running through the village lands and in the hydroelectric reservoir on the northern boundary of the village.

In this village, the communal land title preserves the land for villagers' livelihoods and, for the moment at least, there are no families who are landless. Some, especially widows, older people without strong family support and families supporting invalids do face hardship. These families make up shortages in rice production by selling produce in the Ban Lung market and labouring for others.²⁵ However, at the same time, no one in the village goes hungry and the village is contributing to the government's economic goals by producing crops for export.

There are problems, however, with a heavy reliance on cashew nuts and cassava, because villagers are vulnerable to price fluctuations for both crops. Also land for

growing the staple food, rice, has been converted to growing luxury (cashew nuts) and non-food crops (cassava for biofuel and animal food, as well as flour). However, over the past few years, larger outside landowners in the province have been converting their cashew nut orchards to rubber plantations. This has served to strengthen the price of cashew nuts and reduced, though not eliminated, the chances of severe price reductions in the near future, at least.

A further issue in Pierr Village that needs to be addressed is the difference in wealth among the villagers. As seen with the situation of a new family with only 0.5 ha, the relatively high land pressure in the village means that the allocation of land to new families will become more difficult. However, much as private land is passed down through families, it is also possible that new families can be allocated some land through their clan or by the village elders. While not guaranteed, the communal land does offer some flexibility for accommodating changing demands for land depending on the changing size, age and needs of different families. Informal intra-village rental and borrowing arrangements can also be accommodated more easily within communal land ownership. Communal management is also more able than individual ownership to ensure some land is left for growing rice and other food crops, through, for example, the existing community agreement that restricts any one family to planting no more than three hectares of cashew nuts.²⁶

Therefore, Pierr Village is an example of a communal system, which for the moment provides food security and at the same time ensures cash income. With some support, production systems in this village could be further refined, diversified and strengthened for better land use and livelihood outcomes. The production of vegetables, fruits, small animals and forest products (mushrooms, wild vegetables, bamboo shoots, etc.) is perhaps a good example of the kind of intensification of production which can build on the swidden system for villages like Pierr that are situated close to expanding provincial and district towns. Figure 7 shows the relatively unchanged land cover of Pierr Village in 2010, compared to the rapid land use changes going on around it. This diverse small-scale land use indicates potentially greater long-term resilience in dealing with changing climatic and agronomic conditions. In contrast to the large-scale single species plantations (the large scale land clearings depicted in the satellite image), Pierr Village farmers are not dependent on a single crop but rather are more able to shift between different livelihood strategies depending on changing conditions. Given also that Pierr Village is an important watershed area above O Chum Reservoir, diverse small-scale land use is more appropriate for watershed protection than single species monocultures. Figure 8 shows a panorama of what the village land use looks like.

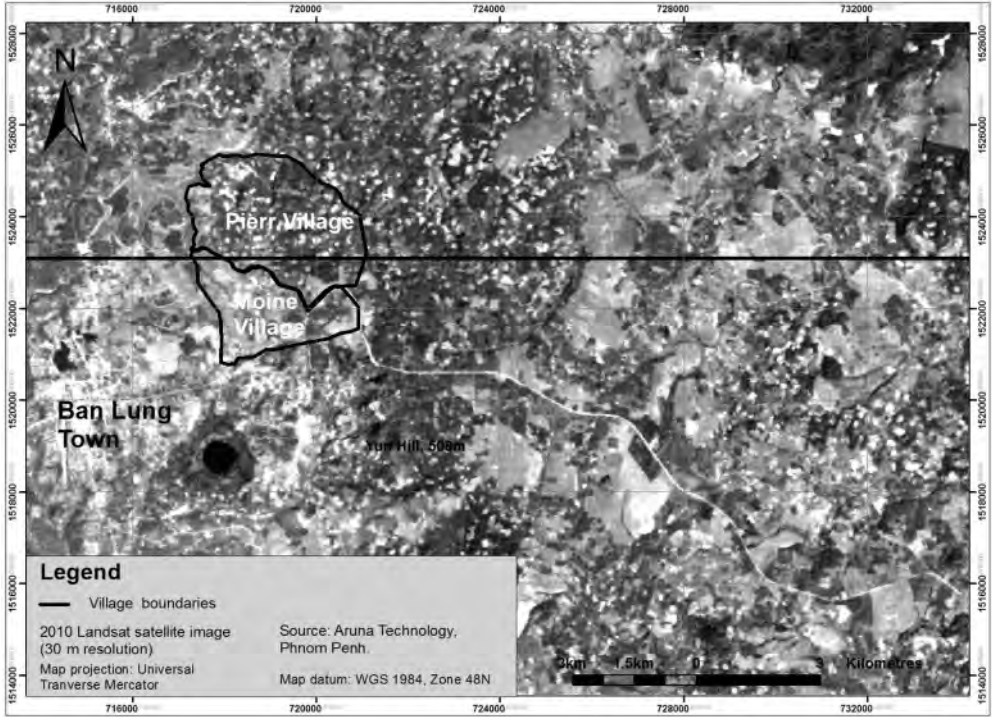


Figure 7. Land use change in the area around Pierr Village



Figure 8. Pierr Village land use. Photo: Jeremy Ironside

2. Beine Village

In 2014, food security and livelihoods of Beine Village, based on upland rice and now more and more on cash cropping of cassava, soybeans and cashew nuts, have been maintained as adequate. Before the arrival of the rubber concession and the Order 01 land titling campaign, the farming systems in this village had a much smaller proportion of cash cropping, and production was more diversified than in Pierr Village. The impact of rubber companies and forced individual land titling demonstrates the vulnerability of swidden systems to macro-scale political and economic decision-making.

Now all families in the village plant one to two hectares of rice, and harvest on average between 50-100 *rieoo* (back basket), corresponding to 1 000-2 000 kgs. of unmilled rice, depending on the size of the basket.²⁷ Two larger families interviewed harvested more than this because the land had been newly cleared and was fertile. Villagers said that 50 *rieoo* are enough to cover the needs of a family of five for the year. However, rice is also used for feeding animals and making rice beer. All families in the village are generally self-sufficient in rice, if weather conditions are favourable. Villagers commented that rice yields have always been good in this village. When a family is short of rice, they are able to buy it cheaply in the village. Families traditionally plant a large area of rice so there will be enough for eating, feeding pigs and chickens, for ceremonies, making rice beer, and selling any surplus. In 2010, villagers said they preferred planting rice to planting cash crops like soybeans as the income from growing soybeans is used for buying rice anyway. Villagers also pointed out that it is difficult to plant rice and beans together because both require labour investment at the same time of the year. Cassava is planted before rice and harvested in the dry season so the competition for labour at crucial times of the year is not as great. In 2014, villagers again repeated that they prefer to plant rice over cassava.

Despite this preference for rice, in 2014, the proportion of cash cropping in the livelihood strategy has increased with all families planting between one and four hectares of cassava. In addition, several families plant between half to two hectares of soybeans. This increase in cash cropping is partly to claim the land to prevent the rubber company from taking it, and partly because of the potential income from cassava of around US\$1 500, and up to US\$2 000/ha, depending on the fertility of the field, the price and the season. Villagers also commented that one hectare of soybeans can return US\$500. Total annual income from cash cropping for the families interviewed ranged from US\$1 000-US\$2 700 depending on the mix of crops and areas grown.

In addition to this increase in annual cash cropping, all families have between a half to four hectares of cashew nut trees. Cashew nuts can return between US\$250-

US\$600/ha depending on the price and the season, villagers said. One family sold the rights to collect the cashew nuts from their two hectares before the 2013 and 2014 harvests for US\$1 000. Raising pigs is also an important source of income in this village, with most families raising 1-2 breeding sows. A group of village women commented that piglets sell for good prices.²⁸ Pigs are fed on local crops, including rice bran, rice, banana stems, sweet potatoes and cassava, and also scavenge for their own food, which village women said decreases their workload. However, this means that the paddy areas or cash crops like soybeans, which are planted near the village, are prone to being eaten by the roaming pigs.

Other products grown and sold in the village include tobacco, sesame, chickens and even dogs. The importance of cow raising had reduced since 2010; at that time, villagers said they sold cattle and agricultural produce to build their houses, rather than selling their land. In 2014, only 10 head of cattle remained in the village with villagers complaining about unexplained deaths, speculating that this was possibly from eating grass sprayed with herbicide. Sesame is another traditional cash crop, which is inter-planted in the upland rice field. Harvests can be variable, but some families grow and sell 500 kgs in certain years.

Like in Pierr Village, no Beine villagers work as labourers outside the village. Villagers said they were too busy with their own work. Two families interviewed said they earned between US\$25-US\$75 per year labouring for other farmers in the village. Labour exchange on the other hand is widely practiced for rice planting, cassava and other crops.

The diversity of the cropping system is also augmented by the collection of fish and forest products. However, fish stocks have declined considerably compared to the past with an increase in illegal activities, for example outsiders pumping water out of ponds in the dry season, and from overfishing. The long period of war and clearing of forest areas for rubber also had an impact on wildlife. Villagers commented that now there is little secondary forest, therefore, there are very few animals like squirrels so there is no hunting. Some small animals remain in the areas that are still forested. The 100 ha area of Roy hill which villagers have delineated as a community forest also overlaps the rubber concession and it is not clear whether the company intends to clear this area.

In contrast to Pierr villagers, who are much closer to the market, Beine villagers concentrate on a wide range of livelihood activities typical of traditional systems in Ratanakiri. The diverse agricultural livelihood strategies provide resilience when the rice harvest is poor. Until the arrival of a rubber company in 2011 (see Chapter V and Figure 3), Beine Village demonstrated an interesting contrast to several villages in Ratanakiri where land selling has considerably changed both land use and livelihoods.

Now, as discussed, with the arrival of individual land titling, village families selling parts of their titled land has begun.

VIII. The future – market-oriented monoculture or diverse community driven models of agricultural development?

As shown by this study, both these villages continue to earn their livelihoods from their own land. However, this is not the case in many other villages in Ratanakiri, which have lost large areas of their land. In the future, wage labour on rubber plantations will be an increasing source of employment in Ratanakiri. However, since large areas of these plantations still contain only young trees and are not yet producing latex, including significant areas still being planted, it is not yet clear whether indigenous villagers or outside migrant labourers will make up the bulk of this rubber workforce. In addition, rubber prices have declined from an average price of US\$4 500/tonnes in 2011 to around US\$1 980/tonnes in early 2014 (Muhong, 2014a and 2014b). This decrease in prices, caused largely by a glut of rubber in China, comes at a time when total harvest area in Cambodia in 2013 increased to 98 000 ha, a 32 percent increase on the 2012 harvested area (Muhong, 2014b). Volatility in rubber prices has been an ongoing issue over the past few years (Reaksmey, 2010).²⁹ The fact that Cambodia has only limited processing capacity, and therefore is forced to sell natural rubber in the market at depressed prices also points to problems of future volatility and livelihood insecurity for those working in the industry. The optimistic picture which Cambodian politicians and elites paint about the future of rubber production in Cambodia may well be illusory because several other countries are also increasing their rubber production capacity, including Myanmar, Lao PDR, Viet Nam and China (Global Witness, 2014). This again points to the problem of the vulnerability of large-scale monocultures. Economic volatility may also be exacerbated over the next decades by flood or drought events as climates become more erratic (IIED, 2013). Related pest and disease outbreaks and also the close relationship between rubber for tire manufacture and the fossil fuel industry are also likely to exacerbate this economic volatility (IIED, 2013).

Given this ongoing uncertainty in future livelihood options and the fact that villagers will need to use their land to protect it, it is worthwhile to explore options for indigenous villages which still have their land and are still growing rice and other crops on shorter rotations. The evolving land uses in Pierr and Beine Villages, I argue, provide some insights for what might be possible from building on the existing swidden land-use systems. While there are weaknesses with the farming systems of

both the villages, there are enough strengths to indicate possibilities. In particular, a basic level of livelihood security in both the villages offers considerable possibilities for trying new and more risky strategies. Therefore, the following chapter looks at the perception of Pierr and Beine villagers about their increasing integration into the market, and what they feel the future holds for them. From here, I more broadly discuss some options for building on swidden systems in Ratanakiri.

IX. Increasing integration in the market economy

A key point about the integration of the indigenous people in Ratanakiri into the market is that trading and tribute relationships have long existed in this area (Ironsides and Baird, 2003; Maitre, 1912). Throughout Ratanakiri, highland villages traded elephants, buffaloes, pigs, chickens, tobacco, rice, gongs, ceramic urns, iron, brass and ivory jewelry, and so on among themselves, with neighbouring Lao lowland villages, and depending on the particular political configuration in their area, with Thai, Lao, Khmer, Vietnamese, Burmese and Chinese traders (Guerin, 2001; Maitre, 1912; Aymonier, 1895). Guerin (2001) describes how upland swidden farmers supplied rice, corn and other products to lowland rice farmers, particularly when their harvest was insufficient, in Veunsai, on the Sesan River in the north of Ratanakiri Province in the early twentieth century.³⁰ A local villager from this area recounted that villagers did not raise cows and buffaloes in this mountainous area and their prosperity came from growing and selling rice. Sesame is another crop that has long been grown in the swidden fields throughout Ratanakiri as a cash crop.

Now, as a result of more intensive cash cropping, Pierr and Beine villagers feel their livelihoods are easier compared with the past. Villagers said they now have more things, such as wooden houses, bicycles, motorbikes, mobile phones, televisions, etc. A leader in Pierr Village commented that livelihoods are now easier because people know how to earn money. A Pierr Village woman noted that one reason villagers are better off is because they can sell their produce in the Ban Lung market. She said they need this provincial market now, even if it is a 10-kilometre journey to get there.

Villagers also felt that they are working harder and everything they buy is expensive, including essential items. Beine villagers noted that everything has to be bought, including vegetables, meat, fish, telephone cards, petrol, and schooling. In addition, villagers observed that illnesses in the family can also use up a lot of money. However, compared to the authoritarian control and extreme hunger during the periods of the Khmer Rouge and civil war, livelihoods have definitely improved. During the time of the Khmer Rouge in the 1970s, a Pierr Village leader described how people ate cassava, and in 1985 they had money but there was no rice to buy.³¹

He felt that things have improved since 1995. This comparison is not only in economic terms, as villagers now also appreciate a greater sense of freedom compared with earlier oppressive times under the Khmer Rouge.

For the moment, villagers in both villages have been able to negotiate the new crops and market opportunities to their advantage. There are very few villagers in these villages working as labourers for outside landowners or the rubber plantations. Despite the increasing reliance on the market, labour exchange is also still important in both villages. The swidden system combined with cash cropping in these villages is able to provide productive employment, which is able to compete favourably with what can be earned from plantation work or with working for larger cash cropping farmers.

From this, the question is what ratio of market and subsistence production do villagers find most suitable for them and what is the role of swidden production in this. The willingness by farmers in Ratanakiri to innovate and adopt new crops has been shown by their planting of cashew nuts and coffee prior to that. However, the example of coffee and rubber (discussed above) has shown the problem of relying on a single crop.³² As Dove (1983) points out, indigenous villagers in Indonesia have been able to try risky new crops because they have the security of subsistence production from the swidden fields in case there are any problems. Production from the swidden fields also continues to be important in the two villages studied in contributing to food security as well as to the social and cultural life of the village. For ongoing food and livelihood security, as well as for social and cultural reasons, it is therefore important to base new production systems, on the diversity of the existing swidden farming practices.

Avoiding problems of reliance on a single or few crops in a context of variable yields and climate, and volatile markets, implies a different trajectory to present modernist approaches to agricultural development based on monoculture and high inputs. As part of developing different agricultural approaches, assessment is needed of the social and environmental impacts and the sustainability of the cash cropping farming systems now being adopted in Ratanakiri. It is important to also question the discourse that views 'modern' agriculture, in terms of high yielding varieties (and monoculture), and the use of pesticides and fertilizers (see for example Cramb, *et al.* 2009). Following Shiva's (undated) point, the knowledge systems of farmers and tribal peoples, which have ensured sustainability in the past, need to be recognized as futuristic, not primitive. It is important to better understand these knowledge systems and engage with them openly in a spirit of partnership and mutual learning. The rest of this chapter explores some ideas for an alternative approach to agricultural development to support the adaptation of swidden systems in Ratanakiri.

X. Community land governance and development

Building on the communal land management systems found in Ratanakiri means working with community models of economic and agricultural development. However, as Fox *et al.* (2009) point out, there are few programmes that seek to build on and allow the existing swidden agriculture system to adapt and meet new challenges. Often the alternatives offered to poor farmers are either models focused on the individual family, or ultimately leaving farming and migrating to urban areas. The current emphasis on market-based approaches also ignores the huge potential of non-monetary forms of economic activity, such as gifts, reciprocity, etc., in meeting human needs (Pimbert, 2005).

Strong systems of labour exchange, continued adherence to traditions through ceremonies, the strong interest in communal land management and the fact that migration, or even labouring outside of the village is minimal in Ratanakiri means that social cohesion is an important resource for developing forms of community agricultural development. While things are changing with the individual land titling process in Beine Village, both villages felt community solidarity and Tampuan culture are still strong. As discussed, ceremonies to build community solidarity that require sacrificing a chicken, pig, or at times even a buffalo are still held after cutting, cleaning, planting and harvesting the upland rice field. Other ceremonies are still carried out to honour the spirits of the village, the ancestors, the spirit of water, forest, caves, stones, rice, etc. Internal disputes are minor and are still dealt with in the traditional way.

It is important to build on this cohesion. This could include some form of cooperative organization within (and between) communities that yield a net economic (livelihood) benefit to all members. This perhaps has not been a major focus to date because the forced-labour cooperatives of the Pol Pot era (1975-1979) and the Viet Nam-backed State of Cambodia (1979 to 1991) have left a bad taste in peoples' mouths. However, intensifying swidden production and the processing and marketing of products from the swidden, fallow, agro-forest, etc. to creatively access markets will require communities organizing themselves in some way. Given the present political and economic context, villagers need to jointly develop diverse livelihoods to protect their land. Also building on the existing communal (split) ownership systems, villages can organize themselves to divide the benefit from these kinds of ventures between the individual families and the community.

As seen from the example of Pierr Village, economic initiatives by individuals and families can still flourish within a framework of traditional communal management. The examples of cashew nut trees and small-scale market production highlight the

flexibility of the system. Interestingly, despite the wealth differences in Pierr Village with some families having larger areas of cashew nuts orchards and owning more cattle, the villagers still opted for a communal title. This points to other development pathways for swidden lands and the property rights governing these, which are perhaps not as uni-directional as conventional theories postulating inevitable transitions from communal to fully private land rights (see Deininger and Feder, 2001; Demsetz, 1967).

As discussed, communal land governance also lends itself to strategic collaboration both within and between villages for a landscape-level management approach. This has the potential to create dynamic and adaptive agro-ecosystems, satisfying both production and sustainable management objectives, including maintaining soil health, water quality, biodiversity, and sustainable rural livelihoods (Atwell *et al.* 2010). Discussion about developing diversity and multi-functionality in agricultural landscapes has been underway in northern countries for some time (Carvalho-Ribeiro *et al.* 2010; Atwell *et al.* 2010; Penker, 2009; Parra-Lopez *et al.* 2009). Ziegler *et al.* (2009) suggest paying upland farmers in Southeast Asia to preserve forest resources, or alternatively promoting diversified agroforestry systems in which cash crops play important roles, but are not planted as monocultures. In an age of climate change and volatile markets, ‘multi-functional mosaic’ landscapes (IIED, 2013) can best supply local and market needs, while at the same time minimizing the risk for the farmer, providing ongoing cash flow and maintaining ecosystem functions. As I have argued, greater consideration of this multi-functionality is needed in forested areas such as Ratanakiri.

It is ironic that Cambodian policy promotes a ‘leopard skin’ policy for landscape diversity (see Milne, 2013); however, apart from accommodating large-scale plantations, to date, this policy has not seriously considered how this might be best implemented, and the kinds of strategic collaborations required for this. Communally managed swidden systems potentially play an important role in developing the diversity and multi-functionality implied in this leopard skin policy.

XI. The role of women in swidden adaptation

A further example of an alternative approach to agricultural development is focused support to indigenous women farmers. In the communal swidden systems in Ratanakiri, women have equal rights of access to community land and resources. However, a recent study on land alienation in indigenous villages in Ratanakiri found that men have overwhelmingly been involved in selling indigenous community land (Ironsides, 2012).

Women play an important role in protecting the land for future generations, in ensuring food security through continuing swidden practices, marketing its produce, protecting the agro-biodiversity associated with it, as well as participating in the cultivation and marketing of the various cash crops grown. It is particularly important to consider supporting the efforts of women to strengthen swidden systems. Maffi (2008), for example, found that with the increasing use of motorbikes, men tend to leave the village more, and women have been taking on more and more responsibility for swidden cultivation to ensure family food security.

Therefore, as part of realigning paradigms about agricultural development and changing discourses about swidden agriculture, a change of focus is needed to allow women a much greater say in interventions, to promote local indigenous women as extension and support agents and to design interventions by and for women swidden farmers. As discussed above, this change is required because clearing of old fallows is no longer the arduous task it once was and instead women's workload has increased dramatically as weedier swidden fields are being cropped for longer and longer. Given the important role women play in marketing their produce, they need assistance to better deal with merchants who come to the village. As others have pointed out, the swidden field is often the domain, and perhaps more and more so the responsibility of women (Maffi, 2008; Colfer 2008 in Cramb *et al.* 2009).

XII. Conclusion

As this paper has shown, the swidden system in Ratanakiri has been greatly modified due to pressure on fallow land and a trend towards cash cropping. As a result of unmitigated land speculation, land concessions and in-migration from the lowlands, the livelihood, lifestyle and identity of indigenous communities in Cambodia is now very much under threat. Without serious efforts to support indigenous communities and their land-use systems, particularly by ensuring their ability to defend their lands, the onslaught will eventually breakdown the social solidarity at family and community levels in the uplands, increasing landlessness and food insecurity.

Allowing swidden systems to evolve according to cultural norms also depends on maintaining forms of property rights, which are common to indigenous groups throughout this region. The challenge is in implementing and enforcing the existing legal framework to protect and maintain indigenous community land. However, in Cambodia, as in many similar countries, implementation of policies which support the poor or indigenous minorities is impeded by the lack of a functioning governance structure, a virtual absence of political will and the absence of an effective grass-roots civil society able to claim their legal entitlements and hold the government accountable. In view of the powerful economic forces driving land privatization, cash

cropping and land concessions, a vibrant grass-roots civil society is needed to claim and defend legal entitlements of swidden cultivators, such as communal land titles.

As I have argued, continued food and livelihood security for Ratanakiri's indigenous populations and the adaptation of swidden systems to new circumstances requires attention to the wider socio-ecological and political contexts in which it is embedded. Land use in Ratanakiri is increasingly dominated by central-level decision making. Therefore, in order to ensure the maintenance of the property and socio-cultural arrangements, which allow communities to adapt their present systems, influence and pressure at central government level is required to ensure that indigenous communities' land is officially recognized.

This relates to the further argument in this paper, which is the important need to change the mindset of decision-makers and promote an alternative vision of strong indigenous communities functioning as viable land management entities. Perhaps the biggest advantage which swidden agriculture has over cash-cropping monocultures is that communities can remain intact, make a contribution to the national economy and at the same time allow ecological approaches to landscape level management. In the context of wider climatic changes, the overall productivity of multiple products from diverse agro-ecosystem landscapes that can adapt to changing conditions needs much more serious analysis. It is important, in other words, to develop alternatives to the conversion of bio-diverse forested areas, such as the swidden landscape, to monoculture plantations. There is also a need to question the models of monoculture agricultural production being promoted and to develop more holistic approaches to livelihood improvement and agricultural development.

In terms of allowing communities to adapt their swidden systems, policies and activities that strengthen local organizations to manage their food systems and their environment, would be perhaps one of the few viable alternatives to the crisis of governance currently being experienced in Ratanakiri and in other indigenous areas in Cambodia. From the above discussion and from Pimbert (2005), these strategies could be summarized as:

- Build on local institutions and social organization;
- Build on local systems of knowledge and management, including communal land management;
- Build on locally available resources and technologies to meet fundamental human needs;
- Use process-oriented, flexible approaches;
- Support local participation in planning, management and evaluation.

Perhaps this discussion repeats calls by Boserup (1965) many years ago for pro-small farmer policies to intensify labour inputs in agrarian transition. However, this debate continues between investing in the innovation and creativity of Ratanakiri's swidden farmers or, as Blaikie and Brookfield (1987; 30) put it, in "the modern biogenetic, chemical and organizational agricultural revolution". The takeover of the land, forest and land use in this region by the present agricultural revolution of large-scale rubber agribusiness and monoculture cash cropping is having major socio-political and environmental impacts. It is ironic that the land in Ratanakiri is being transferred to fewer owners producing rubber, cassava for flour, animal feed and biofuel, luxury cashew nuts, etc., at the same time as increasing food insecurity in several villages. It is these political dynamics that will have to be addressed if an alternative agricultural development scenario, based on building on the existing swidden land use and on the innovation of the local indigenous populations, is ever to take hold in this area.

In light of this need for changing mindsets and the importance of diversity and mobility for agricultural development in bio-diverse upland areas, a rethink of concepts such as productivity and efficiency is needed. As Boserup (1965) also points out, an agricultural system adapts to the prevailing land, labour and other production conditions. This analysis has shown the way farmers themselves have been adapting to the changing scenarios in Ratanakiri, and will continue to do so. New innovations and alternative ways of organizing land use will come from their small-scale successes. In this sense, linear and narrow concepts and assumptions of development, 'progress' and 'economic growth' need to be replaced with "more plural definitions of human well-being, and diverse ways of relating with the environment" (Pimbert, 2005; 155). Without this change of mindset, including allowing for alternative forms of land tenure, the swidden/fallow systems in northeastern Cambodia and the livelihood security which these systems have always ensured are under significant threat from the present onslaught of land-use change underway in the region.

XIII. Recommendations

Building on the above discussion, this briefly explores some ideas for assisting the adaptation of swidden systems in Ratanakiri.

1. Livelihood improvement on communal land

As discussed, along with communal land titles, efforts are needed to strengthen the local village economy, to protect the land for growing village populations. Some efforts at community driven development are underway in these villages and further efforts could build on these. To date, with each family contributing US\$12.50, Pierr Village has developed a community shop with outside assistance and a village bank

where members can borrow money at low interest rates. Beine Village has also recently initiated a savings group, also with outside assistance, which can cut down on the amount of village resources going to credit institutions in the form of interest.³³

To facilitate livelihood adaptations, options are also required to enable owners of communal land to borrow from credit institutions. The difficulties communal landowners face in borrowing from these institutions is often given as a reason why indigenous villagers should abandon their traditions and opt for individual land titles. However, because few people actually have a land title in Ratanakiri, credit institutions have had to adopt group guarantee arrangements to lend to the villagers. Groups of four to five people are formed and if a group member is unable to repay their loan the others in the group guarantee to take over repayment. These kinds of arrangements could easily be expanded to accommodate communities borrowing for community investment and development. Some banks, agricultural institutions and merchants are now lending to families, but lending to communities which are officially recognized as a legal entity and/or have their communal land title could be explored further. It is ironic that compared to the financial resources, which concession companies and private land holders are able to access, local communities have to rely on pooling their own meagre funds and limited NGO support in order to access limited financial resources in the form of savings groups and village banks.

Similar to community loans, the legal entity status of villages could also be adapted to allow for joint marketing activities and supply contracts, of raw or processed products. These arrangements could help to promote artisanal specialization and family enterprises to assist communities to adapt to new livelihood niches and new processing and marketing opportunities. New skills are needed for this kind of community adaptation. This would complement and greatly enhance current efforts to promote cultural identity and solidarity within and between indigenous communities.

These kinds of community-oriented pathways have the potential to at least regulate the wealth differentiation, which is often seen in more individualist economic development approaches. While there have always been wealth differences in villages in Ratanakiri, there have also always been systems of mutual assistance and reciprocity which at least lessen inequalities.

2. Strengthening the role of women in swidden adaptation

Along with technical support to improve the productivity and reduce labour in the swidden field (see section 3 below), supporting women's roles could also include intensifying small-scale market production of a variety of swidden crops for local markets. As discussed, women play a significant role in these small-scale market

transactions. Aside from chickens and pigs, much of the produce sold—bananas, papayas, bamboo shoots, mushrooms, a wide range of vegetables (several varieties of eggplant and gourds, chillies, a kind of spring onion, lemon grass, sweet potato, cassava, etc.), comes from the swidden fields. Rather than seeing this intensification of marketing activities as ‘partial swiddening’ (Cramb *et al.* 2009), the concept puts more emphasis on the diversity of swidden production, while at the same time building on the important agro-biodiversity that the swidden field has always nurtured.

Furthermore, different varieties of rice, and several varieties of eggplant, gourds, chillies, bananas, yams, domestic and wild fruits, wild chicken and pig breeds, etc. are found in Ratanakiri and similar areas. Finding, selecting, and even breeding varieties of upland rice, which are able to grow in increasingly infertile swidden fields; and, dealing with increasingly changeable weather patterns, are just some of the reasons for preserving this important resource before these varieties are irretrievably lost. However, this should not be a process carried out by external ‘experts’, but by the local experts in their swidden fields.

3. Crop rotations, fertility building and agroforests

Clearly continued efforts are required to find less costly labour and low-cost methods of naturally building the fertility of the swidden field. An interchange of experiences between farmers adapting to land shortage and reduced swidden cycles in other parts of Southeast Asia could usefully be carried out. Local adaptations also need to be further investigated. For example, farmers and indigenous extension workers have noted that upland rice tends to grow well after a crop of peanuts. The local rotation of planting soybeans after rice could also be further experimented with to understand how this might work. This could also include trialing relay cropping, if possible planting an early crop of peanuts followed by rice. Existing bean varieties such as lablab (*Lablab purpureus*) and jack bean (*Canavalia ensiformis*) could also be further experimented with to provide ground cover and fertility building during the dry season.

As discussed, for cultural, economic and agronomic reasons, it is also important to consider strengthening the animal component of these systems (for example, using the fertility from animals to enhance fallow fertility regeneration). This can range from forage systems for pigs, chicken and cattle in intensively planted fallows, to more strategic animal husbandry, which collects and manages animal waste for intensive crop production. The ways in which animal production is integrated into the swidden system, and how it could complement these systems in the future, is to date perhaps an overlooked aspect of improvement strategies in need of more focused attention.

Also given the work done by swidden farmers in developing diverse agroforests in other parts of Southeast Asia (Cairns, forthcoming; Cairns, 2007; Penot, 2007; Tomich *et al.* 1998; Michon and deForesta, 1995), more work is needed in developing agroforestry models in Ratanakiri. This work emphasizes tree crops for income and sustainable land use and perhaps most importantly, builds on the skill sets of the existing land users. A system of bio-diverse, multi-storeyed agroforest-type agriculture could be a viable adaptation of the swidden system in this area. Such a system would maintain the ecosystem as well as produce food and income throughout the year. Communal swidden lands could be more a mix of cropping, agroforestry and fallows. Several possibilities that maintain forest systems and generate economic return are possible with secure land tenure. These kinds of interventions have not yet been widely promoted or adopted. However, as the pressure on land increases there will be increasing incentives for farmers to invest in sustainable adaptations. Local farmers need to demonstrate the productiveness of their fallows while they still have them, so that they are not lost to concessions and speculators.

Interestingly, Pierr villagers developed their own coffee agro-forest in the 1990s by planting coffee bushes under the bigger trees in the area behind the village houses. With the decrease in coffee prices this has now been abandoned. People found cashews nuts easier to look after, easier to pick and they generated better returns than coffee. However, this also indicates the knowledge and skills available in these villages, which could equally be applied to developing diverse rubber-based agro-forests, for example, as a component of diverse livelihood strategies. There is no reason why swidden farmers cannot incorporate rubber production on their communally titled land, instead of outside companies doing so and displacing local communities in the process. In both the villages, people said they are interested in planting fruit trees and in obtaining other useful seed and plant material. Mixed fruit planting undoubtedly has potential for incorporation into existing livelihood strategies.

4. Dealing with outsiders

A further key part of developing swidden land uses is enhancing the ability of the villagers to deal with outsiders and new contexts. Management skills are needed and younger villagers need to be able to bridge between indigenous cultural norms and outside institutions. For example, Beine villagers saw literacy as a priority. They said they get cheated on contracts and in transactions with outsiders. "We need at least to be able to read," a villager commented. It is also important to provide training to allow village youth to take on new forms of employment and generally to assist villagers to better prepare for the changes underway.

Appendix 1: Household data from Beine and Pierr villages

Beine Village															
Family	Household size	Land area (ha)	Assets	Land use this year (ha)				Yield/Income				Food expense (US\$ per week)		Expenses in order of importance	
				Upland rice	Cassava	Soybean	Cashew nuts	Rice (kgs)	Cassava	Soybean	Cashew nuts	Labour	Wet season		Dry season
1	6	6	1 pig 1 cow 5 buffaloes 1 motor bike	2 ha	1		3	1 750	US\$625		US\$ 1 875			US\$5	1. Food 2. Petrol 3. Health 4. Education
2	3	4	1 motor bike 1 mobile phone	11 ha fallow		1	1	1 260	–	US\$350	US\$600			–US\$ 7.50	1. Food 2. Petrol 3. Health 4. Mobile phone
3	9	8	7 pigs 2 motor bikes 2 mobile phones 1 generator 1 TV 1 small rice mill	22 ha fallow	2		2	4 900	US\$ 3 000		Trees were burned	75		>US\$ 12.50	1. Health 2. Food 3. Petrol 4. Education 5. Mobile phone
4	6	4.5	2 motor bikes 1 mobile phone 1 rice mill	2	2		0.5	4 200	US\$ 1 000		US\$250	US\$25		>US\$ 12.50	1. Food 2. Health 3. Petrol 4. Education 5. Mobile phone
5	4	6	2 pigs 2 motor bikes 2 mobile phones	11 ha fallow	2		2	840	US\$ 1 700		US\$ 1 000			–US\$10	1. Food 2. Petrol 3. Health 4. Mobile phone

Pierr Village															
Family	Household size	Land area (ha)	Assets	Land use this year (ha)				Yield/Income					Food expense (US\$ per week)		Expenses in order of importance
				Upland rice	Cassava	Soybean	Cashew nuts	Rice (kgs)	Cassava	Soybean	Cashew nuts	Labour	Wet season	Dry season	
1	12	5	1 motor bike 1 mobile phone 1 generator 1 pump	11.5 ha fallow	1	0.5	1	1 000	US\$ 1 250	US\$250		US\$80 0-6 people	US\$ 17.50	US\$ 17.50	1. Food 1. Petrol 2. Education 3. Mobile phone
2	3	4	3 pigs 1 motor bike 1 mobile phone 1 generator 1 TV 1 radio	11 ha fallow	1 (+ small area of peanuts cultivation)		1	1 000	US\$ 1 000		US\$600		US\$ 12.50	-	1. Petrol 2. Food 3. Health 4. Mobile phone
3	10	0.5	3 sows 1 mobile phone 1 generator	0.5	1 (rents land for US\$ 100/ha)		-	320	US\$500			US\$600 (4 people)	US\$ 10.00	US\$ 10.00	1. Food 2. Petrol 3. Education 3. Mobile phone
4	6	3	1 motor bike 1 mobile phone 1 TV	0.5	1.5 (+ small area of peanuts cultivation)		1	480	US\$875		375 (young trees)	US\$50	US\$5	US\$15	1. Food 1. Petrol 2. Mobile phone
5	5	4	1 pig 1 motor bike 1 mobile phone 1 TV	11 ha fallow	1		1	1 400	US\$ 1 250		Young trees		US\$ 1.25	US\$ 2.50	1. Health 2. Petrol 3. Food 4. Mobile phone 5. Education

References

- Akram-Lodi, A.H. 2005. Vietnam's agriculture: Processes of rich peasant accumulation and mechanisms of social differentiation. *Journal of Agrarian Change*, Vol. 5(1), pp. 73-116
- Alvares, C. 1992. Science. In Sachs, W. (Ed.) *The Development Dictionary. A Guide to Knowledge and Power*. London; Atlantic Highlands, New Jersey: Zed Books, pp. 219-232
- Atwell, R., Schulte, L. & Westphal, L. 2010. How to build multifunctional agricultural landscapes in the U.S. corn belt: Add perennials and partnerships. *Land Use Policy*, Vol. 27(4), pp. 1082–1090
- Backstrom, M., Ironside, J., Paterson, G., Padwe, J. and Baird I.G. 2006. Case Study of Indigenous Traditional Legal Systems in Ratanakiri and Mondulhiri Provinces. Phnom Penh: United Nations Development Programme (UNDP) and Ministry of Justice
- Baird, I.G., K. Tuptim and M. Baird 1996. *The Kavet and the Kreung. Observations of Livelihoods and Natural Resources in Two Highlander Villages in the Districts of Veun Say and Ta Veng, Ratanakiri Province, Cambodia. Livelihoods and Natural Resources Study*. Ratanakiri, Cambodia: Novib and Oxfam (UK and Ireland)
- Blaikie, P. & Brookfield, H. (eds.) 1987. *Land Degradation and Society*. London: Methuen Publishers
- Boserup, E. 1965. *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure*. London: George Allen and Unwin Ltd.
- Boulbet, J. 1975. *Paysan de la Foret*. Paris: École Française de l'Extreme Orient
- Bourdier, F. 1995. *Knowledge and Practices of Traditional Management of Nature in a Remote Province, Report of a research mission on the theme of environment in Cambodia, sponsored by AUPEL/UREF (October 1994 – July 1995), unofficial English translation by Dr Carol Mortland*. Honolulu: East-West Centre
- Bryant R. & Bailey, S. 1997. *Third World Political Ecology*. London, New York: Routledge
- Cairns, M. (Ed.) 2007. *Voices from the Forest: Integrating Indigenous Knowledge into Sustainable Upland Farming*, Washington: RFF Press
- _____ (Ed.) (forthcoming). *A Growing Forest of Voices*. London: Earthscan

- Carvalho-Ribeiro, M., Lovett, A., O’Riordan, T. 2010. Multifunctional forest management in Northern Portugal: Moving from scenarios to governance for sustainable development *Land Use Policy* 27(2010) 1111-1122
- Cambodian Human Rights Action Committee 2009. *Losing ground: Forced evictions and intimidation in Cambodia*. Phnom Penh: The Cambodian Human Rights Action Committee
- _____ 2010. *Still Losing Ground: Forced Evictions and Intimidation in Cambodia*. Phnom Penh: The Cambodian Human Rights Action Committee
- Colm, S. 1996. *The highland minorities and the Khmer Rouge in northeastern Cambodia 1968-1979*. Phnom Penh: Document Centre of Cambodia
- Condonimas, G. 1977. *We Have Eaten The Forest: The Story of a Montagnard Village in the Central Highlands of Vietnam*. New York: Hill and Vang
- Conklin, H. 1975. *Hanunóo agriculture: A report on an integral system of shifting cultivation in the Philippines*. FAO Forestry Development Papers, No. 12. Rome: Food and Agriculture Organization
- Cramb, R.A. *et.al.* 2009. *Swidden Transformations and Rural Livelihoods in Southeast Asia*. *Human Ecology* 37: 323-346
- Cupet, P. 1998. *Among the Tribes of Southern Vietnam and Laos. ‘Wild’ Tribes and French Politics on the Siamese Border (1891)*. Translated and an Introduction by Walter E.J. Tjips. Bangkok: White Lotus Press
- Dao, N. (forthcoming). *Rubber plantation in the Northwest: Rethinking the concept of land grabs in Vietnam*, *Journal of Peasant Studies*
- De Koninck, R. 2004. *The Challenges of the Agrarian Transition in Southeast Asia. Labor, Capital and Society* 37(2004) pp. 285-288
- Deininger, K. & Feder, G. 2001. *Land Institutions and Land Markets*. In: Gardner, B., Rauser, G. (Eds), *Handbook of Agricultural Economics*. Amsterdam: Elsevier, pp. 288-331
- Demsetz, H. 1967. *Toward a theory of property rights*. *American Economic Review Papers and Proceedings*, Vol. 57, pp. 347-359.
- _____ 2002. *Toward a theory of property rights II: The competition between private and collective ownership*. *Journal of Legal Studies*, Vol. 31(2 II). University of Chicago, pp. 653-672
- Dove, M. 1982. *The myth of the ‘communal’ longhouse in rural development: The Kantu of Kalimantan*. In MacAndrew, C. & Chin, L. (Eds.), *Too rapid Rural Development – Perceptions and Perspectives from South East Asia*. Athens: Ohio University Press, pp. 14-78

- _____ 1983. Theories of swidden agriculture, and the political economy of ignorance. *Agroforestry* Vol. 1, pp. 85-99
- _____ 1985. The agro-ecological mythology of the Javanese and the political economy of Indonesia. Honolulu: East West Centre, Reprint No. 84
- Fox, J. 1997. Customary boundaries in Ratanakiri – A study of 3 villages in Poey Commune (unpublished). Honolulu: East-West Centre
- _____ 1998. Customary land use practices and resource tenure systems among the Krung in Northeastern Cambodia. In *Crossing Boundaries; Book of Abstracts*. 7th Conference of the International Association for the Study of Common Property, June 1998, Simon Fraser University, Vancouver, Canada
- _____ 2002. Understanding a dynamic landscape: Land use, land cover, and resource tenure in Northeastern Cambodia, in S. Walsh and K. Crews-Meyer (Eds) *Linking People, Place, and Policy: A GIScience Approach*. Boston: Kluwer Academic Publishers, pp. 113-130
- Fox, J., Vogler, J. and Poffenberger, M. 2009. Understanding changes in land and forest resource management systems: Ratanakiri, Cambodia, *Southeast Asian Studies*, Vol. 47(3), pp. 309-329
- Friedmann, H. 2008. Book review: The global food economy: The battle for the future of farming by Tony Weis. *Journal of Agrarian Change*, Vol. 8(4), pp. 618-623
- Gall, T.L. (ed.) 1998. *Worldmark Encyclopedia of Culture and Daily Life: Volume 3 – Asia and Oceania*. Cleveland, Ohio: Eastword Publications Dev.
- Global Witness 2013. *Rubber Barons: How Vietnamese Companies and International Financiers Are Driving a Land Grabbing Crisis in Cambodia and Laos*. London: Global Witness
- _____ 2014. *What future for the rubber industry in Myanmar*. London: Global Witness
- Grimsditch, M. 2014. *Impact of the Order 01 Land Titling Campaign: Legal Analysis & Literature Review*. Phnom Penh: NGO Forum
- Guerin, M. 2001. *Essartage et riziculture humide: Complementarite des ecosystems agraires a Stung Treng au debut du XX siecle (Swidden cultivation and wet rice: The complementarity of agrarian ecosystems in Stung Treng at the beginning of the century)*, *Aseanie* Vol. 8, pp. 35-56
- Hall, D., Hirsch, P. and Li, T. 2011. *Powers of Exclusion: Land Dilemmas in Southeast Asia*. Singapore: NUS Press

- Hughes, C. and Un, K. 2011. *Cambodia's Economic Transformation*. Copenhagen: NIAS Press
- IIED 2013. *Landscapes for public goods: Multifunctional mosaics are fairer by far*. IIED Briefing. London: International Institute for the Environment and Development
- Ironside, J. 1999. *Culture and Agri-culture. Hill Tribe Farming Systems from an Agroecological Perspective: A Case Study of Yeak Loam Commune, Ratanakiri Province, Cambodia*. Ban Lung, Ratanakiri, Cambodia: IDRC/CARERE
- _____. 2006. *Indigenous land and forest management in Ratanakiri Province, Northeast Cambodia*. Phnom Penh: Community Forestry International
- _____. 2009. *Poverty reduction or poverty creation? A study on achieving the MDGs in indigenous communities in Cambodia*, in F. Bourdier (Ed.) *Development and Dominion: Indigenous Peoples in Laos, Vietnam and Cambodia*. Chiang Mai: White Lotus Press, pp. 79-113
- _____. 2012. *Thinking outside the fence: Exploring culture/land relationships, a case study of Ratanakiri Province, Cambodia*. Ph.D. thesis: University of Otago, Dunedin, New Zealand
- _____. (2015). *What about the 'unprotected' areas? Building on traditional forms of ownership and land use for dealing with new contexts*, in Milne, S. and Mahanty, S. (Eds.) *Conservation and Development in Cambodia*, London: Earthscan, Routledge, pp. 203-225.
- Ironside, J. and Baird I.G. 2003. *Wilderness or Cultural Landscape? Settlement, Agriculture and Land and Resource Tenure in Virachey National Park, Northeast Cambodia, Biodiversity and Protected Areas Management Project*. Phnom Penh: Ministry of Environment and World Bank,
- Ironside, J. and Nuy, B. 2010. *Development with identity: Assessment of the impact of tenure security from legal entity registration in indigenous communities in Cambodia (Mondulkiri and Ratanakiri Provinces)*. Phnom Penh: DANIDA
- Ironside, J., Patterson, G., Thomas, A. (forthcoming). *Swidden Agriculture Under Threat – The Case of Ratanakiri, Northeast Cambodia: Opportunities and Constraints from the National Policy Environment*, in Cairns, M. (Ed.) *A Growing Forest of Voices*. London: Earthscan Press, in press
- Irwin, K., Sok, M., Put, S., Dul, V., Tith, S. & Pheav P. 2004. *Aspects of indigenous peoples' communities and their land use and management systems in*

- Ratanakiri Province, Cambodia. Partnerships for Local Governance, Ban Lung, Ratanakiri
- Lafont, P.B. 1963. *Toloi Djuat: Common Law of the Jarai Tribe*. Bulletin de l'École Française d'Extrême-Orient, No. 51 (Unofficial English translation (Dec. 1995) by Dr. Carol Mortland). Honolulu: East West Centre, pp. 1-86
- Maffii, M. 2008. Changes in Gender Roles and Women's Status among Indigenous Communities in Cambodia's Northeast. In Hammer, P. & Mean, C. (Eds.), *Living on the Margins: Minorities and Borderlines in Cambodia and Southeast Asia*. Siem Reap, Cambodia: Centre for Khmer Studies, pp. 137-148
- Maitre, H. 1912. *Mission Henri Maitre (1909-1911) Indochine Sud-Centrale: Les Jungles Moi*. Paris: Emile Larose, Libraire-Editeur
- Marks, S. 2010. Governments, investors to map Ratanakiri investment, Cambodia Daily, 12 March 2010, Phnom Penh, p. 31
- Master Plan for CLV-DTA 2004. *Socio-economic Development Master Plan for the Cambodia - Laos - Vietnam Development Triangle* (unpublished), Hanoi
- Matras-Troubetzkoy, J. 1983. *Un village en foret: L'essartage chez les Brou du Cambodge [A Village in the Forest: Swidden Cultivation among the Brao of Cambodia.]* Paris: SELAF (Unofficial translation (Dec. 1995) by C. Mortland). Honolulu: East West Centre, pp. 1-107
- Meyer, C. 1979. *Les nouvelles provinces: Ratanakiri – Mondulkiri (The new provinces, Ratanakiri and Mondulkiri)*, *Revue Monde en Développement*, Vol. 28, pp. 682-690
- Michon, G. & deForesta, H. 1995. *Agroforests: An original agroforestry model from smallholders for environmental conservation and sustainable development*. In Ishizuka, K. Hisajima, S. Macer D. (Eds.) *Proceedings of the UNESCO – University of Tsukuba International Seminar on Traditional Technology for Environmental Conservation and Sustainable Development in the Asian-Pacific Region, held in Tsukuba Science City, Japan, 11-14 December, 1995*
- Milne, S. 2013. *Under the leopard's skin: Land commodification and the dilemmas of indigenous communal title in upland Cambodia*, *Asia Pacific Viewpoint*, Vol. 54, No. 3
- Milne, S., Pak, K., and Sullivan, M. (2015). *Shackled to nature? The post-conflict state and its symbiotic relationship with natural resources*, in Milne, S. and Mahanty, S. (Eds.) *Conservation and Development in Cambodia*. London: Earthscan, Routledge, pp. 28-50.

- Ministry of Planning, Royal Government of Cambodia 2009. 2008 Cambodia Population Census. CELADE – Population Division, ECLAC, National Institute of Statistics, Phnom Penh, Ministry of Planning
- _____. 2013. Intercensal Population Survey. National Institute of Statistics, Ministry of Planning, Cambodia
- Muyhong, C. 2014a. Exports of rubber up, but prices on the fall, Phnom Penh Post, May 8, 2014, Phnom Penh. <http://www.phnompenhpost.com/business/exports-rubber-prices-fall> (Accessed 23/9/14)
- _____. 2014b. Rubber decline stokes worry, Phnom Penh Post, April 1, 2014, <http://www.phnompenhpost.com/business/rubber-decline-stokes-worry> (Accessed 23/9/14)
- Naren, C. 2012. Cambodia surges full speed ahead with land concessions, Cambodia Daily, 23 March 2012, Phnom Penh, p. 18.
- Nevens, J. & Peluso, N. (Eds.) 2008. Taking Southeast Asia to Market: Commodities, Nature, and People in the Neoliberal Age. Ithaca, New York: Cornell University Press
- NGO Union (forthcoming). Logs and Patronage: The illegal logging and destruction of state forests and protected areas in Ratanakiri and Stung Treng Provinces, Cambodia, Draft. Phnom Penh: NGO Union.
- OHCHR 2004. Land concessions for economic purposes in Cambodia: A human rights perspective. Phnom Penh: United Nations Cambodian Office of the High Commissioner for Human Rights
- _____. Economic land concessions in Cambodia: A human rights perspective. Phnom Penh: United Nations Cambodia Office of the High Commissioner for Human Rights
- Padoch, C., Coffey, K., Mertz, O., Leisz, S., Fox, J., & Wadley, R. 2007. The Demise of Swidden in Southeast Asia? Local Realities and Regional Ambiguities. *Danish Journal of Geography* Vol. 107(1), pp. 29-41
- Parra-López, C., Groot, J., Carmona-Torres, C. & Rossing, W. 2009. An integrated approach for ex-ante evaluation of public policies for sustainable agriculture at landscape level. *Land Use Policy*, Vol. 26(4), pp. 1020-1030
- Penker, M. 2009. Landscape governance for or by the local population? A property rights analysis in Austria, *Land Use Policy* 26, 947-953
- Penot, E. 2007. From shifting cultivation to sustainable jungle rubber: A history of innovations in Indonesia. In Cairns M. (Ed.) *Voices from the forest:*

- Integrating indigenous knowledge into sustainable upland farming. Washington: RFF Press, p. 577-599
- Peter, Z. 2013. Loss of forest in Cambodia among worst in the world, *The Cambodia Daily*, Nov. 19, 2013, Phnom Penh, <http://www.cambodiadaily.com/archives/loss-of-forest-in-cambodia-among-worst-in-the-world-47259/> (Accessed 23/9/14)
- Pimbert, M. 2005. Supporting locally determined food systems: the role of local organizations in farming, environment and people's access to food. In Bigg, T. & Satterthwaite, D. (Eds.) *How to Make Poverty History – the central role of local organizations in meeting the MDGs*. London: International Institute for Environment and Development (IIED), pp. 129-155
- Plant, R. and Hvalkof, S. 2001. *Land Titling and Indigenous Peoples*. Washington, DC: Inter-American Development Bank
- Rabe, A. 2013. Directive 01BB in Ratanakiri Province, Cambodia: Issues and impacts of private land titling in indigenous communities. Chaing Mai: Asia Indigenous Peoples Pact
- Reaksmey, H. 2010. Demand Pushes Price of Cambodian Rubber Up. *Cambodia Daily*, Jan. 7, 2010. Phnom Penh, p. 25
- Royal Government of Cambodia 2001. *Land Law*. Royal Government of Cambodia, Phnom Penh
- _____ *Cambodian Law on Forestry*. Phnom Penh: Royal Government of Cambodia
- _____ *Sub-decree on Procedures of Registration of Land of Indigenous Communities*. Council for Land Policy. Phnom Penh: Royal Government of Cambodia
- Salemink, O. 2003. *Enclosing the highlands: Socialist, capitalist and protestant conversions of Vietnam's Central Highlanders (draft)*. Amsterdam: Vrije Universiteit
- Scott, J. 2009. *The Art of Not Being Governed: An Anarchist History of Southeast Asia*. New Haven: Yale University Press
- Shiva, V. (undated). *Biodiversity: A Third World Perspective*. Pulau Pinang, Malaysia: Third World Network
- _____ 1991. *The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics*. London; Atlantic Highlands, N.J., USA: Zed Books
- _____ 2003. Globalization and the war against farmers and the land. In Wirzba, N. (Ed.), *The Essential Agrarian Reader: The Future of Culture, Community, and the Land*. Lexington: University Press of Kentucky, pp. 121-139

- Simms, A. 2014. Unprecedented Case Filed at International Criminal Court Proposes Land Grabbing in Cambodia as a Crime Against Humanity, Huffington Post, Oct. 13, 2014
- Steinmetz, R. 1996. Landscape Ecology and Wildlife Habitats: An Indigenous Karen Perspective in Thung Yai Naresuan Wildlife Sanctuary of Western Thailand. Bangkok: Wildlife Fund Thailand
- Subedi, S. 2012. A Human Rights Analysis of Economic and Other Land Concessions in Cambodia. Report of the Special Rapporteur on the Situation of Human Rights in Cambodia, A/HRC/21/63/Add.1/Rev.1 United Nations, Human Rights Council
- Tauli-Corpuz, V., Enkiwe-Abayao L. & Chavez R. (Eds.) 2010. Indigenous Peoples and the Millennium Development Goals. In Towards an Alternative Development Paradigm: Indigenous Peoples' Self-Determined Development, Baguio City: Tebtebba Foundation (Indigenous Peoples' International Centre for Policy Research and Education), pp. 513-540
- Tomich, T., van Noordwijk, M., Vosti, S. & Witcover, J. 1998. Agricultural development with rainforest conservation: Methods for seeking best bet alternatives to slash-and-burn, with applications to Brazil and Indonesia. *Agricultural Economics*. Vol. 19. (1-2), pp. 159-174
- Tsing, A. 2008. Natural Resources and Capitalist Frontiers. In Baviskar, A. (ed.), *Contested Ground: Essays on Nature, Culture and Power*. New Delhi: Oxford University Press, pp. 137-157
- UNDP 2010. What we do: Poverty reduction, United Nations Development Programme, Phnom Penh, www.un.org.kh/undp/what-we-do/poverty-reduction, accessed 6 June 2013
- Vannarin, N. and Lewis, S. 2013. Hun Sen Shares Vision of Rubber Plantation Boom, Cambodia Daily, February 22, <http://www.cambodiadaily.com/archive/hun-sen-shares-vision-of-rubber-plantation-boom-11253/>, accessed 27 January 2014
- Vrieze, P. and Naren, C. 2012. Carving up Cambodia: One concession at a time, Cambodia Daily, 10-11 March 2012, Phnom Penh, pp. 5-11
- Watts, M. 2006. Book Review of *Food for the Future*, by José Bové & François Dufour. *Journal of Agrarian Change*, Vol. 6(3), pp. 448-454
- Ziegler, A., Fox, J., Xu, J., 2009. The Rubber Juggernaut, *Science* 22 May 2009: Vol. 324. No. 5930, pp. 1024-1025

Endnotes

- ¹ The government sees the northeast of the country becoming one of the four ‘pillars’ of economic development for the country. The other three ‘pillars’ are the capital Phnom Penh; Siem Reap, where the temples of Angkor Wat are located; and Sihanoukville, the country’s main port (COHCHR, 2007).
- ² This plan involves joining five provinces in Viet Nam and four each in Cambodia and Laos (Master Plan for CLV-DTA, 2004).
- ³ The 2008 Census puts the number of Tampuan mother tongue speakers at 30 888. The 2013 inter-census population survey was based on a sample and thus has perhaps overestimated the number of Tampuan. However, this does highlight the significant difficulty indigenous groups have in being accurately accounted for in national statistics.
- ⁴ From 1998 to 2008 the province’s population growth rate was 4.65 percent (MOP, 2009).
- ⁵ A Vietnamese Ministry of Agriculture and Rural Development document (No. 3492/BNN-NT dated December 20th, 2007), which was sent to the Prime Minister regarding policies for rubber plantation in Northwest region provinces comments, “The development of rubber in mountainous provinces should focus on large scale plantation at the beginning stage. Once the large scale plantation becomes stable, small rubber farms will be developed.” (MARD, 2007 in Dao, 2014; 10).
- ⁶ The Sloping Land Conversion Programme in China, for example, supported the planting of rubber, because it counts as reforestation (Ziegler *et al.* 2009). The Vietnamese government also allowed rubber companies to convert most of the land intended for the national programme of planting 5 million ha of forest to rubber (Dao, 2014).
- ⁷ Naren (2012) also reports that 300 000 hectares have been given away in less than 3 months in 2012. Also two thirds of the 751 882 hectares awarded in 2011 was in protected areas. Cambodia as a whole covers 18 million ha, there are 6.5 million ha of agricultural land with 2.5 million ha of lowland rice land (COHCHR, 2012; Sothath and Sophal, 2010).
- ⁸ An example of this is seen in the following quote from the CLV Master Plan, “The border areas of the three countries are home to many ethnic minority people. Their life is in general difficult, their production customs and practices remain backward, and shifting cultivation occurs in many areas.” (Master Plan for CLV-DTA, 2004; 129)
- ⁹ As a result of these development programmes, these ethnic groups cultivable land was taken over by cooperatives, and their forests became the property of state forest enterprises. Many families are now landless and without resources. An official 2004 report found that more than 50 percent of ethnic minority households in the Central Highlands—that is, around 86 000 households or half a million people—were living under the national poverty line with poor living conditions and lack of cultivable land. Under the government’s current poverty classification, families with income per capita less than US\$6/month are recorded as poor households. Land and forest scarcity have also led to conflicts within the minority groups themselves. As a result, in the last few years the Central Highlands have become a hotspot for social conflict, especially over rights to land and forest (Cramb *et al.* 2009).
- ¹⁰ These village names are pseudonyms.
- ¹¹ With regard to distribution and land-use patterns of Ratanakiri’s indigenous groups, Cupet (1891, in 1998: 147-148) observed at the end of the 19th century that;

“Nowhere have I found any [highlanders] that are at all nomadic, as they are generally believed to be. Besides, even if they wanted to move around, they could not do so except within a short radius. As a consequence of secular fighting, the inhabitable territory has been divided up between the villages. Each of these has won a corner, in which it billets itself and which truly belongs to it. Simple verbal agreements and traditions limit the public domain. Within it the inhabitants mark out their fields as they see fit, fish and hunt as they please. The smallest incursion into neighboring territory brings about a conflict because nothing safeguards collective property among them. The different peoples are, consequently, more or less immobilized where they are established. Despite the forces working against autonomy, resulting from their way of living, from their social organization and from the deep-rooted, continual fighting, a great number of them have preserved their independence almost entirely until today.”

Matras-Troubetzkoy (1983) also emphasized that the distribution of ethnic groups between the Sre Pok and Se San Rivers hardly changed between 1890 and the end of the 1960s, and Fox (2001) reported that the *Kreung* of Poey Commune, O Chum District, Ratanakiri Province only moved short distances within their ancestral cultivation area over the last 50 years.

With respect to the Jarai group found in Ratanakiri and in the Central Highlands of Viet Nam, Lafont (1963) also commented that, “Each village has an eminent right over its territory and refuses it to strangers”, although any individual can hunt on the territory of other villages.

- ¹¹ In particular, people from highland villages in Ratanakiri do not allow swiddens of other villages to be established within their territory (Baird *et al.*, 1996; Fox, 2001). Gall (1998) also reported that most highland groups in northeast Cambodia frequently abandon their swidden fields and village sites, sometimes returning a generation or two later after the forest has re-grown on their former fields.
- ¹² In Ratanakiri, the Jarai ethnic group and the Tampuan and Kachok ethnic groups that lived in proximity to the Jarai also traditionally lived in longhouses.
- ¹³ Article 37 of the 2002 Forest Law states “Local communities that traditionally practice shifting cultivation may conduct such practice on land property of indigenous communities which is registered by the state.... Forestlands reserved for shifting cultivation shall be identified by AnuKret (Subdecree)”
- ¹⁴ The process requires official confirmation of a community’s indigeneity from the Ministry of Rural Development’s Department of Ethnic Minorities; registration of the community as a legal entity with the Ministry of Interior; and approval of the community’s land-management regulations, surveying, demarcation and titling of the community’s land by the Ministry of Land Management. Registration as a legal entity is necessary for the village to hold a communal land title.
- ¹⁵ Royal Government of Cambodia No. 83 ANK, BK, June 09, 2009, Sub-decree on Procedures of Registration of Land of Indigenous Communities, Article 6.
- ¹⁶ Subdecree on Indigenous Communal Land Registration (2009), Article 7.
- ¹⁷ The formal name for this Order is; Directive 01BB: Measures Reinforcing and Increasing the Efficiency of the Management of Economic Land Concessions. The policy aimed to

expedite the systematic issuance of private land titles over 1.2 million hectares of land to 350 000 families living within ELCs, forest concessions, or state public land. Thousands of student volunteers were recruited and provided with basic training before being deployed throughout Cambodia. The students had two objectives: (1) to measure land in conflict between communities and companies, and (2) to issue private land titles. Since the titling programme began in late June 2012, the RGC has issued an estimated 110 000 private land certificates (Rabe, 2013).

- ¹⁸ Only villages whose lands overlapped with economic land concessions were considered for titling under the Order 01 land titling scheme. The implementation of Order 01 throughout the country has resulted in 27 of the 155 indigenous villages that have been proceeding through the communal land titling process becoming 'stuck' and unable to continue.
- ¹⁹ This reservoir was created in the 1980s for a small (1 MW) hydroelectric power plant to serve Ban Lung town.
- ²⁰ The elephants were taken away by the Khmer Rouge and subsequently died. An adult elephant is worth around US\$4 500.
- ²¹ Fallow areas which have recently been abandoned also provide fruit (bananas, papayas) and self-seeded vegetables
- ²² Vietnamese loggers have been operating in this area for many years (Ironsides, 2009).
- ²³ In comparison, Bourdier (1995) reports densities of Amazonian forest horticulturalists of between 0.17-3 people/km².
- ²⁴ Statistics are conservative estimates only as literacy is low so written records are not kept. The cashew nuts harvest is also staggered over a period of two to three months so villagers sell small amounts over a sustained period. This is an indication of overall production, however. The exchange rate used is 4 000 Riels = US\$1.
- ²⁵ For the several families without a motorbike a trip to the market is a two and a half hour walk one way.
- ²⁶ The families with more area than this in cashew nuts planted their orchards before this restriction was put in place.
- ²⁷ A kapha contains between 15-20 kgs of unmilled rice, depending on its size.
- ²⁸ A small piglet is worth 50-60 000 (US\$12.50-15). Indigenous farmers buy smaller, cheaper piglets around 100 000-200 000 Riels/head (US\$25-50). Khmer and Lao farmers buy larger piglets valued at 300 000 – 400 000 Riels (US\$75-100). Village women also said the price of chickens is high at 20 000-0 000 Riels each (US\$5-7.50), and they said people come all the time to buy dogs for eating for around 100 000 Riels/head (US\$25).
- ²⁹ In July 2008 prices hit a record high of US\$3 500/tonne during the food crisis and then declined to US\$900/tonne in early 2009, and then climbed again to US\$2 800/tonne by the end of the year (Reaksmey, 2010).
- ³⁰ From French records of annual harvests of the upland and lowland agricultural systems existing in Siam Pang and Veun Sai Districts Guerin (2001) showed that over a 14 year period, between 1905 and 1919, mutually beneficial trade allowed both uplanders and lowlanders to avoid severe rice shortages. Over this period, the lowland Lao and Khmers were saved six times by the rice of the upland swidden farmers, while lowland farmers only supplied rice to the upland farmers once to bridge a poor harvest in 1913 (Guerin, 2001). Guerin (2001) also remarks on how surprised the *French* and *Khmer* administrators were,

during the years 1905-1919, at seeing upland rice at the markets of Veun Say (Ratanakiri), Siam Pang or Stung Treng. Guerin comments that the administrators thought that this was an exceptional phenomenon, because in their opinion, swidden farming is a primitive technique that cannot possibly be more efficient than wet rice cultivation, the symbol of civilisation itself. The administrators' posting, Guerin points out, was not long enough for them to understand that these exceptional harvests repeat themselves practically every year.

³¹ The Khmer Rouge controlled Ratanakiri for nine years from 1970-1979.

³² From 1990-2000 Viet Nam increased its coffee production from 1.5 million to 15 million bags. Massive deforestation, environmental devastation and the displacement of indigenous peoples from their lands by lowland migrants resulted from this economic project. Due to the oversupply, coffee prices dropped from US 1 500/tonne in 1998 to less than US\$700/tonne in 2000 (Tauli-Corpuz 2005).

³³ Members save between 10 000-50 000 Riels per month (US\$2.50-US\$12.50) and in four months the capital has grown to 2 470 000 Riels (US\$617.5).

Chapter 3

Shifting options: a case study of shifting cultivation in Mokokchung District in Nagaland, India

Amba Jamir



Acronyms and glossary

ADB	Asian Development Bank
ATMA	Agriculture Technology Mission Agency
ICAR	Indian Council for Agriculture Research
INR	Indian Rupee; 1 US\$ 60 INR
Jhum	Shifting cultivation as generally referred to in northeast India)
MNREGA	Mahatma Gandhi Rural Employment Guarantee Act
msl	Mean Sea Level
NEPED	Nagaland Environment Protection and Economic Development
NTFP	Non-timber forest products
SARS	State Agriculture Research Station
SHGs	Self-help groups
UNDP	United Nations Development Programme
US\$	United States Dollar
VDB	Village Development Board

*Title page photo: Jhum field in Mokokchung District, Nagaland, India, Photo: Chiden Yaden/
NEPED*

Shifting options – a case study of shifting cultivation in Mokokchung District in Nagaland, India

Amba Jamir

This case study takes a look at shifting cultivation in two villages of Mokokchung District in the State of Nagaland in northeast India. It aims to identify key challenges and opportunities faced by shifting cultivating communities in achieving and maintaining livelihood and food security. It is hoped that the report will help to design viable approaches in supporting adaptive responses in shifting-cultivation-based livelihoods of indigenous peoples in the region. The study seeks to understand and analyse the transition of cultivation practices, particularly the gradual change from shifting cultivation to settled land-use systems and the food and livelihood security of such farmers in Mokokchung District of Nagaland.

I. Site selection and methodology

Given the time constraint for the study, the research team decided to focus on two villages in Mokokchung District in Nagaland. Mokokchung is a district where shifting cultivation is not just widely practiced as a traditional farming method, but also an area where the practice is undergoing rapid changes. In order to identify the study villages, the team reviewed the extent of shifting cultivation being practiced within a given area and the level of transition the communities may be going through. Through this process, two ranges – Asetkong range and Ongpangkong range – were identified within the district. Criterion was developed to ensure that the villages selected represent the current scenario of the district. Following are some of the criteria used to select the sample study areas:

1. Communities with traditional shifting cultivation practices and institutions;
2. Communities undergoing transitions with regard to land-use practices;
3. Communities that are experiencing or have adopted changes to cope with food and livelihood security; and,
4. Communities with situations and activities that are representative of the challenges being faced by shifting cultivators in Mokokchung District.

Once the villages of Sungratsü in Asetkong range and Chuchuyimpang in Ongpangkong range were selected for the case study, the team started working on designing the field methodology. Given the scarcity of secondary sources and past research on such issues, the research team formulated a methodology that included reviewing any available material; however, the study was strongly dependent on the analysis of primary data and findings from the field.

In order to ensure that information was as realistic as possible, the researchers met with numerous members of the Village Council in the research villages, as well as other neighbouring villages. Respondents also included farmers, government representatives and others involved in the development of agriculture and related activities in the district.

The participatory tools and processes applied for the study amongst others included the following:

- Multi-stakeholder consultations;
- Key respondent interviews;
- Transact walks;
- Field observations; and,
- Focus group discussions with a variety of stakeholders, including farmers and farm-based entrepreneurs in the study areas.

II. Nagaland: Legal and policy context

Nagaland is a small state situated in the northeastern region of India. It is bounded by the state of Assam in the west, Manipur in the south, Arunachal Pradesh and parts of Assam on the north and Myanmar on the east. It lies between 25° 6' and 27° 4' northern latitude and 93° 20' and 95° 15' eastern longitude. Nagaland has an area of 16 579 square kilometres (sq. km.) constituting barely 0.5 percent of India's total geographical area and a population of 1 979 502, averaging to 0.2 percent of the country's population (Government of India 2011). The state is predominantly rural and 82.26 percent of its population lives in villages with strong dependence on natural resources (Government of Nagaland 2012).

The Nagas – inhabitants of Nagaland – are a group of indigenous peoples recognized as a 'tribal group' under the Constitution of India. Given that the state is not so developed and with barely any industrial units, the Nagas by way of life have always been dependent on the natural environment not just for sustenance and survival but also for their livelihood. Given this factor, the dynamics of people-land relationship is crucial for the Nagas because land is the pivotal point in their societal structure.

There are 16 major tribes in Nagaland and each tribe has its own governance systems and land-use practices. However, this particular study focuses on the land-use practices and issues amongst the Ao Naga tribe in Mokokchung District of Nagaland.



Figure 1: Map of Nagaland

Box 1. Nagaland basic statistics

Area	16 579 sq. km.
State Capital	Kohima (1 444.12 metres (m) above sea level)
No of districts	11 districts
Population	1 979 502
Density	119 per sq. km.
Literacy	79.55 percent
Average rainfall	2 500 mm

Source: 2011 Census. Government of India

1. Mokokchung District

Mokokchung District – one of the eleven districts in Nagaland – is the home territory of the Ao Naga tribe. It is situated between 93.53 and 94.53 degrees longitude and 25.56 degrees latitude and has altitudes ranging from 155 to 2 000 metres above sea level (Government of Nagaland 2012). It is bounded by the state of Assam in the west and the Nagaland Districts of Wokha, Zunheboto, Tuensang and Longleng on its southwest, south, east and northeastern sides.

Physiologically, Mokokchung District, with an area of 1 615 sq. km., is composed of six ranges running in a northeasterly direction, with 83.53 percent of the district occupied by forest area (ibid.). Two types of forests are found in the district:

- Northern tropical semi-evergreen forests along the foothills of Assam-Nagaland border area, mostly dominated by deciduous plant species and less evergreen plant species; and,
- Northern sub-tropical broad-leaved wet hill forests between 500–2 000 m above mean sea level, mainly characterized by semi-deciduous trees.

The soil type of the district is mainly alluvial, non-laterite red and forest soil. The land enjoys a monsoon type of climate with mild summers, averaging 27° Celsius (C) and cold winters at a minimum of 2°C. The district experiences an annual rainfall of 2 500 millimetres, thus making the land very suitable for agricultural activities.

The district has a population of 193 171 and an average density of 210 people per sq. km. The majority of the population (71.37 percent) is concentrated in the rural areas and only 28.63 percent live in urban areas. In spite of the high percentage of people in rural areas, the district has a high literacy rate of 93.59 percent, with males and females having rates of 93.81 percent and 93.33 percent respectively. In the rural areas of Mokokchung District, the literacy rate stands at 90.82 percent of the total population (Government of India 2011).

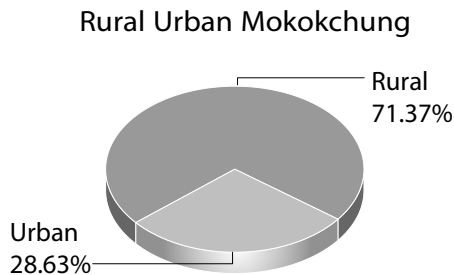


Figure 2. Share of rural and urban population in Mokokchung District

III. Introduction to Sungratsü and Chuchuyimpang – the case study villages

As introduced earlier, this study in Sungratsü and Chuchuyimpang Villages attempts to look into the transition of the Ao Naga farmers from shifting cultivation to permanent and more intensified land-use systems. It studies the overall food and livelihood security of the two villages in Mokokchung District of Nagaland. Sungratsü Village and Chuchuyimpang Village are ancient and traditional Ao Naga Villages with strong institutions and rich natural resources. Both the villages are going through a series of land-use changes brought about by transition from full-scale shifting cultivation to more permanent land-use systems.

Sungratsü Village: Bounded by nine villages, Sungratsü Village is located at an elevation of about 1 155 m above mean sea level, the village lies between 26° 24' north latitude and 94° 33' east longitude. Sungratsü Village has a population of 3 590 people and 110 sq. km. of territorial domain¹. An estimated 40 percent of the farmers are traditional shifting cultivators while another 20 percent practice it at a much-reduced scale or as a secondary practice. Even after reallocating two shifting cultivation blocks to other land-use options, the village still has a 12-year fallow cycle.

Chuchuyimpang Village: This village is located at 1 352 metres above mean sea level and lies between 26° 20' north latitude and 94° 33' east longitude. It has a population of 4 443 persons and a territory of 121 square metres (sq. m.). Recently, this village experienced extreme changes in its land use with a drastic reduction of farmers practicing traditional shifting cultivation. The practice has declined to such an extent that it is almost non-existent, with only six families practicing it. In the process, the fallow cycle of the village has increased from 8 years to 14 years now.

1. Governance and socio-economic status

The Village Councils – like in any Ao Naga Village – oversee the overall social and developmental aspects of the community through various other committees, such as the Village Development Board (VDB) and others that look after health, education, water and electricity. The Village Council is the apex governance body of any village and all aspects of community life, its festivals, and social practices are administered through it.

Both the villages are well connected by roads to the district headquarters. They are well electrified and have piped water. The villages have middle and primary schools and basic primary health centres. About 50 percent of the younger people are either in government jobs, in business and some also are into small scale commercial farming. However, in spite of their work nature, almost 70 percent of the families in the villages are directly or indirectly dependent on agriculture and its produce.

Almost 30 percent of the total land area of both the villages is covered by natural forest. The remaining land is either forest plantations or shifting cultivation land. The rapid pace of acculturation and urbanization has tremendous influence on the lives of local communities, particularly with the proximity of urban markets and comforts.

With improved road infrastructure and connectivity, farmers in both the villages now find it easier to sell vegetables and fruits in the nearby markets. This has prompted farmers to re-assess not just their farming systems but also their cropping patterns. On the other hand, some farmers supplement their livelihoods and incomes by rearing pigs and poultry. Almost 56 percent of the farmers reported that such activities not only provide additional sources of income and livelihood but also help them in times of emergency as these have good market value and demand.

IV. Understanding the context

Shifting cultivation or *jhum*², as it is widely referred to in the region, is the most common land-use practice across Nagaland, including Mokokchung District. The common perception that shifting cultivation is primitive, unproductive and destructive to the environment greatly influenced government programmes and policies to 'eradicate' and later 'rehabilitate' shifting cultivators. In order to wean away shifting cultivators from the practice, the government introduced numerous cash crop plantation programmes, as well as permanent land-use alternatives, but most of them did not succeed. In the process, shifting cultivation was completely ignored and farmers rarely received any support from government agencies for improving shifting cultivation.

In spite of the prevalence of such policies and decline in the practice of shifting cultivation in the two villages, shifting cultivation continues to be widely practiced by farmers in Mokokchung District as this is perhaps the most suitable system adopted in response to the natural environment and physiographic condition of the region. Shifting cultivation is an integral part of the Ao Nagas and their socio-cultural life is closely linked and attuned to the activities of shifting cultivation. Almost all social festivals and ceremonies are rooted in the shifting cultivation cycle. One of the main roles of the Village Council continues to be overseeing land allotment and land use itself. It is so linked with the life and institutions of the people that when a drastic reduction in shifting cultivation was observed in 2009 at Chuchuyimpang Village, the Village Council resolved that the community as a whole must provide all support and community service to the few shifting cultivators left.

One of the biggest external factors that negatively influenced shifting cultivators was unresponsive central government policy, which often referred to shifting cultivation as unproductive, primitive, unsustainable and destructive to the environment. Such misconceptions by policy-makers and planners meant that there

were no direct initiatives contributing to the development of shifting cultivation as a practice. Rather all interventions on shifting cultivators were aimed at eradicating the practice.

On the other hand, the government of India initiated schemes and programmes for shifting cultivators in the hope that the farmers might adopt new crops or new land-use practices. Unfortunately, none of the programmes were directed towards sustainably strengthening the practice itself. Afforestation programmes were also initiated to encourage farmers to plant commercially viable trees in their fields but there were no interventions to help farmers improve their rice crops in such situations. While farmers did try all the alternatives, the programmes themselves failed for numerous reasons as illustrated below:

Box 2. Reasons for failure to adopt 'alternative' schemes

After much evaluation with regard to why shifting cultivators have not adopted alternative land-use practices, the Indian Council for Agriculture Research (ICAR) stated the following:

1. Permanent cultivation cuts into their socio-cultural life. The peculiar community-based land tenure system based on traditions and customs is a crucial factor and most models were designed for assets on permanent land occupancy;
2. The alternative of terrace rice cultivation was not only low yielding but also dependant on costly inputs like seeds, fertilizers, and irrigation;
3. The low diversity of crops raised in the proposed programmes, as compared to the multi-layered and multi-species crops in jhum fields, does not meet the requirement and lifestyle of the communities;
4. Many of the alternatives are not gender sensitive and the role of women is made insignificant, unlike in jhum where they play a major role;
5. The fallow phase of jhum is an important aspect of tribal subsistence economy and livelihood. Conversion of land into permanent terraces or other land uses eliminates this very important aspect of tribal life;
6. Land in most parts of the northeast is within the jurisdiction of tribal institutions and lacks codified documents. This also hampers access to loans and other mortgage facilities with banks and financial institutions;
7. The alternatives have all been cash crop or horticulture based, which requires good financial and marketing infrastructure. This factor has not only been lacking but is further compounded by poor road links; and,
8. The failure to recognize and support traditional innovations of farmers to intensify jhum and make it productive.

1. Land – a cultural domain

Land is generally understood as the main source of life and hence there is a strong relationship between people and the land. It is not only considered as an object or property but rather as a gift from god and thus sacred to them. It is also sacred because their ancestors have lived and worked on the same land and it was handed down to them to be passed on to the future generations.

Even to this day, although Christianity is the dominant faith, people swear by invoking the spirits of the land to settle disputes. For example, the selection of a site for shifting cultivation in both Sungratsü and Chuchuyimpang Villages continues to be guided by the interpretation of dreams and the invocation of spirits of that particular plot. Therefore, a deep sense of supernatural and spiritual attachment with the land continues, and as such their entire socio-cultural and economic life revolves around the land and its resources.

Box 3. Interpreting dreams for site selection

Dreams about barren scenes, infertility and nudity suggest the need to review the usefulness of a site. Conversely, if the dreams denote signs of feasting and fertility (this may range from childbearing to trees bearing fruit), the proposed site is selected (NEPED and IIRR 1999).

In spite of almost 90 percent of the land in Nagaland being under private or community ownership, the majority of such land, including fallow forests and shifting cultivation areas were earlier categorized as ‘unclassified state forests’ by the government. While this did not in any way influence land use or change the status of the land and its ownership, the classification provided a convenient ‘status quo’ for the state to simply let it be as it is without much development agenda for a long time. On the other hand, the classification gave the state legal rights over such land without the government ever claiming so. The government has now declassified this categorization, but even though land surveys are yet to be done, the legal confusion is now cleared as such lands are recognized as community or private lands. Despite the lack of cadastral surveys of such domains, the traditional boundaries of each plot, forest or land are clearly demarcated and well respected and recognized by all members of the community, as well as, by the state. This recognition of rights by the state stems from the special constitutional status for Nagaland guaranteed by Article 371A of the Indian Constitution, which guarantees the ownership right of ‘land and its resources’ to the people.

Land tenure is complicated as different villages – even within the Ao Nagas – have “their own unique customary laws regulating ownership and access to land and resources” (Darlong 2004). In spite of such diverse tenures within villages, there are no complications amongst the different villages with regard to how each village manages its land. Each village develops its own land-use systems in its own way, which include homestead land, clan forests, permanent farms, shifting cultivation land and fallow forests, conservation areas, etc. The guarantee of the Constitution of India to land ownership rights continue to provide a positive and enabling environment for shifting cultivators, not just in Mokokchung District but also across the entire Nagaland state in general.

2. Land ownership and management of the Ao Nagas

By tradition, land in Ao society belongs either to the individual or the community. While land held by individuals is very clearly understood, the term ‘community’ in ‘community land’ can be rather ambiguous as it can mean an extended family, a clan, the village or sometimes, even a group of people. Except for private land holdings in urban areas, there is little or no cadastral survey of land in rural areas. Therefore, land records are validated and held by the community and the state government legally recognizes land documents issued by village councils. Following is a short description of land ownership categories of the Ao Naga community as is also evident from the two case study villages:

Private or individual land: This is land that an individual purchases from someone or inherits from parents or land obtained through the transfer of ownership rights for various reasons, such as land held against a mortgage. While individual ownership of land means absolute rights, there is also a form of private ‘ownership’ of land in which one is permitted to use or develop it as the sole occupant even though the land does not belong to the person. Often such an arrangement – different from a lease – happens when an individual is permitted to use or develop such land by a family or clan. In such cases, while the individual may have all usufruct rights over the resources in the land, one cannot sell, mortgage or lease the property. Whichever the case, the control and rights of such lands rest with the individual concerned, except when it comes to selection of area for shifting cultivation. For shifting cultivation, the decision of the community – by the Village Council – reigns supreme and one must follow the community decision in terms of site selection, slashing of vegetation and the setting of fire.

Common property or community land: There are two clear types of land under this category:

1. **Clan land or *kidong li*:** Land that is under the control and ownership of a clan

2. **Lineage land or *kinunger li***: Land that belongs to and is under the control of an extended family belonging to one single lineage (*or relatives land*).

Such land can include forests, residential lands on which members of the clan or family establish homesteads, farm land etc. The management of such land rests with the elders of either the clan or the family. While such land may also be shifting cultivation land, a majority of it are generally conserved as forests or managed as bamboo groves. Sometimes parts of such land are allocated to members for development as farms and orchards, especially if a member of the clan or family makes a request. In extreme cases, trees or bamboos from such lands and forests are allocated to individuals either for personal use or to repay loans. These common property resources, therefore, act as a reliable social safety net both in times of emergencies and otherwise. For example, groups of people, like self-help groups (SHGs) or other such groups, take such land on lease (group land or *telok li*) for income generation activities, such as planting vegetables and other cash crops. In all these instances, the rights over such land are generally usufruct rights only.

Village land: This category of land belongs to the village in general and is akin to government property. These may include cemeteries, community halls, playgrounds, or even patches of forests that are reserved for the contingencies or emergencies of the community. It may also include water bodies, rivers or any other land or forest within the village that does not belong to any individual, clan, family or the state. Village lands also include places like the *morung* (traditional men's dormitory), *yimkumkimong* (community/village land or plot), log drums, *yimlu* (community/village field), *yimarem* (community/village forest), etc. Any citizen of the village can freely use forest resources from the common village land for their personal and household consumption, but permission from the village authority is a must for obtaining construction materials or other major resources, failing which it is considered a social offence.

Box 4. The Morung

The *morung* is a traditional dormitory – an institution for boys and young men to learn about the traditions and social responsibilities of the community. It also acts as the first responders for emergencies related to the security and welfare of the community. Although *morungs* do not function as strictly as they used to (i.e. they are not used as dormitories for boys and young men any longer), all young men in the village are expected to register themselves to their respective peer groups and actively participate in all activities and responsibilities as prescribed by the elders.

V. Shifting cultivation in Mokokchung District

Although a variety of land-use systems are practiced in Mokokchung, shifting cultivation continues to be the most dominant land-use form in the district. An estimated 70 percent of the farmers in Mokokchung District practice shifting cultivation. The total area under agriculture in the district is 108 554 ha., and the average fallow cycle at present is 10 years (Krishi Vigyan Kendra n.d.). It is a practice that provides a social safety net even to the poorest of the poor as no citizen is denied access to land and therefore, the opportunity to farm. It does not differentiate between the landed and the poor because it is based on the principles of common and shared responsibility; and strictly governed by traditional laws and customary norms.

The Village Council is the apex regulatory body that decides on and pronounces the calendar of events for shifting cultivation in any village. Every year, the Village Council selects a particular block to be cultivated by the community. The Village Council also decides the dates for slashing the jungles and setting fire to the dry slashed vegetation. Before the fire, every family, and thus the community at large, makes firebreaks to ensure that the fire does not spread outside the designated area. Stringent penalties are imposed upon those that do not control the fire or cause wild fires. The Village Council also coordinates all shifting cultivation-related community activities like clearing and maintenance of the path to the fields, construction of rest houses, etc.

The strong social structures and institutions combined with secure access to land and its resources in traditional communities have ensured that farmers have not just one, but a number of options when it comes to livelihood and food security strategies.

Box 5. Village Councils

The Village Council is the highest traditional institution within a village. Each Naga Village functions as an independent democratic republic with its own governance systems, laws and domains. Village Councils are legally empowered by the government through the Nagaland Village and Area Councils Act 1978, giving it legitimacy and recognition as a local self-governance institution.

1. Shifting cultivation in compact blocks

The Ao Nagas practice shifting cultivation in designated shifting cultivation blocks. The entire shifting cultivation land – which includes fallows – is usually divided into blocks, the number of which may vary from one village to another. Villages with a larger land area may have 20 or more blocks, while others with

a smaller domain may have just 10 or fewer blocks. The number of shifting cultivation blocks in a village determines the fallow cycle, i.e. the number of years a land is left fallow for regeneration.

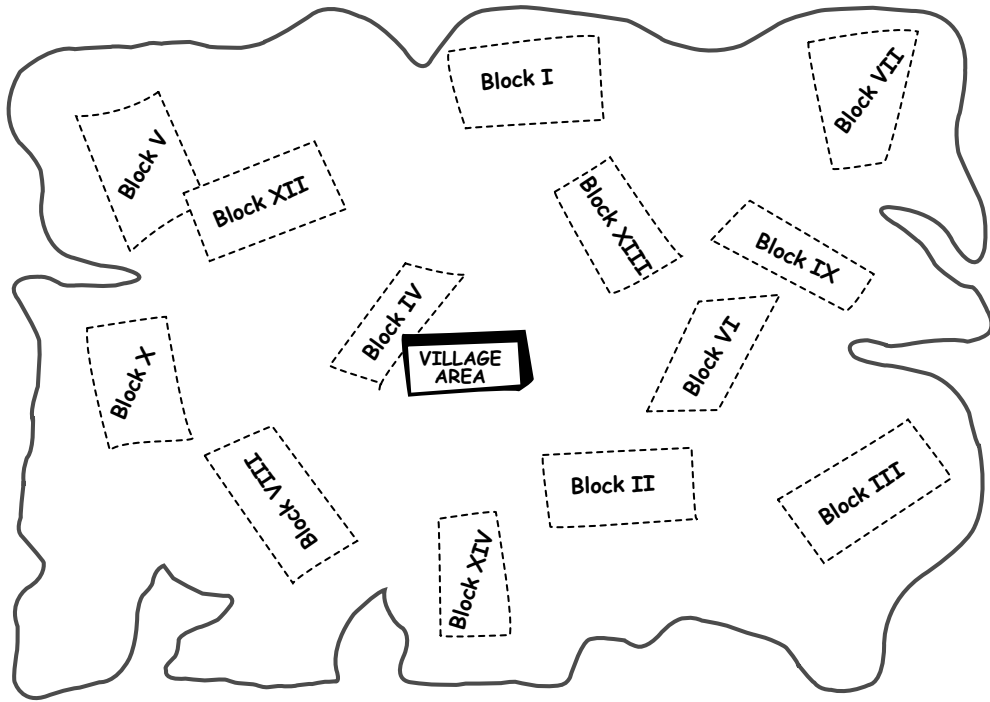


Figure 3. Indicative figure depicting shifting cultivation blocks of a village

Like all conventional Ao Naga shifting cultivators, the shifting cultivation farmers in Sungratsü and Chuchuyimpang villages also do not cultivate rice in a single plot for more than two years. This is irrespective of productivity of the land and is a traditional norm observed across the tribe. While farmers may continue to cultivate other crops, they avoid rice cultivation beyond two years in the belief that it will allow the land to regain its fertility and natural properties.

The management of land in the context of shifting cultivation is rather different from the usual tenets of modern concepts of land ownership. While all shifting cultivation land is privately owned by either individuals or clans, the Village Council administers the selection of the shifting cultivation block for a particular year and its calendar of activities. This facilitates shifting cultivation amongst the Ao Nagas to be practiced in contiguous areas thus sustaining the practice by allowing only one new block to be used per year and maintaining a good fallow cycle.



Figure 4. Shifting cultivation landscape in Mokokchung District. In the foreground, swidden fields in a contiguous shifting cultivation block. Photo: Chiden Yaden/NEPED

In cases where a family may not own any land in the selected block, they are allocated one either by the Village Council, the clan or landowners. The land in the active block of a particular year does not take any special advantage because norms and traditions prescribe that if someone requests to farm on a particular patch of land, it must not be denied. Usually members of a family or clan farm close to one another as this not only facilitates labour sharing but also provides them a sense of security from wild animals, as well as any other unforeseen threats.

Social security is one of the main functions of the local institutions governing shifting cultivation. The fact that there are no landless people in shifting cultivation communities is unique as any member of the community has equal right and access to land for practicing shifting cultivation. An important factor of community driven shifting cultivation is the principle of ‘cultivation for and by all’.

2. Shifting cultivation – the practice as it is

Shifting cultivation as a practice in the two study villages and across Mokokchung District bears similarities to such systems that are found elsewhere in tropical areas of the world. The vegetation is slashed, burned, tilled and sown. After a year or two of

cultivating, the land is left fallow for some years to regain its fertility. Then the next slashing is done when the land has regenerated itself and regained its fertility. The period from slash to slash makes a *jhum* cycle or shifting cultivation cycle.

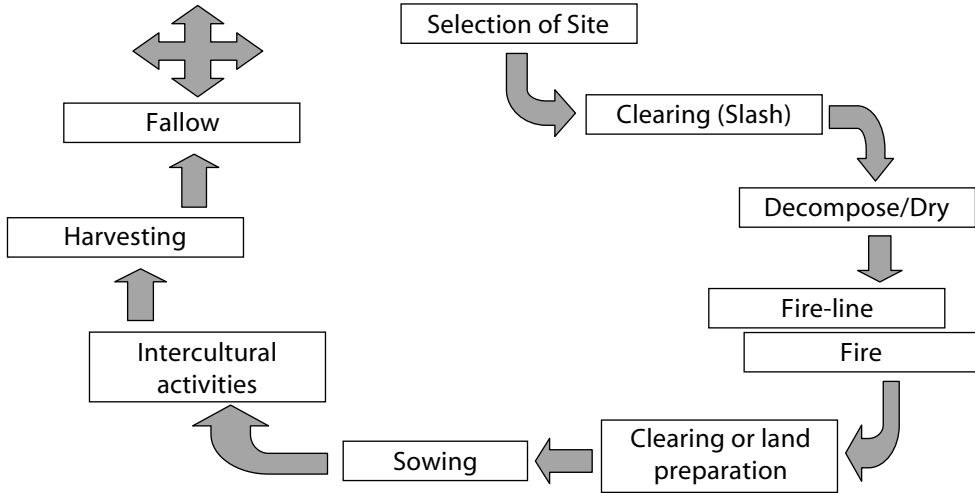


Figure 5. The Shifting cultivation activity cycle

Once the vegetation is slashed and burned, farmers clear the land and prepare it for broadcasting of seeds. They prepare the land by shaping it and making bunds along contours. Bunds are made with locally available materials like stones, rocks, bamboos, branches or trunks of trees etc. Farmers also develop vegetative bunds along the contours to reduce loss of soil and water run-off from their fields. Right from the planting stage, farmers initiate fallow management practices by taking care of specific trees and plants to ensure that post harvest, the fallow land establishes a good forest to recoup its fertility.

Cropping pattern

Shifting cultivators in both the villages generally practice mixed cropping. In order to obtain maximum outputs from minimum inputs, farmers grow 20 to 60 items of crops along with rice as the main crop (see Appendix I). Depending upon the plot and the purpose of farming, farmers mix-crop, inter-crop or apply sequential cropping to suit their purpose. Farmers also grow vegetables for commercial purposes and such farmers tend to apply more of intercropping and sequential cropping patterns. Legumes are planted along contours to develop into vegetative bunds while crops like maize, millet and job's tear are planted as barriers in rows across slopes to check soil erosion. Farmers also grow soybeans and velvet beans in rows along contours to serve as cover crops and also to control soil erosion and water loss.

By farming in this manner, farmers not only get better production and higher economic return but also conserve soil and water and prevent erosion. Harvesting of crops other than rice starts from May and continues even after the harvest of rice to the fallow period. According to farmers, if they pay better and more attention to vegetables and other crops that grow with rice, the economic returns from a given shifting cultivation farm can be enhanced three fold.

Changing fallow patterns

Until the late 1970s, almost 90 percent of the farmers in Sungratsü and Chuchuyimpang Villages were engaged in shifting cultivation with an average fallow cycle of about 15 years and beyond. After the mid-80s, the fallow cycle in many parts of the district – including in the case study villages – was reduced to 10 years and below, as more land was cultivated due to growing population pressure and many areas of land were used for forestry and other permanent land-use activities.

The pressure on shifting cultivation lands was further aggravated by numerous government supported agriculture and related department schemes and programmes. According to the farmers in Sungratsü and Chuchuyimpang Villages, some of them were provided cash in the form of grants and subsidies to buy tools and implements, invest in permanent land-use systems and to establish agriculture and rural development-related enterprises. The establishment of orchards, tea plantations, coffee farms, tree plantations, spices and other cash crop plantations, including floriculture were mostly undertaken on fallows. They recalled that the conversion of land to permanent land-use systems led to competition for land and exerted pressure on fallow land. Thus, it further ‘diverted’ the traditional shifting cultivation lands away from growing food crops.

However, currently, the average fallow cycle across Mokokchung District is again increasing to 10-12 years. According to the farmers in the study villages, unless some drastic land-use changes occur, the fallow land in most areas including their villages will continue to increase. The increase in fallow land is mainly attributed to a combination of reduction in area of rice cultivation and reduction in the number of farmers practicing traditional shifting cultivation. With such scenarios, barely half the areas of traditional shifting cultivation blocks are being used. In the process, the traditional blocks are getting further divided into two or more areas, thus increasing the fallow cycle.

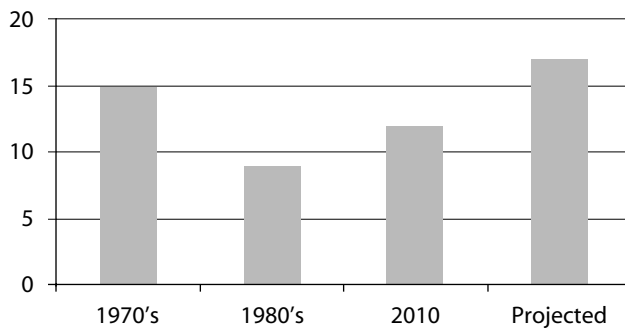


Figure 6. Changes in length of fallow cycle

VI. Livelihood in transition

The paradox for shifting cultivators is aggravated by the two concurrent paradigms by researchers and policy-makers about the pros and cons of shifting cultivation which often results in a situation where “shifting cultivators fall through the crack between marginalization and traditionalism³”. Such situations create difficulties for consensus building on the issue of choice of interventions that are necessary to support practicable options strengthening the livelihood of shifting cultivators. Today, it is above all the reality of market-driven economies and the everyday need for cash that is constantly testing shifting cultivators in their strategy for livelihood and food security.

1. Livelihood and food security

The intimate knowledge of their local environment has for ages enabled traditional farmers to select crops for their food and subsistence. Cultivation then was generally for rice but this is changing rapidly. Farmers now cultivate crops not just for their own consumption but also to sell. Shifting cultivators in Mokokchung District are going through a series of transitions that affect them beyond their livelihood and food security strategies. The changes have affected traditional land-use patterns, its institutions and even the perception of farmers to farming itself. Following are some salient features:

Reduction in the number of shifting cultivators

In both the case study villages, the number of shifting cultivators has dropped. Farmers attribute the reduction in shifting cultivators to numerous factors which include increased education levels and changing aspirations of the younger generation; rural-urban migration; poor productivity; low cash income from subsistence-based shifting cultivation; unavailability of both community-based labour sharing or even

paid labourers; high cost of living and the need for cash; and little or no support from the government for shifting cultivation. Another reason is that many farmers have diversified their activities and are paying more attention to other land-use activities, such as home gardens, vegetable farms or horticulture plantations closer to the village.

The most evident observations from the study villages are:

- Even in villages like Sungratsü where shifting cultivation is widely practiced, the area of rice cultivation has been reduced, thereby shrinking the size of the field. One of the reasons for the reduction in size of fields is the unavailability of labour within the family and outside;
- On the other hand, the reduction in farm size influenced changes in cropping patterns, particularly towards growing cash crops. Almost 70 percent of the farmers interviewed confirmed that erstwhile 'subsidiary crops' – usually traditional vegetables – are now considered viable cash crops and hence, they are paying equal attention to them. Even in shifting cultivation fields, farmers lament that gradually the cultivated area of such crops is increasing while the area of rice cultivation is dropping;
- Farmers in both the villages reported that while the change in reduction of field size was mainly due to reduced availability of labour; much of what is happening with regard to changes and adaptation in cropping pattern is because of their enhanced understanding of market demands and increased accessibility to the markets and not by any particular state policy;
- With reduced areas under rice cultivation, many farmers are managing more intensive farms growing cash crops and vegetables. On the other hand, those that have abandoned farming now work as labourers in agricultural fields, in forestry activities or in other enterprises closer to the village.

Adaptive farming

By tradition, the Ao Nagas shifting cultivators maintain two plots – the first year plot and the second year plot. They grow different varieties of rice and other crops in different plots and manage them simultaneously. As labour intensive as it may seem to be, farmers say that it has helped them maintain and grow different traditional varieties of rice and crops. They maintain that the second year plot does not require as much attention as the first year plot, especially for tedious weeding operations, and so it is tenable. However, given the recent changes in availability of labour, the number of farmers maintaining the traditional twin shifting cultivation plots has fallen because farmers prefer to maintain a garden closer to the village to grow cash-crop vegetables. In addition, improved agronomical practices mean that farmers cultivate smaller farms but obtain better returns through the sale of produce from such permanent farms.

However, farmers say that if possible they would like to cultivate both rice and vegetables as both are beneficial in their own way. The increased economic opportunities have increased capital surplus in the farming community and this has further enabled them to develop their home gardens and diversify their livelihood options.

Box 6. Rice cultivation and vegetable farming

An average shifting cultivation field is about 3 acres where a family sows three tins of paddy. Each tin of paddy weighs about 8 kilogrammes (kgs) and this yields about 800 kgs of rice. Going by the current average price for local rice at INR 25 (US\$0.42) per kgs, the farmer gets an estimated return of INR 20 000 (US\$333).

However, in the same plot, a vegetable farmer can earn up to INR 35 000 (US\$583) by growing crops like ginger, passion fruit, pineapple, orange and other seasonal vegetables throughout the year.

2. Market integration and changes in land use

From subsistence farming to market-driven farming

The general belief that shifting cultivators are subsistence farmers with little or no surplus seem to be a one sided assessment of the situation as it does not take into account 'secondary' produce from shifting cultivation fields and fallow forests. While farmers may not have surplus of the rice crop, it is observed that in almost 70 percent of cases, farmers often have a surplus of a variety of secondary crops, but in small quantities. Such surpluses together with leafy vegetables, tubers, fruits and other plants from fields and fallows ensure that farmers meet their food and nutritional requirements, as well as sell some for cash income. Farmers say that there is no shortage of market opportunities for local products from their fields and fallows and so they have started cultivating such products for the local urban markets.

In the two villages studied, 80 percent of the farmers interviewed, responded that while shifting cultivation did not fetch them bulk cash income as compared to other forms of land use, it continues to be a major provider of rice and food security, as well as a reliable and constant source of cash income.

On the other hand, vegetables are cultivated for both home consumption and the local market. Uncultivated non-timber forest products (NTFP), such as mushrooms, leafy vegetables and other herbs gathered from the forests have high market demand and farmers earn additional income from them.

Box 7. Farmers and the markets economy

1. Sixty-eight percent of the farmers grow local varieties of rice for their personal consumption;
2. Unlike cultivators of local rice varieties, 80 percent of wet rice cultivators say that they cultivate rice keeping in mind both domestic and market requirements. Most of the rice varieties they cultivate are market varieties they got from government agencies;
3. 60 percent of traditional farmers interviewed say that they now collect wild NTFPs from fallow to sell in the market;
4. 60 percent of farmers rear pigs and raise poultry at the household level. While chicken is raised for both domestic and commercial purposes, pigs are generally reared for special occasions or to be sold in the market;
5. 90 percent of the people working as daily labourers said that they generally work on farms and plantations;
6. 76 percent of investments by farmers in the two study villages are to grow crops to sell in the market.

Conversion of traditional shifting cultivation land

As the number of shifting cultivators and the overall size of individual shifting cultivation fields across communities are reduced, a lot of shifting cultivation land within given blocks remain uncultivated. The reduced number in shifting cultivation in many ways is also attributed to the sudden shift of farmers from food production for domestic consumption to cash crop production to sell in markets. Over the years, such scenarios have led to an increase in fallow land that is not cultivated. Therefore, villages have started converting selected shifting cultivation blocks to permanent land-use systems, thus bringing about a complete change in the traditional land-use patterns. Although no specific data is available, the conversion of shifting cultivation fallows into permanent farms for income generation is spreading across the district.

On the other hand, shifting cultivation fallows in blocks located far away from villages and not being cultivated any more are allowed to naturally regenerate and these areas are declared as conservation reserves. Once the Village Council designates such areas as 'reserved,' strict laws regulating or preventing hunting, fishing and logging are enforced.

Box 8. *Loyalü Reserve Forest and Yimchalü*

Given the availability of sufficient fallow land, Sungratsü Village declared an entire shifting cultivation block as a reserved forest, namely *Loyalü Reserve Forest* and established another block into a new model farm village called *Yimchalü*. Families from the community are encouraged to establish commercial farms and undertake income generation projects in the model farm village. Farmers cultivate vegetables, fruits and spices, rear poultry, and practice animal husbandry, as well as maintain fishponds in the new area.

Adaptive land-use and resource management

Communities have always had traditional ways of land management and planning that sustainably managed land use, such as shifting cultivation, forests and other resources, to ensure equitable access for all and conserve resources for the future. The community managed the resources in such a way that access and harvest was regulated. More recently, communities in villages like Sungratsü and Chuchuyimpang have adapted their focus to facilitate food production and income generation without losing focus on conservation. Therefore, land-use plans are now more comprehensive because these communities are looking at it from macro landscape levels, as well as ensuring that revenue is profitably generated.

3. Changes in crop selection and land use

The need to generate cash income from agriculture has greatly influenced the way shifting cultivators select crops and cultivate the land. Aside from mixed cropped rice cultivation in shifting cultivation, farmers are investing in permanent vegetable farms in home gardens and orchards. This not only provides the much-needed cash income to farmers, but also opens opportunities for smaller farmers to earn by working part time as daily labourers in such farms, plantations and orchards.

Traditionally, home gardens were extensions of the family garden and a perennial source of fresh vegetables. They are now viewed as commercial assets because they generate much-needed income throughout the year. Home gardens are also a good site for farmers to experiment with domestication of wild plants or raise nurseries to ensure continuity of agricultural diversity.

In the two villages studied, almost 7 percent of the total number of farmers were young farmers that invest in high value and input intensive commercial farming activities such as tea plantations, cardamom farms; timber plantations, floriculture and even dairy farming. Animal husbandry, particularly pig rearing and poultry raising, is

another source of added income and acts as a safety net for many farmers during emergencies because they practice this in small ways without much investment of time or inputs.

Box 9. Income of vegetable farmers in Chuchuyimpang Village

Mustard farmer: A farmer growing mustard leaves earns an average of INR 30 000 (US\$500) per season. Depending on the availability of water, it is grown and harvested from August until the month of April the following year. This is followed by growing maize and tapioca which are mainly for animal and poultry feed. The feed produced enables the farmer to rear four to five pigs, which will earn an additional INR 75 000 (US\$1 250) per annum.

Kitchen garden farmer: Coriander is grown in small patches from October to May, earning the farmer INR 20 000 (US\$333) per season. This is followed by growing a variety of beans, which provide an additional income of INR 40 000 (US\$667). Thus, the farmer earns a total of INR 60 000 (US\$1 000) from the kitchen garden to supplement the rice harvest.

Part time vegetable farmer: Local varieties of bitter melon (*Solanum* var.) are a popular and high demand vegetable in the market. The seeds gathered from one season are used for two years. This way, farmers grow this crop in additional patches without much input, risk or labour and easily earn an additional income of INR 25 000 (US\$417) per year.

4. Wage labour and entrepreneurship

The move from subsistence farming to market-oriented farming has opened up numerous opportunities for smaller farmers and others to earn from working as labourers or daily wage earners in the various farms and plantations. This has facilitated the diversification of livelihood options for many people who do not have the resources to farm. On the other hand, it has also brought about a situation where the already limited labour has become even scarcer. At the same time, increased market opportunities have facilitated the emergence of many entrepreneurs who not only invest in cash crop cultivation but also in marketing and value added activities. Following are some issues in this regard.

Value addition to traditional crop

In Sungratsü Village, almost 40 percent of the farmers not only farm *colocasia* (Aroides) as a cash crop but have also become entrepreneurs by adding value to the crop. *Colocasia* is a typical shifting cultivation crop and there are about six varieties

available in the village. The tuber is consumed as a main dish and its leaves processed to produce *anüshi*, a popular and traditional cooking ingredient famously produced in their village. Therefore, *colocasia* is a typical multi-purpose cash crop which even shifting cultivators manage to cultivate in small plots close to their rice fields.

According to respondents, *colocasia* harvested from an acre of land produces about 200 kgs of *anüshi*, which is currently sold at INR 300 (US\$5) per kgs in the local markets. It is estimated that on average, a typical farmer in the village sells 200 to 500 kgs of *anüshi* per season earning them between INR 60 000 (US\$1 000) to INR 150 000 (US\$2 500). Farmers in Sungratsü Village estimate that collectively the village earns about INR 3 500 000 (US\$58 333) per year from *anüshi*. They added that cultivating *colocasia* is almost investment free because planting materials are locally available and it does not require any special attention. The only investment is in buying firewood to cook the leaves and fire-dry the *anüshi*.

Box 10. *Anüshi* – a traditional delicacy

Anüshi is prepared from the leaves of the edible *colocasia* species mainly by the Ao Naga tribe. The fresh mature green leaves are taken, washed, and then the leaves are staked one above the other and wrapped with banana leaf. It is then kept aside for about a week till the leaves turn yellow. The yellow leaves are then ground into paste and cakes are made out of it. The cakes are dried over the fireplace in the kitchen. If desired, during grinding chilli, salt and ginger are added to it. The dried cakes are ready for use. It is cooked with dry meat especially with pork, which is a favourite dish of the Ao tribe.

Source: Mao and Odyuo 2006

Increase in off-farm activities

Farmers and entrepreneurs in both the villages studied, particularly those that have financial resources or access to government schemes, undertake off-farm activities ranging from pig rearing, poultry raising, animal husbandry, and dairy units. Some set up small rice mills and other mechanized units that process agricultural products. Other entrepreneurs invest in developing post-harvest processing technologies; engage in agricultural marketing; or, in other new activities such as masonry, carpentry or blacksmithing to make farming tools and other implements.

Some villagers, particularly in Chuchuyimpang village, with sufficient forest lands and good water sources have invested in their land and water sources so that they can sell firewood and water. People owning land with good water sources, usually from springs, develop water collection ponds and sell the water in towns or even in the

village. Families that have land or forests close to roadsides develop firewood forests to harvest and sell firewood in the market. According to a report by the government of Nagaland, next to food security, firewood is the most important resource in the life of a farming family in the village. It also states that in order to meet the firewood requirement, both for rural and urban population, it is imperative that energy plantation is taken on a large scale. Demand for firewood is on the rise in cities and towns of Nagaland. Providentially, it was observed that firewood plantation by the farmers was found to be simple and effective (Government of Nagaland 2011).

Firewood reserves are usually private fallow lands converted to permanent plantations. They are usually located at the outer margin of the village boundary where a farming family may have planted or preserved naturally sprouting useful species and maintained the trees including bamboo for domestic use. Such forests are like natural forest except that the size of trees is smaller. The demand for domestic fuelwood is high and one can earn up to INR 150 000 (US\$2 500) in one season.

Labour issues

The increase in commercial farming activities in villages across Mokokchung District has brought about much demand for casual and temporary labourers. Given that traditional farming was dependent on community labour sharing mechanisms, farmers did not need to hire labour. Further, no labour market or labourer classes ever existed in the society or in the villages. Therefore, the current flurry of commercial farming has brought about an acute shortage of labour. While this is good for those now working as daily wage earners, it is becoming extremely difficult for smaller families or poorer farmers who generally depend on community labour sharing. Now they cannot afford to get the extra hands they need to maintain their farms.

Community elders and traditional farmers lament that the transition from community-based farming systems like shifting cultivation to individually developed permanent farming systems not only fragments common property resources and dilutes the activities of traditional institutions, but also greatly impacts traditional community principles of labour sharing for farming.

5. Government initiatives and related programmes

National policies and programmes have been generally designed to wean away traditional farmers from shifting cultivation and to introduce them to permanent land-use systems. Farmers in the study villages lament that they were also encouraged to farm in valley lands and adopt terraced rice cultivation. They were provided with seeds, tools and implements, cash subsidies and even external inputs like fertilizers, insecticides and herbicides to grow high value exotic crops. The villages are also

beneficiaries of government-introduced rural development schemes designed to ensure that unskilled rural people earn cash income by contributing physical labour. Farmers state that while it did provide temporary relief and support, it was not sustainable as payments and opportunities were not regular. While the alternatives may have been alien and not so adaptable to the local situations, the government did not impose restrictions or laws to ban shifting cultivation in any manner.

Additional income sources

National flagship programmes like the Mahatma Gandhi Rural Employment Guarantee Act (MNREGA)⁴ facilitate minimum employment guarantee in rural areas to provide additional income to rural people. The income from such programmes helps poor farmers get much-needed cash to invest in farms and other alternative livelihood options. Older people opine that once farmers start earning from other sources, they generally look for jobs and other opportunities and abandon farming activities. Often many people choose to work on other people's farms and plantations to supplement their monetary income, neglecting their own farming activities. The usual monetary income for such small or marginal farmers is from selling wild and uncultivated herbs and leaves, which they gather from the forests.

Expansion of cash crop plantations

Government sponsored programmes and schemes to promote horticultural, floriculture, spices and other cash crops are being replicated across the rural areas as more farmers have better access to financial services and opportunities. The potential success of such projects has also attracted a lot of urban-based wealthy investors who outsource the management of their farms either to people from within the community or outside. Many of these farms and plantations are developed on prime shifting cultivation fallow lands, thereby reducing the availability of good arable land, often at the cost of the poorest of the poor. Such individually owned and managed cash crop farms have fragmented community-managed lands, and thereby fragmented the shifting cultivation of land.

Box 11. Failure of cash cropping in Chuchuyimpang

About 20 farmers in Chuchuyimpang Village reported that they are on the verge of abandoning their cash crop farm due to lack of financial support. They said that while farming of traditional shifting cultivation crops and vegetables is not a problem, it becomes difficult with exotic cash crops because such crops did not have any local use or demand.

Farmers said that government agencies provide free or subsidized planting material, which they initially found attractive and planted. However, there was no further assistance or additional service, and even if the crops did well, there was no market linkage. Such failures not only affected their earning, but also their food security because they rely on the returns from their crops to buy food. These farmers said that they are now contemplating a return to shifting cultivation because the system at least provided both food and income, even if at a lower scale.

Support from state agencies

The government of Nagaland has passed a law on shifting cultivation: the Nagaland Jhumland Act of 1970. The law recognizes the practice and the ownership of people over land and resources. However, the state does not have any clear written policy with regard to this traditional practice and has maintained a rather ambiguous attitude toward it. Except for two externally aided projects, one supported by the Canadian government and the other by the United Nations Development Programme (UNDP) which directly work with shifting cultivators to improve their practice, there are no state supported programmes initiated for shifting cultivators. However, the state is implementing various national programmes that support permanent land-use development programmes.

On the technical side, agencies like the Agriculture Technology Mission Agency (ATMA) – a national agency – brings together state level multidisciplinary teams of technical officers from agriculture and allied departments in every district. The ATMA directly engages with farmers by initiating farmer field schools and supports exchange and exposure tours for farmers. As a technical support organization, ATMA interventions and activities are directed to help farmers plan and strategize livelihood and income generation activities.

The State Agriculture Research Station (SARS) of the Department of Agriculture, based in Mokokchung District and within the domain of Sungratsü Village, also works directly with the farmers to introduce new crops and to field-test them in farmers' fields, and to undertake research to improve shifting cultivation and its productivity.

SARS has been instrumental in helping farmers scientifically domesticate wild plants and crops before introducing them in fields and farms.

Funds for rural development programmes and activities are channelled through Village Development Boards (VDB) in each village, including Sungratsü and Chuchuyimpang Villages. Depending on the number of households, the VDB receives funds from the department of rural development. These funds are to be utilized by the villagers to develop their community. The community through its general body meetings identifies activities and projects to be implemented in the community. The VDB funds have been instrumental in helping farmers and entrepreneurs at the community level to access funds that help promote their ideas. Special provisions of reserving the funds for women and youth have also been provided for in the guidelines.

Box 12. Village Development Board

The VDB is a body ordained by law to formulate village development schemes and supervise the maintenance of water supply, roads, power, forest, education and other welfare activities. It receives grant-in-aids from the government for community development and also helps government agencies in carrying out development works in the village. It facilitates borrowing from the government, banks or financial institutions for development and welfare works by providing security for repayment of loans by any permanent resident of the village.

The law mandates that out of the five to 25 members of a VDB, one-fourth must be women. This provides opportunities for the active participation of women who otherwise do not get much opportunity to directly participate in planning and decision making for the community.

Beyond policies and programmes

One externally aided programme that has succeeded very well is the Nagaland Environment Protection and Economic Development (NEPED) project. A joint venture between the governments of India and Canada and implemented by the government of Nagaland across the state, the NEPED project focused on people, their knowledge systems and traditional shifting cultivation. Both Sungratsü and Chuchuyimpang Villages were project villages and farmers say that even though this was implemented through government departments, the difference was that it built upon traditional knowledge and practices and focused largely on enhancing soil productivity and improving fallow management practices. Such interventions helped farmers increase productivity and build capacities to engage with markets and external

players. Appropriately designed fallow management practices that included planting trees during the cropping phase and the recognition of social and cultural valuation of tree and crop species made all the difference.



Figure 7. Modified land preparation before dibbling/broadcasting of seeds, developed under the NEPED project. Photo: Chiden Yaden/NEPED

The project also documented and researched people's knowledge, their farming practices and strengthened community-based institutions. It introduced community-managed revolving funds within villages, thus making small loans accessible to farmers. The project in its second phase introduced shade-loving cash crops such as cardamom, turmeric and black pepper to be grown under the trees in the fallow land. Such initiatives found favour with farmers who adopted the modifications in permanent farms carved out of shifting cultivation lands. While some farmers started to generate income from such activities, others were limited by a lack of capital, or their inability to invest in post-harvest technologies and value adding processes.

VII. Impacts and challenges

The transition from traditional food production that is driven by shifting cultivation to permanent land-use systems that promote cash cropping for markets is beneficial to farmers in general, but it has its share of impacts and challenges. These range from impacts on common property regimes, land use and management, to food

production challenges, biodiversity conservation issues in general and the preservation of traditional crop varieties in particular. In addition, it also had an impact on the interface with the market as well as on the traditional norms of food sharing and other cultural values.

1. Market access and improved livelihood

Access to markets, especially when farmers are actively producing cash crops, is a crucial issue that makes or breaks their investments. The challenges in remote places like Mokokchung District in Nagaland are great for a number of reasons. As mentioned earlier in this report, the market system in the state is still at its nascent stage and there are no organized buyers, sellers or even agents that work with the producers. At best, producers are themselves the marketing agents with little or no knowledge of how the system works. This makes farmers vulnerable to low prices and they often end up with poor returns on their investments. On the other hand, production itself is not organized and the size of fields is limited because of the hilly terrain, which limits large-scale production.

However, the markets have made inroads into rural farms and farmers have learned their lessons from earlier failures and are now more cautious when planning their cropping strategies or meeting with buyers. However, uncertainties over market price fluctuations continue and farmers, particularly poor farmers, become more vulnerable especially when it comes to investing in exotic market-oriented cash crops. Traditional institutions like the Village Councils are now actively involved with the market activities to secure the interest of farmers and fix the minimum selling prices and even oversee quality control.

The ability to sell produce to local and external markets has nonetheless enabled farmers to diversify their livelihood strategies and as they succeed, other entrepreneurs are following by investing in service-related and value-added activities.

Box 13. Good production, poor marketing

On the advice of the agriculture department, farmers in Sungratsü Village cultivated ginger on a large scale. They received subsidized planting materials and managed to produce a bumper harvest. However, problems began when they could not sell the ginger because they did not understand proper market linkages. The situation was further aggravated by a drastic fall in the market price of ginger and farmers were forced to sell at giveaway prices as low as INR 3 or US\$0.05 per kilogramme).



*Figure 8. Products from shifting cultivation and home gardens in a roadside stall.
Photo: Chiden Yaden/NEPED*

2. New challenges for food security

A prominent feature of traditional shifting cultivation is its high level of agro-biodiversity, which evolved through the judicious use of local resources and deep consideration for food security of the family. Farmers judiciously selected crops and varieties for cultivation and produced food to feed not just the family and community in the village but beyond. The recent trend of reduced rice and mixed cropping and increasing monoculture cash-crop plantations, though high on revenue generation, needs to be carefully reviewed and studied.

Although current studies indicate an increase in fallow cycles, decreasing fertility of the soil brought about by years of short fallows and over exploitation of the land in the past has negatively impacted productivity, especially that of rice. The issue of poor soil fertility is not only because of land degradation but also relates to the occupation of more fertile areas for permanent farms, orchards or plantations. A report published by the Government of Nagaland (2011) suggests that the rice security of farmers in the state is at around four months. This is a worrying indicator, especially when so much land is being developed to grow cash crops as compared to rice and other food crops.

However, 47 percent of the farmers interviewed in the two study villages responded that productivity of rice is now improving and is sufficient for six to nine months. For some farmers with smaller families (39 percent of respondents), the rice harvest was not only enough to sustain them throughout the year but they could also sell some surplus rice when required.

3. Changing land tenure, land concentration and increasing wealth gap

The following excerpt from a report by Longkumer and Jamir (2012) on the status of land in Nagaland reflects how critical changes in land tenure have become: “Of late, there is a drastic change in the pattern of land use. Modernization has a great impact on the traditional community life of the Nagas and individualism is penetrating every sphere of life, which directly affects the landholding and land use pattern in the society. Land, which was once considered sacred and the most important factor for sustaining the community life is now becoming a mere commodity or wealth to many. Induced by money-oriented farming and other central schemes, there is an alarming changeover from traditional shifting cultivation...”

The most visible and critical change in land use and tenure is that of shifting cultivation lands being fragmented and converted into permanent private farms. While such transitions may be inevitable as a development process, the rapidness of the changes and potential impacts on food security, loss of agro-biodiversity and inequitable distribution of wealth all remain a major challenge.

Fragmentation of shifting cultivation land

Commercial development of land for plantations, orchards, farms and other activities, including animal husbandry has fragmented shifting cultivation land. Most of these land-use changes are happening on shifting cultivation fallows, which are privately owned by clans, families or individuals. The development of private land does not fall within the preview or norms of community resource management and the changes are taking their own course. The rapid fragmentation of shifting cultivation land may be a recent trend that is yet to significantly affect shifting cultivation, but it is a matter for concern in the long run because it might impinge upon the traditional free access of land to community members for shifting cultivation.

The fragmentation of shifting cultivation land may not necessarily disrupt shifting cultivation in a major way because land is still available, particularly in the two case study villages. However, what is being noticed is that the land that gets fragmented and converted into permanent farms are usually the fertile land or land that is easily accessible by road or land that is closer to the village. Such factors force shifting

cultivators to farm on less fertile land or in areas that are very far from the village, or in areas that are not well connected by road. According to the farmers, cultivation in areas that are far from the village, or not so fertile, discourage them and this is one of the reasons why the number of farmers practicing shifting cultivation may be decreasing.

Changing land tenure

The fragmentation and privatization of common property has brought about changes in the way land is managed. What were once clan or lineage lands and fallow forests, managed by elders, are now all individually owned, and a majority of them are being put to non-forest land use. The most evident impact of the transition is the change in ownership from community to private ownership and the reduction of the powers and responsibilities of the Village Councils in resource management.

Appropriation of common land by the affluent

With the changes in land tenure, individuals begin to privately own more land, thus the more affluent tend to appropriate land without actually owning it. This usually happens within members of a clan or family with their respective community land. After consultations with clan or family elders, individuals get permission to develop the land. Once an individual develops a land, it usually remains under the full management of the developer. Although the individuals do not get ownership rights, they have all the rights over the produce that is cultivated on that particular plot of land. Of late, the affluent are seen amassing considerable areas of land by investing in commercial plantations.

Increasing wealth gap

While traditional shifting cultivators are also investing in cultivating vegetables and fruits to sell in markets, it is the affluent who are investing more in high-value cash crops and spices. They also invest in larger fields and orchards, ultimately getting even higher returns. The poorest of the poor farmers, those who cannot afford to invest in commercial activities, continue with traditional rice-based shifting cultivation and many continue to farm at the subsistence level.

4. Impact on agro-biodiversity

Shifting cultivation's strength in contributing to conservation lies in its diversity of practices and crops grown. The diversity of crops during the agriculture phase and the fallow forests in the forestry phase represent a rich living genetic pool of agro-biodiversity. Coupled with the rich knowledge system and time-proven practice, this helps secure the livelihood and food security of farmers.

There are concerns that rapid transition to permanent commercial farming, the reduced number of shifting cultivators, increased length of fallow cycles and the conversion of shifting cultivation blocks to reserved forests and conservation areas may have a negative impact on agro-biodiversity on the whole. Older farmers said that one of the main reasons for continuing shifting cultivation is to ensure the survival of local domesticated plant species and varieties. Farmers in Chuchuyimpang said they were already facing seed shortages of local crops and that many of their local rice varieties were already lost. They also said that cultivating rice and other crops in shifting cultivation provides them a sense of security which even money cannot provide.

Domestication of wild plants

Numerous varieties of mushrooms, roots, tubers and leafy plants from fallow forests are in very high demand in local urban markets. Of late, farmers have started domesticating certain varieties of wild and uncultivated leafy vegetables, such as *Amrem* (*Clerodendrumcordatum*), *Mongmong* (*Zanthoxylumrhetsa*), or *Aochisang* (*Pterococcuscorniculapus*), which are otherwise usually gathered from fallow lands and forests. The domestication of wild plants has become so successful that some farmers have made it a large-scale activity as they sell the products in the market at higher premiums. The domestication of wild vegetables and other plants have also ensured the sustainability of these resources which otherwise were just being collected from the wild in random ways that may even have threatened their existence.

VIII. Conclusions and recommendations

Rapid transition

Farmers in the communities studied lament that the transition from shifting cultivation to commercial farming – particularly among traditional and smaller farmers – in the earlier years was not a conscious or strategic move. Rather this was a desperate attempt to emulate the trends of better off farmers, to benefit from government schemes, and to respond to market opportunities. This trend still continues with many smaller farmers, and hence, is a reason for the failure of not so well off farmers in high investment commercial activities. However, respondents added that so long as farmers stick to commercialization of traditional crops – which have very high demand in urban markets – there is little risk because such crops have a good market demand and thus can help to improve their livelihood and food security.

Fear of support failure

Farmers claim that they are open to new systems of farming so long as it is economically viable, appropriate for their land-use system and has good market

support. The farmers, though enthusiastic about new farming systems, are apprehensive of uncertainties caused by the absence of any comprehensive farming and marketing policy, both at the local and state level. Such fears are further compounded by past failures in marketing produce because of the absence of proper support systems and infrastructure. Therefore, farmers say that their best option is to continue shifting cultivation because it reduces their vulnerability to uncertainty.

Challenges faced by communities

Given the rapid pace of transition, traditional village institutions constantly face new challenges relating to land use, its management and with issues that directly or indirectly impact the food and livelihood strategies of the community. Following are some specific observations from community elders in Sungratsü and Chuchuyimpang villages:

Dilution of traditional governance systems

The slow dilution of traditional land use and management systems including fragmentation of common property resources, not only altered land ownership and management systems but also affects institutions that govern and manage them. As private ownership increases, the ability of Village Councils to influence resource use and management are weakened.

Beyond resource management

Amongst others, the Village Council's role in managing shifting cultivation is more than simply caring about food security, livelihood strategies, festivals and culture. While no cadastral surveys have been done in the rural areas, elders say that the rotation of fields in different shifting cultivation blocks scattered across the village territory helped the Village Council to monitor its boundaries and resources. The rotation ensured that the community as a whole knew its territories and regions well. As shifting cultivation declines and people's farming activities become more sedentary, village elders fear that the younger generations may never get to know or even see their village territory, thus making it vulnerable to encroachment.

Absentee farmers and landowners

An estimated 37 percent of farms and plantations in the study villages are managed or financed by members from within the community but living outside the village. This has brought in a form of absentee farming; and according to the community, it benefits only the investors and those that earn their wages as farm hands.

Migrant labourers

In cases where people have established tea plantations, animal husbandry farms and other such labour intensive activities requiring special skills, migrant labourers are brought from outside the community. For example, seasonal labourers from tea garden communities in neighbouring Assam are brought in to pick tealeaves; and Nepalese labourers are normally hired for animal husbandry and dairy farms. The Village Council constantly monitors such cases to ensure that there are no problems in the community.

Keeping poverty away

Fortunately, a majority of the farmers (70 percent) are small farmers who base their activities on traditional mixed cropping and chemical free agricultural practices using local seeds. In this manner, local food production continues to be sustained and the increased focus on vegetable farming further enhances their income generation and livelihood strategies. According to the elders of the two villages studied, the villagers might not be rich in cash, however, everyone has the right to farm and it is ensured that there is no poverty or hunger in their community.

Continuing shifting cultivation – albeit on smaller plots

The sudden drop in shifting cultivation farmers in villages like Chuchuyimpang and the rapid shift to permanent commercial farming has created much concern amongst the community at large. According to them, changes are inevitable, but all changes must come with proper awareness and reason. They expressed concern not just for the traditional food security of the village, but also in terms of seed loss and lack of awareness of traditional land domains by the younger generation.

The community in both the villages reported that in the near future the number of shifting cultivators is expected to increase again because many farmers who tried investing in cash crops are contemplating a return to shifting cultivation. Farmers say that the main reason for this turn-around is the realization that shifting cultivation is a minimum risk and maximum return system, as long as it is managed well. Farmers also say that the sense of security provided by farming in shifting cultivation is much greater than being at the mercy of markets and erratic weather events and even alien pests and diseases.

Market-oriented development

The entire developmental process of resource allocation, management and choice of crops is very market oriented. Farmers are not just growing crops to sell in markets and for consumption, but also for animal and poultry feed. The competition for

growing crops for local food security and income generation has just begun and the communities and government alike must recognize such trends and sensibly make decisions to balance the two. It is another matter that even now, the inputs and efforts to improve traditional cultivation and its productivity leaves much to be desired. For the poorer farmers, this is the crux of the issue and must be addressed immediately.

Recommendations

1. Policy-makers and development specialists promoting the introduction of alternative crops or the transition of traditional farmers to new land-use options must ensure that the changes are gradual and based upon the strengths of the community, including their practices and local resources.
2. The concerns and vulnerability of traditional farmers must be seen from their perspective and addressed accordingly with an enabling policy environment. At the same time, it must be recognized that while traditional farmers have vast knowledge and experience with regard to managing their local resources, their skills and capacities to engage with market forces are weak. Therefore, support and services must be provided for such activities and services.
3. The different state agencies working on farming and production systems that facilitate diversification of livelihood options for the communities must synergize their activities to a point of convergence. While this is evident at the planning level such as in District Planning Boards, it is not very evident at the field level. The lessons from projects like the NEPED, which connected shifting cultivation with other income generation activities by building on local knowledge and institutions, must not be ignored.
4. The organic and direct linkage between land, its use and management and the traditional community institutions must be understood and recognized for all development planning. Current planning for agriculture and forestry are more based on economics without taking into consideration social and traditional dimensions. Unplanned land-use interventions, which attempt to do away with traditional food production systems not only disrupt social relations, cultural practices, and weaken the governance of the Village Councils, they may also affect the local biodiversity.
5. Shifting cultivation as a food production system does not suffer from poor knowledge or underproduction. It is not only based upon strong traditional knowledge systems and practices but also with a strong and diverse seed structure. What farmers need are appropriate technology and technical support, capacity building and knowledge about the challenges regarding soil fertility and ways to enhance their food productivity.

6. In terms of commercial farming, farmers will benefit much more from targeted support for strengthening the value chain of their products. The support must cover all aspects from planning, production, processing and value addition to marketing rather than only from incentives in cash and kind
7. Amongst others, the challenge of retaining skilled youth in rural areas in all sectors is a major challenge. Out migration from rural areas to urban centres is a major challenge because the agriculture sector loses manpower, often leaving only women and older people to engage in the responsibility of food production for the local community and the local market. A comprehensive policy that facilitates and secures diversification of livelihood activities in rural areas will need to be formulated to meet this particular challenge.
8. Given the nature of traditional agricultural systems like shifting cultivation, which is often small scale and family based, most production is often for ensuring household food security and not necessarily for the market. While economically driven policies and plans are necessary, special attention must be paid to secure the interests and nutritional and food security of small farmers. Policies must look beyond productivity, marketability and also focus beyond profits to include social, cultural and ecological values of the communities.
9. Fragmentation of common property resources, focus on individual entrepreneurship development and rapid transformation of rural and traditional communities have greatly affected the crucial social safety nets of the community. Such transformations mean that now there are fewer social assets, social cohesion is weakened and traditional institutions have less control over resource and community management. It also means that it becomes more difficult for communities to mobilize community resources. State agencies together with community leaders and development organizations must ensure that transitions are critically monitored so that potentials are capitalized upon through social mobilization and initiatives undertaken through community-based institutions.

Final words

A systems-based approach will have to be applied at all levels of planning. Improving factors such as the biological efficiency of the fallow sub-system; the productivity of the fallows; and the productivity of the cropped farms are areas that require a lot of attention. At the same time, it is equally important to understand the social and institutional mechanisms of communities, their livelihood and food security strategies and their inherent strengths and challenges.

Shifting cultivators are not necessarily looking for alternatives but are rather longing for interventions that will help to improve the food production and productivity of crops; add value to their produce and to learn new skills that will help them engage with market forces.

Farmers lament that with new crops come new pests and challenges and while they are confident in managing pests and diseases of traditional crops, they do not know how to deal with the problem of new ones. They want extension services and access to both markets and new knowledge systems.

The requirements of farmers are simple and often very practical. Planners and policy makers often talk of alternative livelihood options, but what farmers need more are supplementary livelihood options to help them cope with both food security and diversification of livelihood strategies. They want simple post harvest technologies that will help to add value to their produce.

The commodification of agriculture modelled on the industrial mode of production may not be the best platform to help traditional farmers. Their food production and land-use systems continue to be small and family centric and therefore, the schemes and plans to support them must recognize such factors. Simply introducing exotic cash crops and plants that have no cultural context or local demands further alienates them and makes them more vulnerable to market forces. It also does not help the critical issue of food production and security of farmers in such regions with little or no markets and options.

Marketing continues to be the weak link in this chain and the capacities of farmers, sellers and the market systems require immediate attention to ensure that capacities are built to sustain both the livelihood and food security of farmers.

Finally, shifting cultivation must be accepted as one more type of livelihood practice. To recognize that it will need “the services of agronomical and silvicultural experts and extension workers, and requires support to fully integrate it with the evolving market system in a dynamic manner” (Government of India 2008).

Appendix 1. Partial list of shifting cultivation crops

No.	Scientific Name	Common name	Local name (Ao Naga)
1.	<i>Allium fistulosum</i>	Spring onion	Repjeelasüing
2.	<i>Allium porrum</i>	Leek	Reepjee
3.	<i>Allium sativa</i>	Garlic	Lasüing
4.	<i>Alocacia</i> sp.	Taro	Manü
5.	<i>Amaranthuscaudatus</i>	Amaranth	Aru/Rua
6.	<i>A. Gangeticus</i>	Do	Do
7.	<i>A. Virides</i>	Do	Do
8.	<i>Brassica chinensis</i>	Mustard leaves	Cheebi
9.	<i>B.arvensis</i>	Do	Do
10.	<i>Cajunuscajan</i>	Pigeon pea	Maaha
11.	<i>Capsicum annum</i>	Chilies	Mersu
12.	<i>Carica papaya</i>	Papaya	Mamazü
13.	<i>Clerodendrumcolebrookianum</i>	–	Umrem
14.	<i>Coixlachryma-jobi</i>	Job's tears	Menjang
15.	<i>Colocasia</i> sp.	Tarro	Manü
16.	<i>Cucumisedule</i>	Pumpkin	Mappü
17.	<i>C. melo</i>	Musk melon	Apangmatzü
18.	<i>Cucumissativa</i>	Cucumber	Zungi
19.	<i>Dioscoriabulbifera</i>	Yam	Shii (sureshii)
20.	<i>D. Deltoeodea</i>	Do	Süingmokshii
21.	<i>D. Floribunda</i>	Do	Meolocha
22.	<i>D. Villosa</i>	Do	Atsüingcha
23.	<i>Glycin max</i>	Soya-bean	Alli-chami
24.	<i>Hibiscus surathensis</i>	–	Entsürep
25.	<i>Ipomoea batata</i>	Sweet potato	Chamiang (Tazushii)
26.	<i>Lycopersiconesculentum</i>	Cherry Tomato	Bengena
27.	<i>Manihotesculenda</i>	Tapioca	Alishi
28.	<i>Mucunamonosperma</i>	Velvet bean	Mesemer
29.	<i>Mucunaprurita</i>	Do	Do
30.	<i>Musaesp</i>	Banana	Mongo
31.	<i>Ocimumgratissimum</i>	–	Nangpera
32.	<i>Oriyzasativa</i>	Paddy	Tsuk
33.	<i>Pennisetumthyphoiduim</i>	Millet	Chenchang
34.	<i>Perillafrutusece</i>	Perilla	Azzü/Aping
35.	<i>P. Ocimoedes</i>	–	Napa

No.	Scientific Name	Common name	Local name (Ao Naga)
36.	<i>Phaseolusaurens</i>	Naga-dal	<i>Anak-chami</i>
37.	<i>Phaseolus Calcaratus</i>	Do	Do
38.	<i>Phaseolus Vulcaris</i>	Kidney-bean	Kollar
39.	<i>Psophocarpustetragonolobus</i>	Wing-bean	Thakra
40.	<i>Sacharumofficinarum</i>	Sugarcane	Moochi
41.	<i>Sechiumutillus</i>	Squash	Squash
42.	<i>Sesamumindicum</i>	Sesame	Pingnak
43.	<i>Solanumkurzii</i>	Bitter solanum	An-likok
44.	<i>S. Barbesum</i>	Do	Likok
45.	<i>S. Melongena</i>	Brinjal	Süngerlikok
46.	<i>S. Tubersum</i>	Potato	Allu
47.	<i>Sorgham vulgaris</i>	Sorghum	Achang
48.	<i>Vignaumbellata</i>	Naga dal	Mallang-chami/ Azungken
49.	<i>Xanthosomasp</i>	Taro	Manu
50.	<i>Zeamayze</i>	Maize	Menti
51.	<i>Zingeberofficinales</i>	Ginger	Süngsüng
52.	<i>Z. officinalis (Var)</i>	Ginger	Süngmok

Appendix 2. Crops grown according to the Agro-ecological regions in Mokokchung District

Altitude	Climate	Topography	Existing Agro-ecology
Below 500 msl	Tropical climate (humid)	Foot-hills	Paddy, maize, mustard, sesamum, soyabean, french bean, black gram, green gram, bengal gram, arhar, lentil, tapioca, colocassia ginger, yam, turmeric, cucurbits, potato, pea, orange, pineapple, banana, jackfruit, mango, litchi, rubber, tea, aloe vera, jatropa, betel vine, arecanut, black pepper, cashew, piggery, goatery, duckery, poultry, fishery, rain-forest
500-1 000 msl	Sub-tropical climate	Sub-montane lower ranges	Paddy, maize, millets, french beans, rice bean, cowpea, sesamum, groundnut, tapioca, calocassia, yam, ginger, sweet potato, cucurbits, chillies, green leafy vegetables, peas, papaya, pineapple, banana, citrus, jackfruit, litchi, peach, pears, tea, sugarcane, castor, bee keeping, piggery, poultry, dairy, rain-forest
1 000-1 500 msl	Sub-temperate climate	Sub-montane higher ranges	Paddy, maize, french bean, rice bean, soyabean, faba bean, field pea, sesamum, leafy green vegetables, cucurbits, chillies, ginger, tapioca, yam, colocassia, potato, sweet potato, garlic, bananas, passion fruit, chayote, stone fruit, jackfruit, citrus, tea, sugarcane, coffee, cardamom, papaya, mulberry, castor, citronella, piggery, poultry, dairy, goatery, mixed forest
Above 1 500 msl	Temperate climate	High hills and mountains	Paddy, maize, millets, french bean, rice bean, pea, soyabean, sesamum, cucurbits, cole crops, green leafy vegetables, tomato, potato, chillies, ginger, tapioca, colocassia, yam, sweet potato, squash, passion fruit, plum, pears, peach, banana, kiwi, cardamom, dairy, piggery, mulberry, goatery, coniferous forests

Source: Krishi Vigyan Kendra Mokokchung website: Agro-ecological situation

References

- Darlong, Vincent D. 2004. *To Jhum or Not to Jhum*. Guwahati, Assam: The Missing Link (TML-India).
- Government of India 2008. *Report on Inter-Ministerial National Task Force on Rehabilitation of Shifting Cultivation*. New Delhi: Government of India.
- _____. 2011. *2011 Census*. New Delhi: Government of India. Accessed at: <http://www.census2011.co.in>
- Government of Nagaland 1970. *Nagaland Jhumland Act, 1970*. Kohima, Nagaland: Government of Nagaland.
- _____. 2011. *Traditional Agricultural Practices and Sustainable Livelihood – A Thematic Paper*. Kohima, Nagaland: Department of Planning and Coordination, Government of Nagaland.
- _____. 2012. *Statistical Handbook*. Kohima: Government of Nagaland.
- KrishiVigyan Kendra Mokokchung web-site: *Agricultural scenario*; <http://kvkmokokchung.in/index.php/2012-03-29-08-20-43/13-agricultural-scenario>
- _____. *Agro-ecological situation*. <http://kvkmokokchung.in/index.php/2012-03-29-08-20-43/12-agro-ecological-situations-aes>
- Longkumer, Lanusashi and Toshimenla Jamir 2012. *Status of Adivasis/Indigenous Peoples Land Series-6: Nagaland*. New Delhi: The Other Media
- Malik, Bela. 2003. The 'Problem' of Shifting Cultivation in the Garo Hills of North-East India, 1860–1970. *Conservation and Society* 1, 2: 1-14.
- Mao, Ashiho A. and N. Odyuo 2006. *Traditional fermented foods of the Naga tribes of Northeastern India*. *Indian Journal of Traditional Knowledge*, Vol 6(1)-January 2007, pp. 37-41. Accessed at: [http://www.niscair.res.in/sciencecommunication/ResearchJournals/rejour/ijtk/Fulltextsearch/2007/January%202007/IJTK-Vol%206\(1\)-January%202007-pp%2037-41.htm](http://www.niscair.res.in/sciencecommunication/ResearchJournals/rejour/ijtk/Fulltextsearch/2007/January%202007/IJTK-Vol%206(1)-January%202007-pp%2037-41.htm)
- NEPED (Nagaland Environmental Protection and Economic Development) and IIRR (International Institute of Rural Reconstruction) 1999. *Building Upon Traditional Agriculture in Nagaland, India*. Silang, Cavite, Philippines: IIRRE

Endnotes

¹ Village Council record, Sungratsü Village

² *Jhum* is an Assamese word that refers to shifting cultivation. Assam is the largest state in northeast India and the term *jhum* or *jhumiyas* is widely used in the region to refer to shifting cultivation and shifting cultivators respectively.

³ The NREGA later known as the Mahatma Gandhi Rural Employment Guarantee Act (MNREGA) aims to ensure livelihood security in rural areas by providing at least 100 days of guaranteed wage employment per year to every household whose adult members are willing to do unskilled manual work.

Chapter 4

Food security in the farming system of the *Dayak Jalai* in Ketapang District, West Kalimantan, Indonesia

Institut Dayakologi-Indonesia



Acronyms and glossary

AB2TI	Asosiasi Bank Benih Tani Indonesia/Association of Indonesian Agriculture Seed Bank
Adat	Customs or customary traditions and way of life or Indigenous
AIPP	<i>Asian Indigenous Peoples Pact</i>
Air Upas	A sub-district in Ketapang District, West Kalimantan Province
AMA JK	Aliansi Masyarakat Adat Jalai-Kendawangan/The Alliance of Indigenous Peoples of Jalai-Kendawangan
Andi & Japin	Vitalis Andi is the Secretary General of AMA JK, also a journalist for Kalimantan review magazine published by Institut Dayakologi. Japin is an indigenous person from Silat Hulu community. Both of them are victims of criminalization by PT Bangun Nusa Mandiri, a subsidiary of Sinar Mas Group, for defending their ancestral territory in Kampong Silat Hulu – Ketapang District against the company's palm oil plantation.
Asam	Mangifera spp – a type of mango
Beliong	A traditional cutting tool used by the Dayak to fell down big trees
Bengkirai/Benuah	Shorea laevis – a kind of tree renowned for its strength and used as building materials because of its hardness and durability against tropical climate
Benuaq	A Dayak Jalai local term for a village and or village territory
Berladang	Indigenous farming system; rotational farming
BLSM	Bantuan Langsung Sementara Masyarakat or Temporary Direct Aid to Community – a programme of the Indonesian government for disadvantaged people
Bukit	Hill
Dahas tuhaq	Older dahas characterized by old trees and fruit trees
Dahas	An area approximately 5-10 hectares owned and managed by 2 to 4 households where an integrated indigenous management system of natural resources is applied
Dayak	The Indigenous Peoples of Kalimantan/Borneo Island
Duku	Lansium domesticum or lanzones is a species of tree in the Mahogany family. The plant, which originates from western Southeast Asia, bears edible fruit

Durian	Fruit of several tree species belonging to the genus <i>Durio</i> . Its outer shell has spikes.
Duwataq	The Guardian Spirit or Creator in line with Dayak Jalai's system of religiosity
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussion
Gaharu	Also known as agarwood or aloeswood. It is the resinous heart wood of <i>Aquilaria</i> trees. The production of the fragrant resin is a response to fungal infection. Gaharu is used to make incense and one of the most expensive forest products.
GPPK	Gerakan Pemberdayaan Pancur Kasih/Pancur Kasih Empowerment Movement
ICW	Indonesia Corruption Watch
ID	Institut Dayakologi
IDR	Indonesian Rupiah (currency)
IWGIA	International Work Group for Indigenous Affairs
<i>Jalai</i>	Indigenous Dayak sub-ethnic group residing in the research areas in Ketapang District or along Jalai river and its tributaries
Jelai Hulu	A sub-district in Ketapang District, West Kalimantan Province
Juruk barai	Mutual cooperation where a family who has received help in their farm has to return the favour and participate in similar phase of work in the farms of those who have helped them earlier
Jurung	Paddy barns
Kabun Prasasaq	This is usually an area that was previously used as a farm but later cultivated with trees like rubber and fruit trees
Kampung	Sometimes also written 'kampung;' the word in Indonesian and Malay for village or hamlet.
Kayu ulin	<i>Eusideroxylon zwageri</i> – a kind of tree renowned for its strength and used as building materials because of its hardness and durability in tropical climate
Kembiliq	<i>Dioscorea esculenta</i> – a local yam variety
Kendawangan	Dayak sub-ethnic group in Ketapang District
Keramat	A sacred area or place of the Dayak
Keribang	<i>Dioscorea alata</i> – a yam variety

Ladak	Rice field on swampy areas whose irrigation system is relied on rainwater (also see payak)
Lakau mudaq	A young forest that was previously used for farming
Lakau	Dry paddy field
Menimbung	A ritual personally performed by each farm owner to seek God's blessing over all the seeds that are going to be sown
Menjulang Atuq	A ritual of thanksgiving on the harvest of the farms; a post-harvest ritual
Menugal	Sowing/planting seeds in a dry rice farm by dibbling (punching holes using wooden poles)
Menyandam	A ritual performed by a farm owner as a way of communicating with nature by way of looking for omens and auguries. This is performed to know whether the area is allowed to be cleared or not.
Menyapat Tahun	A ritual performed and attended by the entire community, marking the end of the past year and the beginning of a new planting season
Meranti	<i>Shorea</i> spp. – a type of tropical hard wood tree
Merimbaq	Opening up a primary forest for farming activities
Natai	A lowland area that is usually close to the river
Pandam-pasaran	Cemeteries
Pangkalan Pakit	The name of a kampong of research area in Ketapang District in West Kalimantan Province
Payak	Rice field on swampy areas whose irrigation system is relied on rainwater
Pedahasan	A forest area independently managed by a family or families, which is enriched with a wide variety of fruit and other useful trees. This is also a second settlement area besides the Benuaq. (Also see Dahas)
Penggarak	A forest area that has not been farmed for decades that the trees growing in this area have reached big size; old-growth forest.
Perladangan Gilir Balik	Rotational farming
Pesaguan	Dayak sub-ethnic group in Ketapang District in West Kalimantan Province, Indonesia
PUSKESMAS	Pusat Kesehatan Masyarakat/Community's health care centre

Rambutan	Nephelium lappaceum – a medium-sized tropical tree in the family Sapindaceae. The fruit produced by the tree is known as rambutan.
Rasap	A farm of smaller size, less than 1 hectare
Raskin	Beras miskin/rice for the poor – a programme of the Indonesian government to help the poor
Rimbaq	An area with primary/pristine forests that have never been managed or opened for farms
Satuan Keluarga Pengembangan (SKP)	Developed household unit, which comprise five Settlement Units
Satuan Pemukiman (SP)	Settlement Units, in which one SP comprise 500 households
Sawah	Wet paddy field with managed technical irrigation system
Tengkawang	The name of a fruit and tree of Shorea spp that produces high value oil. This tree can only be found in Kalimantan and is known in English as illipe nut or Borneo tallow nut.
Tingkung	A kind of curved machete
Toke	Small-scale merchant/trader in kampongs
Toke besar	Large-scale merchant/trader
Walhi Kalimantan Barat	Wahana Lingkungan Hidup Indonesia-Kalimantan Barat (Indonesian Forum for Environment in West Kalimantan) – one of the NGOs in West Kalimantan, which is concerned mainly about the environment
WTO	The World Trade Organization

US\$1 = 11,748 Indonesian Rupiah, as of August 2014, in West Kalimantan Province.

Title page photo: A Dayak Jalai farmer gathers his harvested rice crop. Photo: Institut Dayakologi

Food Security in the Farming System of the *Dayak Jalai* in Ketapang District, West Kalimantan, Indonesia

Institut Dayakologi-Indonesia

I. Profile of the research area

This research was done in the three kampongs *Tanjung*, *Pangkalan Pakit* and *Kusik Pakit* in the southern part of the Ketapang District, West Kalimantan Province. This district, established by Law Number 27/1959, is one of the original seven districts of West Kalimantan Province¹. Ketapang District covers 31 588 km² and consists of 20 sub-districts. Ketapang, the district capital is the oldest city in West Kalimantan, built on what historically was *Tandjungpura* Kingdom – *Matan* that was also the oldest kingdom in West Kalimantan. According to the historical atlas devised by Muhammad Yamin (1965), based on the script of *Negarakertagama* devised by *Mpu Prapanca*, Ketapang's geographical territory was referred to as *Tandjungpura* (during *Majapahit* Kingdom ruled by *Hayam Wuruk* 1350-1389 AD). According to other references, such as the map of the Sultanate of *Riau-Johor* (Harun: 2003), the territory of Ketapang city was named *Matan*.²

Ketapang is the largest district in West Kalimantan. It is located in the southern area of West Kalimantan and lays between 0°19'-3°05' south latitude and 108° 42'-111°16' east longitude covering a total area of 31 588 square kilometres (km²). Of its total area, 30 099 km² is land and the remaining 1 489 km² is water.³

In terms of its topography, Ketapang District is split by many rivers, both big and small, among which are *Kualant*, *Semanakng*, *Banjur*, *Gerai*, *Laur*, *Jeka'*, *Pawan*, *Bihak*, *Krio*, *Kayong*, *Tayap*, *Tolak*, *Kendawangan*, *Pesaguan* and *Jalai*.

Hilly areas can be found throughout most of this area. Swamp areas with mangroves dominate the coastal areas of this district. Ketapang District is also renowned for its vast peat areas that comprise 40 percent (627 500 hectares) of the total peat areas across West Kalimantan Province.⁴

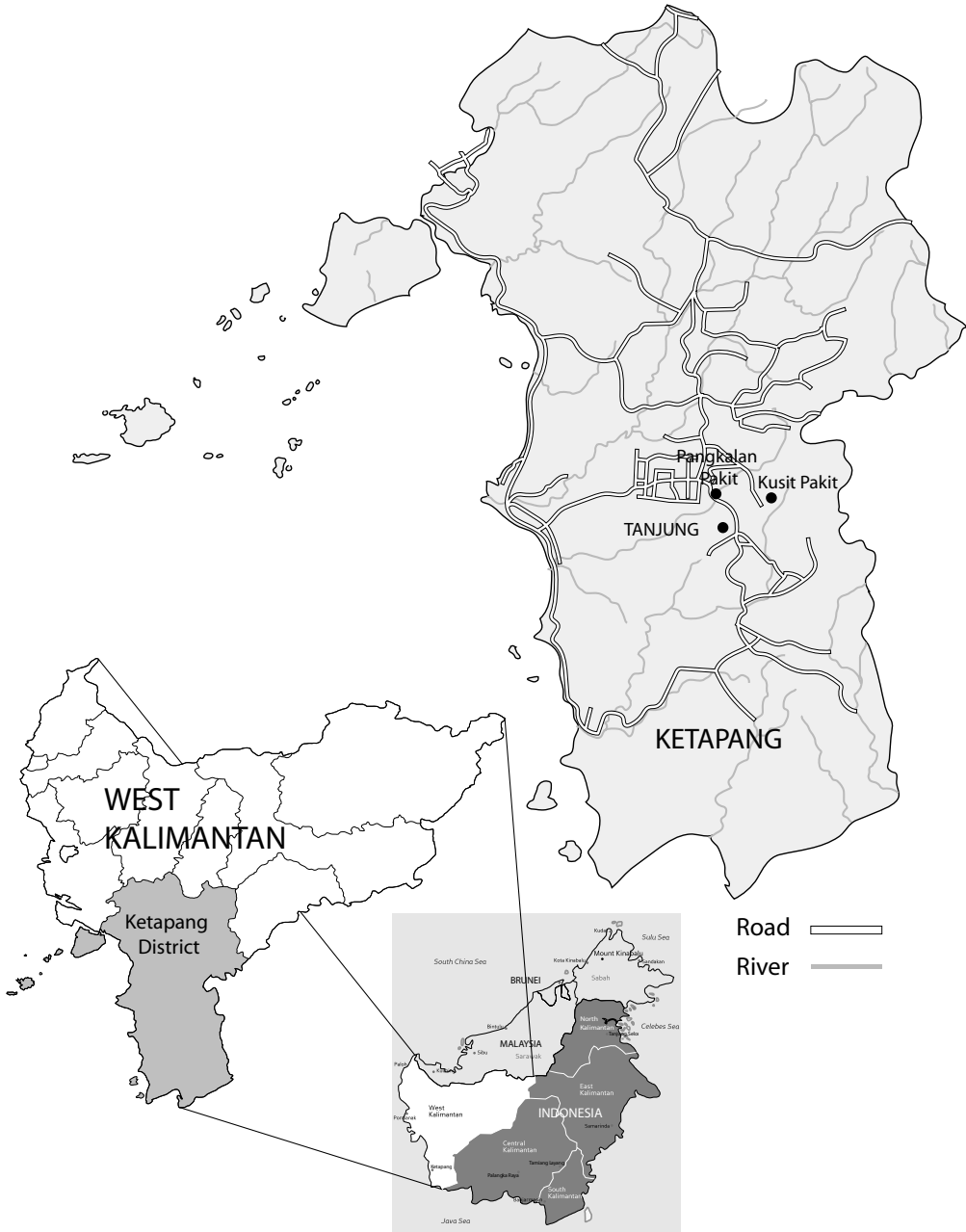


Figure 1: Map of research sites: The three kampongs Tanjung, Pangkalan Pakit and Kusit Pakit in Ketapang District, West Kalimantan

The research area is part of the ancestral territory of the *Dayak Jalai*, which is one of the *Dayak* sub-ethnic groups. The *Dayak Jalai* inhabit the area in the proximity of the water shed of the *Kiriq* river, a tributary of the *Jalai* river. Therefore, this community identifies itself as the *Dayak Jalai*.⁵

The *Dayak Jalai* live side by side with the *Dayak Pesaguan* and *Dayak Kendawangan*. The people of *Dayak Pesaguan* sub-ethnic group inhabits the *Pesaguan* river basin that is located in the area of *Tumbang Titi*, *Pemahan* and *Sungai Melayu Rayak* sub-districts while most *Dayak Kendawangan* sub-ethnic group resides in *Marau*, *Singkup* and *Air Upas* sub-districts.

The *Dayak Jalai*, particularly those inhabiting kampong *Tanjung*, *Pangkalan Pakit* and *Kusik Pakit*, never had any violent tradition in the past. While many other *Dayak* sub-ethnic groups had the headhunting (*mengayau*)⁶ tradition in the past, the kampongs where the research was carried out did not have this tradition. *Pangkalan Pakit* Village was originally a *dahas* owned by a family from *Tanjung*, which later on developed into a separate village as the population of the *dahas* grew. This explains why the distance between the two villages is less than 5 kilometres (km). *Kusik Pakit*, about 7 km from *Tanjung*, was originally from *Lambui* village. *Lambui* itself is only about 5 km from *Tanjung*. *Lambui* Village was originally a *dahas* managed by a family of refugees coming from *Delang* in Central Kalimantan to avoid the slavery tradition by the aristocratic families in that area (for more details, see: John Bamba 2004). *Dayak Jalai* is a common term for the indigenous peoples living along the *Jalai* river and its tributaries. Their origin, according to history and tradition, was from *Delang* in Central Kalimantan, like the people of kampong *Lambui*. They merged with the tradition of *Dayak Jalai*, thus becoming one group.

John Bamba, in his book “*Dayak Jalai at the Cross Roads*” (*Dayak Jalai di Persimpangan Jalan*, Institut Dayakologi, 2004) mentions that *Dayak Jalai* communities did not have the headhunting tradition, except those in *kampong Semenjawat*. They brought this influence from *Dayak Lemandau* of *Delang* in Central Kalimantan.⁷ In addition to living harmoniously with their fellow *Dayak* sub-ethnic groups, the *Dayak Jalai* also build harmonious relationships with other ethnic groups such as Malay, *Tionghoa*, Javanese and Florenese. Till date (August 2014), there has not been even one conflict involving the *Dayak Jalai* and other ethnic groups in the research area.

Since the early 1970s, due to government pressure, the *Dayak Jalai* has abandoned the tradition of living in a long house,⁸ which they called *Rumah Tinggiq*. One accusation was that such communal living and the solidarity among the Dayaks in the long houses would promote communism in West Kalimantan. The government disseminated and campaigned that the displacement of long houses was because such living was harmful to people’s health and increased the risk of fires.⁹

Despite the fact that some *Dayak Jalai* in *kampong Tanjung*, *Kusik Pakit* and *Pangkalan Pakit* are now living in single houses in their kampongs (locally known as *Benuaq*), more than 70 percent, have cabins or humble houses in *dahas* or *pedahasan*.¹⁰ Often three to five households live in one *dahas*.



Figure 2. Cabin in a *dahas*. Photo: Institut Dayakologi

The source of livelihood of the *Dayak Jalai* is farming or *lakau* in the *Dayak Jalai* language. To get some cash for other needs, they grow and manage natural rubber gardens. Nearly all families have rubber gardens with an average of 5 hectares that produce 20-25 kilograms of rubber slabs per day. In *Manis Mata* sub-district, downstream of *Jalai* river, some of them also earn income from weaving rattan handicrafts such as mats, baskets and other household utensils for sale in the neighbouring villages.

The table below contains data on the areas of ancestral territories and rubber tree gardens in the research areas.

Table 1: Land area under rubber gardens ¹¹						
Kampong	Total land area (ha)	No. of households (hh.) + people (Aug. 2014)	Total area of rubber gardens hectares (ha)	No. of rubber gardens (plots)	Productive land (plots)	Non-productive land (plots)
Tanjung	6 247	402 hh. 1 509 p.	4 352	1 809	1 101	708
Kusik Pakit	2 182	227 hh. 567 p.	1 816	908	544	364
Pangkalan Pakit	2 581.31	147 ph. 329 p.	1 263.61	735	520	215
Total	11 010.7	776 hh. 2 405 p.	7 432.32 (67.5% of area)	3 652	2 165	1 287

The majority of the *Dayak Jalai* marry people from the same ethnic group. For instance, in *kampong Tanjung*, 5 percent of the *Dayak Jalai* have intermarried with the transmigrants who work as merchants, teachers, labourers and drivers, while 20-30 percent of the locals are married to other *Dayak* sub-ethnic groups from Ketapang District and the remaining 65 percent are married among themselves.¹² Social relations among the *Dayak Jalai* and the transmigrants are built through marriages.

The distance from the *Dayak Jalai* communities to Ketapang City – the district capital and local government centre – is only 110 kilometres. However, it takes approximately five to six hours by car under normal condition to cover this distance. During the rainy season, travel time becomes unpredictable because the roads get flooded and muddy. The infrastructure that connects the rural areas to the urban areas is of mediocre quality although the roads have been paved with asphalt. Unfortunately, due to the poor quality of the material and unprofessional work, the roads are not durable. The access between kampongs is even worse.

The city of Ketapang serves not only as the centre of local administration, but also as the centre of business where all the products, commodities and the basic needs are traded. Rubber, that constitutes the main commodity of the communities, is transported on trucks (belonging to the merchants) from kampongs to sell to the traders in the city. The merchants bring back the necessities of the communities from the city. Most of the time, there is disparity in the price of the necessities bought and commodities sold by the communities. Due to poor access, the transportation cost in this trade chain is quite high. As a result, commodities produced by the communities are bought at a very low price, whereas the necessities brought from the city are sold

to the communities at a high price. Thus, the high cost of transport, of both commodities sold and bought, is borne by the communities. The further the inland, the bigger is the price disparity.

The markets in the kampongs are represented by small-scale merchants referred to as *toke*. They buy commodities from the communities, particularly rubber, and sell them to large-scale merchants/*toke besar* in Ketapang City, who further get these commodities transported on ships and sell them to factories in Pontianak City – the provincial capital, approximately 12 hours away. This lengthy marketing and trading chain results in high costs and thus, a sharp disparity between the prices of the commodities sold by the communities and the necessities bought by them. Farmers in particular fall victim to such disparity. Education and public health care suffer similar unsatisfying condition like infrastructure. Not all kampongs have education and public health care, and in those few kampongs that do have these facilities, the condition is far from ideal. It is very common to see school children aged between 6-12 years old who have to walk 6-7 kilometres to get to the school in a neighbouring kampong. Moreover, in order for those children to go for higher education – Junior High and Senior High Schools – they have to walk even farther, or leave their parents and stay with relatives who live near these schools. Only sub-district capitals are ‘fortunate’ to enjoy the latter two levels of education regardless of the quality of the outcome of the education. It is not surprising if some parents send their children to continue their study at Senior High School in Ketapang City, where the quality of education is better.

Public health care is no better. In most kampongs, we can find a building that serves as the community’s health care centre (*PUSKESMAS*). However, not all of them have adequate medical staff, sufficient health tools or equipment. In case a patient suffers from a serious sickness and requires intensive treatment, the patient has to be taken to Ketapang City over very poor roads. In some cases, patients had to be brought back to the kampong even before they could reach the hospital in Ketapang City because they died on the way because of the long journey on poor roads.

Communication facilities and media are of much better quality. Nearly all kampongs, despite their remote location, have access to adequate communication facility, especially telecommunication. Towers of the cellular phone network can be easily found across the kampongs in remote areas that allow fluent flows of information and communication from one area to another. What also can be easily found are satellite dishes that are set up at houses to receive television channels from several countries. The communities are information-literate no matter how remote their area is; and thanks to this information media, they can even know what happens on the other side of the world.

For daily communication, the *Dayak Jalai* uses the *Jalai* language, which is linguistically included into the *Malayic* language group.¹³ They can generally speak *Ketapang Malay* with other communities in Ketapang, and use Indonesian as a formal language or to communicate with outsiders who do not speak *Jalai* or *Ketapang Malay*. In all, they can speak and understand, at least, these three languages: *Jalai*, *Ketapang Malay* and moderate *Indonesian*.

II. Environment and natural resources

In the kampongs that are not yet heavily affected by the expansion of oil palm plantations or the bauxite mines, the *Dayak Jalai*, in general, are still managing natural resources based on their indigenous knowledge. Based on the research observation in kampong Tanjung, Pangkalan Pakit and Kusik Pakit, today, at least 80 percent of the community is still safeguarding and managing their natural resources collectively in a sustainable way. This is demonstrated by their active management of *dabas*, farming, tapping rubber and working together. A similar view was expressed by John Bamba (*Dayak Jalai at the Cross Roads*, 2004). He wrote that *Dayak Jalai* Indigenous Peoples have a distinctive system of managing natural resources in which the system integrates the aspects of self-determination, sustainability and resource use. This system is supported by their view that the entire world and its contents are one unity supporting rather than destroying each other.¹⁴

Forest, land and water are the three elements that are inseparable from *Dayak Jalai* because these three elements not only constitute the pre-conditions to their sustainability as a people, but also have very significant meanings to them. The entire life cycle of the *Dayaks* is marked with cultural rituals, which have become an integral part of their daily life, particularly in managing their natural resources. Some of the rituals directly relate to their system of farming and healing.

Rotational farming is one of the natural resource management tools that is part of the life of *Dayak Jalai* and it is rich with ritual symbols and practices. Farming or *lakau* is the focal point of economic activity because all kinds of area management come from farms. Thus, farms are not merely a piece of land or a place for cultivation, but also are a broader concept of resource management of an area for either economic, socio-cultural and sustainability purposes. For instance, a farm is the original place that will develop into new *dabas*, rubber gardens, fruit gardens and eventually a new community or settlement. To clear land for a farm or *lakau*, the *Dayak Jalai* comply with the customary law and traditions that prevail. Eighty percent of the community in the research area is still farming and performing farming rituals.

The balance of the three natural elements—that constitute the pre-conditions to the survival and sustainability of the *Dayak* culture—is influential to other aspects of life. For example, the loss of lands or forests for farming will lead to the loss of one of the sources of livelihood. However, the process of natural resource management in the research areas, including farming remains intact. Most of the community territories are still well managed, protected and continuously improved by planting fruit trees, ironwood (*Eusideroxylon zwageri*), *gaharu* (*Aquilaria malaccensis*), rubber trees and medicinal herbs.

The forests in the *Dayak Jalai* area are the natural habitat for ironwood/*kayu ulin* (*Eusideroxylon zwageri*) and *bengkirail/benuah* (*Shorea laevis*). These two kinds of trees are renowned for their strength and are used as building materials because of their hardness and durability in tropical climate. In the past, it could take up to three days to cut down an ironwood tree with a diameter of one metre by using *beliung* – a traditional cutting tool. However, today people usually use chainsaws and an ironwood tree of the same size can now be cut down just in a matter of hours. Ironwood and *bengkirai* are expensive wood. With the introduction of the chainsaw, the forests that were once full of ironwood and *bengkirai* trees can be quickly cut down and converted into deforested areas and grasslands. This was happening and conducted by illegal loggers who received support from local investors, based either in *Tanjung, Ketapang or Pontianak*. The investors behind illegal logging were wealthy local businessmen who hired local people to log the forests for personal profit. Illegal logging was particularly rampant in the period between 2002 and 2006. Today, the government has curbed illegal logging with a moratorium on forest logging and better law enforcement. Thus, the problem has significantly decreased. It is at least not done as openly as before.¹⁵

In their natural resource management system, the *Dayak Jalai* know several types of land based on their topography and uses, as explained below.

- a) **Bukit:** This is a plateau region or rocky hills. The plants that can be found in this area are usually dominated by tropical hard wood such as ironwood (*Eusideroxylon zwageri*), *benuah* (*Shorea laevis*), *meranti* (*Shorea spp*) and many others. There are places where the hills are also dominated by fruit trees like *durian* and various types of *asam* (*Mangifera spp*) that have reached tens and even hundreds of years of age. The fruit gardens found in the hill area are usually planted by the previous generations. There is a customary law prohibiting the land from being farmed, while in the hill where there are no fruit gardens, farming activities are allowed. The communities find that farming in the hilly areas is very effective to avoid wild boars from destroying the farm because these animals prefer low land areas or in the proximity of the bottom of hills.

- b) *Rimbaq*: This is an area with primary/pristine forests. This is a term referred to forests that have never been managed or opened for farms. *Rimbaq* serves as a hunting area and also as the source for building materials for the local people due to the presence of large trees.
- c) *Penggarak*: This is a forest area that has not been farmed for decades, therefore, the trees growing in this area are big in size.
- d) *Natai*: This is a lowland area that is usually close to the river. Such an area is quite fertile and preferred for rice farming.
- e) *Lakau mudaq*: This is a young forest that was previously used for farming. *Lakau mudaq* is deliberately not planted with trees (such as rubber or fruit trees) so that it can be used as farms again several years later. This system is commonly referred to as shifting cultivation or swidden farming/swidden agriculture.
- f) *Kabun prasasaq*: This is usually an area that was previously used as a farm but is later used to grow rubber trees and fruit trees, such as *durian*, *rambutan* (*Nephelium lappaceum*), *duku* (*Lansium domesticum*)/*langsar* or *lanzones* and many others.
- g) *Payak or ladak*: This is an area whose soil is similar to that of wet rice fields. *Payak* or *ladak* (wet land with soft soil texture) is not the same as *lakau* (dry land). *Payak* is also different from paddy field because *payak* relies on merely small water flows to support the growth of the local wet rice varieties. It is different from modern *sawah* (wet rice fields) such as those found in Java, which is a form of wetland agriculture that applies a modern system of irrigation. Therefore, a *ladak* could be seen as the local and traditional wet rice field practiced by the Dayak. In a *ladak*, the communities only grow rice and it can be farmed every year. The method applied in the farming system of the *Dayak Jalai* is considered traditional because it does not apply modern irrigation methods and rice is grown only once a year (unlike in the fields in Java or Bali where rice is grown more than once a year).
- h) *Pandam-pasaran*: This is an area of land that the local people use for cemeteries. There are some cemeteries that are very old and no longer used and seem to have been neglected. However, this kind of area must not be used for farming.
- i) *Keramat*: This area of land is considered sacred and places of worship can usually be found here because this area is believed to have 'magical powers'. This kind of area must also not be used for farming.

III. Research methods

This research involved various stakeholders, among which are Institut *Dayakologi* (ID) represented by *Benyamin Efraim* as the main researcher, The Alliance of Indigenous Peoples of *Jalai-Kendawangan* (*Aliansi Masyarakat Adat Jalai-Kendawangan/AMA JK*) represented by *Vitalis Andi* and some other activists of AMA JK who contributed in the process of collecting required data and information. The involvement of AMA JK was mainly during data collection in the field where the activities of organizing were required to gather the resource persons such as rubber tree farmers, farmers, and local experts in agriculture and farming traditions. Benyamin Efraim wrote the first draft of the research report, while the second draft and the final report were prepared by ID's team that consisted of Ajin Vincentius, Krissusandi, Johanna Anpolini. Julianto Makmur assisted with the translation from Indonesian to English and John Bamba did the final revisions and editing.

In addition to the data and information directly collected from the resource persons mentioned above, other sources of information and data that served as the basis and supporting material for analysis were obtained from various written references and literature, which are available on internet, books and other printed media. These books include the research findings of *Institut Dayakologi* on the same topic but from different perspective that was conducted in the past.

The methods used to obtain information from the resource persons are direct interview, focus group discussion (FGD) and workshops. In the interviews with the resource persons, the researcher had prepared a number of key questions in advance that were further developed according to the need when the interviews were conducted (semi-structured interviews). The resource persons were those directly involved in farming activities (actors) and those who are no longer active farmers.

Workshops and FGD were conducted not only to obtain additional information but also to be used as a tool for data validation. It is necessary to clarify any inaccurate and dubious information from the resource persons; therefore, crosschecks were carried out with other resource persons. Additional information was obtained from various books, articles in both printed and internet media as well as research reports that have previously been published in this field.

1. Time and location of field work

The focus of this research work is on *Dayak Jalai* communities who live in several kampongs that have previously already been facilitated by ID: *kampung Tanjung, Pangkalan Pakit, and Kusik Pakit*. These three kampongs are administratively located in *Jelai Hulu* sub-district, one of the 20 sub-districts in Ketapang District.

Of these three kampongs, the researcher took three *dahas* as samples. The three *dahas* are well managed and the owners remain active in farming activities. A *dahas* is an area, approximately 5-10 hectares, owned and managed by two to four households where an integrated indigenous management system of natural resources is applied. Therefore, a *dahas* is not only an area for rice fields, but also for fruit gardens, rubber gardens, wet paddy field, fish ponds, areas for hunting and setting traps for wild animals, raising pigs and chicken, semi-permanent house(s) and even grave yards. A *dahas* is normally started with a rice field and then developed with planting fruit and rubber trees. Later on, the owner enlarges it as new rice fields are cultivated, so eventually it covers a wider area and if other families join in, it is owned by a group of families rather than one family. A *dahas* that is managed successfully and located in a strategic area, such as a river with good water flow, has the potential capacity to develop into a village at a later time. So, a *dahas* serves as a second settlement, or a mini village.

These locations were chosen as the sites of research because ID has a long history of empowerment and facilitation activities for these communities, which have been done intensively since 1999. So, the researcher has relatively adequate knowledge of the development of these kampongs over time. However, the research on the food security system in *Dayak Jalai* community's farming system has been conducted since February 2014. This research is expected to complement previous research programmes on *dahas* (ID 2008) and the farming system of the *Dayak Jalai* (ID 2010).

2. Methods applied in the field work

This research was essentially done using two methods, literature and field studies. The literature study was conducted in the early stage to collect various references relating to the research topic, and in the next stage the literature study became the foundation and tool for analysing the data obtained from the field study. Literature study was used to explore various references with supporting research data from previous studies that have been published related to relevant issues and topic of research. The literature study also included policies issued by the government either in the form of legislation, government regulation or other decisions.

The field study itself, in addition to collecting data and documentation relating to farming activities, was intended to obtain data from the actors and the resource persons relating to the research topic. The methods applied in field data collecting are as follow:

Interview

Interviews were conducted in order to collect valid information from the primary sources. In this research, the resource persons were selected using the criteria below:

1. Old farmers (more than 50 years old); three men and three women
2. Farmers from young families (less than 50 years old); eight men and seven women
3. The owners of well-maintained *dahas*; three men and three women
4. Ex-farmers; three men and three women

Focus group discussion

Focus group discussions were conducted with the intention of obtaining collective information and general opinions. Each FGD involved the groups who represented the farmers from the three kampongs (*Tanjung, Kusik Pakit, and Pangkalan Pakit*) and was attended by 15-20 people, comprising 12 men and eight women—five of them were old, nine were less than 50 years old and six were young teenagers.

This FGD was specifically intended to discuss some fundamental questions concerning:

1. How does the farming system of the *Dayak Jalai* ensure food security and sustainability?
2. What is the condition of farming tradition today and which factors influence it?
3. Do indigenous peoples have any anticipated alternatives to seek food security and sovereignty following the abandonment of their farming traditions?

3. Definition of key concepts

In order to further comprehend this research, some key definitions should be clarified. These definitions are also intended to focus on the problems to allow a more in-depth discussion toward common understanding. Below are several key terminologies used in this article.

a. Shifting farming system and rotational¹⁶ farming system

Many publications about Dayak indigenous farming traditions use the term 'shifting cultivation'. This term was further developed and it experienced change of meaning and has negative connotation in which the farming system performed by indigenous peoples was perceived as the cause of forest destruction.

Institut Dayakologi and *Gerakan Pemberdayaan Pancur Kasih* (GPPK)/Pancur Kasih Empowerment Movement, in their reports and publications, always use the terms '*Perladangan Gilir Balik*' (rotational farming) or solely '*Berladang*' (farming). They use this term to reflect the Dayak's practice of leaving rice fields to fallow for several years to restore soil fertility before they return to the same plot to farm rice again.

b. Food security

The 1996 World Food Summit agreed that *food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life* (FAO 1996). This is consistent with the concept formulated by the government, which is incorporated in Government Regulation No. 68 in 2002. However, this concept does not regulate how food is produced and where the food comes from. This is one of the weaknesses of the concept and the policy of national food security. As a result, the government remains inactive and does not take serious measures to improve food production systems and control the influx of imported food into Indonesia.

c. Food sovereignty

Food sovereignty is the ability to produce and determine the distribution system, its uses and the policies concerning food issues independently in accordance with the potential of local resources.

d. Dahas

A *dahas* is a natural resources management system based on the local knowledge of the indigenous peoples of *Dayak Jalai* and *Kendawangan*. A *dahas* is managed by one or more families and is passed down to their next generations and hence is in line with the principles of solidarity and sustainability. A *dahas* is located within the ancestral territory and is collectively developed and managed by groups of families. A *dahas* is also a centre of agricultural activities of indigenous people, particularly rice farming, rubber tree gardening and raising farm-animals. A *dahas*, in general, contains forest, fruit trees, farm, natural rubber trees, livestock, medicinal herbs, streams or river and several cabins. A *dahas* can be managed by one family but can also be managed by five to seven families practicing indigenous knowledge in natural resources management, based on *adat*/customary law to ensure its existence.¹⁷ In the natural resources management system of the *Dayak Jalai*, farming is one small but important part of a *dahas*, therefore, farming is inseparable from *dahas* that represents a concrete natural resource management system that is based upon local knowledge.

IV. The traditional *Dayak Jalai* farming system

Farming has been at the core of the *Dayak Jalai* survival strategy. Their farming knowledge and skills are passed down from their ancestors for generations. Historically, farmers have had a mixed system in which their rice farms provided their staple food, while rubber gardens generated cash income to fulfil their other needs. Such combination of farming and rubber tapping secured the family livelihood.

In addition to obtaining food from farming, the *Dayak Jalai* could easily supplement their diet from other food sources such as edible ferns, mushroom, bamboo shoots along with other plants in the forest that were common in their daily diet. Forests also provided wild animals to hunt for food, such as boars and deer (Bornean yellow muntjac and mouse deer).

Dayak indigenous peoples commonly raise chickens, pigs and dogs. The latter plays a very important role for humans becoming their guards and faithful companions and to chase away animals damaging their rice fields. Meat consumption is met by raising livestock in addition to hunting and fishing.

Because of the significance of agriculture to the society, many rituals were related to agriculture. The main purpose of the ritual activities were requesting blessing from the spirits and thanks giving for harvests, both collectively and personally by farmers to *Duwataq* (the Guardian Spirit) in line with *Dayak Jalai's* system of religiosity.¹⁸ In the farming system of the *Dayak Jalai*, each farming activity could only be carried out when ritual requirements are met.

Let us have a look at the main components of the traditional farming system of the *Dayak Jalai*.

1. Rice, the main staple food

Rice is the staple food and plays an important role in *Dayak Jalai* society. The rice cycle consist of three main phases:

1. **Preparation and clearing of farm area:** This phase is generally performed between May and August preceded by the performance of a series of customary rituals from *Menyandam* until *Memanit*.
2. **Cultivation and Maintenance:** This phase begins with *Menugal* carried out in the middle or at the end of August until the end of December.
3. **Harvest:** A phase when the rice crop is ripe and can be harvested and usually takes place from the end of December until April.

The following are the phases of physical farming activities throughout one farming cycle in detail.

1. *Menabas* is preceded by two customary rituals; *menyapat tahun* and *menyandam*. *Menabas* means clearing shrubs and small trees that grow in an area to enable further land clearing for farm. Prior to clearing, the border of the land is normally demarcated. Using machetes, the entire family can participate in this activity.
2. *Menyakat* is cutting the smaller trees (whose diameter is less than 10 centimetres) and clearing the plot from clumps of bamboo trees. *Menyakat* can be done by both men and women using axes and large machetes.
3. *Menabang* is cutting of the bigger trees (with a diameter more than 10 centimetres) using *beliung*. To cut down very big trees with a diameter over one metre, a *penemparaqan* – a platform for farmers to stand to enable them to cut trees above the buttresses were the trees diameter has decreased significantly – is constructed. Some of the *penemparaqan* are built at three metres high. Nowadays with the help of chain saws, *menabang* has become easier and quicker. Adult male usually carry out *Menabang*.
4. *Meradaq* is cutting of branches and stems of the already felled trees in the farm plot or *raban* to be further piled up in a more organized way and to enable effective burning in the next phase. Men using axes and machetes usually carry out *Meradaq*.
5. *Hamparan Raban* is actually a period of time when the farmers stop their work to wait for the cut vegetation to dry and get ready for burning. Normally the vegetation is left for one month to dry. Once the piles of the cut trees have completely dried up, the burning sets in.
6. *Meladang* is making the firebreaks that surround the farm. The firebreaks normally are two to five metres along the edge of the farm. The width of the firebreak is extended with an additional two metres when the drought is particularly long and forests are easily combustible. This activity is carried out by all family members approximately one week before the start of *mencukul* (burning) activity.
7. *Mencukul* is burning of the vegetation that has dried in the farm plot. Ahead of burning, the owner of the farm observes and predicts the direction of the wind. The fire is started from the side of the farm that opposes the wind direction to ensure that the fire does not grow too big; and although the wind blows strongly, the fire will not spread to the area outside the farm. Thus forest fires can be prevented.

8. *Memanit* is stacking up and further cutting and burning of the remaining unburned vegetation. This activity is carried out by both men and women before *menugal*.
9. *Menugal* is sowing the rice seeds, corn, vegetables and other annual crops and is carried out by men and women simultaneously. Men make the holes to sow seeds by using a dibble stick (piece of wood two metres long with a pointed end), while the women sow the rice seeds in the holes. The sowing activity is termed as *membanih*. The sown rice seeds normally take three to four days to germinate.
10. *Menggurun* is clearing the entire farm plot from weeds that hamper the growth of rice. *Menggurun* can be carried out manually or by using a tool named *tingkung* (a kind of curved machete) to weed the undergrowth that is difficult to pull out directly by hand.
11. *Betanam hubiq-tabuq* is planting crops other than rice, particularly cassava and sugar cane, which are deliberately not planted simultaneously with rice in order to ensure that the growth of cassava and sugar canes does not hamper the growth of rice. This is usually carried out when rice has grown as high as an adult's knee (40-50 centimetres).
12. *Memansau* is clearing the farm plot from bamboo shoots. There are times when *memansau* is carried out simultaneously with *menggurun*; however, this phase is mostly carried out separately because this activity needs the use of machetes.
13. Planting of perennial crops. A farm area that is intended to be re-used for growing rice or other seasonal crop in the coming years will not be planted with tree crops such as rubber or fruit trees. But if the farm area is deemed suitable for tree crops such as rubber, fruit trees, ironwood, etc. it will immediately be planted with the seedlings or seeds of the chosen tree species.
14. A farm area that is intended to be re-used for farming for years to come will not be planted with tree crops such as rubber and various fruit trees, but with vegetables and local spices instead. But if the farm area is deemed suitable for rubber tree garden or new *dahas*, it will immediately be sown with needed seeds of useful fruit and herbal plants and with the seedlings of rubber and ironwood trees among others.
15. *Behanyiq* is harvesting the rice using a tool referred to as *behanyiq (ani-ani)*. *Behanyiq* is normally carried out by women and men assist carrying the baskets of harvested rice to *jurung* or paddy barns.

16. *Menyiangiq tanam tumbuh* is maintaining of many other crops that are still not yet ready for harvest and are still growing after the rice harvest, e.g. cassava, *keribang* (yam species), *kembiliq* (yam species), *terong asam* (a local type of eggplant), various fruits and so forth. This activity can be done by both women and men.



Figure 3. *Menugal*, collective rice planting. Photo: Institut Dayakologi

2. Main rituals related to rice cultivation

Traditionally there are seven rituals that should be ideally performed throughout the rice-growing season as can be seen below.

- a. *Menyapat tahun*. This literally means marking the year limit. This ritual is attended by the entire community marking the end of the past year and the beginning of a new year (or between the past rice cycle and the coming rice cycle).
- b. *Menyandam*, which is personally performed by a farm owner prior to *menabas* is aimed at having a vision about whether the location that is going to be cleared for farm is promising or inauspicious and finding out how much area is needed for a farm. In addition, it is also a ritual to pray for blessings and protection from God over each phase of farming activities that will be carried out.

- c. *Menimbung* is a ritual performed personally by each farm owner to seek God's blessing over all the seeds that will be sown.
- d. *Menumbal*, or also commonly known as *Menumbal-menyempalit*, is a ritual personally performed by a farm owner to purify the land if the area that is going to be cleared for farm is believed to be inauspicious. The types of land that are deemed inauspicious for farming plots are *utung arai* (water springs), land that has been hit by lightning strike and *pandam-pasaran kuburan tuhaq* (land formerly used for cemeteries).
- e. *Baabuang Hulat* is a ritual that is carried out by the inhabitants of a *kampung* led by *adat* (customary) elders during rice crop maintenance or around 1 to 2 months following the sowing to ensure that crops are pest-free and rice grows unhampered resulting in a successful harvest.
- f. *Mengebaharuan/Baansabatan* is a ritual collectively performed by a community at the beginning of harvest time. Every family who has a farm will bring food produced on their farm, such as *emping* (the traditional dish prepared from the first half ripe sticky rice/*ketan* mixed with palm sugar and coconut), rice and other items made from the freshly harvested rice. This food is brought to one particular place to be consumed together after reading customary prayers to express their gratitude for the arrival of harvest. In the past, this ritual would coincide with the fruit season (*Buah rayaq padi mansak*) – a season when all the fruit species in *kampung buah* (fruit orchard) and *dahas* are ripe. Thus, the community not only enjoys fresh rice harvest but is also overwhelmed with abundant fruits.
- g. *Menjulang Atuq* is a ritual of thanksgiving on the harvest of the farms. *Menjulang atuq* is marked by storing the harvested rice in the *jurung* or rice barns.

3. Main crops produced in rice fields

The table below describes various crops commonly cultivated in a farm. There are at least five types of crops planted and one kind of naturally growing plants in a farm. More detailed information on the kinds of the crops can be seen below.

Grains, comprising several crops

Senduaq and *padi barat* are types of common rice. These two types are differentiated by the fact that *senduaq* can be harvested at the age of approximately three months while *padi barat* needs four to five months to harvest. Planting these two types has the advantage of providing some rice early when farmers start to run out of rice stock, while the difference in harvest time is helpful in spreading the demand for labour during the rice harvest season.

Padi lekatan or *pulut* is sticky rice and comprise many varieties. This rice is primarily used for making *tuak* or local rice wine – a *Dayak* traditional drink that is often required during customary rituals. *Pulut* rice is also consumed at breakfast and during work in remote places because it is more durable and farmers can feel full for a longer period in comparison to consuming ordinary rice.

Corn is normally planted as supplementary food and is mixed with rice when rice supply is low. By doing so, more family members can be fed during difficult times. Corn is important to feed chickens, a common domestic animal of the *Dayak* people.

Jawaq, *njalik* and *langaq* are crops whose primary purpose is as supplementary food that is consumed at breakfast and as snacks.

Tubers

The most important tuber crop is cassava. There are three reasons why cassava is considered important. Firstly, this crop can serve as supplementary food, secondly it can be used to feed pigs and thirdly, which is actually the most important, cassava and all its by-products can serve as substitution food to replace rice in case of a failure in rice harvest. Other tuber crops are mostly used as supplementary food stuff or secondary food (sweet potato, *kembiliq* (*Dioscorea esculenta* L. or *Dioscorea* sp.), *ganyum* and yam bean) and as side dish to go with rice (*keladi* or *talas*/*Colocasia esculenta* L. and *keribang*/*Dioscorea alata*).

Vegetables

Various kinds of vegetables are usually planted in farms. Firstly, vegetables whose leaves and young buds/shoots are edible including spinach, *sensabiq* (*Brassica juncea*)/mustard, *jagur* (a sort of shrub plant), secondly, those whose flowers and fruits are edible, including *tabu talur* (*Saccharum edule*), long beans, *hibus* (*Luffa cylindrica*), *lepong* (*Luffa acutangula*) and bitter gourd. The third type is vegetables whose leaves and flowers or their fruits are edible including cucumber, marrow, winter melon and *prenggi* (yellow pumpkin).

Wild plants in the rice farm

This includes plant species whose young leaves, buds/shoots and fruits are edible and consumed like vegetables or salad. Included in this group are various mushrooms.

Spices

Another group of crops are spices and herbs.¹⁹ Included in this group are some plants whose tubers are used mostly for herbs and spices.

Sugar cane

Sugar cane constitutes one of the ‘compulsory’ crops in farms. There are many varieties of sugar cane that are cultivated in the farms of the *Dayak Jalai*. Before refined sugar was introduced like we see today, the *Dayak Jalai* used to meet their sugar consumption by producing sugar from sugar cane. The process begins with the squeezing of sugar cane stems whose outer skin has been peeled off and cleaned by grinding them using a tool known as *gulingan* or *hapitan*. The juice was squeezed out and cooked into crimson coloured syrup, which was stored to mix with drinks (coffee) and other food as needed. The other kind of sugar cane is *tabu talur* (*Saccharum edule*) and the only edible part of this plant is its flowers that are served as vegetables and salad.

Kambang tahun (*Amaranthus* sp.)

Kambang tahun is the only kind of plant that is excluded from the categories above. Farmers do not know if this plant has other functions other than its beauty that enhances the view of the farm. *Kambang tahun* has red and yellow flowers. When the rice crop begins to ripen, the colourful *kambang tahun* plays its part by ornamenting the farm with its beauty and as far as the eye can see on the farm are the expanses of yellow rice plants giving a sense of comfort to the farmers. Moreover, farmers feel that their farms are incomplete during the paddy harvest without *kambang tahun* plants.

4. *Dahas*, a local integrated natural resource management system

Another important aspect of the agricultural system of the *Dayak Jalai* is *dahas*. A *dahas*, in daily activities of a farmer family in *Dayak Jalai* community, serves as the centre of the entire natural resources management system. *Dahas* are significant because it is the place that facilitates their access to natural resources and allows easier control.

A *dahas* is basically a second settlement in addition to the *kampung*.²⁰ It covers an area where farmers grow rice, but also cultivate and manage rubber and fruit gardens as well as raise livestock. The management of a *dahas* reflects how a farmer’s family manages their life. *Dahas* management is very complex because it is likely to develop continuously and the number of people who settle there may increase over time. In such case, the *dahas* can develop into a *kampung*.²¹

A *dahas* originates from an area of land that is cleared for a new rice field. If the farm is later deemed to be potential, the farmer will build a hut. The farm will soon be cultivated with rubber trees following the rice harvest and the area in the proximity of the hut will be planted with various trees mainly fruit trees. The owner of the farm also raises livestock, such as pigs and chickens. To enable practical control and monitoring, the farmers will usually start to settle on the new farm. If it develops well,

this farm will soon become a new *dahas*. As the owner of the *dahas* stays longer in their *dahas* rather than in the village where they come from, they spend more time on other activities such as hunting and collecting non-timber forest products. For this purpose, the *dahas* area is increased, covering the rice field, the rubber and fruit gardens and the settlement, but also the primary or secondary forests (depending on availability) in the *dahas* vicinity.

When the *dahas* is managed properly and passed on to the next generation, it becomes *dahas tuhaq*²² (an old *dahas*), and the area becomes a very good integrated natural resources management area with sound land use management system. A *dahas* is collectively owned and managed by several families; therefore, the risk of selling the *dahas* areas to the outside parties is minimized because the decision should be made collectively rather than individually.

The descendants of the *dahas* owner, who have had new families, will usually build houses not far from the first house. As the number of members in the families increases, the *dahas* becomes more populous. A *dahas* that is situated on the sides of main roads between kampongs is likely to develop and attract more people to settle there. Populous *dahas* will enable farmers to work together because there are many phases of farming activities that need many people simultaneously. As the number of residents of the *dahas* increases, local government will start administering it to ensure easy control and organize the implementation of its programmes.

A *dahas* complex, locally known as *pedahasan*, covers quite a vast area of land in which hunting, fruit gardens, cemeteries, farms, rubber garden and forest supporting area have been managed, which means farms are not managed separately but are integrated with other elements.

V. Rapidly changing circumstances and their impact on the *Dayak Jalai*

The traditional farming and natural resource management system described above is facing a number of serious challenges that have a significant impact on the capability of the communities to maintain their food security. The main external threat is the decrease of ancestral land due to the initiation of activities of large-scale economic operations in the area. Also the government policy is providing insufficient support to the communities to maintain their (communal) *dahas* areas. *Dayak Jalai* society is experiencing internal changes such as changing aspirations that impact its food security.

1. Decreasing land

The expansion of oil palm plantations in Ketapang District dates back to the early 1990s, when the government brought this industry into this area at the pretext of development and welfare of the community and was promoted as economically promising. From this point on, oil palm industries flourished in Ketapang District, resulting in the influx of trans-migrants who were hired to work at the oil palm plantations that operate across many sub-districts, including *Manis Mata*, *Sungai Melayu*, *Air Upas*, *Marau*, *Singkup*, *Tumbang Titi*, and now in *Jelai Hulu* also. Oil palm plantations have proven to be the biggest threat to the existence of the ancestral domains of *Dayak Jalai*. The majority of the areas that have been facilitated by ID over the years were and are still involved in conflicts with the oil palm plantations.



Figure 4. Newly established oil palm plantation. Photo: Institut Dayakologi

For instance, indigenous peoples are facing conflicts in *kampung Silat Hulu* (*Andi & Japin* case) with PT Sinar Mas, in *kampung Keladi* with PT Harapan Sawit Lestari (HSL), in *Terusan* with PT HSL, in *kampung Batu Menang* and *Tembiruban* with PT Fangiono Agro Plantation, in *kampung Tanjung* with PT ASM, in *Tanjung Batu* with Sinar Mas Group. There are many more similar cases. During their work in the province between 2008 and 2014, ID and AMA-JK recorded at least 97 cases of land alienation and displacement by oil palm plantation companies.²³ This indicates

that oil palm plantations have become a source of protracted land conflicts. The legal settlement of the conflicts is a complicated and long process, which places indigenous peoples in a very difficult situation. One example is the conflict between the indigenous peoples of *Silat Hulu* and PT Bangun Nusa Mandiri (Sinar Mas Group), who grabbed the people's land back in 2008. The dispute escalated throughout 2009 in which a community member was reported to the police by the company and was tried at the State Court of Ketapang. This case is on going to date and is now being heard at the Supreme Court of the Republic of Indonesia. It usually takes at least 5-10 years just to have a case settled completely. Another example is that of the indigenous peoples of *Kampung Keladi* who have been fighting for compensation for their land that was confiscated by PT HSL since mid 2000. To date the case has not been settled and the Indigenous peoples have not achieved the justice they are seeking.

The source of all those conflicts is linked to the differences in outlooks and positions of the communities and companies with respect to indigenous peoples' rights over their ancestral territories and their management. Indigenous peoples are establishing their ownership of ancestral territories on their prevailing customary law while the companies are basing their operation on the concession granted by the government. By 2014, there has not been even a single law issued by either the District Administration of Ketapang or the Provincial Administration of West Kalimantan that incorporates the rights of indigenous peoples.

Institut Dayakologi has begun intensive facilitation and empowerment in the *Dayak Jalai* area since 2001. In the beginning, 132 kampongs were facilitated. One requirement for facilitation by ID was that its ancestral domain remained free of plantation or mining companies. As of 2014, there are only 10 kampongs left who still have safeguarded their natural resources and are free from the expansion of plantations and extractive industries.

Currently, the District Administration of Ketapang has issued concessions on a total area of 623 392 hectares to at least 18 mining companies²⁴ and concessions on a total area of 1.3 million hectares for 77 oil palm plantations.²⁵ According to the report of Indonesia Corruption Watch (ICW), the total concession areas for industrial tree plantations, oil palm plantations and mining covers 2 437 060 hectares, which makes up 78 percent of the total area of Ketapang District as can be seen in the following diagram.²⁶

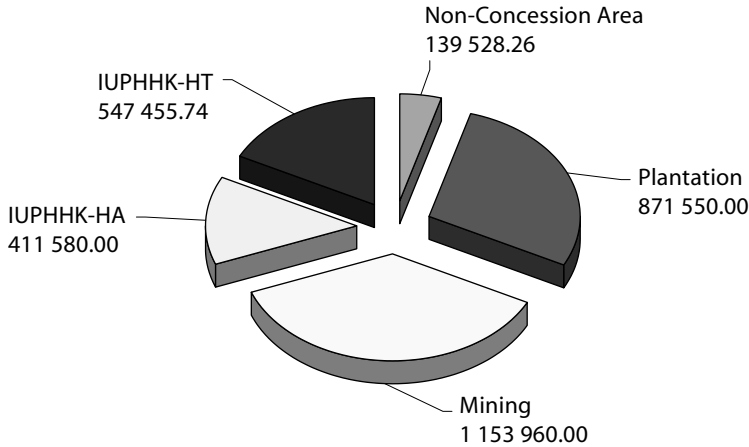


Figure 5. Share of land allocated to plantation, mining and forestry in Ketapang District

Legend: *IUPHHK-HA* (Ijin Usaha Pemanfaatan Hasil Hutan Kayu Hutan Alam or Concession for Using the Timber in Natural Forest)

IUPHHK-HT (Ijin Usaha Pemanfaatan Hasil Hutan Kayu Hutan Tanaman or Concession for Using the Timber of the Industrial Tree Plantation)

There are various ways through which companies gain access to ancestral land. During our research, we identified six forms that have been used in *Dayak Jalai* areas:

1. Pressure from various levels of government from the district level down to the village level pushing communities to give consent to the permits issued by the central, provincial and district administration. This method was rampantly applied in the past, but today, communities have become more critical and this approach is rarely used.
2. Some communities that are less critical accept the presence of the extractive industries and relinquish their land voluntarily to them.
3. Prominent community members or leaders like village heads, head of hamlet and customary leaders are co-opted by the companies in order to pitch the community members against one another to eventually relinquish their ancestral territories.
4. Individual approach in which the extractive industries approach a few community members deemed influential and those who have many plots of land to relinquish/sell their lands in order to influence the other members of the community to do the same. Benefiting from the decreased sense of collectivism of the people, this is the most recent and the most effective approach used by the companies.

5. The companies now buy land from individuals in the community, who 'agree' to sell their land to the oil palm plantations at a relatively high price that ranges from IDR 5 000 000 (or US\$425) to IDR 10 000 000 (or US\$850) per hectare. Once an individual has given his or her consent to the company, the company will in no time take over the land irrespective of whether that individual is the real owner or not. If the real owner, who may not agree to sell the land to the oil palm company, fights for his/her right against the company, he/she will usually be detained by the authorities and charged with a crime.
6. The extractive industries offer promises to provide jobs and development of the kampongs if they sell/relinquish their land to them. The companies usually hire local people as staff members for public relations, security and as, foremen with relatively high pay (IDR 2 000 000 or US\$170 – IDR 5 000 000 or US\$425 per month). This classic method is effective at undermining the solidarity of the people.

The ancestral territories in the research areas are targeted by operations of two oil palm plantations – PT Andes Sawit Mas (Polyplan Group) and PT Agriplus; and one bauxite mining company – PT KWAM (Harita Group), who have already received concessions from the government and have been trying to acquire the ancestral territories of the communities in many ways, despite having been rejected earlier by the communities. Learning from the impacts that affected other kampongs as a result of the expansion of the extractive industries, the community of *pedahasan* are collectively safeguarding and controlling their *dahas* from being displaced. To this end, the activities carried out at *dahas* are now much more intensified.

The availability of land is not only decreasing due to large concessions, people have also increased the area under rubber gardens because the rubber price has been good for several years. This has resulted in less land for rice farming which in turn results in shorter rotation. Thus, soil fertility may not be completely restored during the short fallow period and this increases the risk of lower crop yields. To adequately fulfil the need of food, rice in particular, the community taps rubber and works as daily labourers in oil palm plantations and mining companies to earn cash so that they can supplement the shortage of rice by buying rice from the market.

The price of rubber, an important source of income, often fluctuates. In 2014, it suffered a major drop from IDR 12 000 (US\$1.02) to between IDR 4 000 and 6 000 (US\$0.34-0.51) per kilogram. This price drop has affected the community in many aspects such as their ability to fulfil non-food needs, including education for their children, transportation, health service and others. As a result of the price drop, at least 10-20 percent of the community members in *kampung Tanjung* and *Pangkalan*

Pakit have turned to working as labourers in oil palm plantation – PT Andes Sawit Mas (ASM). A worse impact occurred in *kampung Tanjung*, where 5 percent of its community members sold their ancestral land to the oil palm plantation (*PT ASM* and *Agri Plus*) for IDR 5 000 000 (US\$425) on average per hectare. Therefore, rubber price indeed affects the ancestral domains of the people. A long-term drop of the rubber price is likely to lead to more loss of ancestral domains.

2. Government food policy

Recently, transport into the area has significantly improved. This has resulted in the easier availability of food, particularly rice, in the local markets. Moreover, government, through its policy, subsidizes the price of rice in order to enable the people to have access to cheap rice.²⁷ Of all the farmers who make up 80 percent of the total households across the research areas, only 40-50 percent produced enough rice to meet their household needs, while 30-40 percent of them do not produce enough due to several factors, including limited farm areas, harvest failure due to pests, climate change, poorly managed farming and not performing customary rituals properly.

In addition to abundant cheap rice in the market, it is also a common sight in *Dayak Jalai* villages to see vegetables, fish and other food for sale that come from outside the kampongs. This is something that the farmers in the past never thought would happen. The majority of the consumers are migrants but now some of the local kampong residents are also buying them. The situation is different in each kampong, especially depending on the condition of transport facilities to the settlement. For instance, in *kampung Tanjung*, more than 10 percent of the people are becoming dependent on the supply of the shops or vegetable and food sellers because this area has a village market. Community members who generally do not have *dahas* or farms come to buy food, although not on a daily basis. Vegetable sellers include people who farm and manage *dahas* but are not from *kampung Tanjung*. Moreover, a village in *Tanjung*, known as *Teluk Runjai* has seen half of its area covered by an oil palm plantation and a mining site leading to a decrease in food supply, vegetables in particular. Whereas in *kampung Pangkalan Pakit*, the rate of dependence of the people on buying vegetables and other food is only 5 percent because 90 percent of its people are managing *dahas*, doing gardening and farming, and the ancestral territory of this kampong remains intact. This kampong is situated right on the side of a road connecting Tanjung and Ketapang City which has enabled easier access for the vegetable sellers to offer their products to the locals on a daily basis. A contrasting situation can be found in *kampung Kusik Pakit*, where only 0.1-0.5 percent of its people rely for their food supply on outside food sellers, because their residential area still has an abundance of food from the natural environment, and vegetable sellers rarely go to this *kampung*.

3. Changes in the farming system

Earlier we discussed the various traditional ceremonies related to each agricultural cycle. Today, not all farmers strictly comply with all the ritual requirements. For instance, traditionally, the *menyandam* ritual that is personally performed by the farmer prior to selecting the farm plot could only be carried out when *Menyapat Tahun* ceremony had been conducted by the whole community. Nowadays, this requirement is no longer strictly adhered to.

These rituals are performed throughout the farming cycle, from before an area is cleared for farm until post harvest. As mentioned earlier, 60 percent of the community in the research areas still perform a complete series of the seven rituals, while 35 percent of them perform just four to five of the rituals and 5 percent do not perform the rituals at all. In general, the rituals that have started to be left out by the group of 35 percent are *Menimbung* and *Menjulang Atuq*.

Another change in the farming practices is the decrease in species planted by individual farmers. This is caused by a combination of factors, including decreased importance of farming (because people have additional income), and decreased dependence on the farm for food supply (because goods are available in the market).

4. Changing aspirations in the Dayak Jalai society

Today, like in many other communities, the *Dayak Jalai* communities have more diverse professions. Progress in education and their openness to external influence have had significant impact on the change in professions among the *Dayak Jalai*. It is not surprising to see *Dayak Jalai* who are civil servants, soldiers, policemen, teachers, nurses, private employees, merchants and labourers who work on plantations and in the mining industries. 80 percent of the households are farming full time, 15 percent of them are farming part time, while the remaining 5 percent are farming rice just to fulfil their own subsistence.

The research among 20 percent of the people across these three areas has shown that there are five groups with different reasons for discontinuing farming, as discussed below:

- People who are not local residents, which means they are migrants who have different ways of fulfilling their food needs. They generally have access to land because of their direct or indirect kinship with the locals through marriages. But in cultural perspective and according to the ancestral territory ownership system, they do not have direct access to land. However, today, this group makes use of its financial strength to purchase ancestral lands managed by the locals, enabling them to gain access to land.

- Local residents who no longer farm but instead work as merchants, businessmen (contractor, *toke*/big merchant/agent), civil servants and labourers in plantations. They regard farming as ineffective or inefficient because their orientation is merely economic.
- People who no longer have any land to farm because they have sold their land to oil palm and mining companies and the remaining area has been entirely cultivated with rubber trees.
- People over 60 years old, who are no longer able to farm.
- Young people or those who are still single, who make rubber tapping a priority and are not fully capable of farming.

During the interviews, the people explained some of the reasons why increasingly more people are discontinuing farming. The main reasons that were mentioned as to why farming as the main source of food security is abandoned are as follows:

- Nowadays, traditional farmers tend to be negatively labelled by the public, implying that the profession of farmer is obsolete, old-fashioned and does not fit the present situation. The government of Indonesia labels the indigenous agricultural system as 'shifting cultivation'. This label has resulted in a negative perception of the farming profession. Shifting cultivation has a negative connotation of constant shifting from one farm area to another. Its rotational character and the sustainability of this system are not recognized. Unfortunately, mainstream media supports this labelling, leading to the persistence of negative stereotypes.
- Small farmers are often blamed as the ones responsible for forest fires and haze affecting large areas every dry season, particularly in Sumatra and Kalimantan. This problem is so serious because it is not only a national disaster but also affects neighbouring countries such as Singapore and Malaysia. Unfortunately, the mainstream media keeps repeating that the forest fires were caused by rotational farmers, and those blamed did not have the opportunity to counter such public accusation. Such discredit of the indigenous farming system has contributed to their decreasing self-confidence. Those who are supposed to be held responsible for the forest fires and haze are the large-scale oil palm plantation corporations who clear thousands or even tens of thousands of hectares of land by burning.²⁸
- Farming is considered ineffective or uneconomical to meet the food needs of a household. The resources spent for farming, including time, energy and money are considered higher than the value of the harvest. The entire farming process, which starts in May and ends with the start of harvest in December, obviously has considerable cost. Several phases of the process

involve a large number of people, for instance during *menugal* (sowing/ planting), because rice has to be sown simultaneously. This system is termed *juruk barai* or mutual cooperation where a family who has received help in *menugal* has to return the favour and participate in collective work in the farms of those who have helped them earlier. An activity that requires the participation of a considerable number of people inevitably is a costly affair since food has to be offered. Some community members who are not aware of the long-term benefits of such collective aspects of indigenous peoples' farming systems deem this way of farming too costly and not profitable.

In the past few years, the onset of dry and rainy seasons has become unpredictable as a result of global climate change. There are times when dry and rainy season last longer than they did historically. In the past, the dry season generally was from June to the end of August, the perfect time for clearing and burning of the rice fields. By the time rice seeds were beginning to germinate, rain would start to fall mildly and reach its peak precipitation around November and December when rice crops were starting to get ripe and harvest season would start and last until the end of April. Unpredictable dry and rainy seasons cause challenges for the farmers in determining when the farming season can start. Excessive precipitation or protracted drought may result in complete harvest failure. This condition has caused the farmers to turn to their rubber gardens and livestock raising as well as selling durian and other fruits harvested from their *dahas*.

- The most vicious pest that has repeatedly affected rice crops in the farms is the migratory locust (*Locusta migratoria*). The first plague of migratory locusts was recorded in 1978. In response to this plague, the government at that time carried out a programme termed as SIBA²⁹ to eradicate it. This plague re-occurred in 1998-2000 in the same area devouring rice crops leading to another harvest failure.
- Population growth has led to reduced availability of farmland. This is not only a result of increased birth rate, but also due to increased migration of people from other parts of Indonesia and West Kalimantan. The transmigration programme not only increased the number of inhabitants, rather, in 2001, in Ketapang District, the transmigration programme has taken away a total area of 532 220 hectares from the ancestral domain of indigenous peoples. Transmigrants were brought in to this area and were simultaneously hired to work at newly operating oil palm plantations. The area provided for the transmigration covers *Manis Mata*, *Marau*, *Air Upas*, *Singkup*, *Sungai Melayu*, and *Tumbang Titi* sub-districts. The scheme of the transmigration was that 2 500 households were grouped in several *Satuan Pemukiman* (SP)/Settlement Units, in which one SP comprised 500

households and five SP comprise a *Satuan Keluarga Pengembangan* (SKP)/ Developed Household unit, which occupy an area of more than 10 000 hectares.³⁰

5. Impacts on livelihood and local food security

The *Dayak Jalai* are facing rapidly changing circumstances that provide both new opportunities and new challenges. There is a marked shift, especially among the younger generation, from agriculture as the main source of livelihood to either a combination of agriculture and wage labour or sole reliance on cash to purchase food. The mixed agricultural system combining rice farming and rubber gardens has proven to be resilient. However, decreasing land availability means that this system may not always be able to provide enough for the family needs.

A number of new professions, such as casual labourer, mechanic, security guard and so forth, have emerged. This has resulted in a shift from farming to wage labour. Some people believe that they can meet all their needs (including food) if they have cash in hand. However, as this research demonstrated, the cash income derived from wage labour can be inferior in terms of purchasing power when compared with the goods and cash obtained from agriculture (see comparison in table below). Unfortunately, many are not aware of this due to lack of knowledge and information.

Source of Income	Farming and Rubber Tapping	Working in Oil Palm Plantation	Working in Mining
Average income (20 working days)	a. Rubber tapping: 20 days × 15 kg × US\$0.6 = US\$178.76 b. Farming (accumulation) 1 hectare generates 1 000 kg/12 months = 83 kg × US\$1.02 = US\$84.78 Total a + b = US\$263.54	20 days × US\$5.96 = US\$119.17	20 days × US\$8.51 = US\$170.24
Other income	1. Selling Fruit and Vegetables; annual average (only <i>durian</i> fruit as sample): 1 000 <i>durians</i> /12 months = 83 <i>durians</i> /month × US\$0.85 = US\$70.652. Farm-animal Raising: (chickens & pigs): 200 kg/12 months = 16.6 kg per month × US\$2.98 = US\$49.67	Over time Work: 15 nights × US\$6.38 = US\$95.76	Over time Work: 15 nights × US\$8.5 = US\$127.68

The table below presents data obtained in March 2014 from *kampung Tanjung* and *Pangkalan Pakit* that allows a comparison of income from different activities.

The table shows that people's perception that alternative livelihood sources (working as labourer) and not practicing local knowledge-based farming is more financially promising is not correct. The actual factors that lead to such misperception is the successful media-backed campaign of the government, the state education system that lacks appreciation of local knowledge and cultural values, as well as the changing life expectation and the get-rich-quick mentality of the people themselves. The situation is further aggravated by the pressure, intimidation and criminalization faced by the communities in their efforts to protect and maintain their livelihood based on their own culture and traditions.

From an economic perspective, the profession a community member chooses does not matter as long as it guarantees the fulfilment of the basic needs of the community. The big questions are whether this is the case for the *Dayak Jalai*, and to what extent the Indonesian government is supporting policies and strategies that maintain the stability of its people's livelihoods, particularly food security, when it is mainly relying on imports and production that is controlled by the central government (i.e. the Ministry of Agriculture and Commerce). A related question is: what is a better strategy; improving food security independently through empowerment of farmers, or relying on imports of basic necessities from other provinces or other countries while local potentials for food and non-food production are simply ignored? Furthermore, is there any guarantee that the relation between producers and consumers will never experience any constraints?

When the focus is on food security, ensuring self-reliance in food and long-term sustainability will be the best option both for farmers and the nation. Unfortunately, the current policy of Indonesian government does not support self-determination in food of its people. For instance, there is no policy protecting the ancestral domains as an important farming area providing farmers with food sustainability. Conversely, various programmes implemented are rather contra-productive. Since 2008, food subsidies have been given through several programmes, such as *raskin* (*beras miskin*/rice for the poor), *BLSM* (*Bantuan Langsung Sementara Masyarakat* or Temporary Direct Aid to Community) and so forth. However, these programmes are unfortunately closely linked to the political interest of the policy makers who use them mainly as a means of gaining the sympathy of the people and not as a means of improving the welfare of the people.³¹

Although 'new' professions that emerged are part of the adaptation to the current changing economic situation, the decreasing interest in the profession of rice-rubber farmer should receive the attention of all stakeholders. The indigenous farming system

embedded in the *dahas*-system has contributed significantly to sustainable natural resources management. Local knowledge and practices can contribute to the sustainable management of globally important natural resources. Losing the farmer profession in the *Dayak Jalai* area is equal to losing the indigenous knowledge about a system of sustainable natural resources management.

In general, the recent development among *Dayak Jalai* farmers points at the ironic situation that has emerged in Indonesia in general. Approximately, 46 percent of Indonesia's population identify themselves as farmers. This number is very high and should mean that the food security and sovereignty of the people of Indonesia is ensured. Moreover, Indonesia is blessed with an extensive land area and therefore, food production in this country should be more than sufficient to feed its own people. However, the reality is the opposite. Indonesia as a predominantly agrarian country is not able to produce enough food and has become the world's biggest rice importer. This situation suggests that there is no correlation between having a large percentage of the population working as farmers and the ability to produce food.

FAO's (1996) definition of food security that was later adopted by the government of Indonesia through issuing Law No. 7 in year 1996 states four components that must be met in order to achieve food security as follows:

- Sufficiency of food availability,
- Stability of food availability without fluctuation from season to season or from year to year,
- Accessibility to food and
- Quality of food.

The law somehow does not incorporate anything about the origin of the food and how the food is produced, and this omission is seriously undermining Indonesia's food security.

VI. Conclusions

Indigenous peoples like the *Dayak Jalai* should be expected to be among the people with the highest level of food security and sovereignty because they are the ones who are closest to the land and natural resources. Their food security is inseparable from the following prerequisite factors:

1. The existence of their ancestral territory, without which their farming system cannot be sustained;

2. Local knowledge-based management system, without which it will be difficult to continue farming to ensure food security;
3. Rituality because a farming process that is carried out without going through rituals would consequently ignore the relationship among people, nature and the creator (*Duwataq*);
4. Customary law, because if customary regulations in farming are violated without any penalties then the principles of rituality and locality would no longer be respected leading to a weak and less sovereign farming system;
5. Price parity between agricultural products and other goods, since this has a direct impact on how the indigenous peoples meet their everyday needs. For instance, the drop in rubber price from IDR 10 000–15 000 (US\$0.85–1.27) to IDR 5 000 (US\$0.42) per kilogram in September 2014, or the price drop for dry *tengkawang* (illipe nuts) from IDR 15 000–20 000 (US\$1.27–1.7) to just IDR 3 000 (US\$0.25) per kilogram will lead the people, particularly those relying solely on rubber gardening and farming, to look for alternative livelihood sources. If the price of these commodities keeps falling, people will stop farming and seek other means to meet their primary needs;
6. The preservation of local rice varieties is another important factor. A decrease in the number of farmers and harvest failure due to climate change may cause the loss of the seeds of certain rice varieties, thus, reducing the gene pool needed for sustainability. This aspect is very important because rice varieties from other places may not be suitable to the local growing conditions.
7. The lack of protection for the land rights of indigenous peoples will gradually undermine the food security system because of the expropriation of the land of indigenous peoples by the state and through the development of palm oil plantations and mining.

The tradition of farming can ensure that food is always available. The heterogeneity of food crops in their farms is a wise measure not only as a response to work and diet preferences, but also as an important strategy to address the food crisis that may occur due to rice harvest failure.

Farming activities as a way of maintaining the availability and sustainability of food sources combined with rubber tapping are two sectors that mutually support each other to increase the chance of family surviving. However, it must be supported by the availability of the three basic elements: forest, land and water.

Nowadays, the situation has changed 180 degrees with natural resources being tremendously degraded due to large-scale exploitation. The expansion of both

monoculture palm oil plantations and mining has negatively influenced natural resource management. A related impact is the drastic population increase in the area requiring more space and resources.

A variety of outside influences resulting from improved access have impacted the livelihood of indigenous peoples. Being a rice and rubber farmer is not the only option anymore because there are other job opportunities. The youth mostly prefer the 'new' professions although they mostly end up working as casual labourers.

Based on the research findings and literature consulted, in comparison to the past, current access to food is much more practical, convenient and affordable. Relying on cash to buy food is deemed economically preferable to working on farms, where yields are not always sufficient and include the risk of total harvest failure. However, while traditionally cultivated farms may not ensure maximum productivity, they are more resilient. To ensure that the indigenous farming system can produce optimally, the seven prerequisites mentioned above have to be met.

The government programme for food security that does not regulate the source of food and does not contain provisions that makes self-reliant food production mandatory has (directly and indirectly) resulted in people becoming dependent on outside supplies. In other words, food security and sovereignty of the people have decreased, a fact many are not aware of.

The case experienced by the *Dayak Jalai* who mostly work as rice and rubber farmers can be a reflection of the condition of other indigenous peoples in West Kalimantan and in rural areas throughout Indonesia, where large plantations, mining and other companies are grabbing land for their expanding businesses because indigenous peoples' rights over their land, territories and resources are not being legally recognized.

1. Prospects and recommendations

The concept of food security does not refer simply to the availability of food for consumers, but includes the whole system of production and distribution as well as related government policies that are supposed to ensure the ability of people to access food. Inseparably linked to food security are justice and resilience. To ensure resilience, dependence on any outside parties should be avoided. The dependence of a community on corporations to meet its food needs is to a large extent a result of corporate appropriation of farmlands that are part of the community's ancestral territory. A decrease of farmland inevitably leads to decreased food security. Another example of dependence is the reliance on supplies of imported rice, which, due to adverse climate conditions or political tension, may sometimes become unavailable or the price may rise, increasing poverty or even causing famine.

Farmers have a strategic position in which they are producers and consumers at the same time. They also need cash to purchase goods and meet other needs (e.g. education), but most indigenous peoples, like the *Dayak Jalai*, have difficulties generating enough cash. Community empowerment is needed to increase community awareness so people will have the capability to make informed decisions to sustainably use their assets and secure the fulfilment of their needs.

The circumstances in indigenous communities are rapidly changing as land is becoming scarcer and the need for cash is increasing. How can they meet their food needs if they do not produce their own food and at the same time their purchasing power remains low? In order to ensure food security, they must have not only the ability to produce food but also have enough cash income to buy food. Through a natural resource management system that combines rice farming with rubber tapping, the *Dayak Jalai* have been able to do that. To maintain this system in the future, indigenous communities need to be empowered to secure their ownership and control of land.

The Constitutional Court decision of 2012 has created the legal precondition for that. In its Judicial Review of Act No. 41/1999 on Forestry, the Constitutional Court Decision No. 35/PUU-X/2012 drew two important conclusions. It recognizes that indigenous peoples have rights over their customary forest and it ruled that Article 1 Paragraph (6) of Law No. 41 on Forestry, which states that “customary forest is State forest located in the areas of traditional-law society,” is contrary to the Indonesian Constitution which makes this definition legally void. Thus, Article 1 paragraph (6) now should read “customary forest is forest that is situated in the areas of customary law communities.”

The Constitutional Court decision opens the opportunity for indigenous peoples (referred to as the Customary Law Community by the law) to independently manage their forests, including farming systems. However, to achieve this, the issue of plantation and mining concessions granted by the government that are overlapping with indigenous forests without their collective consent must be addressed.

Another potential opportunity that can be used to advance the interest of indigenous peoples is the new Village Law (Law No. 6 of 2014). Article 26, paragraph (3c and d) of this law stipulates that some of the roles of the village head are organizing village administration and empowering the rural communities. The village head plays a strategic role in realizing food security and community empowerment for his/her village; therefore, the village head is legally authorized to implement his/her policies. The law also regulates the sources of village revenue for implementing programmes. Assuming that a village head, who is elected democratically by the community members, is aware of and concerned about the issues mentioned above,

villages now have the opportunity to become more autonomous and self-sufficient. They have the potential to sustainably manage their ancestral domains, particularly the ancestral forests based on time-proven traditions and indigenous knowledge.

Related to this is the draft law on the recognition and protection of indigenous peoples, which is still awaiting approval by parliament. The need to establish a law on indigenous peoples is indeed mandated by Article 18B paragraph (2) in 1945 Constitution as a result the second amendment in 2000, which states: “*The State recognizes and respects the societies that live by customary law and their traditional rights as long as they remain in existence and in accordance with the development of society and the principles of the Unitary State of the Republic of Indonesia, which is regulated by law.*”

There are at least two more reasons why parliament has to pass the Bill on Indigenous Peoples. First, the law on the recognition and protection of the rights of indigenous peoples is necessary for resolving any conflicts between indigenous peoples and either government or private companies related to the management of land, forests and natural resources. Second, the law on the recognition and protection of the rights of indigenous people constitutes one of the obligations of the state towards all its citizens to protect their human rights and avoid arbitrary deprivation.

Some opportunities existing in the present laws, policies and regulations issued by the state should be utilized to the maximum. The problem is that not all people know and understand them. Information on laws, policies and regulations, disseminated by the government does not reach all communities. Therefore, the dissemination of such important information should be supported by all stakeholders – governmental and non-governmental – who are concerned about the rights and well-being of indigenous peoples.

Efforts to encourage indigenous peoples to revitalize their traditional farming systems, such as the *dahas* of the *Dayak Jalai*, are still not sufficient to address today’s challenges. More direct support is needed, also in the form of innovations that enable these systems to provide optimal benefit and adjust to changing conditions, especially maintaining productivity on the increasingly shrinking farming areas.

Intensification and innovation are the two key requirements to increase farming productivity of indigenous peoples. Due to increasingly shrinking farmland, there is no longer any opportunity for communities to increase production by expanding the areas under cultivation. Other areas with limited agricultural lands in Indonesia, such as Java and Bali, can serve as examples of how rice production can be intensified.

In addition to innovations in agriculture, it is also necessary to develop other livelihood alternatives to maintain or increase self-reliance and sustainability, such as

raising farm animals. An unstable rubber price and the unpredictable future of rubber production constitute constraints and insecurities that require alternative sources of income.

To fill this void, community empowerment institutions are needed, especially in the economic sector, which employ people-centred approaches. Examples are credit unions that can also make positive contributions in the form of education and training. The presence of such institutions can help significantly in developing initiatives for self-reliance, and particularly to ensure food security for communities.

It is time to address the food security challenges indigenous peoples confront today. Strategic measures should be taken to prevent food crises in the future. Below are several recommendations for measures that can be practically applied:

1. Producing food self-reliantly at the family level through revitalization of existing farming systems in indigenous communities that still have sufficient land. In communities with limited farming land, a more intensive use of wetland (*payak/ladak*) should be considered. In order to support this, it is necessary to have adequate knowledge and skills that enable adaptation to changes, especially climate change.
2. Expanding the diversity of self-produced food crops to fulfil the needs of a family that are in line with the resource potentials and the consumption and work patterns of the communities. This measure helps to ensure that cash income is not spent on food. Minimizing financial expenditure on food is a wise measure that can be taken by every family so that their cash income is used to meet other needs that cannot be substituted, for instance, medical care or education of their children.
3. Productively utilizing available lands both in *dahas* and in the yard around the house in diverse and integrated ways, like combining vegetable gardens, fishponds, and livestock, etc., to meet consumption needs and to generate cash income.
4. Improving agricultural productivity in line with the capacity of indigenous farmers. Since the introduction of rubber trees, there has been very little innovation in land use. Developing alternative forms of land use that help increase both food production and cash income are necessary to maintain self-reliant livelihoods of indigenous communities in the long run.
5. Intensively support education and community empowerment to increase awareness and strengthen human resources. The existing role of microfinance institutions such as credit unions should be maximized.

6. Strengtheni networking (producers, wholesalers, retailers, buyers) and commitment of all stakeholders (farmers' groups, village leaders, cooperatives and similar institutions like credit unions, local governments and government line agencies in key sectors like agriculture and industry) regarding policy and decision making as well as technical execution of initiatives at all levels. There should be a synergy (mutual complementary and co-operation) of all stakeholders. For instance, the producers are to improve their productivity in addition to the quality of their production; the village administration issues supportive local policies through village regulations; farmers' groups serve as wholesalers; credit unions assist by providing loans to the farmers' groups and the district government and ministries support and protect local production and marketing as well as prices that are in favour of the farmers. Partial and sectoral efforts are not sufficient. Networking among organizations and institutions should focus on promoting the common goals of improving household food security and the well-being of common people in an economically and ecologically sustainable manner.

References

- Alloy, Sujarni and cs. 2008. *Mozaik Dayak; Keberagaman Sub Suku dan Bahasa Dayak di Kalimantan Barat – Dayak Mosaics; the Diversity of Dayak Sub-ethnic groups and languages in West Kalimantan*. Pontianak: Institut Dayakologi
- Bamba, J. 2001. *Pelajaran dari Masyarakat Dayak – Lessons Learnt from the Dayak People*. Pontianak: Institut Dayakologi
- Bamba, J. 2003. *Dayak Jalai di Persimpangan Jalan – Dayak Jalai at the Cross Roads*. Pontianak: Institut Dayakologi
- Corruption Watch (ICW) 2013. *Concession for Industrial Tree Forests, Oil Palm Plantations and Mining in Ketapang District*. Investigation Report of Indonesia
- Dove, M. 1998. *Living rubber, dead land, and persisting systems in Borneo representations of sustainability*. Leiden: KITLV Journals
- Gunui', Krissusandi and Elias Ngiuk (2012). *Melindungi Tiong Kandang – Protecting Tiong Kandang*. Pontianak: Institut Dayakologi
- ID and AMAN. 2010. *The Dayak Jalai Peoples & Their Concept of Dahas In Ketapang District, West Kalimantan, Indonesia: A Case Study*. Baguio City: Tebtebba

- Institut Dayakologi 2014. Overview Report of the Programmeme for Facilitation on the Self-Reliance of the Indigenous Peoples in Ketapang District 2008-2013. Pontianak: Institut Dayakologi
- Interview Findings with Benediktus Basri, The Head of Tanggerang Village-Tanjung, Jelai Hulu Sub-District, Ketapang District, Year 2014; allowed to quote
- Lilis, E. 2008. Pengetahuan Adat dan Tradisi – Indigenous Knowledge and Traditions. Pontianak: Institut Dayakologi
- Office of Energy and Mineral Resources of Ketapang District 2007. Data on Concession for Mining in Ketapang District 2007
- Petebang, Edi. 1998. Dayak Sakti-Mengayau – The Magical Dayak-Head Hunting. Pontianak: Institut Dayakologi
- Sareb Putra, R. Masri 1992. Lukisan yang Hidup tentang “Si Kecil” – (Alive Painting about “The Little”): Understanding a journal of a missionary, the Introduction of a Book: “Catatan Seorang Misionaris: Hidupku di Antara Suku Daya” (The Journal of A Missionary: My Life Among the Daya”), written by Herman Josef van Hulsten. Jakarta: Gramedia
- Tatang, Laurensius *et al.* 2000. KALIMANTAN: Bumi Yang Kaya Makanan – Kalimantan: the Earth rich of Food. Pontianak: Institut Dayakologi
- Wahana Lingkungan Hidup Indonesia-Kalimantan Barat (Walhi-Kalbar) – The Friends of Earth of West Kalimantan 2014. Concession for oil palm plantation corporations in Ketapang District year 2013
- Wahono, F.X. 2012. Pancur Kasih Credit Union Movement. Baguio City: Tebtebba & Institut Dayakologi
- Wahono, F.X. 2013. Pancur Kasih Empowerment Movement. Baguio City: Tebtebba & Institut Dayakologi

Internet Sources

- Dimue, Alex *cs.* 2013. Food Injustice in Eastern Indonesia. Jakarta: Aliansi Jurnalis Independen Indonesia (AJI) – The Alliance of Independent Journalist of Indonesia. Downloaded source: aji.or.id/read/buku/17/Ketidakadilan-Pangan-Di-Timur-Indonesia.html
- Bill of the Recognition and Protection of the Rights of Indigenous Peoples. Downloaded Source: ditjenpp.kemenkumham.go.id/files/.../2453_Draft%20RUU%20PPHMA...

- Crisis of Agricultural Areas in Indonesia 2013. Downloaded source: <http://www.tempo.co/read/news/2014/06/11/173584243/Konversi-Lahan-Pertanian-di-Indonesia-Mencemaskan>
- Data of the Central Agency of Statistic of the Republic of Indonesia 2013. Rice production and export-import of Indonesia. Downloaded source: http://www.bps.go.id/download_file/IP_Februari_2014.pdf
- FAO, 1996. World Food Summit Plan of Action. World Food Summit 13-17 November 1996. Rome: FAO; accessed at: http://www.fao.org/wfs/index_en.htm
- Hariyono, Tri 2014. Dari Ketahanan Pangan Menuju Kedaulatan Pangan – From Food Security Towards Food Sovereignty, Serikat Petani Indonesia/SPI (Indonesian Union of Farmers) – Yogyakarta. Downloaded source: http://www.academia.edu/4810716/Dari_Ketahanan_pangan_menuju_Kedaulatan_Pangan/
- Information on the Total Area of Ketapang District and the Map of Ketapang District's Area, Public Relation of Ketapang District. (August, 2014). Downloaded source: http://www.humas.ketapang.go.id/info_daerah.php?k=peta_ketapang
- Kalimantan Review Online Magazine 2013. Fenomena sawit dan kabut asap di Kalimantan Barat (The Phenomenon of smog in West Kalimantan). Pontianak: Institut Dayakologi. Downloaded source: <http://kalimantanreview.com/berita-fenomena-sawit-dan-kabut-asap-di-kalimantan-barat.html-November>
- Law of the Republic of Indonesia No. 18 of year 2012 on Foodstuff. Downloaded source: <http://ppvt.setjen.pertanian.go.id/ppvtpp/files/61UU182012.pdf>
- Law of the Republic of Indonesia No. 27 of year 1959. jdih.ristek.go.id/?q=system/files/perundangan/1260103333.pdf
- Merdeka.com 2014. Indonesia Terancam Krisis Pangan 2017 – Indonesia is facing Food Crisis by 2017. Downloaded source: <http://www.merdeka.com/uang/indonesia-terancam-krisis-pangan-pada-2017.html>
- Presidential Instruction/Decree Number 6 year 2013 on the Moratorium on new concessions for the natural forest and Improvement of Forest Governance of Primary Forest and Peatland. Downloaded Source: http://www.slideshare.net/yossy_suparyo/inpres-6-tahun-2013-tentang-moratorium-izin-hutan-dan-penyempurnaan-tata-kelola
- Profile of Ketapang and History of Matan-Tanjungpura Sultanate. Official Website of Ketapang District 2013. Downloaded source: <http://www.ketapangkab.go.id/>

- Regulation of Manpower and Transmigration Minister No. 07 year 2013 on Regional Minimum Wage. Downloaded source: <http://aswinsh.files.wordpress.com/2013/10/peraturan-menteri-tenaga-kerja-dan-transmigrasi-nomor-7-tahun-2013-tentang-upah-minimum.pdf>
- Tanda-Tanda Krisis Pangan Indonesia (Signs of Indonesia Food Crisis) 2013. Downloaded source: <http://www.merdeka.com/uang/ini-tanda-krisis-pangan-indonesia-kian-dekat.html>
- The Condition of Nature and Peat Land in Ketapang District. Data of the Office of Environment of Ketapang 2013. Downloaded source: <http://lingkunganhidup.ketapangkab.go.id/>
- Undang-Undang Dasar Republik Indonesia 1945 (The 1945 Constitution of the Republic of Indonesia), Downloaded source: www.itjen.depkes.go.id/public/upload/unit/pusat/files/uud1945.pdf
- Anwari, Akbar (18 May 2014) Kondisi Ketahanan Pangan Indonesia-Kedaulatan pangan merupakan prasyarat dari ketahanan pangan (the Situation of Indonesia Food Security – Food sovereignty is precondition of food Security). Downloaded source: <http://m.kompasiana.com/post/read/657635/1/kondisi-ketahanan-pangan-indonesia-saat-ini.html//>

Endnotes

- ¹ jdih.ristek.go.id/?q=system/files/perundangan/1260103333.pdf
- ² Official website of the District Government of Ketapang. www.humas.ketapang.go.id (October 2014) <http://lingkunganhidup.ketapangkab.go.id/index.php/public/page/detail/37>
- ³ http://www.humas.ketapang.go.id/info_daerah.php?k=sejarah_ketapang
- ⁴ Environment office of Ketapang, 2013 <http://lingkunganhidup.ketapangkab.go.id/index.php/public/page/detail/37>
- ⁵ The Mosaic of *Dayak*, the Diversity of *Dayak's* Languages and sub-ethnic groups in West Kalimantan. The Findings of Ethno-linguistic Research conducted by *Institut Dayakologi*, 2008.
- ⁶ *Mengayau* is, in general, collectively understood as a tradition of head hunting in the past, in which one group of Dayak assaulted another and this dates back to hundreds of years. *Edi Petebang*, in his book "*Dayak Sakti*", Institut Dayakologi, 1998, explains that *Mengayau* was a ritual custom that contained richness of oral traditions. The purpose of the head hunting could only be understood within the scope of the belief structure of the oral tradition itself. Head-hunting custom is full of mystery because it is rich in supernatural powers. This fact has led to a lack of articles/writing on this custom.
- ⁷ John Bamba, *Dayak Jalai di Persimpangan Jalan* (Dayak Jalai at the Cross Roads), Institut Dayakologi-Pontianak, 2004.
- ⁸ *John Bamba, Dayak Jalai di Persimpangan Jalan, (Dayak Jalai at the Cross Roads)*, year 2004, page 219.
- ⁹ The findings of Institut Dayakologi's research and studies in 2001.
Similar note can be seen in: *R. Masri Sareb Putra, Lukisan yang Hidup tentang "Si Kecil"* (Alive Painting about "The Little")
Understanding a journal of a missionary, the Introduction of a Book: "*Catatan Seorang Misionaris: Hidupku di Antara Suku Daya*" (The Journal of A Missionary: My Life Among the Daya"), written by Herman Josef van Hulsten. Jakarta: Gramedia, 1992, page. xvii. The displacement of long houses was linked to the anti-communism politic campaigned by the New Order Regime of that time. The influence of *Pasukan Gerilya Rakyat Sarawak/PGRS* (Guerilla Army of Sarawak's People) in 1967 in the patches of boundary area of Indonesia and Sarawak-Malaysia and Indonesian experience of confrontation with Malaysia had further fuelled the reason behind this displacement although the *Dayaks* were not involved in it.
- ¹⁰ *Pedahasan* is an area on which a wide variety of fruit and other useful trees grow. *Pedahasan* is an independent area belonging to several households of one kampong and this place serves as the economic centre for their owners. Therefore, *pedahasan* usually becomes the second settlement to a household, and therefore, a semi-permanent house is built as a place to reside in when they are working on their land (*dabas*). Since it is an alternative settlement, farm animals can usually also be found in *pedahasan*, including fish and previous year rice farm turned into rubber garden (John Bamba: 2004)
- ¹¹ Data Source: Participatory Map of the Ancestral Territories of kampong Tanjung, Pangkalan Pakit, and Kusik Pakit, year 2001; Findings of Social Investigation of the Alliance of Indigenous Peoples of Jalai-Kendawangan year 2012; Data of Tangerang-Tanjung & Rangga

Intan Villages, August 2014; Interview with the Heads of Rangka Intan, Tanggerang Villages and with the Head of Pangkalan Pakit Hamlet

- ¹² Data obtained from the Office of *Tanggerang* and *Teluk Runjai* Villages (both of which are situated in *kampung Tanjung*) in 2014.
- ¹³ *Sujarni Alloy, cs, Mozaik Dayak, Keberagaman Subsuku dan Bahasa Dayak di Kalimantan Barat* (Mosaic of Dayaks, Diversity of Dayak's Sub-ethnic groups and Languages in West Kalimantan) *Institut Dayakologi, Pontianak, 2008.*
- ¹⁴ John Bamba, *Dayak Jalai di Persimpangan Jalan-Sistem Pengelolaan Wilayah Adat* (Dayak Jalai at the Cross Roads-System for Ancestral Domain Management), page 203, year 2004.
- ¹⁵ Presidential Instruction Number 6/2013 on the moratorium on new concessions for the natural forest and peat land use
- ¹⁶ Rotational farming system (Indonesian: *Sistem Perladangan gilir balik*) means that in managing their farms, the *Dayaks* always emphasize their local knowledge-based principles, including rituals, sustainability, process, subsistence and customary law. Moreover, a plot of land (forest that is prepared for farming) that has been farmed will be farmed again in the next 5-10 years. What needs to be understood is that such farming pattern has gradually sustained changes because of, for instance, reduced area resulting from former farms being directly used for planting vegetables or other tree crops for alternative income generation, such as rubber, *tengkawang* (*Borneo illipe nut*) and others. Nowadays (2014), it is already difficult for farmers to conduct such rotational farming in a span of 5 years' time due to limited farm areas, therefore, they must ensure effective and efficient land use (Institut Dayakologi's research findings into the Management System of Dayak Tae's Ancestral Territory, year 2012, written by *Krissusandi Gunui* and *Elias Ngiuk* in a Book: *Melindungi Tiong Kandang sebagai Sumbat Dunia* (Protecting *Tiong Kandang* as the seal of the World, year 2012)
- ¹⁷ See Institut Dayakologi's Research Report on *Dahas*, year 2010-2011;
- ¹⁸ The *Dayak Jalai* have their own religiosity system. Despite the fact that the majority of them are Catholics, the rituals still take place. Moreover, people who reside in *dahas* or *pedahasan* are generally more strictly adhering to their indigenous religion's rules and bonds. The *Dayak Jalai* believe that the world's balance happens when there is balance among human themselves, human with nature and human with *Duwataq* (Guardian Spirit), and thus their customary rituals and law always accommodate these three elements of balance. According to *John Bamba* (2014), *Dayak Jalai*'s religiosity is reflected by the diversity of culture that is rich in rites they perform. Those rites – that are often deemed backward because they hamper efficiency—are otherwise a manifestation of a unique civilization that has the potentials to solve various crises that are affecting humanity today. *Dayak Jalai*'s religiosity lies within the limits of human ability that can be put into practice in daily concrete actions with all the consequences and is free from contention or dichotomies between faith and law of religion. Therefore, the *Dayak Jalai* do not recognize hell – a place believed to be where people settle all their unpaid 'debt' in the world. The mistake done in a man's world has to be accounted for and corrected in the same world because the Upper World is the World of Eternity; a world that differs from that of human's.
- ¹⁹ This kind of spice and herbal plants are combined because some of them can be used for both functions, such as ginger, *cakur*, turmeric

- ²⁰ In the past, *dahas* even used to be the primary settlement area, whereas the house in kampong was the secondary settlement.
- ²¹ John Bamba; *Dayak Jalai* at the Cross Roads, Institut Dayakologi, 2004
- ²² *Dahas tuaq* is characterised by old fruit trees dominating several parts of the kampongs. This differentiates it from young *dahas* (*dahas mudaq*).
- ²³ Report of Programme for Facilitation on Indigenous Peoples' Self-Determination in 2008-2013, *Institut Dayakologi*.
- ²⁴ Source: The Office of Energy and Mineral Resources, *Ketapang* District, 2007
- ²⁵ Source: *Walhi Kalimantan Barat*/Friends of the Earth of West Kalimantan, 2014
- ²⁶ Indonesia Corruption Watch, investigation findings in 2013
- ²⁷ This programme is known as RASKIN that stands for Rice for Poor People. Every family that falls into poor category receives a quota of 10 kilograms of rice per month. This programme has been implemented since 2008 and has sparked pros and cons from the people.
- ²⁸ For instance, the suspects of forest fires in Riau Province on Sumatra in June 2013 are foreign corporations such as PT Langgam Inti Hiberida, PT Bumi Rakksa Sejati, PT Tunggal Mitra Plantation, PT Udaya Loh Dinawi, PT Adei Plantation, PT Jatim Jaya Perkasa, PT Multi Gambut Industri, and PT Mustika Agro Lestari. Other oil palm plantations, which are allegedly involved are the Singapore-owned corporation – Wilmar International Ltd. (WIL) and Malaysia's Sime Darby Bhd (SIME), PT Sinar Mas Agro Resources and Technology (SMART) as well as Asia Pacific Resources International Holding Ltd. (APRIL). <http://www.satuharapan.com/read-detail/read/8-perusahaan-asing-diduga-penyebab-kabut-asap-di-riau>.
- ²⁹ SIBA is the abbreviation of *Sikat Belalang* – literally translated as Exterminate Locusts. Resource persons about this programme are those who were directly involved in this operation. The military played a very active role at the time so that is why the name of the programme, which implied their perspective on the pests was chosen. They chose the word exterminate instead of control.
- ³⁰ John Bamba, *Pelajaran dari Masyarakat Dayak* (Lessons Learnt from Dayak Peoples), year 2001
- ³¹ This programme is not only used as a political commodity by those in powers, but also is prone to be misused because of the fact that in reality many families who are economically well-off are the ones who receive the subsidy instead.

Chapter 5

An alternative approach to land and forest management in northern Lao PDR

Satomi Higashi



Acronyms and glossary

ADB	Asian Development Bank
DAFO	District Agriculture and Forestry Office
DOE	Department of Environment
FAO	Food and Agriculture Organization of the United Nations
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit/German Technical Cooperation
LFA	Land and Forest Allocation (Programme)
Lao PDR	Lao People's Democratic Republic
MAF	Ministry of Agriculture and Forestry
MSG	Monosodium Glutamate
NGO	Non-governmental organization
NTFP	Non-timber forest product
REDD	Reducing Emissions from Deforestation and forest Degradation
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNDP	United Nations Development Programme
WREA	Water Resource and Environment Agency
Kmhmu'	An ethnic group belonging to the Mon-Khmer sub-branch of the Austro-Asiatic language family. Alternative spellings are Khmu, Kammu, Khmou, Khamou, and Khımu.
Khoum	Hamlet (small unit in a village)

Title page photo: Harvesting swidden rice, Pak Beng District. Photo: Satomi Higashi.

An alternative approach to land and forest management in northern Lao PDR

Satomi Higashi

In the Lao People's Democratic Republic (Lao PDR), where approximately 80 percent of the population lives in rural areas, rice production through shifting cultivation¹ remains an important means of rural livelihood. However, since the mid-1980s, the Lao PDR government has deemed shifting cultivation as a major cause of deforestation and adopted the Shifting Cultivation Eradication Policy (Souvanthong 1995). To promote the policy, the government has also implemented the Land and Forest Allocation (LFA) Programme throughout the country beginning in 1996. The LFA programme has contributed to preserving forests and promoting stationary agriculture in some areas. However, in other areas, the programme has led to no practical improvement in land and forest use, but rather it has caused damage to forest resources in the Lao PDR. Some researchers (e.g., Kitamura 2003: 227; Chamberlain 2001) observed that the LFA programme has aggravated poverty in the Lao PDR, especially in the northern part of the country, where shifting cultivation is the main livelihood of the local people.

One notable group of people who have been particularly affected by the LFA programme is the Kmhmu² people, the focus of this case study. Traditionally, Kmhmu' people have made their living on agricultural production in swidden cultivation, hunting, fishing and non-timber forest product (NTFP) collection. Their life, culture and religion have close connections with shifting cultivation. However, the LFA programme has made the life of Kmhmu' difficult. In Pak Beng District, Oudomxay Province in northern Lao PDR, where the Kmhmu' is the majority, the LFA has been implemented in a top-down manner to limit shifting cultivation. This has confused land use among the local Kmhmu' villagers who depend on shifting cultivation, as will be discussed in more detail later. The decrease of agricultural land has led to food shortages and higher rental prices for farmland in neighbouring villages. Moreover, forest management has become disorderly because villagers have started 'illegal' cultivation in watershed forests due to insufficient land. This was neither what the district government hoped for nor what the central government tried to achieve in relation to land and forest management through the LFA.

I came to work in Pak Beng District, particularly with the local Kmhmu' communities, in 2005 as a programme coordinator of Mekong Watch³, a Japanese non-governmental organization (NGO). Mekong Watch was already aware of the mixed results of the LFA programme and hypothesized that two types of gaps were exacerbating the impacts of the programme. One was a communication gap between regional government officials and local residents; and the other was related to the state policy implementation—between policies formulated at the central and local government levels. Mekong Watch thought that we could fill these gaps by conducting research to clearly identify the gaps and provide training for local government officers as well as villagers on management and use of watershed forests. A number of activities were carried out in close cooperation with the Faculty of Forestry, the National University of Laos and the Pak Beng District Agriculture and Forestry Office (DAFO). The following case study is based on my experiences and the lessons that I learned while working under such circumstances.

This chapter aims to illustrate the land use and livelihoods of Kmhmu' upland farmers in Pak Beng, identify the key challenges facing the local communities and make suggestions on the roles of international NGOs working with the Lao PDR government to solve problems caused by forest management policies and improve the forest management system. I will describe the following:

1. Lao PDR government policies related to shifting cultivation
2. The livelihoods and food security factors of swidden farmers, especially Kmhmu' people
3. The impacts of the government policies on the livelihood of swidden farmers
4. Alternative approaches to land-use planning based on my experiences working with the local government and communities

I. State policies affecting shifting cultivation

1. Shifting cultivation in the Lao PDR

The state statistics (MAF 1999) indicate that about 25 percent of the rural population were still practicing shifting cultivation. When fallow land was included, shifting cultivation accounted for more than 80 percent of the agricultural land use (Roder 2001: 1). Although the area and the number of households involved in shifting cultivation decreased from 176 605 hectares (ha) and 186 265 households in 1996 to 118 900 hectares and 174 036 households in 2000 (Kitamura 2004: 122), shifting cultivation continued to be an important factor for food security for many villagers in the Lao PDR.

Village relocation policy

The first Lao state policy that substantially impacted shifting cultivation was village relocation. Village relocation has a long history in the Lao PDR. Between the 1960s and the early 1970s, especially during the peak of the Indochina War, resettlement was commonplace; much of it was related to the war and US bombing. In 1975, when the new Lao PDR government was formed, it again began to move rural villages out of mountainous and remote areas due to security concerns about armed rebel activities (Baird and Shoemaker 2005: 6).

However, even after the socialist regime had stabilized control, the Lao PDR government continued with village relocation. In addition, the government increased village relocation by formalizing it into a state policy. The government justified the village relocation with the following five goals:

1. Eradicate or reduce shifting cultivation
2. Suppress opium cultivation
3. Weaken rebel and other anti-government movements
4. Improve access to remote areas for better service delivery
5. Strengthen the administrative and cultural integration as well as national identity (Baird and Shoemaker 2005: 6-11)

While the earlier concern, i.e., state security, continued to be one of the reasons for the relocation, other political, economic and social justifications were added. Eradication of shifting cultivation emerged to be the major justification for village relocation. The government moved highland communities to lowland areas, and in some areas, the process replaced swidden fields with monoculture industrial plantations and commercial cash-crop fields (Baird and Shoemaker 2005: 6-11). This often led to deforestation and loss of food security, contrary to the policy's initial objectives – forest conservation and poverty alleviation.

Health conditions in resettlement sites raised concerns of international agencies. A study conducted in 1997 by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the United Nations Development Programme (UNDP) found mortality rates of up to 30 percent in resettled upland communities (Goudineau 1997, cited in Baird and Shoemaker 2005: 16).

In many cases, village relocation also led to increasing pressure on land resources in new settlement areas and often resulted in land conflicts between old and new communities (Soulivanh et al. 2004:22). As a result of village relocations, more people were concentrated in lowland areas, especially along major roads, thereby increasing

the competition over resources (Baird and Shoemaker 2005; Evrard and Goudineau 2004; Fujita and Phengsopha 2008: 119).

Concerns over conflicts across communities and over natural resources mounted so much that some donors tried to urge the Lao PDR government to review its village relocation policy. For instance, a study by the German Technical Cooperation (GTZ) agency recommended the following:

- Newly arrived migrant families needed to be integrated in the land-use planning process
- Land-use zoning should not take place in villages awaiting resettled migrants
- Organized displacement and resettlement of highland communities should be stopped (Soulivanh et al. 2004: 23)

However, village relocation continued to be a major state policy (this will be discussed in detail later in the article). The policy subsequently became more severe by a top-down land-use planning and caused even more land conflicts and destructive land and forest use in the Lao PDR, which continues to this day. It might be important to note here, as Baird and Shoemaker (2005: 2-3) point out, that many international development agencies and donor governments working in the Lao PDR failed to recognize or understand the devastating impacts of the Lao PDR government's village relocation practices. Some of these agencies even provided the government with active or uncritical support to village relocation.

Lack of alternative livelihoods after the LFA programme and the loss of food security forced some upland villages to leave their resettlement sites and move elsewhere (Evrard and Goudineau 2004; Baird and Shoemaker 2005; Fujita & Phengsopha 2008). Inappropriate land-use planning is one cause for the lack of agricultural land and has increased internal migration. Therefore, social and environmental impacts of village relocation and interferences between village resettlement and the livelihood of the local people should be carefully considered in the process of land-use planning.

Shifting cultivation eradication policy

Despite the detrimental impacts of the village relocation policy, it has not only continued but has actually increased in some cases. The way the Lao PDR government achieved this was to promote the eradication of shifting cultivation as one of the major advantages of village relocation. To stigmatize shifting cultivation, the Lao PDR government made a clear link between shifting cultivation and one of the country's critical national issues: deforestation.

It is true that deforestation has long been a burning issue for the Lao PDR government. The forest coverage rate in the Lao PDR⁴ plummeted astonishingly from 70 percent to 40.3 percent between 1940 and 2010⁵. The causes for deforestation have changed over time. During the Second Indochina War (1959 to 1973), US aerial bombing of the North Vietnamese Army's transportation route, which cut through Lao PDR, destroyed large areas of forest. After 1975, the socialist administration promoted forest clearing to cultivate rice to achieve self-sufficiency in rice. Also, broad areas of land were cleared for a large number of internally displaced people, some of whom were affected by American airstrikes. Moreover, the finances of many provinces in the Lao PDR had been highly dependent on income from logging. This means cutting trees on a large scale, which causes excessive deforestation (Matsumoto & Hirsch 2003: 135). Fujita (2012) points out that the main cause of the recent deforestation was land conversion for cash cropping and industrial plantations, as well as logging for large-scale infrastructure development, such as hydroelectric dams, mining projects, etc.

However, the Lao PDR government singles out shifting cultivation as the main culprit of deforestation in the country. The Council of Ministers' Instruction No. 47 on Forest Protection in 1979, suggested banning shifting cultivation in watershed forests and the promotion of reforestation. The Second Socio-Economic Development Plan (1986-1990) highlighted a programme to curb and eventually stabilize shifting cultivation, according to a government account that claimed "300 000 hectares of forests were destroyed annually by shifting cultivation causing serious environmental problems" (DoF-MAF 2005:3). In 1989, the National Forest Conference agreed on steps to reverse deforestation and resolved that forest cover should be returned to 70 percent by 2020 making it a goal to provide alternative employment to 60 percent of the 1.5 million people involved in shifting cultivation by 2000. To support the government's policy, the Tropical Forestry Action Plan was unveiled the following year by the Food and Agriculture Organization (FAO) of the United Nations and the UNDP. The plan targeted 90 000 people a year from 1990 to 2000 with the intention to eradicate swidden agriculture by intensifying other types of agriculture, commercial logging, industrial fast growing tree plantations, and by promoting land tenure reform (GoL 1990; Goudineau 1997:14, cited in Baird and Shoemaker 2005: 8).

In its Fifth Socio-Economic Development Plan (2001-2006), the Lao PDR government set a target that "shifting cultivation is to be basically stabilized by 2005 and completely stabilized (eradicated)⁶ by 2010" (DoF-MAF 2005:6).

The Land and Forest Allocation (LFA) programme

Among the various state policies in the Lao PDR, the LFA programme most directly aimed to eradicate shifting cultivation (Hyakumura 2005:80; Kenney-Lazar

2013:14). In 1990, the Lao PDR government designated Xayaburi Province in the north as a pilot site for the LFA programme and classified the provincial land into agricultural and forest land. However, during classification, provincial officials were alleged to have made personal gains by securing rights over uncultivated land and growing cash crops there (Akasaka 1996).

The LFA was first implemented throughout the Lao PDR in 1996. In this programme, first the villagers' rights to land, including the rights to use, inherit and sell designated land, were recognized. Secondly, a forest used for agricultural purposes was distributed to the villagers. Villages were also allowed to use a forest as a communal property, as long as they performed the obligation to manage it (Oya 1998: 272).

A fundamental problem with the LFA is that it has mutually contradictory goals. The decree of the Ministry of Agriculture and Forestry, No. 822/1996, states that the goals of the LFA programme include: 1) preserving the natural environment; 2) improving people's lives; 3) controlling shifting cultivation; 4) increasing food production; and 5) promoting commercial crops. However, it became apparent, that protecting the natural environment could conflict with promoting commercial crops. At a more abstract level, the programme was not only an agricultural policy but also a forestry policy. The multi-faceted nature of the programme reflected the vested interests among various actors, including the central government, development agencies, donors and private companies.

Being a socialist country, all land in the Lao PDR officially belongs to the state. The 2003 Land Law defined land ownership as follows:

“Land Ownership: Land of the Lao PDR is under the ownership of the national community as prescribed in Article 17 of the Constitution in which the State is charged with the centralized and uniform management (of land) throughout the country and with the allocation (of land) to individuals, families and economic organisations for use, lease or concession, (the allocation) to army units, State organisations, political organisations, the Lao Front for National Construction, (and) mass organisations for use, (and the allocation) to aliens, apatriids, foreign individuals and organisations of such persons for lease or concession.” (Article 3, Land Law 2003)

In the early 1990s the government adopted a market-based economy and recognized the rights of individuals and legal bodies to use land. Donor governments and international development organizations welcomed and accelerated this historic policy shift. They demanded that the Lao PDR government should classify land and forests. Donors and international organizations, which had just re-started pumping massive development aid to the Mekong region after the 1991 Paris Peace Accords, needed a land titling system to build infrastructure and help repatriated refugees more

easily (Matsumoto 2004). Foreign corporations, which wanted to invest in reforestation and infrastructure development, also requested clear land classification in order to facilitate their business in the Lao PDR. The motivations of both internal, i.e., the government's move towards a market-based economy, and external, i.e., outside actors' development agenda, matched the goals of the LFA and strongly drove the programme forward.

There was another complicating factor. The policy was drafted and approved by the central government. However, when it was implemented at the provincial level, provincial officials found interest, intention and interpretation based on their own, often very personal benefits. In conclusion, different proponents of the LFA had different incentives to support the programme, which created often contradictory dynamics in its implementation. This in turn affected the local communities.

2. Environmental changes and shifting cultivation

Before moving on to the case study, I would like to highlight a few other factors that have contributed to the various impacts that the LFA programme has had on local indigenous communities. The first is a strong drive towards monoculture cash crop production. Recently, similar to other parts of Southeast Asia, monoculture cash cropping, such as rubber, oil palm, eucalyptus and acacia for producing paper; and cassava, sugarcane, and corn for animal feed, has been expanding in the Lao PDR. Shifting-cultivation fields were rapidly converted into permanent upland fields to grow cash crops. Repeated harvesting of monoculture crops resulted in soil depletion and there was also an increase in the use of pesticides. Expansion of monoculture, especially when coupled with population increase, reduced the land area that could be used for shifting cultivation. Hence, fallow land had to be used for shifting cultivation before it was sufficiently regenerated. This placed unsustainable demands on the environment. All these factors accelerated soil depletion (Dwyer 2007; Baird 2010; Higashi 2013).

The second factor is related to global concerns over climate change. In the Lao PDR, when international climate change policy schemes, such as REDD (Reducing Emissions from Deforestation and Forest Degradation), were debated, shifting cultivation tended to be treated as one factor contributing to deforestation (DOE-WREA 2010). The National Steering Committee on Climate Change was set up in May 2008 and the government approved a "Strategy on Climate Change of the Lao PDR" in March 2010. The strategy states that "the onsite burning of forests for slash and burn cultivation" was the largest emitter of CO₂ (DOE-WREA 2010: 5) and "(s)top(ing) 'slash and burn' agriculture by forest management, afforestation of degraded forest and reforestation to increase the forest cover" was one of the mitigation priorities (DOE-WREA 2010: 11).

However, specialists and organizations well versed on this topic have pointed out that in Asia, the primary factor driving deforestation and CO₂ emissions is not the expansion of shifting cultivation, but rather the conversion of forest directly into industrial plantations or agricultural land (FAO *et al.* 2008). Research has also shown that when shifting cultivation is accompanied by an adequate fallow period, it absorbs far more CO₂ than industrial plantations or land on which the same crops are grown seasonally (Erni 2009). If climate change schemes are introduced with no consideration for the land-use practices of local people, then this may not only lead to impoverishment of local people, but it could also result in the loss of biodiversity in secondary forests and turn out to be more destructive.

II. Research location and methods

1. Research methods

Mekong Watch started the Community-based Watershed Management Project in Pak Beng District, Oudomxay Province in June 2005. As a programme coordinator, my task was to conduct research on management and use of watershed forests and give advice to the local government officials and villagers in cooperation with the Faculty of Forestry, National University of Laos and the Pak Beng District Forestry Office (DAFO). The project ended in March 2013.

The data and information below were collected mainly in the process of implementing the project in Pak Beng. Additionally, I visited DAFO and three villages out of the seven target villages of the project in February 2014 and interviewed DAFO staff, village heads, elders and Watershed Management Committee of the three villages. I also held a discussion meeting with 21 villagers in one of the three villages to discuss the future of shifting cultivation and food security.

2. Research location

Data collection was conducted mainly in Phou Hong Theung Village in Pak Beng District, Oudomxay Province in the northern part of the Lao PDR. Information was also collected in Chom Leng Gnai Village in the same district. Pak Beng District is located in the southwest of Oudomxay Province. The district covers 817.12 square kilometres, including a forest area of 554.02 square kilometres. In Pak Beng, agricultural production from shifting cultivation is the main source for food among the villagers because there is little land suitable for paddy fields. Recently, swidden lands are being converted into permanent farmlands for cash crops, such as corn for animal feed. In terms of the ethnic composition of the district's population, 85.79 percent of the people are Kmhmu⁷, 10.33 percent are Lao and Lue, and 3.88 percent are Hmong⁸.

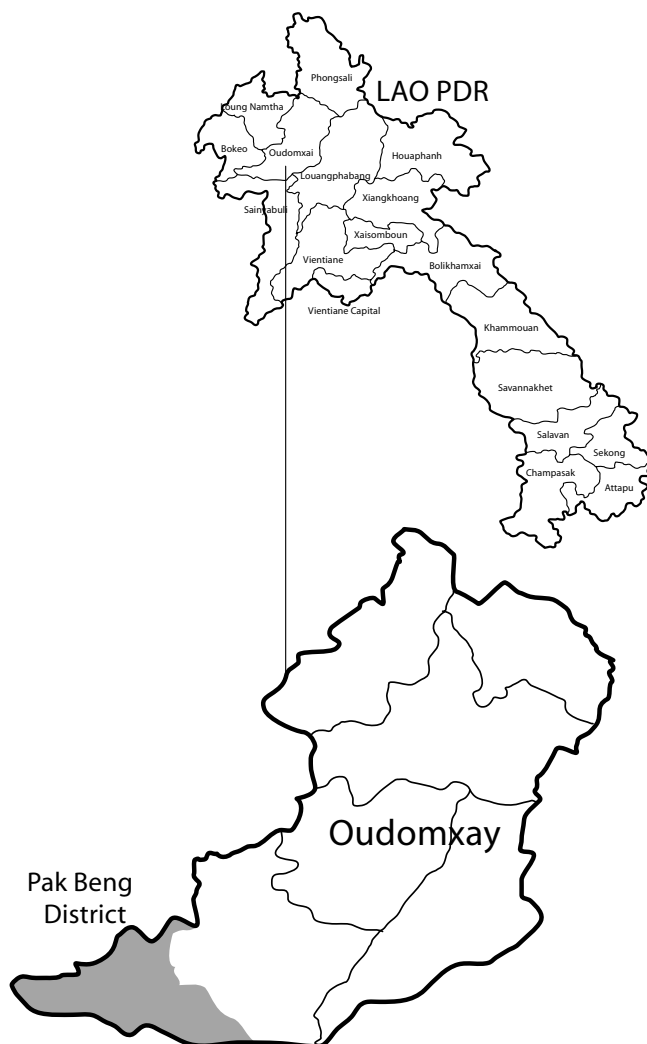


Figure 1. Research Location. Source: National Agricultural and Forestry Research Institute (2007)

In the late 1990s, the district government started to follow the state policy to relocate ethnic minorities living in mountainous areas to lowlands and areas along the main roads. They also merged villages with less than 50 households. As a result, the number of villages in Pak Beng District decreased from 69 in 2004 to 55 in 2008.

A significant event relating to land and forest use in the district took place in 1996, when the district government made a decision to build a small-scale hydroelectric dam with the power generation capacity of 155 kilowatts on the Houay Kasaen river. The purpose of the project was to supply electricity to the central part

of the district. A Chinese company was contracted to build the facility. Based on the decision of the district, approximately 5 000 hectares of the catchment of Houay Kasaen river were classified as a watershed forest. Shifting cultivation was banned in the area in 1997. At that time, 10 villages⁹ with the combined population of about 3 500 people in 600 households¹⁰ was customarily utilizing the land in the watershed area. After the establishment of the protected watershed forest, six villages continued to practice shifting cultivation in the area.

Phou Hong Theung and Chom Leng Noy Village

Phu Hong Theung Village is currently located in a mountainous area, approximately 13-15 kilometres from the centre of Pak Beng District. The village has been moved and merged with Chom Leng Noy Village into New Chom Leng Noy Village¹¹. As of March 2012, 380 Kmhmú' (Kmhmu'-Rok-Kroong) villagers lived in 56 families¹² in 38 households in Phou Hong Theung Village¹³. No paddy fields were seen in the village. All the households depended on shifting cultivation; the main crops were upland rice and Job's tear.

Phou Hong Theung Village was originally located in the centre of the watershed area for about 120 years up until 1999. The initiative of the district to prohibit agricultural cultivation in the watershed was triggered in 1997 when the decision to implement a hydropower project was taken. This decision seriously affected the community. When the hydropower project was approved, the land occupied by Phou Hong Theung villagers (the area enclosed by the dotted line in Figure 2) considerably overlapped with the watershed protection forest (the area enclosed by the bold line in Figure 2). In 1998, district authorities ordered the village to move to the roadside to prevent shifting cultivation inside the watershed area, and thus protect the watershed forest. The relocation of the village was also intended to follow the central government policy to move ethnic minorities from mountainous areas to lowland areas and along the major roads, as well as to merge small villages. Many Phou Hong Theung villagers disagreed with the order, but they had no choice but to resettle. However, in 1999, a year after they had finally decided to move to the roadside, as designated by the district government, Chom Leng Noy Village contested the move. They did not want Phou Hong Theung Village to move to the area, where they had long enjoyed the customary ownership to the land. In other words, Chom Leng Noy villagers did not want to share the land with Phou Hong Theung villagers. Consequently, Phou Hong Theung Village decided to settle on the land a little away from the main road.

After long negotiations between the two villages and with the intervention of the district government, Chom Leng Noy Village finally, though reluctantly, consented to allow the resettlement of Phou Hong Theung Village closer to them. In 2005, Phou Hong Theung Village moved to its current location.

While the two villages were disputing the relocation of Phou Hong Theung Village, the district implemented the LFA programme separately in both villages in 2000. This reinforced the boundary of the area of watershed forest. It was drawn on maps. Signs were put up in the areas to warn that they were watershed forests and that anyone practicing shifting cultivation in the areas would be charged with penalties. For Phou Hong Theung Village, a little land was left categorized as agricultural land (the shaded area on Figure 2). It was located near the old village and was too far from the current village location. What made all this worse was that there was not enough land available around the village for all the families. In addition, the soil of the land classified as ‘agricultural land’ was not good for agriculture.

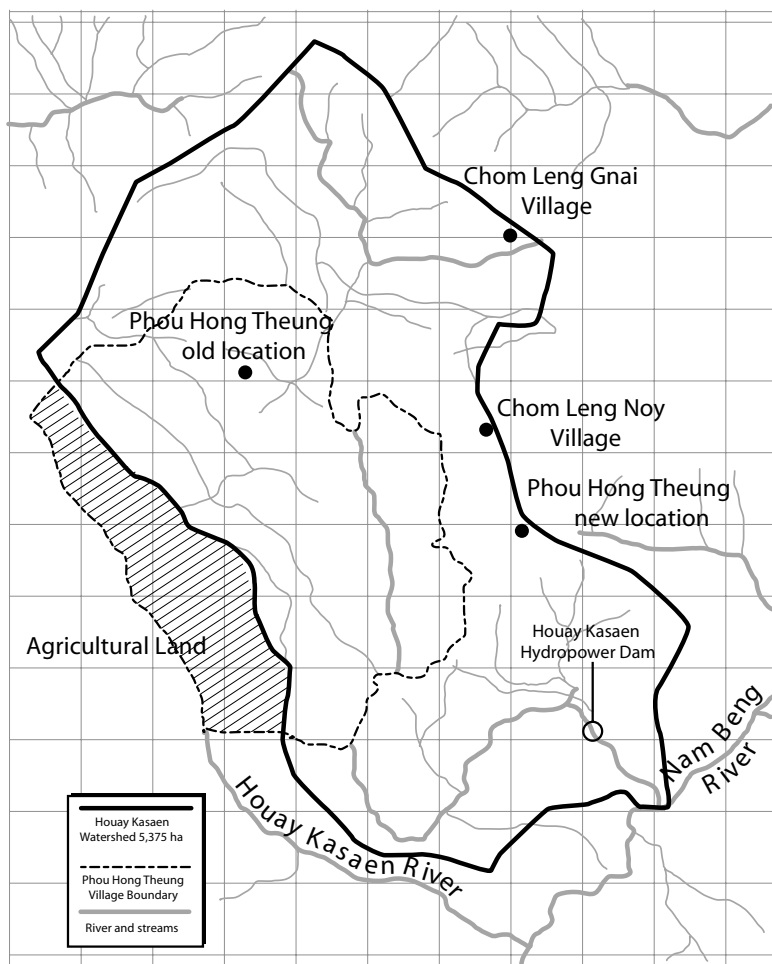


Figure 2: Map of the Houay Kasaen Watershed and target villages (2007)
Source: Pak Beng District's Forestry Office (adapted by the author)

Chom Leng Gnai Village

Chom Leng Gnai Village is located next to Chom Leng Noy Village. Chom Leng Gnai Village started in 1998 as a result of merging Chom Oy and Chom Leng Gnai Villagers. Some families from Mok Jon and Mok Khan Villages also moved to Chom Leng Gnai Village. As of February 2013, 516 Kmhamu' villagers lived in 82 families in 75 households in the village. Out of the 82 families, 79 families practiced shifting cultivation, while three families made their living by running a small business. In 2000 the district implemented the first LFA programme.

Major events at target villages

1996	Construction of the Houay Kasaen Hydropower Dam (155 KW) began.
1997	The district government banned shifting cultivation in the dam's watershed.
1998	The district ordered Phou Hong Theung Village to move outside the watershed area. Chom Leng Gnai Village was consolidated with other villages and the current Chom Leng Gnai Village was built.
1999	Phou Hong Theung Village was moved to the eastern end of the watershed area.
2000	Chom Leng Noy Village was moved to the roadside. The first LFA was conducted separately in three villages.
2005	Phou Hong Theung Village was moved again to the current location.
2006	Phou Hong Theung and Chom Leng Noy Villages were merged into New Chom Leng Noy Village.
2008	Mekong Watch facilitated participatory re-zoning of land and forest in New Chom Leng Noy Village
2009	Mekong Watch facilitated participatory re-zoning of land and forest in Chom Leng Gnai Village

III. The Kmhmu' people and shifting cultivation

1. Kmhmu' – 'farmers of forest'

The Kmhmu'¹⁴ consider themselves to be the indigenous people of the northern part of Indochina (Simana and Preisig 2003: 1; Simana and Preisig 2006: 79). Linguistically, the Kmhmu' belong to the Mon-Khmer sub-branch of the Austro-Asiatic language family. The Kmhmu' currently have the population of around 700 000 and live in Lao PDR, northern Vietnam, Xichuang Panna (Sipsong Panna) in China and in the border region of Thailand (Simana and Preisig 2006: 1).

The Lao PDR government officially recognizes 49 distinctive ethnic groups¹⁵. The biggest group is the ethnic Lao, but they constitute only 55 percent of the country's total population (DoS-MPI 2005). The Kmhmu' is one of the original, old indigenous people of Lao PDR. The population of Kmhmu' in Lao PDR is estimated to be about 610 000, which equals 11 percent of the total population of the country (DoS-MPI 2005).

The Kmhmu' depend mainly on agriculture, especially shifting cultivation, and supplementary hunting, fishing, and collecting NTFPs from forests and rivers. They prefer a cool and humid climate, rich forests and pastures and settlement locations near water sources. To the Kmhmu' people, forests are where they live and obtain food as well as the base of culture and religion (Simana and Preisig 1998; 2006). The Kmhmu' have long histories of conducting shifting cultivation and have a rich knowledge about forests. They have long collected NTFPs (Yokoyama 2004b: 19) and utilized them in various ways, including for subsistence and for generating income.

The Kmhmu' believe that the world can be divided into human and spirit spheres and that people belong to both (Simana and Preisig 1998: 7). Animism also plays an important role in their practice of shifting cultivation. Villagers dedicate alcohol to guardian spirits at their houses before going out to find agricultural land to be cleared, and offer food to land spirits on the first day of land clearing in the hope of safety of agricultural practices and a good harvest. Kmhmu' villagers in Chom Leng Gnai Village offer the following prayer to land spirits before they start clearing lands¹⁶:

Please lend us your land and forest.

We vow to return them after harvest.

We are asking for your permission in conformity with the traditional ritual.

Please give us a good crop of rice.

May we have enough to eat our fill.

Oh forest spirits! Oh mountain spirits!

Please help us celebrate a great harvest.

As showed in the prayer, for the Kmhmu', spirits are the 'owners' of forests or agricultural lands. Human beings merely borrow land from them for food production and so must return it to the owners after harvesting. Cultivated agricultural land then returns into forests again.

Crops planted in swidden

The main crop planted by the Kmhmu' in shifting cultivation is upland glutinous rice. It is categorized into early-ripening, mid-season and late-growing varieties. Seeds are handed down from one generation to another. In Chom Leng Gnai Village, at least three varieties of the early-ripening rice, three varieties of the mid-season rice and more than 12 varieties of the late-growing rice varieties were in use. Planting rice at different or staggered harvest periods was a way to hedge against the risk of poor harvests caused by, for instance, weather fluctuations.

Rice seeds cannot be preserved for extended periods of time. Therefore, all varieties of rice must be planted each year to keep seeds for cultivation the following year. Kmhmu' villagers explain that the variety of rice that grows the best in one year will not necessarily be the best variety the next year due to change in agricultural land or weather. Without a variety of rice seeds, they run the risk of not being able to handle the varying environmental conditions that each year brings. This way, the wealth of multiple generations of experiences with shifting cultivation has taught young Kmhmu' how to minimize risks and maximize the stability of crop production.

Along with upland rice, the Kmhmu' villagers planted an array of crops in the shifting cultivation fields. They include corn, taro, cassava, sweet potato, chilli, eggplant, pumpkin, sesame and beans. However, according to the elderly villagers, the number of crop varieties has decreased. For example, millet, which is traditionally used for making alcohol, is now rarely planted.

Biological diversity of secondary forests

When land is used for shifting cultivation, after harvest, it is left fallow for a few years. After a year, the land becomes home to tall grasses and ultimately it turns into a secondary forest, producing NTFPs such as bamboo shoots and mushrooms. Later, several years after the initial harvest, when vegetation has regenerated to a sufficient level, the land is selected for cultivation again.

Secondary forests resulting from shifting cultivation become home to a variety of wild flora and fauna, depending on the location and conditions. Secondary forests offer various products, which help to support the lives and livelihoods of Kmhmu' villagers. They can sometimes serve as substitutes for rice and can also be used as a means of generating cash income. Roots and tubers collected from a secondary forest (e.g., yam,

taro and cassava) are considered good substitutes during emergencies or for poorer households (Stoeber et al. 2013: 28). It is important to understand that fallow land in shifting cultivation is still productive and supports the lives of upland farmers.

Food availability and shifting cultivation

As mentioned above, both agricultural production in swidden and wild plants collected in secondary forests are an integral part of the food security among Kmhmu' villagers living in upland areas in Lao PDR. This was clearly the case with the three villages I studied. Below are examples of menus of the villagers' dinner tables in Chom Leng Gnai Village.

Example 1: The Bounthans' dinner on 20 November 2011



Figure 3. The Bounthan family's dinner on 20 November 2011.

Photo: Satomi Higashi

Menu and ingredient	How to obtain ingredient
1. Gourd vine soup <ul style="list-style-type: none"> • Gourd vine • Ginger • Spring onion • Salt and MSG 	<ul style="list-style-type: none"> • Planted in an upland rice field • Bought at a small village shop
2. Charcoal-grilled bamboo rat <ul style="list-style-type: none"> • Bamboo rat • Salt and MSG 	<ul style="list-style-type: none"> • Caught with traps on an upland rice field • Bought at a small village shop
3. Baked sweet potato <ul style="list-style-type: none"> • Sweet potato 	<ul style="list-style-type: none"> • Planted in an upland rice field
4. Steamed sticky rice <ul style="list-style-type: none"> • Sticky rice 	<ul style="list-style-type: none"> • Planted in an upland rice field

This is a typical dinner menu of families living in Chom Leng Gnai Village. Bamboo rats are one of the major vermin that caused damage to upland rice and other crops. However, they are also a protein source for Kmhmu' villagers. Other ingredients, except for salt and MSG, were harvested from the family's upland rice field.

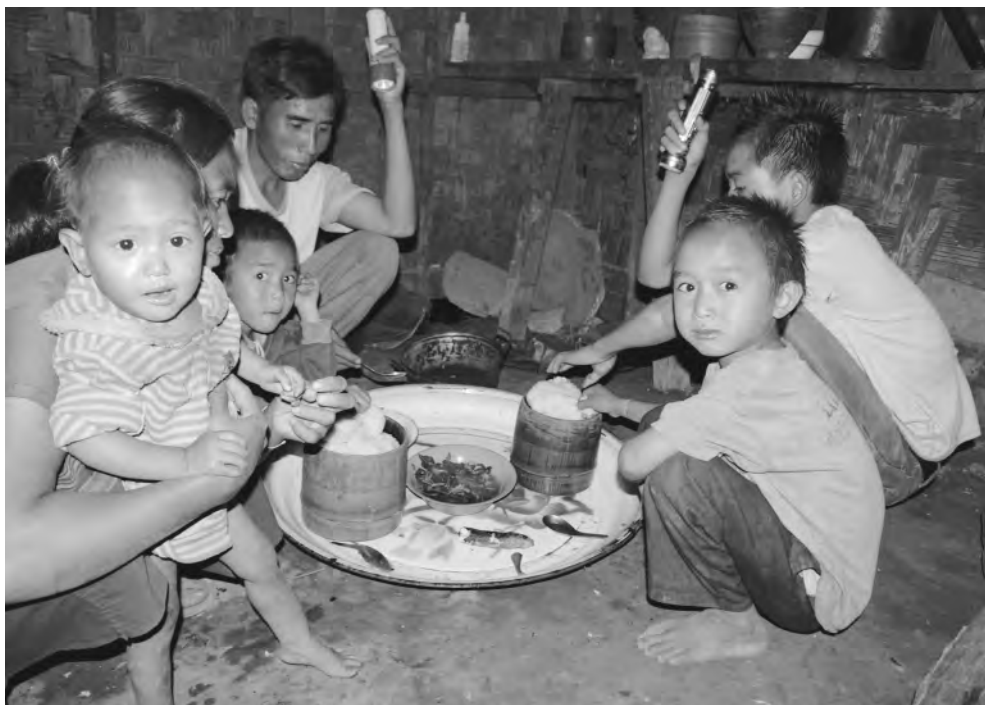


Figure 4. The Bounthan family at dinner. Photo: Satomi Higashi

Example 2: The Bounserms' treat for neighbours on 19 November 2011



Figure 5. The Bounserm family's treat for neighbours helping with the rice harvest.
Photo: Satomi Higashi

Menu and Ingredient	How to obtain ingredient
1. Beef stew <ul style="list-style-type: none"> • Beef • Rice crumb • Vegetables (<i>mak fat</i> and kidney bean) • Chili • <i>Mak khaen</i> (Sichuan pepper) • Salt and MSG 	<ul style="list-style-type: none"> • Bought from a villager • Collected from rice husking • Planted in an upland rice field • Planted in the family's kitchen garden • Collected in a secondary forest • Bought at a small village shop
2. Vegetable soup <ul style="list-style-type: none"> • <i>Mak thuung</i>, kidney bean • Lemongrass and ginger • Green vegetable • Salt and MSG 	<ul style="list-style-type: none"> • Planted in an upland rice field • Planted in the family's kitchen garden • Bought at a small village shop
5. Steamed sticky rice <ul style="list-style-type: none"> • Sticky rice 	<ul style="list-style-type: none"> • Planted in an upland rice field

The second example is a treat for the neighbours who came to help the family in harvesting rice. In the three villages, as well as in most of the villages in Pak Beng, villagers still had the custom of exchanging labour with each other for agricultural practices, such as planting and harvesting rice together. Host families usually provide meals and rice wine for helpers in return. On one particular day, the host family prepared lunch for 16 families who helped them harvest rice on a field located a 30-minute walk away from the village. Though the family bought beef for a special treat from another family in the village, the rest of the ingredients, except for salt and MSG, were harvested from their swidden fields or collected from the forest.



Figure 6. The Bounserms' rice harvest. Photo: Satomi Higashi

In both cases, most of the ingredients came from the family's upland rice fields, kitchen gardens and secondary forests. These examples illustrate how shifting cultivation ensures food security to the local Kmhmu' villagers.

Land use in Phou Hong Theung Village

In Phou Hong Theung Village, one cycle of shifting cultivation usually takes six to eight years. Swidden rice production starts with land selection in February and continues until rice harvest in December. After the rice is harvested, the land is left

fallow. In secondary forests, NTFPs such as bamboo shoots, mushrooms and small animals are collected. The same land is used for swidden again after leaving it fallow for six to eight years—when grasses have disappeared from the land and it again holds sufficient nutrients to support cultivation.

In Phou Hong Theung Village, instead of letting individuals choose their swidden, villagers every year ask respected people in the village, such as elders and knowledgeable authorities to select one to three plots of land for cultivation. Selection is based on how long the land was left fallow; conditions of the land, e.g., the size of trees and the soil quality and the experience of these respected people. Once patches of land are chosen, village authorities and elders distribute them to each household according to the workforce available at each household. If a family has cultivated any part of the selected land in the past, they could claim priority right to cultivate the part over other villagers.

Land is thus distributed to individual families, but it does not mean it is ‘privately owned’ by them in the usual sense of the word. Villagers could claim the right to cultivate a certain area during land distribution processes. They are also allowed to transfer distributed land to their relatives. However, they are strictly prohibited from transferring the land to people outside the village, even if they are relatives. However, villagers can transfer their rights to use the land to other villagers or to another family in the village for reasons such as the lack of workforce, but without charging any rent.

Among the Kmhmu’ people studied, the customary ownership of land is a mix between common property, i.e. a resource communally managed, and private property, i.e. the exclusive right to use or dispose a certain piece of land. This system of land use made it possible for the Kmhmu’ to have a steady harvest every year and to flexibly adjust use of and access to land to social and environmental changes such as population fluctuations.

The meaning of ‘forest’ and ‘land’ for swidden farmers

The Kmhmu’ do not make a categorical distinction between ‘forest’, where trees grow, and ‘agricultural land’, where farming is practiced. They differentiate forest and land according to stages in the shifting cultivation cycle. In Kmhmu’ language, swidden land is called *hre’* and fallow fields *hre’ reeng*. If *hre’ reeng* is abandoned for many years, it becomes *hre’ nong* (‘regenerated forest’) and then *bri’ nong* (‘old forest’). And then, in due time, Kmhmu’ villagers clear *bri’* (‘forest’) and develop *hre’* (‘agricultural land’). In short, this year’s land becomes next year’s forest. Until a land is selected for swidden, it remains part of the ‘forest’. When asked where their agricultural land is, a Kmhmu’ villager may point to where they practice swidden. However, if the same villager is asked the same question again in the following year,

she/he may point to another area, which was a forest in the previous year, and their previous year's agricultural land has become a forest.

However, this does not mean that Kmhmu' villagers have no concept of 'territory' or 'border'. In Phou Hong Theung Village, villagers have been maintaining a spirit-protected forest before the district conducted the LFA programme. Villagers may not know the area of the conservation area in hectares but they could recognize it as the designated space by using landmarks such as 'between that stream and that hill'. When the soil of the forest was not suitable for rice cultivation, the villagers left it untouched for the collection of NTFPs, such as bamboo shoots, by prohibiting burning and logging. The villagers also have a strong reverence for a cemetery forest where collecting NTFPs and firewood is strictly prohibited.

IV. The impact of the LFA programme on relocated swidden farmers' livelihood

The LFA programme was usually implemented in the following eight stages¹⁷:

1. Preparation
2. Decisions on village borders and land-use classification
3. Data collection and analysis
4. Land and forest distribution
5. Agricultural land survey
6. Agreement over forest and land use with villagers and transfer of rights to villagers
7. Promotion of land management
8. Monitoring and evaluation (MAF and NLMA 2010).

When the LFA programme was implemented in Phou Hong Theung Village in 2000, six district officials were in charge. They followed a management plan and classified the village territory into residential areas, agricultural land, protection forest (for preserving water sources), conservation forest (for preserving biodiversity), production forest (for timber production), and reforestation areas (for recovery of natural forests). However, they spent only seven days at the land and forest classification stage due to financial and technological constraints. Rights to use agricultural land were not transferred to households. No projects were carried out to promote agriculture and no monitoring took place. This hasty land and forest classification caused a significant lack of agricultural land, and consequently rice, in Phou Hong Theung village. Since most of the village land was classified into protection forest, shifting cultivation was banned there.

Table 2 compares land and forest categorization of Phou Hong Theung Village with three other villages. The LFA programme was conducted in the four villages at about the same time, i.e., between 1999 and 2000. Statistics on the shortage of agricultural land were based on the assumption that each family used 1.5 hectares of land per year for shifting cultivation, and that villagers kept a seven-year cycle, which villagers said was needed to maintain the soil quality. The shortage of agricultural land in Phou Hong Theung Village amounted to 416.4 hectares and was more serious than in the other villages (see Table 2 below). Villagers were not able to access much of the agricultural land that was designated to them in the LFA programme because it was very far from their current place of residence.

Village name	Number of households	Agricultural land			Forest		
		Necessary	LFA classification	Shortage	Protection	Conservation	Production
Phou Hong Theung	58	609.0	192.6	416.4	1 030.0	0	0
Chom Leng Gnai	54	567.0	312.2	254.8	316.8	94.0	0
Chom Leng Noy	48	504.0	223.5	280.5	281.1	100.0	108.0
Long Saen ¹⁸	47	493.5	93.9	399.6	859.6	76.7	0

*1: Data from 2000, when the LFA programme was conducted.

*2: Based on the assumption that each family uses 1.5 ha of land per year¹⁹ with a seven year cycle of shifting cultivation.

Source: LFA documents (DAFO 2000) and the author's interviews with villagers.

A series of events in Phou Hong Theung Village over the past decade showed that many land use policies were implemented in conjunction with the LFA programme. For instance, electricity development was pushed forward because of the Lao PDR government's policy to raise the country's electrification rate to 90 percent by 2020. District authorities tried to protect the watershed forest to produce electricity for urban areas in the district. On the other hand, people in the rural area, including Phou Hong Theung Village, who were affected by the watershed management policy did not receive any benefit from the hydropower dam²⁰.

1. Responses and resistance to the forced policy

Phou Hong Theung villagers did not remain passive. They made efforts to cope with the situation and used four main strategies to survive the hardship that had been imposed on them by the LFA programme. Firstly, some villagers moved back to where they used to live before the relocation. Some families chose to go back even though returning to their former residence was against the policy of the district government. As of January 2007, seven households, including four who had refused to move from the beginning, lived at the original location of the village inside the protected watershed. Secondly, some villagers decided to rely on their relatives in other villages and moved and rented land there with their help. In my interview with the Phou Hong Theung Village head in 2007, four households moved out in one year due to the lack of agricultural land. In other words, shortcomings in land and forest zoning resulted in further internal migration. Thirdly, some villagers chose to stay in the new village location and rent land in neighbouring villages. These villagers had to pay rent in the form of cash, alcoholic drinks, goats, pigs and tobacco because land was a common property only among people living in the same village. This is how they continued to practice swidden cultivation. However, rental costs placed a great burden on them. These three strategies which the Phou Hong Theung villagers had to resort to clearly shows that the implementation of the LFA programme reduced the amount of agricultural land available to the villagers.

As a fourth strategy, those villagers who were not able to find agricultural land outside the watershed forests tried to resist the state-imposed LFA programme. One form of resistance was to ignore the official system of land and forest classification. This was not a viable means when seen in the context of the political and social condition of Lao PDR, where it was next to impossible for the villagers to openly speak out against district officials. Therefore, many Phou Hong Theung villagers started to cultivate swidden 'illegally' in the forests without telling district officials. Villagers cultivated land the same way as before the implementation of the LFA programme, when cultivation was not illegal. The following statement made by one Phou Hong Theung villager clearly indicated the desperation out of which the villagers decided to re-start shifting cultivation in the protected watershed forests:

"We haven't had a place to cultivate swidden after forests were designated as watershed forests. We do not have enough rice. We just had to make swidden in watershed forests again despite a ban in order to survive"²¹.

As most villagers ignored the rules to preserve the watershed forests and chose to observe the customary land ownership rather than the new land allocation, it was difficult for local authorities to locate, let alone crack down upon, all illegal swidden cultivation. In the case of the Phou Hong Theung Village, the LFA Programme not

only led to problems such as agricultural land and rice shortages among Kmhmu' villagers, but also led to destruction of watershed forests. Thus, the LFA programme achieved neither forest preservation nor greater agricultural production even though that was originally promised.

In some places, villagers took a more audacious approach. When asked whether swidden (*bre'* in Kmhmu' or *hai* in Lao) were being cultivated, villagers in one of these places answered no. However, smoke from burning slashed trees and plants were clearly visible on mountainsides. When asked again about the smoke, they said, "That is just cultivating rice fields (*souan khao* in Lao)." Whether they used the negative sounding word (in the ears of government officials), 'swidden (*hai*)', or a more 'positive' counterpart, 'field (*souan*)', what they were doing was the same: They were practicing shifting cultivation in protected watershed area. Thus, substituting the word 'swidden (*hai*)' with 'rice field' (*souan khao*) was another tactic used by the Phou Hong Theung villagers to resist the system forced upon them. Changing the words gave more ambiguity within which they were able to manipulate. District officials knew only too well that shifting cultivation could not be easily taken away from the villagers. Changing an explanation from 'swidden' to 'fields' made it possible for the district officials to overlook the villagers' shifting cultivation without being blamed for doing so. The lexical play of the villagers also gave the officials space to balance between their duties in the fragmented bureaucratic system on the one hand and the reality of the impacts of banning shifting cultivation on the other hand.

While arbitrary definitions of 'swidden' caused confusion in the land policy of Lao PDR in some domains, it left room for district officials and villagers to exercise their own power to interpret the rules and settle local conflicts peacefully. It also became clear that even if swidden was defined better and rules strictly enforced, confused land use and shifting cultivation controls would not be easily resolved (Higashi 2009: 55-56). It was apparent that resolving these issues permanently required informed participation by all stakeholders.

V. Alternative approaches for land and forest use planning

1. Rapid changes in land and forest use in Lao PDR

Land and forests are going through rapid changes in Lao PDR. A mere suspension of the LFA programme and recovery of 'traditional' land use will not be enough to defend the right of the villagers over land and forests and to their sustainable management. As the population increases and integration into a global market economy accelerates, land, including agricultural land, is becoming increasingly

scarce in Lao PDR. Shortage of agricultural land is becoming a serious issue, too. Therefore, forest preservation is not the foremost concern of the villagers when they use land. When the population of a village grows and more land is needed, villagers may start cultivating traditionally protected areas, such as areas around water sources or riverbanks. Cultivation of protected areas will increase the burden on the environment. In addition to these changes, development projects, industrial plantations and cash crop cultivation are expanding in rural parts of the Lao PDR at a great speed. Village borders need to be determined and the law must support the land rights of villagers. This will ensure the protection of the rights of villagers from foreign companies and development projects ensuring sustainable livelihoods for the communities and enabling the villagers to manage forests on their own.

2. Challenges in seeking alternative approaches

Some international NGOs and bilateral aid agencies are trying new approaches to protect the rights of villagers from land grabs by large-scale development and investment projects in Lao PDR. Rather than opposing the LFA programme, they are trying to improve the method of implementing the programme because they respect the way the villagers use land.

The way Mekong Watch responded to the situation in Phou Hong Theung Village, which represented the situation in Pak Beng, could offer an example of an alternative approach to watershed forest management. When I found out what was transpiring in Phou Hong Theung Village, I realized that first of all the actual land use by villagers must be studied and understood. And based on such understanding, a system must be established to let the villagers participate in local land use and forest preservation in meaningful ways. Through discussions with and advice from my colleagues, I drafted a plan to carry out the following activities:

- Advising local officials on land and forest policies in Lao PDR
- Conducting research on villagers' land and forest use near watershed forests
- Monitoring the environment around watershed forests
- Helping local authorities and villagers to set up a multi-party watershed forest management committee
- Facilitating changes in the LFA under coordination and supervision of a management committee
- Providing training to villagers on environmental protection.

After talking several times with both the district officials and villagers, they agreed to participate in the evaluation of the LFA programme, especially the impact of the programme on local land use. On 27 February 2007, the 'Pak Beng District LFA

Evaluation Meeting' was held at Pak Beng DAFO. Six representatives from three villages, including Phou Hong Theung Village, and eleven local officials from forestry-related offices, including the Forestry Office, the Land Management Bureau, the Environment Bureau and the Planning Bureau came to attend the meeting. Prior to the evaluation meeting, villagers in each village held a preparatory meeting to share their experiences regarding the problem of land and land use. At the end of the meeting, district officials and villagers worked together on a chart to map out the problems of land use, their cause and how to solve them. In short, the chart represented the understanding of the district authorities and villagers about what was happening to local land use in and around the three villages. Figure 7 below recaptures the chart created by the district officials and villagers.

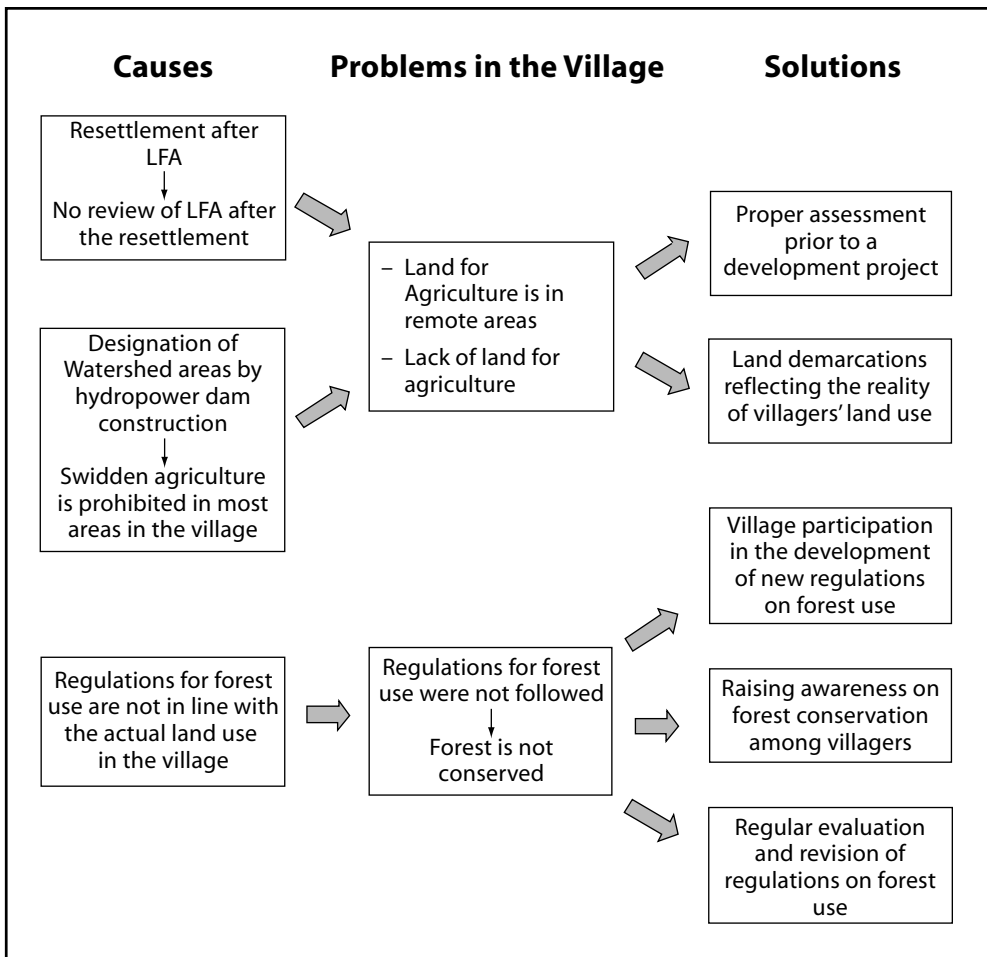


Figure 7. Problems in land use, their causes and solutions
 Source: Mekong Watch (2007); edited and translated by the author

Figure 3 indicates that both villagers and officials in Pak Beng District understood that the district policies on dam construction and village relocation had resulted in the lack of agricultural land. Figure 3 also shows that top-down rules on forest use were not in line with actual land use. That was the reason why these rules were disregarded by the villagers and failed to protect the environment around the watershed area.

Based on this agreed-upon analysis, I proposed to the district authorities to consider establishing a participatory watershed management system. On 7 July 2007, Mekong Watch invited two government officials to Pak Beng and organized a workshop on 'Land Use Planning' at the Pak Beng Agriculture and Forestry Office. One was a central government official from the Forest Inventory and Planning Division, Department of Forestry; and the other was a local official from the Huaphan Provincial Agricultural Forestry Office, who had participated in the 'Shifting Cultivation Stabilization Project' of the Asian Development Bank (ADB). In the workshop, the central government official gave explanations on what was being discussed at the central administration level with regard to shifting cultivation and clearly stated, "A debate is going on about sustainable shifting cultivation. It is not realistic to ban all types of shifting cultivation. Shifting cultivation should be permitted within areas designated as agricultural land"²². The Huaphan Province official, based on his experiences with ADB's watershed management project, suggested that regulations for sustainable watershed management should be established. He was particularly talking about the idea of organizing a management committee involving stakeholders such as local villagers based on a case analysis at Huaphan Province.

After having encouraged district officials and villagers into coming up with a mutual analysis on the current situation on land and land use in Pak Beng, as well as enhancing the understanding of district authorities over state policies relating to land use, watershed management and shifting cultivation, I decided to move to the next stage. In October 2007, with Mekong Watch's support, district officials and villagers agreed to establish a watershed management committee. Drawing Huaphan Province's experiences, a committee came to have a multi-stakeholder structure. It comprised representatives from eight villages that owned land in the watershed forests and local officials from offices in charge of watershed forest management. Establishment a committee opened a channel to improve local land use. First, it created space for communications and dialogues between local authorities and villagers. Until then, there was no opportunity for villagers and officials to come together to discuss land and forest use with each other. Using the committee as a platform, they were now able to consult with each other on annual plans for forest preservation and land use, and deal with land-related troubles, which may occur between villages or between villages and administrative offices. Secondly, with regard to shifting cultivation, if a village needed to secure swidden in watershed forests, it became possible now for villagers to submit

a land-use plan to the committee. It became possible to cultivate swidden in some parts of the watershed forests if all the other villages and district authorities approved the land-use plan at a committee meeting in reference to the rules enacted by the committee. Villagers no longer had to illegally make swidden as long as they followed the rules set by villages and the district for the preservation of forests near rivers and water sources.

Then as a critical development, in 2008, Pak Beng District agreed to reclassify land and forests in five villages, including New Chom Leng Noy and Chom Leng Gnai villages²³, where the LFA programme had been implemented without much consideration for the actual land use. Through the reclassification, the district made efforts to secure agricultural land required to maintain a healthy shifting cultivation cycle, particularly a sufficient fallow period. Figure 8 below is a map to illustrate the first LFA programme, which was conducted in 2000. In this map, the village's land on the west side (to the left on the map) on the major road was designated as a conservation forest and agricultural practices were allowed only in the village's agricultural land on the east side (to the right on the map). It is easy to assume that villagers could not maintain sustainable fallow periods of shifting cultivation because the area is too small to meet the requirements of the entire village.

Figure 9 is a map illustrating the results of the second LFA programme conducted in 2008 under the supervision of a watershed management committee and with the support of Mekong Watch. The second LFA programme produced completely different results. First, a conservation forest was designated along the river and streams, where water sources were abundant. The designation was kept in the most critical spot and so the area was kept relatively small. The rest of the land on the west side of the river was re-assigned as agricultural land. An important result was that shifting cultivation was permitted. As the area was large enough, sustainable shifting cultivation was made possible. Secondly, a protection forest was also assigned around the road. However, as compared with the first LFA programme in Figure 8, the area of protected forest was considerably reduced and concentrated around the spot that was environmentally critical. A large amount of land along the road was left for agricultural practices, including shifting cultivation.

The second LFA programme also aimed to recognize legal rights of the villages to manage land so that the villagers could manage forests in accordance with conditions that were unique and variable at each forest. Changes in the village population and land use were factored in and land was classified in flexible ways to accommodate unforeseen changes. As some parts of watershed forests, which were needed for swidden to allow a sufficiently long fallow period, were classified as 'agricultural land' (for instance, on the left side of the river in Figure 9), villagers are

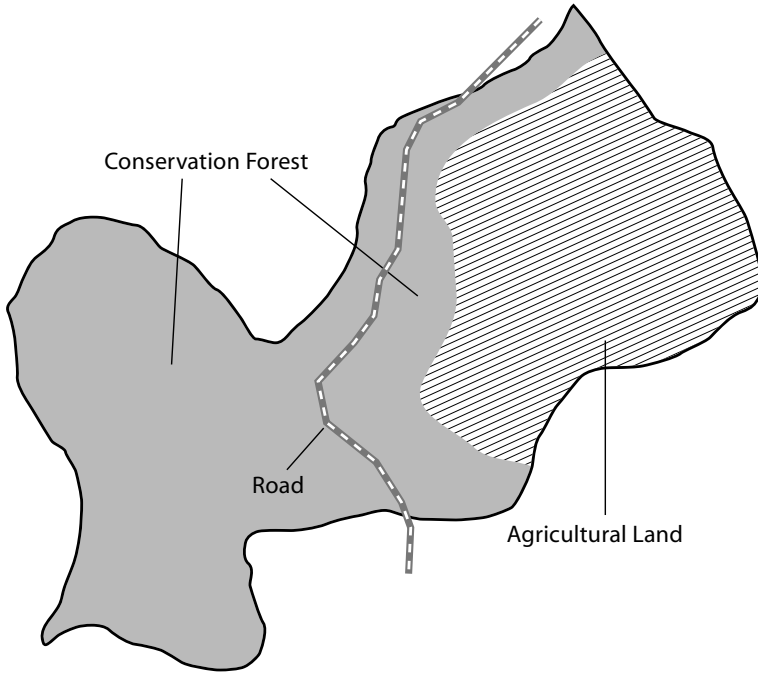


Figure 8: Land and forest allocation map of Chom Leng Gnai Village (2000)
Source: Phengsopha and Morimoto (2003: 9)

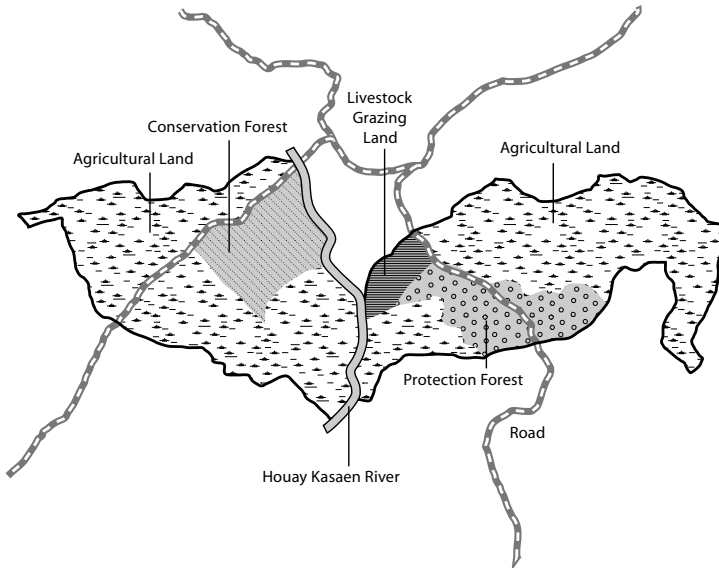


Figure 9: Land and forest allocation map of Chom Leng Gnai Village (2008)
Source: Pak Beng District's Forestry Office (adapted by the author)

able to use the land legally to practice shifting cultivation. Moreover, to make land use more flexible, the district placed the responsibility of land use upon the villages so that they could decide how to use agricultural land. At the same time, the parts of the watershed forests which should be protected as either protection forests or conservation forests were appropriately classified to increase the possibility of protecting the local environment, which was supposed to be one of the main goals of the LFA programme. To sustain the outcomes of the second LFA villages and district officials agreed to meet annually to discuss issues around land use designated under the second LFA so that the district could also continue to perform their administrative and management obligations.

In the case of Mekong Watch's Watershed Management Project, by establishing a watershed management committee and reviewing land-use categories, a forum for the local administrative officials and villagers to work together to resolve land use and forest preservation issues was created. The project set a precedent for integrating the traditional land-use system of the swidden farmers into the legal framework and established a system in which local people could participate. The Mekong Watch project is also trying to deliver the actual land-use information of the local people to decision-makers at the national level by producing a documentary film on the life of swidden farmers in the mountainous area of Lao PDR. In order to improve the autonomy and sustainability of a series of interventions relating to local land and agriculture, there are still some challenges, such as heightening villagers' understanding and appreciation of forest-use rules and watershed management activities and securing a budget for the district to continue its activities that need to be resolved. However, this case shows the potential of external actors such as NGOs to play a role in improving land and forest management systems and upholding the land rights of local communities.

In Lao PDR, where political power of civil society is weak, external actors, such as NGOs, have the potential to balance the power relationship between the government and the local communities. On the other hand, more confusion in regard to land and forest use can result if these external actors impose their way of doing things. Inappropriate intervention can also widen political imbalance and worsen problems. Funding from external actors can also be used by government officials or local communities for activities that are unrelated to or undermine conservation objectives. Moreover, continuing projects may become an end in themselves, regardless of whether the projects are meeting their objectives or not. To make use of NGO expertise to implement integrated approaches and improve the forest management system, such organizations must carefully consider the consequences of any intervention.

3. Emerging issues

After the Mekong Watch project ended and I had stopped visiting Pak Beng regularly, in March 2013, New Chom Leng Noy and Chom Leng Gnai villages faced a new challenge, a change of land use associated with the expansion of the villagers' investment in cash-crop cultivation. Since 2010, the cultivation of job's tears under a contract with a Chinese company started to expand in Pak Beng. In 2012, in Chom Leng Gnai Village, 70 out of the total of 82 families started to plant job's tears on 34 hectares of land. A recent survey (Pak Beng District and Mekong Watch 2014) found that 37 out of 42 interviewed households cultivated job's tears in Chom Leng Noy Village. Some villagers also grew corn for animal consumption to earn cash income. In my interviews with villagers and Pak Beng DAFO in February 2014, both villagers and district officials said that the introduction of *mak nam man khoua* (*Plukenetia volubilis*), a plant to be processed into health foods and cosmetics, was also being considered for cultivation.

In Oudomxay Province, planting corn for animal feed became a boom in 2004, followed by rubber plantations. Large areas of shifting cultivation land were converted into cash-crop farms and industrial plantations. In 2012-2013, Chinese-funded contract farming of bananas and watermelons started expanding, too. In areas where these crops are planted, there are growing concerns about soil degradation and land erosion caused by continuous cropping and heavy use of chemical fertilizers. If land productivity decreases or market prices drops, villagers may want to give up cash crop cultivation. However, it might be difficult to turn back to the production of former crops, such as rice, due to serious soil degradation.

A land and forest re-zoning conducted through the support of Mekong Watch aimed to maintain at least a seven-year fallow cycle of shifting cultivation. However, if villagers continue to use the same area of agricultural land for upland rice cultivation and use additional land for cash-crop cultivation, the fallow cycle will have to be shortened, which will cause land degradation and yield reduction.

VI. Recommendations: The future of shifting cultivation in Lao PDR

Shifting cultivation, when practiced with a sufficient fallow period allowing adequate return of vegetation, has historically been a sustainable method that also works to protect forests and contribute to the conservation of biodiversity. As such, shifting cultivation has played a significant role to ensure food security for residents living in the Mekong region. It has also fostered biodiversity in secondary forests. The values of shifting cultivation should be re-evaluated on these merits, rather than simply

stigmatizing it as a cause of environmental destruction, e.g., climate change. In addition, conservation of local crop varieties is an urgent issue, to which shifting cultivation can make a critical contribution.

At the same time, land suitable for shifting cultivation has become scarce in recent years in both absolute and relative terms due to shortening cultivation cycles across the region. In Lao PDR, these developments are driven by both internal factors, such as population growth and a shift to cash crop cultivation by more local residents; as well as by external factors, such as the village relocation projects, the Lao PDR government policy to restrict shifting cultivation, large-scale infrastructure development, and the creation of industrial plantations. When the government and business sector make or change policies related to land and forest or design and implement development projects, it is also essential to take the land and forest use practices of the local people into account and involve them in decision-making. Introduction of climate change schemes, such as REDD, must be premised on considerations of land use by local people, including shifting cultivation.

In addition, the Lao PDR government has been promoting a shift to cash crop cultivation, especially among local communities engaged in shifting cultivation. However, risk-related information, such as fluctuations in market prices and negative environmental impacts, are not properly communicated to growers. A rapid shift towards cash-crop cultivation without addressing these risks threatens the food security of the local people. On the other hand, with an increase in the demand for cash among the villagers and pressure and opportunities from government and investors, cash crop cultivation has also expanded. The introduction of cash crops should have been well designed both at the district and village levels and should have been based on careful consideration about how to achieve a balance between income generation and food security of the villagers²⁴. What is of paramount importance, whether shifting cultivation is continued or other land-use methods are adopted, is that the local people should be able to select methods of land use that they deem most suitable for themselves and local needs. On that basis, when villagers introduce cash crop cultivation, it is advisable to select forms of agriculture, which leave opportunities to turn back to food production, when they cannot gain enough benefit, and/or maintain some land for shifting cultivation to ensure local food security.

References

- Akasaka, M. 1996. *Jibuntachi no Mirai ha Jibuntachi de kimetai* (We Want to Decide Our Own Future). Japan International Volunteer Center. Tokyo.
- Baird, I.G. & B. Shoemaker. 2005. *Aiding or Abetting?: Internal Resettlement and International Aid Agencies in the Lao PDR*. Probe International. Toronto.
- Baird, I.G. (2010). Quotas, powers, patronage and illegal rent-seeking: The political economy of logging and the timber trade in southern Laos. *Forest Trends*. Washington, DC. Trends.
- Chamberlain, J. 2001. *Participatory Poverty Assessment, the Lao PDR*. ADB, SPC, National Statistics Center. Vientiane.
- Department of Environment (DOE), Water Resource and Environment Agency (WREA) of the Lao PDR. 2010. *Strategy on Climate Change of the Lao PDR*. Vientiane.
- Department of Forestry, Ministry of Agriculture and Forestry of the Lao PDR (DoF-MAF). 2005. *Forest Strategy to the Year 2020 of the Lao PDR*. Vientiane.
- Department of Statistics, Ministry of Planning and Investment (DoS-MPI). 2005. *Census of Population and Housing 2005*. Vientiane.
- Dwyer, M. 2007. *Turning Land into Capital: A Review of Recent Research on Land Concessions for Investment in Lao PDR*. Land Issues Working Group. Vientiane.
- Erni, C. 2009. *Shifting Cultivation and Climate Change*. International Work Group for Indigenous Affairs (IWGIA). Bangkok.
- Evrard, O and Y. Goudineau. 2004. "Planned Resettlement, Unexpected Migrations and Cultural Trauma in Laos." *Development and Change* 35(5): 937-962.
- UN Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), and United Nations Environment Programme (UNEP). 2008. *UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD): Framework Document 20 June 2008*. <http://www.cbd.int/doc/meetings/tk/redd-ilc-01/other/redd-ilc-01-un-en.pdf>
- Fujita, S. 2012. "Raosu niokeru Shinrin Hozen oyobi Jizoku Kanou na Shigen Riyou ni kansuru Kakushu Seisaku." ("Policies related to Forest Conservation and Sustainable Resource Management in Lao PDR"). Japan Forest Technology Association. *Shinrin Gijyutsu* (Forest Technology). No. 848, pp. 34-48. Tokyo.

- Fujita, Yayoi, and K. Phengsopha. 2008. "The Gap between Policy and Practice in Lao PDR". C. Colfer, G.R. Dahl, and D. Capistrano. *Lessons from Forest Decentralization: Money Justice and the Quest for Good Governance in Asia-Pacific*, pp. 117-131. Earthscan. London.
- Goudineau, Y. (Eds.). 1997. *Resettlement and Social Characteristics of New Villages, Basic needs for resettled communities in the Lao PDR, An OSTOM Survey. Vol. 1 and 2.* Supported by UNESCO and UNDP.
- Government of Lao (GoL). 1990. *Lao People's Democratic Republic Tropical Forestry Action Plan (First Phase).* Ministry of Agriculture and Forestry, Vientiane.
- Higashi, S. 2009. "Mori to Tochi wo Bundan suru Hakari" ("Measures' dividing Forest and Land"). Mekong Watch ed. 'Hakaru' Koto ga Kurashi ni Ataeru Eikyo (The Impacts of Quantification on Life). Mekong Watch. Tokyo.
- _____. 2013. "Shifting Cultivation and Upland Life in Northern Laos". Mekong Watch ed. *Nature and Our Future: The Mekong Basin and Japan.* Mekong Watch, Tokyo.
- Hyakumura, K. 2005. "Laosu no Tochi Bumpai Jigyo ni taisuru Chiiki Jumin no Taiou: Savahnakheth Ken no Kyuryo Chiiki niokeru Jirei" ("Local People's Reaction against the Land and Forest Allocation Programme in Laos: A Case Study in the Hilly Area in Savahnakheth Province"). *Ringyo Keizai Kenkyu (Studies on Forestry Economy)*. Society for Forestry Economy, 51(1), pp. 79-88.
- Japan International Volunteer Center. 2006-2007. *JVC Case Studies.* Tokyo.
- Kenney-Lazar, M. 2013. *Shifting Cultivation in Laos: Transitions in Policy and Perspective.* The Secretariat of the Sector Working Group for Agriculture and Rural Development (SWG-ARD), Vientiane.
- Kitamura, N. 2003. "Sinrin no Riyo to Hozen" ("Utilization and Protection of Forests"). Nishizawa, N., Furukawa, H., and Kiuchi, Y. eds. *Raosu no Kaihatsu to Kokusai-kyouryoku (Development and International Cooperation in Laos)*. pp. 209-235. Mekong Publishers, Tokyo.
- _____. 2004. "Forest Policy Development in Laos", Inoue, M., and Isozaki, H. eds. *People and Forest – Policy and Local Reality in Southeast Asia, the Russian Far East and Japan*, pp. 113-116. Kluwer Academic Publishers. Dordrecht.
- Lao-Swedish Forestry Programmeme. 2001. *Land Use Planning and Land Allocation.* Vientiane.

- Matsumoto, S. and P. Hirsch. 2003. "Mekong Gawa Ryuiki Koku no Shinrin Shoshitsu to sono Genin" ("Loss of Forests in the Mekong Region and its Causes"). Inoue, M. ed. *Ajia ni okeru Shinrin no Shoshitsu to Hozen*. (Loss of Forests and Forest Conservation in Asia), pp. 132-148. Chuo Hoki. Tokyo.
- Ministry of Agriculture and Forestry (MAF). 1999. The Government's strategic vision for the agricultural sector. Vientiane.
- Ministry of Agriculture and Forestry (MAF) and National Land Management Authority (NLMA). 2010. *Manual: Participatory Agriculture and Forest Land Use Planning at Village and Village Cluster Levels*. Vientiane: Ministry of Agriculture and Forestry and National Land Management Authority. Vientiane.
- Oya, K. 1998. "Sinrin-Rinya no Chiikishakai Kanri: Laos niokeru Tochi Ringyou Bunpai Jigyo no Kanousei to Kada" ("Forest Management by Local Communities: Possibilities and Challenges of the Land and Forest Allocation Programme in Laos"). Society for Environmental Economics and Policy Studies eds. *Ajia no Kankyō Mondai* (Environmental Problems in Asia), pp. 265-278. Toyo Keizai Sinposha. Tokyo.
- Phengsopha, K and T. Morimoto. 2003. "Local Forest Management and Strategies in Northern Laos Following Government Intervention". Institute for Global Environmental Strategies. *Towards Participatory Forest Management in Laos: Laos Country Report 2003*, pp. 1-11.
- Roder, W. 2001. *Slash-and-Burn Rice System in the Hills of Northern Lao PDR: Description, Challenges and Opportunities*. Vientiane, Lao PDR: International Rice Research Institute (IRRI). Manila.
- Simana, Suksavang. and E. Preisig. 1998. *Kmhmu' Livelihood: Farming the Forest*. Institute for Cultural Research. Vientiane.
- _____. 2006. "Rice-Based Traditions and Rituals of the Kmhmu". Schiller, J.M. et al. eds. *Rice in Laos*, pp. 79-106. International Rice Research Institute. Makati City.
- Soulihanh, B., et al. 2004. *Study on Land Allocation to Individual Households in Rural Areas of Lao PDR*. German Technical Cooperation (GTZ). Vientiane.
- Souvanthong, P. 1995. *Shifting Cultivation in Lao PDR; An Overview of Land Use and Policy Initiatives*. International Institute for Environment and Development (IIED). London.

Stoeber, Silke, E. Sisomphone, and C. Han. 2013. *Women, Food and Land: Understanding the Impact of Gender on Nutrition, Food Security and Community Resilience in Lao PDR*. Care International in Lao PDR. Vientiane.

Endnotes

- ¹ Shifting cultivation is known as *hai* in Lao, as ‘slash-and-burn agriculture’, ‘swidden cultivation’ or ‘swidden’ in English.
- ² Alternative spellings are Khmu, Kammu, Khmou, Khamou, and Khimu (Simana and Preisig 2006: 79). The Lao government does not recognize them or any other ethnic groups as indigenous peoples, but refers to them simply as ethnic groups, stating that they all are equal before the law.
- ³ Mekong Watch is an environmental NGO. It has its headquarters in Tokyo, Japan and has carried out various research and other activities in Lao PDR since 2004.
- ⁴ The Lao government does not follow the widely adopted UN Food and Agriculture Organization’s (FAO) definition of ‘forest’ as “lands of more than 0.5 hectares, with a tree canopy cover of more than 10 percent” and accepts lands with a tree canopy cover of more than 20 percent as ‘forest’. This makes it difficult to compare forest cover in the Lao PDR with that in other countries.
- ⁵ Ministry of Agricultural and Forestry, the Lao PDR (http://www.maf.gov.la/index.php?option=com_content&view=article&id=1942:nations-forests-under-threat-&catid=29)
- ⁶ There is confusion between English and Lao versions of the same text regarding the terms ‘stabilization’ and ‘eradication’. While documents in English often use the term ‘stabilization’ in discussing shifting cultivation, Lao versions often continue to use ‘eradication’ (*kan yutthi kan thang pa het hai*) (Kenney-Lazar 2013: 23). ‘Yutthi’ in Lao Language means ‘stop’ or ‘eradicate’. In the Forest Strategy 2020 and many other documents on shifting cultivation, however, ‘stabilization’ is used as a translation of *yutthi*.
- ⁷ There are many sub-groups of Kmhmu’ in the Lao PDR. Most of the Kmhmu’ people in Pak Beng are Kmhmu’-Rok-Kroong.
- ⁸ Source: data from Pak Beng DAFO (February 2013)
- ⁹ Some of these ten villages have been consolidated. Seven villages have land in the watershed area now (in 2014).
- ¹⁰ Source: data of Pak Beng DAFO (December 2008).
- ¹¹ Therefore, administratively, Phou Hong Theung is no longer a village (*ban*), and has been demoted to a hamlet (*khoum*). However, ‘Phou Hong Theung village’ is still commonly used among local villagers to refer to the original Phou Hong Theung community. This is similar to Chom Leng Noy village. When local villagers speak about Chom Leng Noy village, they mean either the administrative Chom Leng Noy Hamlet or Chong Leng Noy village. I follow local villagers and use ‘Phou Hong Theung village’ to refer to Phou Hong Theung Hamlet and ‘Chom Leng Noy village’ to Chom Leng Noy Hamlet. To avoid confusion, I call the merged village ‘New Chom Leng Noy village’.

- ¹² In this chapter, *khopkhu* defined by an official family book (*peum sammanorkhoua*) is translated into 'family'. Similarly, a unit living in a house (*langkha heuan*) is translated as 'household'. A household often accommodates two to three families.
- ¹³ As of March 2012, 351 Kmuhu' people lived in 74 families in 43 household in Chom Leng Noy village. The total Kmhmu' population at New Chom Leng Noy village was 731 villagers in 130 families in 81 households.
- ¹⁴ The Kmhmu' call themselves *Kam-hmu*, *Kwm-hmu*, *K-mu* or *Kam-mu*, depending on the speakers' dialect. The word *kmbmu*' means 'person' or 'people' and is used by the Kmhmu' to refer to themselves. Many Lao and Thai people used to call the Kmhmu' *Kboom* or *Kha*. *Kha* means 'to kill' or 'slave' and has a derogatory connotation. Kmhmu' people do not like to be called *Kha* (Simana 1998: 1).
- ¹⁵ Resolution No. 213/NA of the National Assembly on the Adoption of the 49 Ethnic Groups Classified in four Language Group of the Lao PDR (24 November 2008).
- ¹⁶ Source: "The Value of Forest, the Value of People: The Kmhmu of Laos and Shifting Cultivation", a documentary film produced by Mekong Watch in 2010 (<http://www.youtube.com/watch?v=JTIVxMMg0eM>).
- ¹⁷ The current "Participatory Land Use Planning and Land-Forest Allocation Manual" was issued in June 2009. Some NGOs and international organizations are trying to apply the new manual to land-use planning in their project sites. However, in other areas, local authorities are still using the old manual.
- ¹⁸ In Long Saen Village, the cycle of shifting cultivation has actually decreased to about three years since the LFA was implemented.
- ¹⁹ Villagers tell government officials or outside researchers that they are using one hectare of land for shifting cultivation every year. However, Takeda 2008: 274-275) points out that in reality the average area of shifting cultivation land per household is around 1.5 hectares.
- ²⁰ The village was eventually electrified in 2011. But electricity did not come from a hydropower dam on the Houay Kasaen River.
- ²¹ Interview with a villager from Phou Hong Theung Village, 14 May 2009.
- ²² Minutes of the meeting on Land and Forest Allocation in Pak Beng, 4 July 2007.
- ²³ These two villages were particularly troubled by the new land use imposed by the district through the LFA programme. Classification of the entire area had to be reviewed for these two villages. In three other villages, only the area in watershed forests was reclassified.
- ²⁴ According to an interview with staff of the Pak Beng DAFO on 25 February 2014, the district is suggesting research on soil quality to make detailed land-use planning, in parallel with measures to soil improvement and more efficient livestock-raising.

Chapter 6

'Post-shifting cultivation': struggles for livelihood and food security among Tharu people displaced by the Chitwan National Park in Nepal

Krishna B. Bhattachan



Acknowledgements

My thanks go first to the respondents, both the Tharu and others of the Simalgairi community in the Patihani VDC in the Chitwan District, Nepal. We thank the Asia Indigenous Peoples Pact (AIPP) and the Food and Agriculture Organization of the United Nations' (FAO) Regional Office for Asia and the Pacific (FAO-RAP) for making this case study in Nepal possible. Our special thanks go to Chris Erni and Shree Maharjan for their support from the beginning of this study and also to the two anonymous peer reviewers whose comments and suggestions on the draft report have been very valuable to revise and enrich the report. Also, thanks to all the participants, who gave their views on my paper that I presented during the Regional Multi-stakeholder Consultation on Livelihood and Food Security of Indigenous Peoples in Asia organized by AIPP and FAO-RAP held from 28 to 29 August 2014 in Chiang Mai. I am indebted to my research team Yasso Kanti Bhattachan, Tekendra Mahato Tharu, Shankar Mahato Tharu, Nirmal Mahato Tharu and Avilekh B. Bhattachan for their help and support in carrying out field work in Patihani VDC in Chitwan District in Nepal. Finally, thanks to all those people who directly and indirectly helped to successfully complete this study.

Glossary of Acronyms

AIPP	Asia Indigenous Peoples Pact
CA	Constituent Assembly
CDC	Chitwan District Committee
CF	Community Forests
CNP	Chitwan National Park
CPA	Comprehensive Peace Agreement
CPN-Maoist	Communist Party of Nepal-Maoist
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
FPIC	Free, Prior and Informed Consent
FUG	Forest Users Groups
HHs	Households
HMG-N	His Majesty's Government of Nepal
ILO	International Labour Organization
NEFIN	Nepal Federation of Indigenous Nationalities
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDCs	Village Development Committees

Title page photo: Members of the Belsahar Buffer Zone Community Forest User Group showing a receipt that gives them permission to collect grass for 15 days. Photo: Krishna B. Bhattachan

'Post-shifting cultivation': struggles for livelihood and food security among Tharu people displaced by the Chitwan National Park in Nepal

Krishna B. Bhattachan

At the end of March 2014, the Asia Indigenous Peoples Pact asked me to conduct a case study in Nepal focusing on livelihood and food security among indigenous communities that have been displaced because of a conservation area. Livelihood and food security of indigenous peoples in these areas of Nepal is problematic (Rai, J. 2013a, 2013b; Rai, U. n.d., 2010). Some efforts have been made to provide livelihood support for those people who live in buffer zones of national parks (Timilsina 2007). To understand the struggle the displaced indigenous Tharu people face regarding their livelihood and food security, I chose the Chitwan National Park (CNP), which today is surrounded by the Tharu people. The Tharu, who comprise 1.7 million of the 26.4 million people of Nepal, are spread out in all parts of the Terai region—the plains that stretch along the foothills of the Himalaya range. The establishment of the two national parks, CNP and Bardia National Park; the three wildlife reserves: Koshi-Tappu Wildlife Reserve, Parsa Wildlife Reserve and Shuklaphanta Wildlife Reserve; and the Blackbuck Conservation Area caused the eviction of the Tharu from their ancestral land. These protected areas established in the ancestral land and territories of the Tharu and other indigenous peoples have adversely affected their livelihood and food security. As a result, the Tharu and other indigenous peoples no longer practice shifting cultivation but try to make a living by other means in and around these protected areas.

I. Background and purpose of the study

This case study is not about shifting cultivation by the Tharu, which they abandoned years ago. This is rather a case study of 'post-shifting cultivation' livelihoods, i.e. how the people make a living after losing their shifting cultivation land to various protected areas. It aims to identify and address key challenges faced by and opportunities open to the indigenous Tharu of Nepal in achieving and maintaining their livelihoods and food security. The focus is on the micro-level, i.e. households in

the Tharu community, and drawing out concrete, practice-oriented lessons learned on how the adaptive strategies and responses of the farmers within a specific socio-economic, legal and policy context play out on the ground.

Chitwan National Park is in the ancestral lands of the Tharu and Bote, who are two of the 59 indigenous nationalities (*Adivasi janajati*) recognized by the Government of Nepal through enactment of the National Foundation for Development of Indigenous Nationalities Act, 2002.¹ In terms of common development indicators, the Tharu have been categorized as one of the marginalized and the Bote as one of the highly marginalized indigenous peoples of Nepal.

The national Census of 2011 identified 63 indigenous peoples, who comprise 35.80 percent of the total 26 494 504 population of Nepal (CBS 2012). Of these, indigenous women comprise 18.67 percent and indigenous men 17.13 percent of the total population of Nepal. The ancestral land of the Tharu is the dense tropical forest of the Terai region of Nepal. The total population of the Tharu is 1 737 470 (female 884 501 and male 852 969), i.e. 6.55 percent of the total 26.4 million population of Nepal (CBS 2012). Indigenous peoples of Nepal have been demanding self-determination, autonomy, self-rule, and ownership of ancestral land and recognition of customary law from the state. The Communist Party of Nepal-Maoist (CPN-Maoist) waged an armed “Peoples’ War” from 1996 to 2006 by largely mobilizing indigenous peoples, Dalits, Madhesi and women promising to ensure rights of these hitherto excluded sectors of society. The People’s Movement of 2006 ended the decade long (1996-2006) armed insurgency. The comprehensive peace agreement (CPA) of 2006 between His Majesty’s Government of Nepal (HMG-N) and the CPN-Maoist, the Madhesi Movement of 2007, and the 2008 Interim Constitution of Nepal mandated restructuring the state into an inclusive federal democratic republic with a new constitution written by the elected Constituent Assembly (CA). The first elected CA failed to deliver a new constitution in its extended four-year term and the current second elected CA is working to deliver it within a year on 22 January 2015. However, this seems to be impossible given the continuing political wrangling for power and the polarization over restructuring the state.

II. Research process and methods

The main sources of information for this study are drawn from a review of literature covering previous research and fieldwork. A research assistant, in close consultation with the principal researcher, spent two days visiting possible sites to determine the most appropriate site in Chitwan for the fieldwork. After consultation with local leaders and knowledgeable persons and members of the Chitwan District Committee (CDC) of the Tharu Kalyankari Sabha (a leading all-Tharu social

organization), Saurah, Kumroj and Patihani were initially identified and the research assistant visited the respective Village Development Committees (VDCs). Among these, Patihani VDC was suggested as the most appropriate VDC for the case study. Again, the research assistant, in close consultation with the principal researcher, visited Patihani VDC and consulted with the local leaders and activists to identify the community that was the worst affected by the establishment of the CNP, but which still relies on the park for their livelihood. Finally, the Tharu community at Simalgairi in Patihani VDC was selected as the research site to carry out the fieldwork for the case study. The principal investigator, senior research associate and junior research associate, carried out the fieldwork in Simalgairi from 18 to 21 April 2014.

The main methods applied in the fieldwork include three community meetings, four focus group discussions (FGD), three key informant interviews and observation. Instead of administering individual survey questionnaire, community-level meetings were organized and information about the community as a whole and some information relating to land ownership, paddy cultivation, and food sufficiency were collected at the household level. Community meetings were focused on generating information about family size, land holding, land used for paddy cultivation, food sufficiency, problems faced by the Tharu while using the CNP for food security and livelihoods, and views about agro-forestry. Focus group discussions generated information about policies and activities of the CNP Patihani User Group, and Belsahar Buffer Zone Community Forest User Group relating to their food security and livelihoods of the Tharu.

1. Key concepts

The key concepts used in this study are the same as the ones used for all case studies in this project. These are as follows:

Livelihood: A slightly revised version of the original definition of Chambers and Conway is used here:

"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base." (IRP and UNDP 2010: 1)

Food security: According to the UN Food and Agriculture Organization (FAO),

"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security." (FAO 2009: 1)²

Adaptation: According to Adger *et al.* (2007: 57)

Adaptation has been defined as adjustments to behaviour or economic structures that reduce vulnerability of society in the face of scarcity or threatening environmental change.

III. Profile of the research area and the community

1. Chitwan National Park

Chitwan National Park became the first protected area of Nepal in 1973. It is one of two UNESCO Natural World Heritage Sites of Nepal. Protected areas (PA) cover 2 028 584 square kilometres (sq km) or about 23.3 percent of the total land area of Nepal. There are four types of PA in Nepal:

- a. Ten National Parks³ (1 010 853 sq km),
- b. Wildlife Reserves⁴ (3 979 sq km),
- c. One Hunting Reserve⁵ (11 325 sq km), and
- d. Conservation Areas⁶ (615 426 sq km).



Figure 1. Map of Nepal showing the location of Chitwan National Park

According to Jailab Rai (2013 b:26), “the objective of its [CNP] protection before formal declaration was not for the biodiversity conservation rather it was for recreational aesthetics of hunting species like tiger, rhinoceros, leopard and other mega-fauna by feudal Rana rulers. Recently, this national park is famous for the preservation of one horn rhinoceros and tiger.” Before the establishment of the then Mahendra Deer Park, now CNP, Chitwan was a prestigious big game area for the Shaha and Rana rulers and their foreign guests. It was established in 1959 as the Mahendra Deer Park. At that time it covered the Tikauli forest from Rapti River to the foothills of the Mahabharat, extending over an area of 175 sq km. In 1963, it was turned into the Rhino Sanctuary covering the area south of the Rapti River. After the Peoples Movement of 2006, it was declared as the Chitwan National Park that covers four districts: Chitwan, Makawanpur, Parsa and Nawalparasi.⁷ The park is divided into four management sectors: Eastern/Sauraha sector, Central/Kasara sector (headquarters), Southern/Bagai/Madi sector and Western/Amaltari sector. “The declaration of this national park gradually imposed restrictive policies upon the local traditional livelihoods of the inhabitants.” (Rai, J. 2013b: 26)

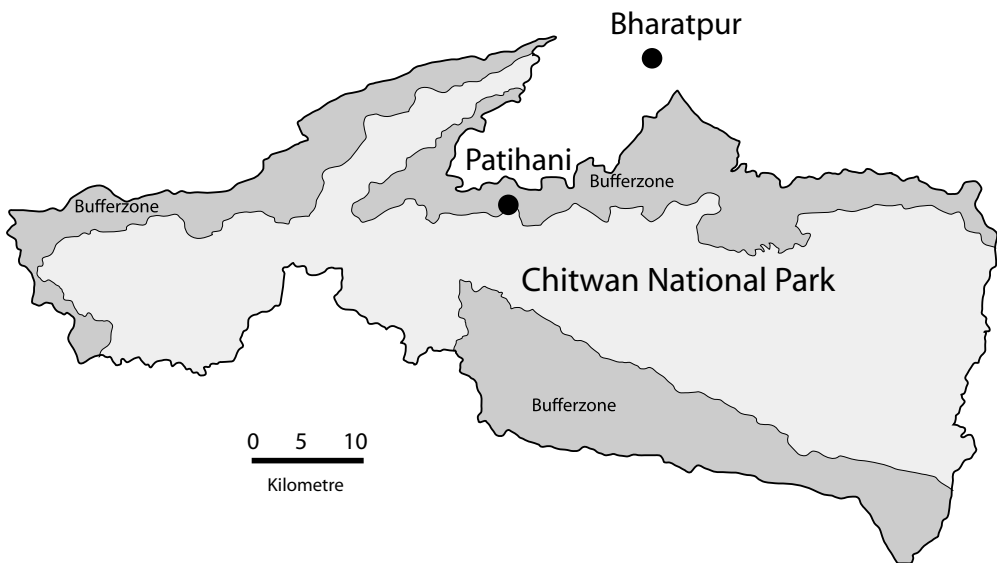


Figure 2. Map of the Chitwan National Park (Source: Rai 2013)

The CNP lies between 27°16.56'-27°42.14' latitudes and 83°50.23'-84°46.25' longitudes. The altitude ranges from 110 metres to 850 metres above sea level. It is situated in the south of the Central Development Region of Nepal, in the sub-tropical lowlands of the Inner Terai. In 1996, an area of 750 sq km surrounding the park was declared as a buffer zone that includes forests; private lands, including cultivated lands;

and a Ramsar Site⁸, i.e. *Beeshazari* Lakes. The park is bounded by the Rapti and Narayani Rivers in the north, Parsa Wildlife Reserve in the east and Madi settlements and the Indian border in the south. The physiographics of the park consist of the Terai plainland and Siwalik Hills. Three major rivers Narayani, Rapti and Reu, and their floodplains and several lakes and pools are the major water sources of the park.”⁹

2. Chitwan District

There was a dense forest, popularly known as a “*Charkose Jhadi*” (‘four mile-long forest’), in Chitwan where the Tharu used to live before the eradication of malaria in the sixties. Since the seventies, King Mahendra encouraged migration of the hill people to the Terai. Chitwan has become popularly known as the 76th district of Nepal, implying that people from all 75 districts settled here to make their living.

Patihani VDC is in the Chitwan District, southwest of Kathmandu, the capital city of Nepal. Makwanpur and Parsa Districts are in its East, Nawalparasi and Tanahu Districts in the West, Gorkha and Dhading Districts in the North and the state of Bihar India is to the south (DDC Chitwan 2070 B.S.: 9). According to the Geographical Information System (GIS) map of Chitwan District, the total area of the district is 2 238.39 sq km of which 908.79 sq km is covered by CNP; the remaining area of 1 329.60 sq km is divided into 36 VDC, including Patihani VDC, and two municipalities (DDC Chitwan 2013: 9).

3. Patihani VDC

The Patihani VDC is one of the 36 VDCs of Chitwan District in Nepal. Currently it is being promoted by the central and the local governments as one of the main tourist destinations in the district.

The Patihani VDC lies at the northern latitude of 27°36’ to eastern longitude from 84°23’ to 84°23’. It is located 250 metres above the sea level. Total area of the VDC is 20.40 sq km. The Barandabhar forest, which includes the Belsahar Buffer Zone Community Forest (CF), lies in the east, the Jagatpur and Parbatipur VDCs lie in the west, the Shivanagar and Gitanagar VDCs are in the north and Rapti River or CNP is in the south. CNP and the Gitanagar VDC are in the east, the Parbatipur and Jagatpur VDCs are in the west, the Shivanagar and Gitanagar VDCs are in the north and the Jagatpur VDC and CNP lie in the south of Patihani VDC.

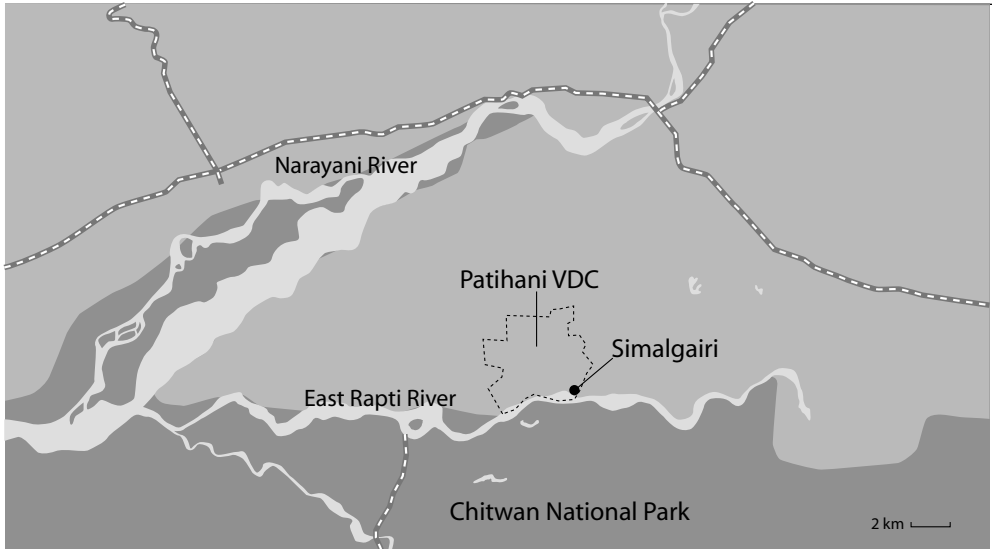


Figure 3. Location of the study site Simalgairi community in the Patihani VDC

The Patihani VDC is divided into two areas; Ghol and Tandi. The Belsahar Buffer Zone Community Forest and Birendranagar Buffer Zone Community Forest cover 224.81 hectares (ha) of land. *Swar Ghol*, *Kerunga Ghol* and *Dhanuji Ghol* are located in the eastern part of the VDC and these cover 30 percent lands of the VDC. The Chitwan National Park lies outside the Patihani VDC. Rapti River flows on its southern part. The Simalgairi is the low land and the Brhmapuri is the high land of the VDC.

According to the VDC profile of 2010, the total population of the Patihani VDC is 12 798 (Table 1). The total population in Ward Number 8 that includes the study area (Simalgairi community) is 2 191, with 1 060 (48.4 percent) females and 1 131 (51.6 percent) males (Table 1).

There are a few studies on the livelihood situation of the Bote community (Acharya 2010) and those who rely on tourism (Marahatta and Kshetri 2012) in Patihani VDC, but no general study on livelihood and food security in this area.

Table 1: Number of settlements and families, average family size, male and female population by wards in the Patihani VDC

Ward number	No. of settlements	No. of families (%)	Average family size	Male (%)	Female (%)	Total (%)
1	4	216 (8.5)	4.7	542 (53.1)	479 (46.9)	1 021 (7.9)
2	4	281 (11.0)	5.4	786 (51.0)	756 (49.0)	1 542 (12.0)
3	3	400 (16.0)	4.9	1 086 (51.9)	960 (48.1)	1 996 (15.6)
4	4	483 (19.0)	4.9	1 236 (51.7)	1 153 (48.3)	2 389 (18.7)
5	3	236 (9.3)	4.9	596 (50.6)	582 (49.4)	1 178 (9.3)
6	2	170 (6.7)	5.1	443 (50.6)	432 (49.4)	875 (6.8)
7	3	200 (7.9)	5.1	535 (52.0)	493 (48.0)	1 028 (8.1)
8	7	440 (17.0)	4.9	1 131 (51.6)	1 060 (48.4)	2 191 (17.1)
9	3	113 (4.5)	4.7	296 (51.2)	282 (48.8)	578 (4.5)
	Total	2 539	5.0	6 601 (51.6)	6 197 (48.4)	12 798 (100.0)

Source: Adapted from Patihani VDC Profile 2010: 6

4. The Simalgairi community

The Simalgairi community is ward number eight of the Patihani VDC in the Chitwan District of Nepal. With the establishment of the CNP, about 70 Tharu families living in their ancestral land in *Khurawa*, *Basbari*, *Dumaliya*, *Ameliya*, *Majur* and *Bahapur* located inside the CNP—opposite to Simalgairi, on the other side of the Rapti River—were evicted in 1963 by the then HMG-N. They not only lost ownership and control over their land but they were dispersed and took refuge in different places in the Chitwan District and worked in the farms of rich people as farm labourers. After the successful People's Movement of 1990, about 81 families, including most of the displaced Tharu from those and other places, Bote, Tamang and Dalit, gathered together and collectively demanded that the HMG-N provide them with land so that they can make their living. As the government did nothing to fulfil their demands, they settled on government-owned land in Simalgairi in the Patihani VDC with the support of the local political party leaders. The devastating floods of 2001

destroyed about half of the settlement. Altogether 53 families moved to nearby higher areas and only 28 families remained.

The VDC profile shows 24 households (HHs) in the Simalgairi community, but by now it has 34 HHs with a total population of 145 comprising 75 females and 70 males. Out of them, 29 community members live outside the community in nearby villages and nine members have gone abroad for work. There are 24 Tharu HHs with a total population of 99 divided into 53 females and 46 males (Table 2). The average family size is 4.1. There are three Bote HHs. Six Tamang HHs and one Dalit HH have migrated from the hills.

Household number	Female	Male	Household size
1	4	2	6
2	1	2	3
3	4	1	5
4	2	1	3
5	1	2	3
6	4	3	7
7	4	5	9
8	3	1	4
9	3	2	5
10	1	1	2
11	2	2	4
12	3	2	5
13	1	0	1
14	1	1	2
15	2	1	3
16	1	2	3
17	1	2	3
18	1	1	2
19	3	2	5
20	5	4	9
21	1	2	3
22	1	3	4
23	2	2	4
24	2	2	4
Total	53 (53.54)	46 (46.46%)	99 (100.00%)

Table 3. Distribution of Tharu household sizes in Simalgairi Village of the Patihani VDC		
Family size	Number of HHs N = 24	Percentage
1	1	4.1
2	3	12.5
3	7	29.3
4	5	20.9
5	4	16.7
6	1	4.1
7	1	4.1
4	0	0.0
9	2	8.3

Source: Fieldwork 2014.

The Patihani VDC has some infrastructure that helps the community members to adapt to problems of livelihood and food security. For example, a black-topped road, the *Hulaki Sadak* ('Postal Road'), runs from the Patihani VDC. This road is further connected to Thori road. Simalgairi to Bharatpur (town center) is at a distance of 14 km. Simalgairi to Thori is 40 km. Ward numbers five and nine have black-topped roads, Ward numbers one and four are touched and Ward numbers two and one are partially touched by black-topped roads. There is no black-topped road in Ward number eight. The nearest village market from the Simalgairi is the Pakaudi bazaar, located in the northwest of the Simalgairi, at a distance of 1.5 km and the Patihani bazaar, located in the west, is in a distance of 2 km. Electricity is accessible in all the nine wards of the VDC. Land phone lines are accessible in the bazaar areas. Mobile is accessible to all. There is no bus park and airport. There is a public health post in Ward number eight.

The Tharu have small landholdings, but due to lack of irrigation they are unable to increase food crop productions. The Ganganagar irrigation canal is in the Patihani VDC, which is about 3 km long but it is not accessible to the farmers of Simalgairi community. That is why they built an irrigation canal from the *Sitami Ghol* (wetland). There is a possibility of building an irrigation canal from the *Sitamai Ghol*, *Belasa Tal* (lake) and the *Jhilari Tal* (lake). The Belshar Buffer Zone Community Forest Office and Face Nepal, a non-governmental organization (NGO), are two community-based organizations. There are five hotels and one resort that show that the Tharu are slowly adapting to new opportunities available for making a living and increasing their food security. The government has encouraged home stay programmes in the Simalgairi for

tourists, which have opened up new opportunities to improve livelihood and food security for some families.

IV. Traditional and non-traditional food

The present livelihood and food security of the Tharu of Simalgairi is dependent on traditional forest product-based food, such as the leaf of wild *Parwar* (Pointed gourd), as well as food available in the local market, such as rice, lentils and fresh green vegetables.

1. Traditional forest products-based food

Data collected during fieldwork show that the Tharu of the Simalgairi rely on nearby forests of CNP and Belsahar Buffer Zone Community Forests User Group to meet their daily supply of wild food (Table 4). The older generation of the Tharu have knowledge of forest-based wild food, both vegetable and meat, because they used to collect these foods when they had full access to and control over the forests before it was taken over by the government. The young generation generally has no that much knowledge about wild food. Among the younger generation of the Tharu, it is generally the women who go to forests every day and collect traditional food; therefore, they have more knowledge about traditional food than men.

Present, regular use	Past regular use; presently declining, occasional use
Wild vegetables	
<i>Parwar ko sag</i> (leaf of pointed gourd)	<i>Neeuro</i> (Dryoptens Cochleata) [Fiddlehead]
	<i>Kande karkalo</i> (Colocasia antique/rum Schoott) [Taro leaf]
	<i>Ban karela</i> (Wild bitter gourd)
	<i>Beth laure or Narkaeyya</i> (stems)
	<i>Ban chittee</i>
	Dhahee
	<i>Chigan gadiya or Madhur kbuttee</i> (Stems)
	<i>Pedar</i> (a kind of flower)
	<i>Tama</i> (Bamboo shoots)
	<i>Kukur dainoo</i> (Smilax Asperuc) [a kind of shoot]
	<i>Kureelo</i> (Racemosus Wild) [Asparagus]
	<i>Chyau-Padke</i> (Mushroom)
	<i>Bader</i> (Stem)

Table 4: The Tharu' traditional food in current and past use (<i>continued</i>)	
Present, regular use	Past regular use; presently declining, occasional use
	<i>Lakunee</i> (Mushroom)
	<i>Chamree</i> (Mushroom on wood)
	<i>Kuro chyau</i> (Mushroom found in grassland)
Wild fruits	
	<i>Kusum</i> (<i>Schleichera oleosa</i> (Lour) Oken, Sapindaceae)
	<i>Khanayo</i> (<i>Ficus Semicordata</i> Buch)
	<i>Gulari or Dumari</i>
	<i>Chiuree</i> (<i>Ingua</i>)
	<i>Koelata</i>
	<i>Anp</i> (Mango)
	<i>Rani kusum</i>
	<i>Farsa</i>
	<i>Khajur</i> (<i>Phoenix Sylvestris</i> Roxb)
	<i>Dafer</i>
	<i>Bayer</i> (<i>Zizyphus</i>)
	<i>Jamun</i> (<i>Syzygium Cumini</i>)
	<i>Bodar or Kyamun</i>
	<i>Titami</i>
Wild mammals	
<i>Bandel</i> (Wild Boar)	<i>Mriga</i> (Deer)
Wild birds	
<i>Dangre</i> (Common Mynah)	<i>Majoor</i> (Peacock)
	<i>Ban kukhura</i> (Wild chicken)
	<i>Titar</i> (Partridge)
	<i>Dhukur</i> (Dove)
	<i>Bakulla</i> (Crane)
	<i>Sawari</i>
Wild aquatic food	
<i>Ghonghee</i> (Fresh water snails)	<i>Kachhuwa</i> (Turtle)
<i>Maccha</i> (Fresh Water Fish)	<i>Thontharee</i> (like Turtle)
<i>Jhinge Machha</i> (Fresh water prawn)	
<i>Karmee sag</i> (Vegetable)	

Note: English names of some wild vegetables were not found in the available sources.

Source: Field work 2014.

They all prefer to collect leaves of wild *Parwar ko sag* for curry every day that it is in season. Due to restrictions in the collection of traditional food from CNP, whatever wild foods are collected at a given time, it is mostly just sufficient for household consumption. Some families, sometimes, exchange wild food with neighbours, but they do not sell it. The new generation, generally, do not see a need to learn about their traditional food. The nutritional values of these wild food used by the Tharu are not known.

The rules and regulation of the CNP and the growing reliance on food available in the market have discouraged the use of traditional food. The Tharu of Simalgairi do not cultivate wild food; therefore, there is no cultivation expense. The older generation is fond of the taste of their traditional food. The new generation has tasted only a limited number of traditional foods that are accessible illegally, namely, *Parwar ko sag*, *Ghongi* (fresh water snails) and *Bandel* (wild Boar). Even at present, the villagers go together to the forest to collect/harvest/hunt the limited number of traditional foods available. This has helped to maintain solidarity among them, because they go together and if someone is caught by the security force they defend themselves collectively. All the respondents univocally said that the security force generally do not give them trouble if they collect wild *Parwar ko sag* and catch fish with prior permission during daytime. The security personnel detain and punish them if they collect other wild vegetables and wild fruits, or catch or kill any wild bird or animal, including *Bandel*. Also, they are detained if they catch fish in the night or wee hours, which is their customary practice.

According to the elders who participated in the FGD, in the past, the Tharu who now live in the Simalgairi community used to cultivate wild paddy, namely, *Gauria*, *Kanajeer*, *Belkajeer*, *Madhukar*, *Dudhraj*, *Gola*, *Anjanta*, *Anda*, *Machae*, *Barma*, *Jogini*, *Anadi* and *Gurdi* in their ancestral land. Of these, they still cultivate *Anadi* paddy, which they need to prepare various foods for religious, ritual and other social and cultural occasions. *Kanajeer* and *Belkajeer* paddy are rarely cultivated. Most varieties of traditional paddy are now extinct due to loss of land, low yield, loss of indigenous knowledge of these crops among the younger generation, and availability of other varieties of paddy in the market.

2. Non-traditional (market) food

The Tharu of the Simalgairi rely on the following non-traditional food and products bought in nearby markets:

- **Paddy:** The Tharu of Simalgairi community cultivates paddy, namely, *Mansulee* and *Taicheen* that give high yields and are easily available in the local market. The respondents said that they have relied on these paddy

available in the market because they do not have enough land to produce food sufficient for their family members and also because they could not rely on indigenous paddy with less yield.

- **Dairy products and meat:** They raise cattle and water buffaloes. They feed hay to these animals. A few years ago every family used to raise goats, but now very few do that because of the unavailability of grass to feed them. They raise these animals for their household consumption. They do not sell the milk they get from these animals. In addition they raise and/or purchase meat products made from chicken, goat, duck, and pigeon.
- **Vegetables:** They either grow traditional vegetables for household consumption, and/or buy non-traditional vegetables that are easily available in local market, such as *Rayo ko sag* (leaf mustard), *Toree ko sag* (Indian rape leaf) (mustard), *Frasee ko munto* (pumpkin vine shoots), *Banda* (cabbage), *Kauli* (cauliflower), *Chiple Bhindee* (lady's finger), *Karela* (bitter gourd), *Bodi* (bean), *Mula* (dikon), *Ghieu Simee and Simee* (green bean).
- **Fruit:** They buy fruit, namely, *Aanp* (Mango), Litchi, *Katahar* (Jack Fruit), *Amba* (Guava) and *Mewa* (Papaya). The respondents said that they do so because they do not cultivate sufficient quantities of these fruits due to the scarcity of land for cultivation.

During fieldwork, the members of the FGDs said that the Tharu find the taste of these market-based foods very different from their traditional foods. Also, the tastes of market-based food are different due to over-use of insecticide and pesticide. They further said that the money they earn from wage labour is spent on buying those market-based food products.

In the community meeting, it was revealed that at least one family member of all the 24 Tharu HHs of the Simalgairi community were forced to accept wage labour to address insufficient food production from their land. They do wage labour work during the agricultural season, particularly plowing, planting and weeding of paddy and maize farms owned of rich people. Many Tharu earn cash by working as carpenters and masons; and they go to different VDCs, near and far, some of them even go as far as Sarlahi and Sindhuli Districts. Families, who are unable to meet their food needs from their land, work as labourers for eight to nine months. Daily wage labourers earn Rs. 500, if they are men and Rs. 300, if they are women.

In 1995, in the CNP buffer zone, the government had introduced agroforestry as a part of the non-timber forest management in order to reduce human-wild life conflict. During the fieldwork, the Warden of CNP at Kasara said that agroforestry did not succeed. It failed immediately after its implementation because farmers were

not interested in cultivating fodder and *Sisau* (*Dalbergia sissoo*) tree production was not encouraging because farmers have to wait for a long time before they get any income from these trees.

V. Land ownership and food sufficiency

Food insecurity is a problem of not only of the Tharu living in and around CNP but also elsewhere in the Terai from the far west to the east, and of other indigenous and non-indigenous peoples of Nepal. “The [food] insecurity increases”, following Uddav Rai, “as a result of productivity, food transport and distribution problems” (Rai 2009: 16). The World Food Programme (WFP), as cited by Uddav Rai, has estimated that “the current food insecure population is 3.7 million, mostly rural people spread over 54, out of 75 districts of Nepal” (see Rai 2009: 16).

During the fieldwork, the elder Tharu respondents said that before forcible eviction from their ancestral land the Tharu used to practice shifting cultivation. They said that they used clear land for shifting cultivation and cultivated a plot for two years. After that, they cleared another piece of land for cultivation while leaving the previous land as fallow to regenerate; and they used to return to the same land after eight years. Now the 24 Tharu HHs who, after being displaced and living a terrible life elsewhere in Chitwan District, took refuge in the 1990s in Simalgairi, where they gave up shifting cultivation for good. The elder respondents said that reviving their practice of shifting cultivation is not possible on the land they now own because it is too small. Data corroborates their views as the one Tharu HH with the largest land holding, owns only 11 *Kattha* (0.36 hectare) of land; all other 23 Tharu HHs own 5 *Kattha* or even less (Table 5). The respondents were of the view that if the Nepal government or CNP allow them to use CNP forest and wetland to make their livelihood, they would be happy to revive their customary practice of shifting cultivation.

Plot size (in Kattha)	1	2	3	4	5	6	7	11	
Number of households	7	1	6	0	9	0	0	1	24
Total HHs % of total	29.17%	4.16%	25.00%	0.00%	37.51%	0.00%	0.00%	4.16%	100.00%

Note: 30 *Kattha* = 1 Hectare

Source: Field Survey

All 24 Tharu families of the community consider themselves poor. Given the cultivation in *ailani* (government owned) land and the small overall size of land holding and especially paddy land, their self-assessment of being poor is quite natural. The distribution of paddy land among the 24 Tharu HHs is as follows (see also Table 6):

- 6 HHs have no paddy land;
- 6 HHs have 1 Kattha of paddy land;
- 2 HHs have 2 Kattha of paddy land;
- 6 HHs have 3 Kattaha of paddy land;
- 3 HHs have 4 Kattha of paddy land; and
- 1 HH has 5 Kattha of paddy land.



*Figure 4. Homestead and maize farm in Simalgairi community.
Photo: Krishna B. Bhattachan*

Food sufficiency from agriculture throughout the year among the 24 Tharu HHs is as follows (see also Table 6):

- 6 HHs have no food sufficiency at all;
- 14 HHs have food sufficiency for less than 3 months;
- 3 HHs have food sufficiency for 3 to 6 months;
- 1 HH has food sufficiency for 6-9 months; and
- No HH has food sufficiency for 9 to 12 months.

In order to address food sufficiency for the remaining period, at least one member of each HH engages in daily and/or seasonal wage labour. One member from each of the eight Tharu HHs have gone abroad to work (three in Qatar, two in Saudi Arabia, one in Oman, and one in Malaysia). There are three Tharu HHs whose members have gone to nearby villages to make their living.

Given that they have such small land holdings (Table 5) without any land registration certificate from the government and considering the restrictions on using the CNP to collect wild food products, it is not surprising that the general level of food security among the Tharu is low and problematic.

Paddy land (in Kattha)	None	Less than 3 months	3-6 months	6-9 months	12 months	Total HHs
0	6	–	–	–	–	6
1	–	5	–	–	–	5
2	–	2	–	1	–	3
3	–	5	1	–	–	6
4	–	2	1	–	–	3
5	–	–	1	–	–	1
Total HHs % of total	25.00%	58.30%	12.50%	4.16%	0.00%	100.00%

Note: 30 Kattha = 1 Hectare

Source: Field Work 2014

VI. Legal and policy framework

The land rights situation among the Tharu of the Simalgairi community, in particular, and of all the indigenous peoples of Nepal, in general, is pathetic. Until 1950s, the dense forests of Terai, including the forests of Chitwan, remained largely under control of indigenous peoples such as the Tharu. After the abolition of *Birta* (land tenure system in which land was granted to the Bahun elites) and *Jagir* (land given to government officials as remuneration) in the 1950s, the *Kipat* (communal land ownership) of the Limbus of east Nepal was abolished in 1963 by the late King Mahendra. He introduced a nationalism project that promoted 'one caste (Nepali), one language (Khas Nepali), one dress (*Daura Suruwal* – traditional Nepali shirt and trouser) and one culture (Hindu culture)'. King Mahendra, once a hunter, later became a conservationist who established CNP as the first-ever protected area in Nepal. The Tharu who were forcibly evicted from their ancestral land in *Khurawa*, *Basbari*,

Dumaliya, Ameliya, Majur and *Bahapur* located in CNP, and now settled in Simalgairi in the Patihani VDC, are living like refugees. Till now, the government has neither registered their land nor evicted them Simalgairi. The Warden of the CNP said that they cannot and will not evict them from Simalgairi as they have been living there for a long time.

Various laws and regulations of Nepal have restricted the traditional livelihood practices of the Tharu and other indigenous peoples. Since 1768, the legal framework has been based on Brahmanism, i.e. the domination of one caste, one language, one religion, one culture, one sex and one region; and caste-ism, privileging the 'high' caste people in the Hindu caste hierarchy at the expense of the indigenous peoples and the Dalits.

In spite of the government control of all land, indigenous peoples of the tropical forests in the Terai, including the Tharu, were in control of their ancestral land until the 1960s. Malaria, to which the indigenous peoples of the Terai were largely resistant, prevented settler migration to their territories. The eradication of malaria in 1950s was followed by state-sponsored migration from the Hills and from India and the Tharu were dispossessed of their land and resources.

It was the Private Forests Nationalization Act, 2013 (1957) that made indigenous peoples lose their forests. Article 3 of the Act states, "(1) The ownership of all private forests in the State of Nepal shall devolve on the Government of Nepal after the date of commencement of this Act."; and Article 5, on prohibition on claiming compensation, states, "No claim for any compensation may be made in relation to the right to the private forests deprived pursuant to this Act."¹⁰

The Limbus of eastern Nepal were the last indigenous people to lose control over their land when the *Kipat* land tenure system was abolished in the late 1960s in the name of the National Land Reform Programme under King Mahendra (Bhattachan 2012: 18).¹¹ The Lands Act, 1964 denied collective or 'communal' ownership of land. The Article 3A of the Lands Act of 1964, states,

"3.A. Provision on Kipat:

(1) The Kipat land may, like the Raikar land, be transferred by conveyance (Pharchhe Rajinama).

(2) The Kipat land shall, like the Raikar land, be subjected to land revenue.¹²"

The Forest Act of 1993, an act made for proper management and conservation of forests, identifies private forest as one of the five types of forests. These five types of forests are Protected Forest, Community Forest, Leasehold Forest, Religious Forest, and Private Forest. Laws related to all these forests restrict livelihood and food security

of the indigenous peoples. For example, Article 17 of the Act states, "No Person to have any Rights in the National Forest: Except when any right or facility has been obtained through a lease or permit or in any other way from Government of Nepal or the authority empowered by Government of Nepal, no person shall have any right or facility of any type in the National Forest."¹³ This article of the Act clearly denies customary rights of indigenous peoples on forest.

Both indigenous and non-indigenous peoples can now have access to community forests for limited use, which is positive to some extent in that it should improve their livelihood and food security. Article 25 of the Act states,

"25. Handover of The Community Forest: (1) The District Forest Officer may handover any part of a National Forest to a Users' Group in the form of a Community Forest As Prescribed entitling to develop, conserve, use and manage the Forest and sell and distribute the Forest Products independently by fixing their prices according to Work Plan. While so handing over a Community Forest, the District Forest Officer shall issue a certificate of alienation of the Community Forest.

(2) The District Forest Officer may constitute a Users' Group as Prescribed by mobilizing users and provide technical and other assistance required to prepare the Work Plan for the purpose of Sub-section (1)."

The Nepal Federation of Indigenous Nationalities (NEFIN), an umbrella organization of the 59 indigenous peoples that has been legally recognized by the Nepal government, criticizes Nepal's Community Forest (CF) management for discriminating against indigenous peoples because the local Forest User Groups (FUG) that form the backbone of the CF management tends to be dominated by the 'high' caste elites.

The *National Parks and Wildlife Conservation Act, 2029 (1973)*¹⁴ have displaced many indigenous peoples including the Tharu, whose ancestral lands were in the national parks and are now living outside, such as the community of Simalgairi in Patihani VDC in Chitwan District. Article 4 of the Act about "restriction on entry into national parks" has indeed restricted livelihood and food security of indigenous peoples such as the Tharu. The Article states:

"(1) No person shall be allowed to enter into a national park or reserve without obtaining an entry permit as prescribed or a written permission from the authorized official.

Provided that, this Sub-Section shall not be applied to government employees who are on deputation or to persons who have the privilege of right-of-way into the national park or reserve.

(2) The design, type, fee and other conditions of the entry permit mentioned in the Sub-Section (1) shall be as prescribed."

The following two provisions of the Article 5 of the Act about “*Prohibited actions within national park or reserve*”¹⁵ have indeed restricted livelihood and food security of indigenous peoples, including the Tharu. The Act states:

“No person shall carry out the following actions within national park or reserve without obtaining a written permission from the authorized official:

- a. To hunt wildlife,*
- b. To construct or possess house, hut, shelter, or any other structures of any material,*
- c. To occupy, clear, reclaim or cultivate any part or grow or harvest any crop,*
- d. To graze any domestic animal or bird, or feed water to it,*
- e. To cut, clear, fell, remove or block trees, plants, bushes or any other forest resources, or do anything to cause any forest resources dry, or set it on fire, or otherwise harm or damage it,*
- f. To dig mines, stones or remove any mineral, stone, boulder, earth or any other similar material,*
- g. To cause damage to forest resources or wildlife or birds or any land,*
- h. To carry arms, ammunition or poison, or use them,*
- i. To take any domestic or any other kind of animal or trophy by persons other than government employees on deputation or visitors of the public paths within the national park or reserve, and*
- j. To block, divert any river or stream flowing through national park or reserve, or any other source of water, or use any harmful or explosive materials therein.”*

Indigenous peoples, such as the Tharu, who live at the edge of national parks, including the CNP, have been further victimized by Article 3a. of the Act which states:¹⁶

“Buffer zone may be declared: (1) Government of Nepal may declare any peripheral area of a national park or reserve as a buffer zone by publishing notification in the Nepal Gazette and indicating the boundaries thereof.

(2) Government of Nepal may, abandon or transfer the ownership, or alter the boundaries of the buffer zone prescribed under the Sub-Section (1) by publishing notification in the Nepal Gazette.”

All these laws of Nepal contradict or fall short of international laws, specially, International Labour Organization (ILO) C. No. 169¹⁷ which Nepal is a party to since 14 September 2007 and United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)¹⁸, which Nepal had adopted on 13 September 2007. According to Article 9 of the Nepal Treaty Act, 2047 (1990)¹⁹:

“Treaty Provisions Enforceable as good as Laws: (1) In case of the provisions of a treaty, to which Nepal or Government of Nepal is a party upon its ratification accession, acceptance or approval by the Parliament, inconsistent with the provisions of prevailing

laws, the inconsistent provision of the law shall be void for the purpose of that treaty, and the provisions of the treaty shall be enforceable as good as Nepalese laws.

(2) Any treaty which has not been ratified, accede to, accepted or approved by the Parliament, though to which Nepal or Government of Nepal is a party, imposes any additional obligation or burden upon Nepal, or Government of Nepal, and in case legal arrangements need to be made for its enforcement, Government of Nepal shall initiate action as soon as possible to enact laws for its enforcement.”

Concerning food security, both women and men of the 24 Tharu households living in Simalgairi go to CNP and CFs to collect food (especially wild vegetables), grass, fuel wood, *Ghongi* and fresh water fish. The Belsahar Buffer Zone Community Forest User Group, Patihani charge Rs. 50 per month and Rs. 25 for 12 days. Many families are unable to pay such fees. Those who can pay are allowed to collect only grass and dry twigs; however, they illegally try to collect food like wild vegetables, *Ghongi* and fish for their own consumption, continuing their customary practices of eating these wild foods. Similarly, the Patihani User Group charges Rs. 50 per month and Rs. 25 for 15 Days to collect 'ground grass' and *Parwar ko sag* from the grassland²⁰ inside the CNP, but some who pay illegally collect firewood and other wild vegetables too. Sometimes, depending on the mood of the Belsahar Buffer Zone Community Forest guards or the army guarding the CNP, people are allowed to take with them whatever they have collected; but sometimes they are caught for such illegal activities.



Figure 5. Tharu women on the way to home, carrying grass collected from the Belsahar Buffer Zone Community Forest. Photo: Krishna B. Bhattachan

The community members recalled a recent case where ten community members (seven women and three men) were caught for alleged illegal collection of fuelwood by cutting trees. They were detained in a small room, and their photographs were taken along with cut wood. In another incident, 18 community members were arrested for illegal activities. They were detained in the Kasara barrack for about 4 hours. The Chairperson of the mid-buffer zone users group, who happened to be one of the community members of the Simalgairi community, made phone calls and all of them were released.

According to Thomson Metz (1998), food security is ensured when there are fewer needs than demand and consumption, and more supply than demand. Food insecurity results when there are more needs than demands and consumption, and more demand than supply. Livelihood and food security system of the Tharu of the Simalgairi community is two-pronged. The first is the reliance on agriculture and forest products such as wild vegetables of the CNP and CFs for daily food, and fodder for raising animals. The second is the reliance on the market for other daily needs, including rice, pulses, spices, cooking oil, kerosene, and vegetables.

The main crops grown in Simalgairi are paddy and maize; a few sometimes grow wheat. Paddy is cultivated during rainy season, i.e. from mid-June to mid-August, and the paddy is harvested during mid-October to mid-December. Generally, they cultivate maize or wheat during mid-February to mid-April. They grow beans, pumpkin, gourds, Chinese okra in between maize. They are all reluctant to grow wheat because the deer from the CNP love to eat the soft wheat plants. When very few families grow wheat, the deer eat all and leave nothing. Because everyone grows maize, the deer cannot eat it all. At the later stage when baby corn begins to develop, parrots and wild boar eat them. Monkeys do not disturb much. After all these, farmers can expect at least one fifth of the maize plants to survive. The community members said that if they kill wild animals or birds they are punished with fines or imprisonment but if the wild animals destroy their crops, they get nothing from the government.

VII. Views on agroforestry

After losing control over their ancestral lands because of the establishment of the CNP, the Tharu lost the ability to be food secure and faced immense livelihood problems. After being evicted from their ancestral land, they began working as domestic servants or wage labourers in nearby villages and towns. The recent occupation of *Aialnee* (government-owned) land by the community members has enabled them to build houses and cultivate some land to make a living. As their livelihood became increasingly difficult, they decided to occupy government land in the Simalgairi of the Patihani VDC with support of local political leaders. Now at least

they have a roof to take refuge under and some land to farm paddy, vegetables and raise goats, cows, buffaloes and chickens. When wild animals enter from CNP to their farmlands, they suffer losses in food production that result in even more food deficiency. Lack of land, lack of food production and helplessness in fighting against the state has driven the community members to find work either in nearby villages, elsewhere in Nepal, or even outside Nepal as far away as the Middle East and Malaysia.

The current livelihood system does not meet the needs of the Tharu. They are not food secure because their food production is limited. Most of them rely on wage labour make a living, except for five households, which are engaged in the hotel and restaurant business that relies on tourism. All the other households have some food security problems.

At present, of the 24 Tharu HHs, none of the households practice shifting cultivation and agroforestry.

The Tharu respondents, Bote and the Tamang, a member of the mid-buffer zone user group, the Warden of the CNP and also the Tharu of other communities said that there are more disadvantages than advantages in agroforestry. In the buffer zone in general, fragmentation of land, rapid urbanization and other factors have prevented agroforestry. The disadvantages of agroforestry mentioned by the respondent community members of the Simalgairi are as follows:

- **Slow production:** Timber products take a long time to grow and generate income. As most of the community members are poor and lack food sufficiency from their land, they simply cannot wait that long to earn money from selling timber products.
- **Small land holding:** A sufficiently large land holding is essential for agroforestry but the 24 Tharu HHs of Simalgairi own only small pieces of land.
- **Bad seeds:** In the mid-nineties, when agroforestry was promoted in the buffer zone by the CNP, bad seeds resulted in high tree mortality.
- **Lack of market access:** In the eastern part of Nepal, business people advance money and buy agroforestry products by contacting farmers directly. But in the CNP buffer zone areas, including Simalgairi, none of the outside business people do so.
- **Advantage of paddy cultivation:** Paddy cultivation is more useful and meaningful to the families. They can use paddy for household consumption and they can sell it if they need some cash.

There is no contribution of agroforestry to the overall livelihood and food security as it has failed immediately after its implementation in the mid-nineties. However, in addition to agriculture the Tharu rely heavily on wild food to ensuring their food security.

The situation of all the 24 Tharu HHs is almost identical in terms of farming. Lack of food sufficiency has driven them to find daily wage labour. However, five of the 24 households have engaged in hotel and restaurants business, with the government's continuing support for transforming Patihani into a major tourist destination in the district; and they have been able to enhance their food security and livelihood. Also, members of the nine households who have gone abroad to work have improved their food security and livelihood in a significant way.

VIII. Factors that hinder and facilitate achieving and sustaining livelihood and food security

The effects of restrictive policies for protected areas include curtailment of traditional livelihood rights, physical and psychological harassment of indigenous peoples, and increased poverty due to depleting livelihood assets (human, natural resources, financial, physical, and social). By now many indigenous peoples are landless migrants looking for work as labourers in various parts of Nepal and abroad—especially India, and more recently Malaysia, Middle Eastern countries and South Korea.

In Nepal, there was no government policy on forest protection and management before 1950. The Private Forest Nationalization Act was introduced in 1957 to “prevent the destruction of forest wealth and to ensure the adequate protection, maintenance, and utilization of privately owned forests” (Regmi (1978: 348), cited by Gilmour and Fisher 1991: 11). It opened up a series of Acts and Regulations that restricted ownership, control and use of forests for livelihood and food security by the indigenous peoples, not only during the autocratic rule from 1960-1990 under the partyless Panchayat political system, but also after restoration of multi-party democracy in 1990 and the democratic republic in 2006. The Forest Act was enacted in 1961, followed by the Forest Preservation Act in 1967. The National Forestry Plan was developed and implemented in 1976. A 21-year Master Plan for the Forest Sector was introduced by the government in 1988.

A new Forest Act was passed in 1992 that abolished the previous forest acts and further restricted the use of forest by indigenous peoples. For example, in 1995 “the government introduced rules and regulations with focus on maintaining ecosystem and fulfilling the basic needs of the people through forest users groups. By now, the

government has given highest priority to community forest. By December 1994, the total number of community forest users groups was 2 756 and the area under it was 112 626 ha.” (Bhattachan 2005: 49-50)

The following laws, regulations, guidelines and government policies have resulted in protected area management that produces severe social inequality and hardship for local communities, including reduced livelihood opportunities and food security. Among them are the following:

- National Park and Wildlife Conservation (NPWC) Act 1973;
- Regulations and Guidelines, Kanchenjunga Conservation Area Management Regulation, 2005;
- Conservation Area Management (CAM) Regulation, 1996²¹;
- Buffer Zone management Regulation 1996;
- Buffer Zone Guidelines 1999;
- Himalayan National Park Regulation 1979;
- National Wetland Policy, 2003;
- Biodiversity Strategy, 2002; and
- Nepal Conservation Strategy, 1988.

As these laws and regulations were enacted prior to the ratification of ILO Convention No. 169 by Nepal and the adoption of the UNDRIP by the UN General Assembly in 2007, the Nepal government neither consulted with indigenous peoples nor protected their rights. Even after ratification of ILO Convention No. 169 and the passing of UNDRIP, the Nepal government has not taken any initiative to align these laws and regulations with these international standards regarding the human rights of indigenous peoples, such as the Tharu.

The Buffer Zone Regulations of Nepal advocate “a community-based approach to the conservation of park resources through the forging of partnership agreements between community organizations and park authorities” and its objective is “to stimulate new livelihood opportunities and the use and development of alternative natural resources”, however, “the effectiveness of these regulations in improving local perceptions of protected areas is limited” (Thapa and Dahal n.d.: 36-7).

At least, the Nepal government has so far not yet evicted the Tharu from currently occupied *ailani* (government-owned) land in Simalgairi, and it seems that the government has no intention of evicting them in the future. The Tharu of Simalgiri have also been able to maintain the practice of collecting and eating at least some wild food, like vegetables, fish and *ghongee*.

IX. Prospects and recommendations

1. Prospects

During fieldwork it was evident that Tharu elders are interested in continuing traditional natural resource management practices, but not the government promoted agroforestry. The reasons given are that they are quite familiar with traditional natural resource management practices and they are well aware that the continuation of such practices contributes to the protection and promotion of their distinct collective identity and their way of life. The reasons given for lack of interest in agroforestry is are many: lack of land ownership, increasing pressure to grow high yielding crops to optimally meet their food demands and, in the case of those farmers who have enough land, they also use available land for cash crops that provide immediate benefits.

At present, all farmers are losing hope of having a better future. Community members, CNP officials, local leaders and indigenous leaders believe that agroforestry failed in the past and there is not much hope for its success due to the shrinking availability of land its fragmentation and the ever-rising level of corruption among political leaders and government officials. The prevalence of an *ad hoc* approach instead of knowledge-based policy interventions has also contributed to their reluctance to get involved in agroforestry.

Challenges facing the Tharu of the Simalgairi community are many. They are facing legal, administrative, economic, socio-cultural, and psychological challenges. Additionally, they are facing challenges to intensify their movement for social justice and human rights. Older generations are fully aware that loss of indigenous knowledge about wild food and its contribution livelihoods will eventually contribute to the erosion of their distinct collective identity and will result in the loss of their collective rights.

A key informant, the immediate past leader of the district-level Tharu Kalyankari Sabha said in an interview that at the district and central levels the leaders are fully aware that the challenges for the Tharu at the deeper levels are eliminating the domination of the Brahman-Chetri castes of the Hindu religion and culture and the domination, patriarchy and hegemony of Khas Nepali language, the centralization of power and the authority and the unitary state. Therefore, recognition of indigenous peoples by the rulers and the dominant caste groups is still a big challenge. After failure of the first elected Constitutional Assembly to write a new constitution in its four-year tenure, the second CA is attempting to come up with a new constitution for a secular, federal republic of Nepal. Ensuring indigenous peoples' rights in accordance with international law, eliminating discrimination, and forging pluralism and inclusion are indeed big challenges facing indigenous peoples, including the Tharu.

Many respondents in community meetings, FGD and key informant interviews pointed out that the Tharu's natural resource management system has many benefits now and in the future. Immediate benefits include improvement of food security and livelihood conditions and the protection of forests, water, and pasture. Long-term benefits include avoidance of communal conflict for scarce resources, maintenance of distinct and collective identity and collective rights of Tharu communities and maintaining biodiversity, indigenous knowledge and mother tongues.

The National Planning Commission, Ministries of Finance, Agriculture, Forestry, Land Reform and Management, Local Development, Water Resource and others have yet to amend and/or come up with new laws, regulations and policies that fully incorporate international law relating to indigenous peoples' collective and individual rights, including self-determination, autonomy, self-rule, free, prior and informed consent (FPIC), consultation, participation, self-determined development, customary laws, indigenous knowledge, mother tongues, indigenous education, equal rights of women, children, and senior citizens and people with disabilities.

2. Recommendations

Farmers of the Simalgairi community of the Patihani VDC in the Chitwan District have the following recommendations for the government:

- Register *ailani* lands and give land registration certificates (*Lal Purja*) to the farmers;
- Give permission to collect wild food in both the CNP and the forests under the buffer zone community forests user groups;
- Fencing should be redone to stop entry of wild animals, particularly deer, wild boars, monkeys, elephants and rhinos from entering community areas and farms;
- Reduce park-people conflict, specially entry in the CNP for collection of wild food for livelihoods and food security, by taking special measures including legal, administrative and financial measures;
- Obtain FPIC of the Tharu on any legal or administrative activity that has direct or indirect effects on the Tharu;
- Ensure full and effective representation of the Tharu at all levels of decision-making bodies, including the CNP, Buffer Zone Management Committees and its users groups, Buffer Zone Community Forest User Groups, VDC, Chitwan DDC and political parties;
- Carry out research and come up with viable projects to improve livelihoods;
- Provide a share of the income made by the CNP and community forests to the Tharu;
- Recognize customary law of indigenous peoples.

References

- Acharya, Umesh Prasad 2010. Livelihood Strategy of Bote Community: A Case Study of Bote Community of Patihani VDC of Chitwan. *Dhaulagiri Journal of Sociology and Anthropology* Vol. 4. Pp. 247-260. <http://www.nepjol.info/index.php/DSAJ/article/view/4524/3772>
- Adger *et al.*, 2007, cited in: Forsyth, Tim and Natalie Evans 2012. What is Autonomous Adaption? Resource Scarcity and Smallholder Agency in Thailand. *World Development* Vol. 43
- Bhattachan, Krishna B. 2005. Tribals and Forests in Nepal: Whether Tribals or Animals and the Dominant Groups Have Right to Live? *Dhaulagiri Journal of Sociology and Anthropology*, Volume I, pp. 42-66. <http://www.nepjol.info/index.php/DSAJ/article/view/275/269>
- Central Bureau of Statistics 2012. National Population and Housing Census 2011 (National Report). Kathmandu, Nepal: Government of Nepal, National planning Secretariat, Central Bureau of Statistics
- DCC Chitwan 2013. Chitwan Jilla parswa Chitra 2070 (Chitwan District Profile 2013). http://cbs.gov.np/wp-content/uploads/2012/District%20Profiles/District%20profile_35.pdf
- Gilmour, D.A. and R.J. Fisher 1991. Villagers, Forests and Foresters. The Philosophy, Process and Practice of Community Forestry in Nepal. Kathmandu: Sahayogi Press.
- IFAD and AIPP 2012. Country Technical Notes on Indigenous Peoples' Issues Federal Democratic Republic of Nepal. Last update: November 2012. <http://www.ifad.org/english/indigenous/pub/documents/tnotes/nepal.pdf>
- IRP and UNDP 2010. Guidance Note on Recovery: Livelihood. International Recovery Platform. Kobe, Japan
- Marahatta, Deepak and Bal Bahadur Kshetri 2012. Major Factors Contributing To Tourism in Patihani VDC Chitwan, Nepal. *International Journal of Scientific & Technology Research* Volume 1, Issue 9. Pp. 46-51. <http://www.ijstr.org/final-print/oct2012/Major-Factor-Contributing-Tourism-case-Study-From-Patihani-Vdc-Of-Chitwan-Nepal.pdf>
- Patihani VDC 2011. VDC Profile. Patihani VDC, Chitwan
- Rai, Jailab Kumar 2013 a. Protected Area Management and the Livelihoods of Indigenous People in Nepal: Harmonizing Policies and Practices. November 13 to 17, 2013 Sendai, Japan http://asia-parks.org/pdf/wg2/APC_WG3-06_Jailab%20Kumar%20Rai.pdf

- _____ 2013 b. Exclusion of Conservation Interventions in Nepal: Impacts on Livelihoods of Bote Indigenous Communities in and Around the Chitwan National Park A Final Report Submitted to the Secretariat SNV Nepal
- Rai, Uddhav Prasad n.d. People and Policies A Case of Food Security among Chepangs of Nepal Research. An article submitted to Research Centre for Nepal and Asian Studies (CNAS), Tribhuvan University, Kirtipur, Kathmandu, Nepal
- _____ 2010 Making Food Reflecting Lives A case of food security and exclusion among Chepangs in Nepal. Bakhundole, Lalitpur: Social Sciences Baha and SIRF Secretariat, SNV Nepal
- Regmi, Bishwa Nath and Chris Garforth 2004. Problems and Prospects of Farm Forestry: A Case of Chitwan, District, Nepal in: Baumgartner, David M. (ed.) Proceedings of Human Dimensions of Family, Farm, and Community Forestry International Symposium. March 29 – April 1, 2004. Pullman, WA, USA: Washington State University
- Regmi, Mahesh Chandra 1978. Land Tenure and Taxation in Nepal. Bibliotheca Himalayica 1 Volume 26. Kathmandu: Ratna Pustak Bhandar.
- Thapa, I. and B.R. Dahal 2009. Sustainable wetland management for wildlife and people at Koshi Tappu Wildlife Reserve. Banko Janakari, Special Issue, Pp. 36-39 <http://www.nepjol.info/index.php/BANKO/article/view/2210>
- Thomson, Anne and Manfred Metz 1998. Implications of Economic Policy for Food Security: A Training Manual. Agricultural Policy Support Service Policy Assistance Division Food and Agriculture Organization of the United Nations and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). <http://www.fao.org/docrep/004/X3936E/X3936E00.htm>
- Timilsina, Lila Bati 2007. Contribution of Buffer Zone Management on Livelihood Support (A case study from Chitwan National Park, Nepal). Management of Protected Areas (MPA). University of Klagenfurt, Austria.

Endnotes

- ¹ www.lawcommission.gov.np/index.php?option=com_remository&Itemid=18&func=fileinfo&id=436&lang=en
- ² http://www.fao.org/fileadmin/templates/wfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf
- ³ The 10 National Parks are: (1) Chitwan National Park in the Central Terai, (2) Sagarmatha National Park in the Eastern Mountain, (3) Bardiya National Park in the Mid-Western Terai, (4) Langtang National Park in the Central Mountain and Hill, (5) Makalu-Barun National Park in Eastern Hill, (6) Rara national Park in the Mid-Western Hill, (7) Khaptad National Park in the Far-Western Hill, (8) Rara National Park in the Far Western Hill, (9) Shey-Phoksundo National Park in the Mid-Western Mountain and Hill, and (10) Sivapuri-Nagarjun National Park in the Kathmandu Valley. (<http://welcomenepal.com/promotional/tourist-destination/park-reserves/>).
- ⁴ (1) Koshi Tappu Wildlife Reserve in the Eastern Terai, (2) Parsa Wildlife Reserve in the Central Terai, and (3) Shuklaphanta Wildlife Reserve in the Far Western Terai. (<http://welcomenepal.com/promotional/tourist-destination/park-reserves/>).
- ⁵ Dhorpatan Hunting Reserve in Western Hill. (<http://welcomenepal.com/promotional/tourist-destination/park-reserves/>).
- ⁶ (1) Annapurna Conservation Area (ACA) in the Western Mountain and Hill, (2) Kanchenjunga Conservation Area in the Eastern Hill, (3) Manaslu Conservation Area in the Eastern Hill, (4) Gaurishankar Conservation Area in the Central Hill, (5) Blackbuck Conservation Area in the Mid-Western Terai, and (6) Api nampa Conservation Area in the Far-Western Mountain and the Hill. (<http://welcomenepal.com/promotional/tourist-destination/park-reserves/>).
- ⁷ <http://www.chitwannationalpark.gov.np/index.php/background>
- ⁸ The Ramsar Convention, i.e. the “Convention on Wetlands of International Importance, especially as Waterfowl Habitat” is an international treaty for the conservation and sustainable utilization of wetlands. The convention was developed and adopted at a meeting in Ramsar, Iran, in 1971.
- ⁹ <http://www.chitwannationalpark.gov.np/index.php/background>
- ¹⁰ <http://www.lawcommission.gov.np/site/en/content/private-forests-nationalization-act-2013-1957>
- ¹¹ <http://www.ifad.org/english/indigenous/pub/documents/tnotes/nepal.pdf>
- ¹² Inserted by the Second Amendment of 25 October 1968. <http://www.lawcommission.gov.np/site/sites/default/files/Documents/lands-act-2021-1964-english.pdf> Raikar land means land owned by the state; i.e. any individual may own land but the owner(s) should pay tax to the state. Even in Raikar land, Article 7 of the Act states the upper ceiling of land allowed to be owned by person as landowner is 10 *Bigaha* in all Terai regions including inner Terai, 25 *Ropani* in the Kathmandu Valley, 70 *Ropani* in all hilly regions except Kathmandu Valley.
- ¹³ <http://www.lawcommission.gov.np/site/sites/default/files/Documents/forest-act.pdf>
- ¹⁴ <http://www.lawcommission.gov.np/site/sites/default/files/Documents/national-parks-and-wildlife-conservation-act.pdf>

- ¹⁵ <http://www.lawcommission.gov.np/site/sites/default/files/Documents/national-parks-and-wildlife-conservation-act.pdf>
- ¹⁶ <http://www.lawcommission.gov.np/site/sites/default/files/Documents/national-parks-and-wildlife-conservation-act.pdf>
- ¹⁷ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169
- ¹⁸ http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf
- ¹⁹ <http://www.lawcommission.gov.np/site/en/content/treaty-act-2047-1990>
- ²⁰ The grassland was part of the Belsahar Buffer Zone Community Forest. After the flood of 2001, the Rapti River changed its course and the grass land became part of CNP as the river separated it from the Belsahar Buffer Zone Community Forest.
- ²¹ http://www.lawcommission.gov.np/index.php?option=com_remository&Itemid=19&func=fileinfo&cid=1715&lang=en

Chapter 7

The lizard on the tree and the Tailor Bird village: 21st Century livelihood challenges among Karen swidden farmers in Thailand

Christian Erni and Prawit Nikornuaychai



Acronyms and glossary

Amphoe	District (in Thai)
Chanot	Title deed (in Thai)
IMPECT	Inter Mountain Peoples Education and Culture in Thailand
IRP	International Recovery Platform
kg/kgs	kilograms
Moo Baan/Moo	The lowest unit of local government in Thailand (in Thai)
NTFP	Non-timber forest product
Pgaz k'nyau	'Human being', the way the Sgaw Karen call themselves (in the Roman script writing system used for Sgaw Karen)
Rai mun wian	Rotational farming (in Thai)
RFD	Royal Forest Department
STK certificate	STK (Sor Tor Kor) is the acronym for the name in Thai of the National Forest Land Allotment programme Temporary under which agricultural land-use certificates are issued
Tambon	Sub-district (in Thai)
TAO	Tambon Administrative Organization (local government)
THB	Thai THB (currency of Thailand)
UNDP	United Nations Development Programme
1 thang	Volume measurement unit common in Thailand: 20 litres; 1 sack of rice has 3 thang
1 rai	Land area measurement unit common in Thailand: 1 600 m ²
1 sack of corn seeds	10 kilograms
1 THB	US\$0.03

*Title page photo: Taking a rest during slashing of a new field. Mae Um Phai Tai Village.
Photo: Christian Erni*

The lizard on the tree and the Tailor Bird village: 21st Century livelihood challenges among Karen swidden farmers in Thailand

Christian Erni and Prawit Nikornuaychai

This report presents the results of a study conducted in four Karen Villages in Mae Hong Son Province in Northern Thailand. They are presented in four chapters: the first chapter provides a brief overview of the thematic context within which the study is situated and in connection with that introduces key analytical concepts. The chapter concludes with a brief description of the research process and methods applied. The second chapter gives a short introduction to the study area; the third chapter describes the presently livelihood system prevalent in villages studied and the fourth chapter discusses current changes, the forces that drive them and the trajectory they are taking. In the fifth and last chapter, we try to draw some conclusions that we consider relevant for an assessment of livelihood and food security of the communities in the study area. Based on the conclusions, we make recommendations for possible supportive interventions.

Fieldwork for this study would not have been possible without the tireless support of Ekaphol Phanteerakul, the Pho Luang (village headman) of Mae Um Phai Village. He not only provided hospitality and logistical support, but also was an invaluable source of information, and he simply was great company. Our gratitude not only goes to him but also to his relatives and neighbours in Mae Um Phai Tai, and to all the other people in this village as well as in Mae Tho Tai, Mae Tho Noi and Mae Cho Tai who hosted us and shared their time and knowledge with us. Finally, we would like to acknowledge the help of the surveyors who gathered the basic data for us in the four villages. Our appreciation goes to Sirakporn Jaruwathisakul, Jera Sawanphaophan, Suphaporn Jatupornmongkol and Ekaphol Phantirakul from Baan Mae Um Phai Tai; Nataya Phrakaewmani, Bodin Suphabjanya and Sriruthai Srisaksakuldee from Baan Mae Tho Tai; Jiraphan Boonma, Rtree Chaemchareonporndamrong and Phichat Phokhumklao from Baan Mae Tho Noi; and Rathaphol Sathidanana, Worachat Srimankhongpornasuk and Srirayawan Chankitman from Baan Mae Cho Tai.

I. Context, concepts and methods

This study seeks to understand how today's Karen farmers in Northern Thailand are addressing everyday livelihood challenges in the context of the rapid transformations currently engulfing them. The title of this study refers to two metaphors used by Karen farmers to capture two of the biggest challenges their communities are currently facing: The realization that once engaged in high-input cash-crop farming, it is difficult to turn back – that they are like the monitor lizard climbing up a tree; it cannot turn back and has to go all the way to the top. And the challenges of governance, captured in a traditional song on how weak leadership makes a village become a poor village, poor like the Tailor bird which does not have a proper nest like other birds.

These challenges are brought about by changes whose dynamics this study seeks to explore. What are the changes taking place, which directions are they taking and what are the main forces driving them? What role does shifting cultivation play today in attaining livelihood security, particularly food security of these communities? What are the choices made and decisions taken by farmers, what are the motivations and expectations, and what are the constraints and limitations that determine their actions?

A focus on food security is of particular concern in the context of poverty and resource scarcity. Both are prevalent conditions in the uplands of Northern Thailand – the former still, the latter increasingly so. For the purpose of our study we consider the following definition, formulated by FAO in 2003, useful¹:

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.” (FAO 2003: 29)

The study drew on a few other key concepts in its analysis. This chapter provides a brief overview of these concepts as well as the broader thematic context within which the study is situated. The limited space available for this study does not allow for an in-depth review of the theoretical discussions surrounding or triggered by these concepts. However, the references given may provide the interested reader with a point of departure for further reading. The overview of the basic concepts and the thematic context is followed by a brief description of the research process and the methods applied.

1. Indigenous peoples, state enclosure and agrarian transition

In Northern Thailand's uplands people's lives are undergoing rapid and profound transformations. Until just a generation or two ago, most of the remote villages were inaccessible for much of the year except by trails crisscrossing the rugged terrain. These hills were and are still predominantly inhabited by people called 'hill tribes', 'ethnic minorities' or, in recent years increasingly, 'indigenous peoples'.² The application of the concept of indigenous peoples in Asia is widely contested above all by governments due to the legal implication it has since the adoption of the United Nations Declaration on the Rights of Indigenous Peoples by the UN General Assembly in 2007 (Erni 2014). In Thailand the concept has been adopted and is now widely promoted by civil-society organizations formed by people who have come to identify themselves as indigenous as a means to address discrimination and marginalization.³

For centuries, living in the hills has ensured the indigenous communities in Thailand a high degree of economic and political autonomy because it kept them out of reach of the valley states.⁴ However, this by no means meant that they have been cut off from the outside world. They have had complex and changing relationships with local and regional polities, they have been a part of extensive trade networks and have been involved as elephant mahouts or labourers in large-scale commercial logging, one of the main extractive industries in the 19th century and much of the 20th century. During roughly the same period, they were drawn into one of the most lucrative – though for the latter part of its existence illegal – cash-crop trade: that of opium in the infamous Golden Triangle. With this they have also become voluntary or involuntary actors in the geopolitics of 19th century colonialism and the 20th century Cold War era.

Until well into the second half of the 20th century, the northern hills of Thailand had most, if not all, the characteristics of a frontier. Frontiers are areas remote from political centres, which hold strategic significance or economic potential for human exploitation and are contested by social formations of unequal power (see Hvalkof 2008: 219). State penetration of these spaces is comparably weak, and thus, the indigenous societies living there have retained a considerable degree of autonomy. Finally, in frontier areas, the rule of law does not (or at least not fully) apply.⁵ As one of the main sources of heroin for the international drug trade, and as one of the last refuges for the Chinese nationalists, Thailand's northern hills retained their frontier character well into the second half of the 20th century and was of strategic importance in the anti-communist agenda of the West. However, over the past three or four decades, the region has experienced dramatic changes driven by forces that are aptly captured by the notions of state enclosure and agrarian transition.

State enclosure⁶ is the process of expanding state control over, and taking possession of, peripheral areas. James Scott calls the expansion and consolidation of state control over upland Southeast Asia during the past hundred years “the last great enclosure movement in Southeast Asia” (2009: 4).

“Seen from the state center the enclosure movement is, in part, an effort to integrate and monetize the people, lands and resources of the periphery so that they become, to use the French term, rentable – auditable contributors to the gross national product and foreign exchange.” (ibid.)

Successful enclosure means closing the frontier. In Thailand, the preconditions for that were put in place with the creation of the modern nation state in the late nineteenth and early twentieth century in response to the threat from the French colonial power to the east, and the British to the west and south. Boundaries were drawn on maps and demarcated on the ground and the people of the peripheral areas became part of the Thai nation. National integration was to be achieved through the expansion of state administration, infrastructure and education. The border areas, where most of the ‘hill tribes’ live, were particularly sensitive areas during the Cold War; and because the loyalty of these people was questioned, they were soon considered a ‘security problem’ (Pinkaw 2001: 48). Furthermore, the mobility of some of these ethnic groups and their livelihood practices, particularly shifting cultivation (and its alleged forest destruction), growing opium (which by then, after pressure from the United Nations, had been declared illegal) and poverty were additional concerns and became part of what came to be known as the ‘hill tribe problem’ (ibid.).

This problem was to be addressed through ‘development’, and the 1960s saw the advent of four decades of ‘highland development’. Numerous bilateral and multilateral donors and domestic and foreign NGOs embarked on a concerted attempt to eradicate opium and poverty. Ambitious efforts were made to protect the environment, improve infrastructure, healthcare and education of the ‘hill tribes’ (see e.g. Renard *et al.* 1988, Renard 2001 and various articles in McCaskill and Kampe 1997).

During roughly the same period, national land, forest and environmental conservation laws led to the de-jure and de-facto dispossession of the vast majority of the ‘hill tribe’ communities because all forest land was declared state property and protected areas were created, covering large parts of the highlands. By the turn of the millennium, state enclosure of Thailand’s northern hills had been pretty much completed. All villages and people have been registered – even though there are still many tens of thousands of ‘hill tribe’ people who lack citizenship,⁷ which restricts their access to public services, such as basic healthcare and admission to schools.

Nine ‘hill tribes’ are officially recognized: the Hmong, Karen, Lisu, Mien, Akha, Lahu, Lua, Thin and Khamu.⁸ According to the Department of Welfare and Social Development, there are 3 429 hill tribe villages with a total population of 923 257 people (IWGIA 2014: 284).⁹ Today, most villages have access to roads, schools, gravity water systems and many also have electricity.

Since 2011, the World Bank considers Thailand an upper middle-income country (World Bank 2011). It calls it “one of the great development success stories, with sustained strong growth and impressive poverty reduction” (ibid.).

Even though 45 percent of Thailand’s population is still engaged in agriculture, the country’s economy has undergone profound changes as a result of what is often referred to as agrarian transition. Agrarian transition has been defined as

“...the transformation of societies from primarily non-urban populations dependent upon agricultural production and organized through rural social structures, to predominantly urbanized, industrialized and market-based societies.” (De Konnick 2004: 286)

De Konnick (ibid.: 285) considers agrarian transition “perhaps the most profound process of social change of the last three centuries”. He points out that while in “the wealthier countries of the global North” this transformation is largely completed, “in the developing societies of the global South it is still very much underway.”

The combined impact of state enclosure and agrarian transition in Thailand has probably been nowhere more significant than among the indigenous communities in the hills, especially those communities that have traditionally practiced shifting cultivation.

2. Shifting cultivation, adaptation, rights and livelihood

Shifting cultivation has been the predominant form of land use among the indigenous communities in the upland North of Thailand. Like elsewhere in Asia, shifting cultivation (or swidden farming)¹⁰ has come under pressure from state policies that consider it an inefficient and environmentally harmful practice and try to eradicate it in the name of forest conservation and rural development. The extent to which shifting cultivation has been abandoned depends on numerous factors including, among others, the level of success of state enclosure on the ground, i.e. to what extent communities have lost or maintained control over land and decision-making on its use; the responses of indigenous communities to state policies and programmes and the promoted alternative forms of land use, population dynamics, and market access. Over the past two decades, an additional factor has come forward as indigenous rights activists, non-governmental Organizations (NGOs) and academics started to promote an alternative view of indigenous forms of land use, particularly that of the Karen. The

so-called 'Karen consensus' has emerged in which shifting cultivation as practiced by the Karen is seen as "a relatively sustainable, ecologically friendly and subsistence-oriented form of agriculture that is threatened by the recent intrusion of the state and the market." (Walker 2001: 145). Advocacy drawing on the 'Karen consensus' has been successful at least to some extent because in 2010, the Thai cabinet passed a resolution on a project 'Recovering the Karen Livelihood in Thailand'. Among others, one of the long-term policies of the resolution is to: "Support and recognize the rotational farming systems which belong to the Karen ways of life and livelihood, and which support the sustainable use of natural resources and self-sufficiency, including promotion of the Karen rotational farming system to become a world cultural heritage" (Government of Thailand 2010). And on 13 September 2013, the Ministry of Culture included rotational farming in the national list of intangible cultural heritage of "knowledges and practices concerning the nature and the universe" (Government of Thailand Intangible Cultural Heritage website).

Walker argues that the 'Karen consensus' is based on "overly selective accounts of Karen economy" that plays down "the historical importance of long-term agricultural intensification and commercial exchange" (op. cit.: 145). While he recognizes "the importance of establishing the legitimacy of upland communities in a context of tenure insecurity and resource conflict", he maintains that the 'Karen consensus' has limited legitimacy and "runs the risk of undermining Karen claims for a greater share of natural resources and development assistance" (ibid.). Indeed, the cabinet resolution on Karen livelihood is very selective and thus of limited scope. Not only does it apply exclusively to the Karen, but it refers rather vaguely to their 'cultural livelihood' or 'traditional lifestyle' and proposes measures to be taken that "support and recognize the rotational farming systems which belong to the Karen ways of life and livelihood" and that support "self-sufficiency or alternative agriculture instead of cash crop production or industrial agriculture" (Government of Thailand 2010). Furthermore, its implementation has been stalled amidst the political squabbles of the past three years. In general, the land and resource rights of indigenous communities in Thailand remain unrecognized and communities are forced to make a living in the context of tenure insecurity and arbitrary enforcement of law.

Traditional (long-fallow) forms of shifting cultivation have disappeared probably in most parts of Thailand's Northern hills. The reasons are pretty much the same as those identified by Fox *et al.* (2009) for Southeast Asia in general:

1. Classifying shifting cultivators as 'ethnic minorities' in the course of nation building, and the concomitant denial of ownership and land-use rights;
2. Dividing the landscape into forest and permanent agriculture, the claim over the former by forest departments and the transfer of use rights to logging companies and commercial plantations;

3. The expansion of forest departments and the rise of conservation, which have further expanded and strengthened state control over forests;
4. Resettlement of shifting cultivators out of upland and forest areas and the dispossession of their lands as a result of the non-recognition of collective or individual rights over land and forests;
5. Privatization and commoditization of land and land-based production, resulting in dispossession of shifting cultivators and giving rise to commercial agriculture and industrial tree-farming by private companies, state enterprises as well as entrepreneurial farmers and small-holders;
6. Expansion of infrastructure (roads, electricity, telecommunication) and subsidies for investors supporting markets and promoting corporate and private industrial agriculture.

The authors also note “a growing trend toward a transition from rural to urban livelihoods and expanding urban-labour markets” (ibid.: 305). They notice a rapid decline of shifting cultivation throughout Southeast Asia and conclude that “the conditions necessary for swiddening, both the availability of land and the aspirations of people, simply no longer exist in many parts of Southeast Asia” (ibid.: 319).

While shifting cultivation seems to be disappearing throughout much of Northern Thailand too, there are still communities that are holding on to it despite the difficult conditions, i.e. above all the fact that shifting cultivation has been criminalized. With the declaration of all forestland as state property, shifting cultivation has become illegal and people have been and continue to be imprisoned for practicing it. Insecurities caused by a restrictive legal and policy environment have become a major factor for people to deal with in their everyday adaptation strategies.

Adaptation has been defined as “adjustments to behavior or economic structures that reduce vulnerability of society in the face of scarcity or threatening environmental change (Adger *et al.*, 2007: 57). Forsyth and Evans (2012: 57) point out that “adaptive responses at the local level are not simply driven by environmental changes *per se*, but [by] how these changes present hazards for vulnerable people’s livelihoods and assets []. And similarly, livelihood diversification in itself can be another form of adaptation if it means that people are less reliant on resources that are threatened by environmental changes [].” In this respect, it is important to keep in mind that for humans, ‘environment’ in general does not just comprise the natural but as much the social environment. Resource scarcity is not only caused by environmental changes or hazards, but is as much, and in the context of state enclosure and agrarian transition maybe even more often, caused by legal, political and economic factors, such as dispossession and restrictions on land and forest use by laws and policies, or by changes in commodity prices.

For farmers in the hills of Northern Thailand, like everywhere, successful adaptation means being able to make a decent living and having a secure and sustainable livelihood. Robert Chambers and Gordon Conway introduced the concept of ‘sustainable livelihood’ in 1991 and since that time the concept has been widely used by academics and practitioners. A slightly revised version of the original definition of livelihood by Chambers and Conway¹¹, which we consider useful for our purpose, is:

“A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.” (IRP and UNDP 2010: 1)

3. Research process and methods

This study is the result of the cooperation of two researchers, one an indigenous rights activist, social worker and farmer, the other a non-indigenous anthropologist and indigenous-rights activist. Being a Pgaz k’nyau¹² himself, Prawit not only did all the translation during fieldwork, but also contributed directly with his knowledge to interpret and enrich the data gathered in the field. Christian developed the research concept and the main research questions, based on which the questionnaire for the household survey was jointly developed. The findings of the research were discussed, sometimes while still in the field, and the main interpretations were agreed on and conclusions were drawn together. Based on this, Christian wrote the report.

The time frame given for this study was very tight. It was carried out roughly between the end of January and the end of May 2014. The research concept and research questions were developed based on the joint guidelines for all researchers of this project in January. Field work was conducted between mid-February and late April in four settlements belonging to three Moo Baan (administrative villages) in Tambon (sub-district) Mae Tho: Mae Tho Tai and Mae Tho Noi in Baan Mae Tho; Mae Cho Tai in Baan Mae Cho, and Mae Um Phai Tai in Baan Mae Um Phai. Fieldwork was done during three field trips with a total duration of four weeks. Community surveyors collected basic household data between the second and the third field visit. The final data analysis and report writing was done between late April and end of May.

At the beginning of the fieldwork, village meetings were held in three of the four settlements to explain the purpose of the study and to seek the villagers’ consent, which was, after some discussions, granted in all cases. In Mae Um Phai Tai, 20 women and 15 men attended, in Mae Tho Tai, 23 women and 30 men, in Mae Cho Tai, 19 women and 11 men. In Mae Um Phai Tai and Mae Cho Tai, the meetings were facilitated by the *Pho Luang* (village head), in Mae Tho Tai by the

Kamnan (sub-district head) and in the presence of the village head. During the meetings, a proposal was presented to demarcate and map the village territories as a part of an ongoing project by Inter Mountain Peoples Education and Culture in Thailand (IMPECT), an indigenous NGO based in Chiang Mai. In Mae Tho Noi, the agreed community meeting could not be held as planned, so collective consent could not be sought. Therefore, the research and its purpose were explained prior to the training of the surveyors, who obtained consent from the people they interviewed.

During fieldwork, standard anthropological research methods were applied. A questionnaire was developed for a household survey, which was conducted by 13 surveyors in 99 households in the four settlements. The surveyors were trained separately in each of the four settlements. Due to the limited sample size, some of the survey results were not statistically significant. They nevertheless helped to identify patterns and trends, which could be further explored. The survey focused on households as the main decision-making unit, and therefore, the data is not gender disaggregated. Surveyors tried to ensure that interviews were conducted in the presence of both husband and wife if possible. The survey was complemented by semi-structured interviews, semi-structured focal-group discussions, a participatory knowledge sharing session on food from fields and forests with men and women groups in Mae Um Phai and informal discussions, mainly at night, during and after sharing meals and drinks.

II. The study area and its people

The study was conducted in four villages belonging to three Moo Baan—the lowest unit of local government in Thailand—in the sub-district (Tambon) Mae Tho of Mae La Noi District (Amphoe), Mae Hong Son Province. The 12 681 square kilometres (sq km) large province is the most mountainous and poorest province of the country. In 2012, it had a population of 244 356 with a density of 19.27 persons per sq km, and 60.29 percent of the population lived below the poverty threshold as compared with 13.15 percent nationally. Per capita income in 2011 was 37 456 THB, which was only 23 percent of the national average of 164 512 THB. (Knoema 2013).

Over 60 percent of Mae Hong Son comprises ethnic minorities, most of which are so-called ‘hill tribes’, now recognized by indigenous peoples’ organizations, as well as by multilateral and bilateral development organizations as indigenous peoples. The province has the highest percentage of indigenous peoples in the country. The main indigenous ethnic groups are the Shan, Karen, Hmong, Lua, Lahu and Lisu.

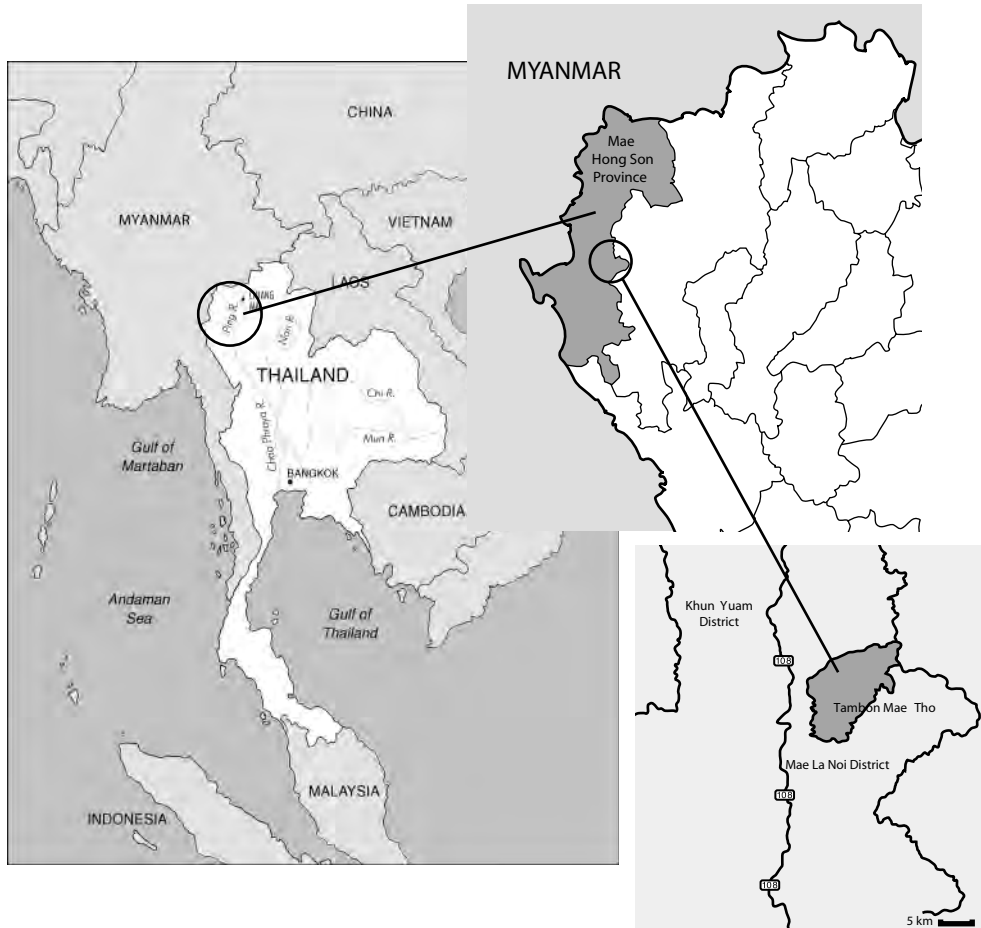


Figure 1. Maps of the study area in Mae Hong Son Province

The mountainous province has very little fertile agricultural land and 88.85 percent of Mae Hong Son's land area is classified as forestland. It has a tropical monsoon climate with high rainfall between May and October and a dry season for the rest of the year.

Mae La Noi District lies in the south of the province ($18^{\circ}23'4''$ N/ $97^{\circ}56'13''$ E). It has a land area of 1 456.6 sq km and comprises eight sub-districts of which Mae Tho, with regards to population size, is the fifth largest.¹³

Tambon Mae Tho ($18^{\circ}39'09.7''$ N/ $98^{\circ}03'51.5''$ E) has eight administrative villages (Moo or Moo Baan). In 2012, the population stood at 3 552. Seven of the eight Moo Baan are inhabited by Karen, the eight (Huay Phueng Mai) by Hmong. Some of the Moo comprise only one large settlement, while others have two or three smaller settlements. All of the Karen of Tambon Mae Tho are Catholic.

Moo Number	Official name	No. of households ¹⁴	Men	Women	Total population	Average p/Hh
Moo 1	Hua Mae Tho	79	189	172	361	4.57
Moo 2	Pha Deng Luang	109	195	171	366	3.36
Moo 3	Mae Tho Klang	145	212	220	432	2.98
Moo 4	Mae Tho Tai	118	200	203	403	3.42
Moo 5	Mae Um Phai	114	208	236	444	3.89
Moo 6	Mae Cho	136	263	249	512	3.76
Moo 7	Huay Phueng Mai	117	407	360	767	6.56
Moo 8	Huay Mai Sang	79	134	133	267	3.38
All Tambon Mae Tho		897	1 808	1 744	3 552	3.96
All Tambon Karen only		780	1 401	1 384	2 785	3.57

Source: Mae Um Phai Village head

Field research was conducted in four of the eight settlements of the three Moo Baan: Mae Tho Tai, Mae Cho and Mae Um Phai. The (sub-)settlements' official name indicate their relative location to each other, e.g. Moo Mae Um Phai consists of Mae Um Phai Nuea (South) and Mae Um Phai Tai (North). Official names are in Thai, however, when they talk among themselves, the people use the names in their own language, i.e. in Pgaz k'nyau.

Official (Thai) name	Pgaz k'nyau name	Moo	Number of households
Mae Um Phai Tai	Mae O Hpgai Klo	Moo 5 (together with Mae Um Phai Nuea)	33
Mae Tho Tai	P'yau Lauz Keiz Htaf	Moo 4	80
Mae Tho Noi	Pgaz Hif Hpo	Moo 3 (together with Mae Tho Klang)	28
Mae Cho Tai	Maij Cau Klo	Moo 6 (together with Mae Cho Klang and Mae Cho Nuea)	70

Most villages lie between 750 and 850 metres above sea level. The Hmong Village, Huay Phueng Mai, lies at a higher altitude because the Hmong prefer a cooler climate, more suitable for (in the past) opium and (today) vegetable cash crops. The natural vegetation is semi-evergreen forest and, above 1 000 metres above sea level., hill evergreen forest. In Pgaz k'nyau, the former is called *K'ne hkauf htiv* (foothill forest), the latter *K'ne muj* (female forest).

All Moo have road access. About 10 years ago, paving of the roads began; and except for the two remotest small settlements of Mae Cho, paving has been completed. People started buying motorbikes in the early 1980s and today almost all households own a motorbike and some have bought a pickup truck too. All settlements are electrified, most have cemented lanes within the village and most households have a water tap in or near the house.

There are elementary schools in all Moo and there is a lower-secondary school (up to level 3) in Mae Tho Klang and in Huay Phueng Mai. The higher-secondary school (up to level 6) is in Mae La Noi. A health centre and the local government (Tambon Administrative Organization) office are located in Mae Tho Klang.

The whole sub-district lies within reserved forest. Thus, many households in the hills are not properly registered. Only households that have been registered long ago have proper, permanent registration. Since about seven to ten years ago, new households are given only 'temporary registration', i.e. their household registration books are stamped with this remark.

Furthermore, the fact that their village territories have been included in a reserved forest prevents them from obtaining proper titles to their land. A few have been given temporary land use rights certificates, but none of the 99 households covered in the survey conducted have any proper land title (more on land rights in Chapter IV). People interviewed consider this a form of discrimination because genuine land titles (*chanot*) are given to people in the lowlands but not to the Karen and other people living in the hills, despite the fact that they have lived in their villages for many generations.

Karen is the generic name¹⁵ that has been given to people belonging to several distinct ethno-linguistic groups living in and near the Irawaddy delta, the Pegu Range in Central and the mountains of eastern Myanmar, and in the North and West of Thailand. Some of the groups referred to as Karen (like the Kayah and Pa-o) do not consider themselves as Karen (Renard 2003: 8), while others have accepted this common name. In Thailand, there are two distinct Karen groups commonly referred to as Pwo and Sgaw. They speak mutually unintelligible languages. The Sgaw are the largest Karen group and the communities of Tambon Mae Tho belong to this group. The Sgaw Karen call themselves Pgaz k'nyau, which means human being. Our study is confined to Tambon Mae Tho, therefore, we will use Karen and Pgaz k'nyau interchangeably throughout this report.

Karen-speaking people have lived in the border areas between today's Thailand and Myanmar since the 13th century (Keyes 1979: 31), but there are hardly any written records, and thus little is known about their history until the early 19th century

(Renard 2003: 1). According to oral history and the genealogy of Mae Um Phai Tai (one of the two settlements of Moo Baan Mae Um Phai), the village was founded by Hpa Nyoj Wau and his wife Nauj Peij Ywa six generations ago. They came to settle there from the Mae Chaem area, which lies to the east of Tambon Mae Tho. However, it is believed that there were already people living in that area. So the Pgaz k'nyau must have lived in Tambon Mae Tho for at least 150 years, probably much longer.

III. Making a living in the hills

The Karen are often portrayed as forest people. And indeed, most of the Karen communities in Thailand live in the forested uplands of the north and west of the country.¹⁶ As mentioned earlier, in recent years, the Karen have gained attention much beyond academic circles for their natural resource management practices, traditional knowledge and forest conservation. In the controversy around forest conservation in Northern Thailand, a 'Karen consensus' (Walker 2001) emerged during the 1990s in which the Karen "represent a fragile ideal of mutually beneficial interaction between culture and nature []. Genuine Karen livelihood, this consensus suggests, is based on a subsistence-oriented production system that is underpinned by a rich body of local environmental wisdom, a vigorous communal orientation and consistently non-commercial values" (ibid.: 145). Walker, however, argues that these are stereotypes that "do not stand up to critical scrutiny, especially when placed in the context of long-term agricultural intensification and commercial exchange" (ibid.: 146).

Particularly the rotational shifting cultivation (in Thai *rai mun wian*, in Pgaz k'nyau *Quw*) that is traditionally practiced by the Karen has attracted much attention by academics and NGOs and has come to be seen as a key cultural trait defining Karen identity (ibid.: 148). Stability and sustainability of their agricultural practices, Walker continues, "are said to be supported by a complex local system of integrated resource management" (ibid: 149) and he points at three elements of this system that are regularly highlighted:

1. A self-sufficient, subsistence orientation;
2. "Karen 'local wisdom' [] said to be reflected in the practical technology of forest product use, complex systems of forest and fallow classification and, most importantly, an array of customs, prohibitions and rituals—deriving from spirit beliefs, Buddhism and loyalty to the ways of the ancestors—that *regulate* the selection of land for *rai mun wian* cultivation." (ibid.); and
3. The social relations of Karen land management, i.e. agricultural rotation and communal agricultural activities that "are said to have limited the development of private property arrangements in relation to land.

Agricultural fields, animal grazing areas, watershed forests, and hunting-gathering forests are said to form part of the communal resource of the Karen Village. Households are allocated use rights to upland fields, but these rights are allocated by village leaders and are temporary. There are also said to be well-developed systems of intra-village redistribution and emergency allocation.” (ibid.)

According to Walker, the second part of the ‘Karen consensus’ “is a tale of ‘externally imposed socio-economic transformation’ [] with both the market and the state subverting indigenous resource management.” (ibid.: 150, original emphasis). He refers to the study by Uraivan *et al.* conducted in the Mae Khan catchment that describes the process of market penetration and the role of the state in commercialization of agriculture and impoverishment by providing subsidies and incentives for cash cropping while at the same time imposing legal restrictions on cultivation in forest areas. (ibid.)

In his article, Walker not only criticizes the main tenets underlying the ‘Karen consensus’, demonstrating that it does not reflect the actual situation and land use systems of many Karen communities and thus has limited legitimacy, but he also, and most importantly, reflects on its implications for legal and policy advocacy, arguing “that the ‘limited legitimacy’ of the ‘Karen consensus’ runs the risk of undermining Karen claims for a greater share of natural resources and development assistance.” (ibid.: 145)

This study does not intend to embark on a critique of Walker’s article on the ‘Karen consensus’. The reason why we are introducing this chapter with a brief discussion of Walker’s critique of the ‘Karen consensus’ is because he reminds us of two important things we need to keep in mind while trying to understand how people are addressing livelihood challenges and adapting to the complexities of the 21st century realities in the hills. First, there is no such thing as the ‘the Karen livelihood’. There is a common Karen, more precisely Pgaz k’nyau identity in the villages of the study area; there is a shared kinship system and customary law regulating many aspects of social relations, there is shared knowledge and there are practical skills that have been passed on for generations. But these are also modified, adapted and complemented in everyday practice as people struggle to make a living in the hills. Thus, we have to expect to find variations and what we may possibly be able to do is to discern patterns, which can help us raise questions on the underlying causes of variations, and thus, bring us a step closer to understanding the actual dynamics of adaptation in the study area. Second, and of particular importance for us with our own background as indigenous rights advocates, Walker’s article asks us to be mindful of the potential implications a particular interpretation and the conclusions we draw from them may

have on future legal rights and policy advocacy among indigenous peoples in Thailand and the region.

1. Patterns of land use

Most of the people in the four villages covered by this study are farmers. While some household members have permanent employment and most households are engaged in some off-farm income generation, all of the households are farming, and agriculture is the backbone of their domestic economy.

Land use in the four villages is complex. Leaving aside, for the time being, non-farming activities, we can distinguish four major types of agricultural land use:

- Wet-rice paddy (*Hsiv*),
- Shifting cultivation (*Quv*),
- Permanent upland farming of cash crops (*Taj lauj le soo auf kawv muj nif*, 'the place used every year') and
- Orchard-gardens (*Taj soof lauj*, 'the place to grow things' or *Taj ro pooz*, 'the place with a fence around').

Their relative importance varies between villages and households as a result of environmental conditions and access to resources and capital. Only very few households maintain small vegetable gardens. People do plant trees and a few herbs and vegetables near the house, but there are no real backyard kitchen gardens. For vegetables they rely mainly on shifting cultivation fields.

Rice cultivation is the pivot around which the annual agricultural cycle revolves. All except one of the 97 households surveyed grow rice.¹⁷ In 2013, 23 percent did this on paddy fields only, 44 percent on swidden fields alone, and 31 percent on both. There is considerable variation between the four villages because not all are equally endowed with land suitable for paddy cultivation. Overall, paddy land is quite limited in this rather rugged sub-district; and given the technologies presently available, all potential paddy land has been brought under cultivation. Upstream villages like Mae Tho Noi and Mae Cho Tai have much less paddy land than villages like Mae Tho Tai and Mae Um Phai Tai, which lie further downstream where the valley is wider. Thus, in Mae Tho Noi, about 74 percent of all households surveyed rely entirely on shifting cultivation for rice. In Mae Um Phai Tai, this is the case only for 17 percent of the households.

Table 3: Land used for rice production in 2013

	N	Only paddy	%	Only swidden	%	Paddy+ swidden	%
Mae Cho Tai	25	3	12.00	14	56.00	8	32.00
Mae Tho Noi	19	3	15.79	14	73.68	2	10.53
Mae Tho Tai	30	9	30.00	11	36.67	8	26.67
Mae Um Phai Tai	23	7	30.43	4	17.39	12	52.17
Total No. of households	97	22	22.68	43	44.33	30	30.93

The relative importance of shifting cultivation and paddy is said to vary over people's life cycles, which is captured in the saying "The shifting cultivation spirit sticks with the young people; the paddy spirit sticks with the married people". This reflects the custom to pass on paddy fields to children only after they get married and have children of their own.

All paddy fields are irrigated, and the availability of sufficient water for irrigation is another limiting factor for the expansion of paddy fields. Paddy fields are planted only once a year, during the rainy season, because water for irrigation is insufficient during the dry season.



Figure 2. Mae Tho Noi Village. Right above are the previous year's swidden fields.
Photo: Christian Erni

Most households practice a medium to long fallow rotational form of shifting cultivation. Fields are cut, left to dry, burned and then planted with rice, various vegetables, herbs and tubers (see Figure 2 for the annual work calendar). They are cultivated only for one year and then left fallow for six to eight years. Six years fallow is considered the minimum, seven or eight years is the preferred fallow time to ensure the eradication of weeds and the restoration of soil fertility before a new cultivation cycle can start. The fallow period needed also depends on the inherent quality of the soil and the microclimate that determines how quickly forest fallow is restored. Karen shifting cultivation has been described extensively in various publications (see e.g. Kunstadter *et al.* 1978, Trakansuphakon 1998, IKAP 2006) and we will, therefore, confine ourselves to this brief description and the schematic overview of a standard seven-year cycle with the Karen terms used for each stage.

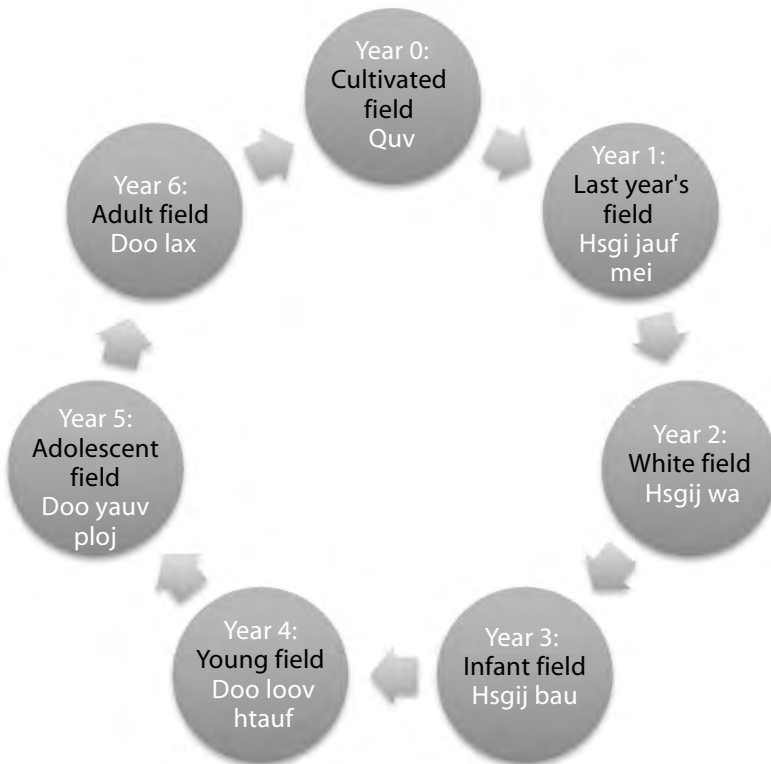


Figure 3. Shifting cultivation cycle. Source: IKAP 2006: 44

People are very conscious of the need to maintain sufficiently long fallow in order to control weeds and maintain soil fertility. Young fallow contains edible plants for a couple of months after the fields are abandoned, and are subsequently used for grazing. Older fallows are a source of wood for house construction and other purposes and a range of other non-timber forest products (NTFP).

Traditionally, the Pgaz k'nyau collect a wide range of food and other products for housing and daily use from fallow and forests. Nowadays, the main pillars of their stilt houses are mostly made from cement and roofs from corrugated fiber cement sheets, but otherwise most houses are made from wood, which is cut in the fallow and nearby forest. Sometimes bamboo is used for walls and floors, for basketry and a range of other purposes. Leaves of the *Laj hte laj* tree (*Dipterocarpus tuberculatus* Roxb) tree are still occasionally used for thatching sheds and other minor roofs.

All households surveyed regularly get food from fallow, forests, rivers and streams. All of them gather a wide variety of wild vegetables, mushrooms, shoots or the pith of palms or rattan, fruit etc. About 55 percent of all households hunt and 79 percent fish at least once in a while. Most of the game hunted today is rodents and birds. Larger mammals like barking deer and wild pigs have become rare, but are still shot occasionally. Other species like Sambar deer, monkeys, wild cattle (Gaur, Banteng) and large predators (leopards, tigers) have virtually gone extinct in the area and there are only very rare encounters with individuals that have strayed from areas with lower hunting pressure. Fishing is also said to be less productive now due to overfishing, particularly since it is done with electricity (using car batteries). Some people ignore the Tambon-wide ban on electric fishing and continue with the practice at night.

Engagement in hunting varies little between villages (ranging from 44 to 68 percent) while fishing is clearly more important in villages close to larger streams and rivers, such as Mae Tho Tai where all households surveyed fish. As Table 4 shows, hunting and fishing is done more frequently during the dry season, when 30 percent of all households hunt and 59 percent fish at least once a week. In the rainy season, only 19 percent of all household hunt and 35 percent fish at least once a week. People hunt and fish more often during the dry season because they are less busy with farming that time of the year. Dry weather allows hunters to stay overnight in the forest and also fishing is easier when water levels are low.

Most of the wild food is consumed directly or shared with relatives and neighbours. Over the past two years, only 14 of the 99 households occasionally sold NTFPs like mushrooms, wild konjac (*Amorphophallus konjac*), Indian gooseberry (*Phyllanthus emblica*; syn. *Embllica officinalis*), various rodents (squirrels, rats etc.), monitor lizard, barking deer etc.

Some fruit trees, herbs and spices are usually grown near the house, 44 percent of the households surveyed also maintained a separate orchard-garden. These are more or less permanent gardens dominated by perennial plants, above all trees. Among the plants found in these gardens are sugarcane, banana, fruit trees (litchi, mango, longan, pomelo, lime, jackfruit, wild apple), papaya, coconut, palms (for the starchy pith),

Table 4: Seasonal patterns of hunting and fishing									
	No. hh surveyed	No. hh that never hunt	%	No. of hh hunting at least once a week		No. of hh that never fish	%	No. of hh fishing at least once a week	
				Dry season	Rainy season			Dry season	Rainy season
Mae Cho Tai	25	14	56.00	2	1	14	56.00	6	3
Mae Tho Noi	19	6	31.58	10	2	2	10.53	16	7
Mae Tho Tai	30	16	53.33	7	8	0	0.00	23	20
Mae Um Phai Tai	25	9	36.00	11	8	5	20.00	14	5
	99	45	45.45	30	19	21	21.21	59	35

rattan (also for its tender shoots), pineapple, various herbs and spices (lemongrass, galangal, garlic etc.) and various vegetables. The sizes of these gardens range from half a rai to three rai, the overall average being about two rai. While some products may occasionally be sold, they are mostly for home consumption and don't contribute much to cash income.

By far more important, and at present the main source of cash income is the cultivation of cash crops, particularly corn. Soybean was the first cash crop planted in Tambon Mae Tho some five years ago, but it was soon replaced by corn and now soybean is planted only occasionally in small quantities. Some of the shifting cultivation land is now being converted to permanent corn land. In 2013, 71 percent of all households surveyed had planted corn. But, as will be discussed in detail later on, there is considerable variation between villages and households regarding the extent of engagement in corn cash crop production. While in Mae Tho Tai, 95 percent of all households planted corn in 2013, only 28 percent did so in Mae Cho Tai. Corn is a pure cash crop; people don't eat it. They are growing a high-yielding variety developed for the production of animal feed. Its cultivation, at least in the way it is currently practiced all over the northern hills, requires the application of considerable amounts of chemical fertilizer and herbicide and thus investment that not all households can easily afford.

Just a generation ago, raising buffaloes and cattle was one of the main sources of cash income. Livestock served as a kind of insurance mechanism, they were sold when larger amounts of cash was needed, like for medical expenses or, more recently, education or for buying more costly equipment (hand tractor, motorbike). The Pgaz k'nyau also recognize the value of cattle and buffaloes for farming. After rice harvest, they are allowed to graze on the straw and stubbles left in the paddy fields. They are

‘weeding’ the paddy fields, i.e. eat and thus cut back grass and other weeds, eat rice straw and stubbles and leave nitrogen-rich manure behind. During the rainy season, when rice and other crops are grown, cattle and buffaloes are left to browse in the fallow fields, which is considered good to promote tree growth and their dung also adds nutrients to the soil.

Today, fewer households keep livestock. Only 25 of the 99 households surveyed kept cattle or buffaloes. Fewer do so in Mae Cho Tai and Mae Tho Noi (8 and 16 percent respectively) than in Mae Tho Tai and Mae Um Phai Tai (27 and 40 percent). A little less than half of all households (48) are raising pigs, while it is said that in the past every household had pigs. The variation is less pronounced, ranging from 37 percent in Mae Tho Noi to 64 percent in Mae Cho Tai. Most households keep just one or two pigs, only six households keep between four and six. Meat from pigs is occasionally sold within the village, but most of the time it is kept for home consumption and shared with relatives. Everybody keeps a few chickens and some have a few ducks for home consumption.

2. Land and labour

Customary law still largely regulates access to land. House lots, paddy fields and permanent gardens¹⁸ are individual property (some of the former two have an STK certificate), usually inherited from parents, but sometimes bought. Traditionally, preferred postmarital residence is uxorilocal, i.e. the young couple moves in with the parents of the bride. They stay and work with her parents at least for a year or two, until they have children and establish their own household and another daughter or son gets married and stays with them. Then they may decide to stay on in the wife’s village, which is common. Some couples move to the husband’s village, or even settle somewhere else. However, this traditional postmarital residence rule is changing as more children are leaving the village and settling in towns. Now, it is not uncommon to see elderly couples living alone.

In principle, parents pass on their property (land and livestock) equally to sons and daughters. At the time when parents divide the paddy land, they give an equal share to all children and keep a plot for themselves. They pass on this plot to the daughter or son who looks after them when they are old. When they do not have enough land to give to all children, it is usually agreed that those living outside the parents’ village get cash compensation. Due to the preferential uxorilocal postmarital residence, more land is de facto passed on to daughters than to sons.

For shifting cultivation land, a two-layer ownership concept applies: Priority rights over particular plots were established by opening a new field in a previously uncut forest. The plots are later on passed on to the children. Therefore, in practice, swidden

land is considered lineage or family property, i.e. a group of siblings and their descendents share the right over the swidden land inherited from their forefathers. Swidden land is often also shared with other people in the village who may not have enough fallow land or for some other reason would like to make swidden on somebody else's land. Table 5 shows that in 2013, most of the land used was owned by the user.

	Paddy		Swidden	
	Own	Others'	Own	Others'
Mae Cho Tai	11	0	22	0
Mae Tho Noi	4	2	15	2
Mae Tho Tai	17	0	18	1
Mae Um Phai Tai	19	0	16	2
Total	51	2	71	5

While there are clear priority use rights over swidden land held by a lineage, these rights are not absolute. If any particular plot is not used for an extensive period of time by any of these usufruct rights-holders, other people from the village have the right to use it and, if they have used it repeatedly, establish a prior usufruct right. In this sense, swidden land is considered to be both a collective family property and communal property. That is how it used to be and how it is still supposed to be in theory. In practice, this concept of ownership is increasingly contested in the context of corn cash cropping and the conversion of swidden land to permanently used land. We will return to this subject in the next chapter.

Almost all land is in one way or the other used for agriculture because valley bottoms have been turned into paddy fields and most of the upland is suitable for swidden farming. Only forests on very steep slopes have remained untouched, and patches of forest that are covered by taboos are not farmed. These places are generally called *Doo tax* ('forbidden forest area/place')²⁰, and the Pgaz k'nyau differentiate between different types based on the specific characteristics of the respective place (see e.g. IKAP 2006: 39ff). Not all of these 'taboo forests' are found in all Pgaz k'nyau villages. A fallow area can also become 'taboo' for shifting cultivation, temporarily or permanently, when an accident or illness happens at the time the forest was cleared. *Doo tax* are few and of limited size, thus in the territories of the four villages covered by this study, no extensive old-growth forests are found. There is no traditional concept of 'community' or 'conservation' forest the way it is widely understood and promoted today. Consequently there are no regulations on access and use of forest other than

those applying to shifting cultivation. In fact, with the exception of village sites and paddy fields, there has not been any clear separation of agricultural land and forest because one merges into the other over time in the course of swidden farming. Thus, the largest part of the village territories consists of what should be called an agroforest landscape.

Except for cases where paddy land or a house have been bought, ownership over land is established by investing labour: either by constructing paddy fields, by opening primary forest for a swidden, or by planting fruit trees and other permanent crops in what thus becomes a permanent garden.

Married couples with the help of their children do by far most of the work. Occasionally a young married daughter and her husband, who come to live with the parents for a year or two, will also contribute to the work. During labour-intensive stages of the cultivation cycle, labour exchange (*maz dauw maz kaf* - 'help and help back') is common in all forms of agriculture, i.e. in paddy, swidden and cash crop cultivation. Almost all households plant paddy (98 percent). Three quarters of the households also plant corn and about two-thirds of those are doing swidden farming organized *Maz dauw maz kaf*. In *Maz dauw maz kaf*, members of several households, usually kin, cooperate in a particular task like slashing a field, planting rice or harvesting. It is common but not a standard practice, i.e. it is initiated and requested by a particular household if needed. The household that received help returns it when those who helped are themselves in need. Those asking for *Maz dauw maz kaf* are expected to offer a meal or at least curries to eat with the rice that people bring. *Maz dauw maz kaf* not only helps to alleviate the burden of work, it is also very much a social activity providing an opportunity to come together and have fun enjoying each other's company.

With the introduction of cash crops, people have heavier workloads because cash crops are planted in addition to paddy and swidden rice; therefore, there are more fields to look after. In the past, after the rice harvest, people were free to rest, but now they have to continue taking care of the cornfields until they are harvested one or two months later. Hiring labour is a way to cope with a heavier workload, and people do hire labour in cash-crop production. In 2012, 35 percent of those households planting corn hired labour; it increased slightly to 37 percent in 2013. Since not all households have planted corn, the overall rate of hiring labour in agriculture is 19 percent for 2012 and 26 percent for 2013.

The most labour-intensive time is roughly between early May, when rice is dibbled on swidden and/or transplanted in paddy fields, and early November, when rice is harvested. The matrix below provides a rough overview of the annual work calendar in agriculture.

In the past, rituals (*Bgau quw*)²¹ accompanied the different stages of swidden and paddy farming. But, this has changed after conversion to Catholicism. Only 25 percent of all households surveyed conduct traditional rituals. However, more than 50 percent still pray during some stages of swidden and paddy farming to ensure a good harvest.

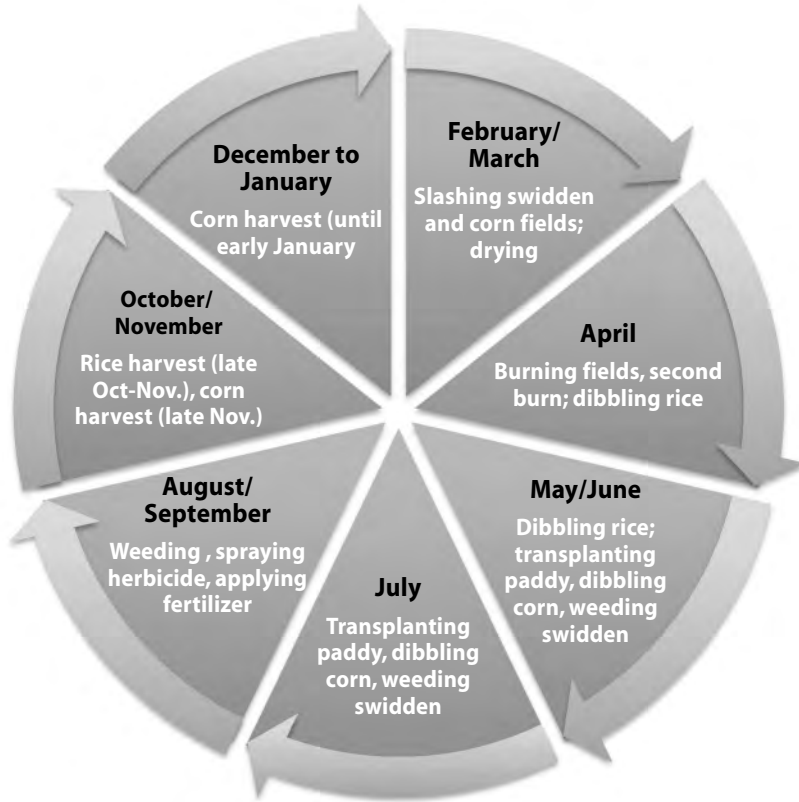


Figure 4. Annual work calendar

3. Cash and credit

Earning enough cash to make ends meet is considered one of the main problems by the people of Tambon Mae Tho, most of whom, as we have seen, are farmers. Very few have full time government jobs, such as teachers, staff in the office of the Tambon Administrative Organization (TAO) in Mae Tho, or as local government members, i.e. village chiefs or members of the TAO. And very few are full-time entrepreneurs. These are the people who are running a large retail shop in Mae Tho Klang, operate corn threshers and are trading in corn and other cash crops. But almost everybody else is also earning money from off-farm income generation activities (many women, also among the younger generation, weave; some men are carpenters) or by working for others as occasional agricultural labour.

Our survey showed that by far, most (87 of the 99) households surveyed had some cash income from employment (government officers), part-time jobs (like school-bus driver), occasional labour in infrastructure projects by the local government such as road building, or in the informal sector, i.e. as agricultural labourers, shop keepers, carpenters, weavers etc. The elderly, those over 60 years of age, and physically challenged people get a monthly government pension of 500 to 800 THB a month, a modest amount, but it makes a difference for poor households.

All occasional labour was done within the sub-district. Some of the young and unmarried migrate to cities temporarily or permanently – a subject we will return to later on – but only few of them are able to send money home to support their parents and siblings. Seasonal labour migration, like to fruit plantations outside the district, is rare.

As briefly mentioned earlier, livestock used to be a major source of cash income in the past. However, the importance of livestock has declined over the last few years and today most households cover their cash needs through the production of corn. Since the introduction of cash crops has such a tremendous impact not only on the local economy and land use system, but also on people's lives in general, we will return to this subject in more detail in a separate chapter.

Unlike any other form of land use practiced today, corn production – and cash cropping in general – requires considerable investment for seeds, fertilizer, herbicides and sometimes insecticides. Seventy-five percent of all surveyed households that were planting corn were able to cover the investment needs for corn production themselves. The others took loans. There are several possibilities for borrowing money. Only very few took credit from corn traders (who are also selling agricultural inputs). The reason is simply because there are other possibilities. Many usually ask their relatives and, thus, are able to get interest-free loans. In Mae Tho Tai Village, a womens' group has small revolving funds from which members can take loans.

The most important sources of credit are the four government micro-credit schemes: The TAO has a small fund of 50 000 THB per year from which people can take interest-free loans with a payback time frame of five years. But due to the limited volume of the fund only a few can benefit from it each year.

The Bank for Agriculture and Agricultural Cooperatives (Thanakhan Phua Kan Kaset Lae Sahakon – TKS) under the Ministry of Finance provides financial assistance to farmers and farmer institutions to increase their productivity and incomes. It also provides deposit services to farmers similar to commercial banks. TKS has an office in each district and gives loans not only to farmers who have land titles, but also to those without land titles if they form a group of five to ten members who guarantee

each other. The group's application is scrutinized and decided on by the district office of TKS.

Under the "Project to Reduce Poverty" (KK.KJ)²² launched in 1993 by the Community Development Department, the poorest villages in the country were identified with the help of a basic needs survey. Each village gets a fund of 280 000 THB, which is to be administered by the village committee. Loans are given with 2 percent interest.

By far the most important is the central government's *Million Baht Village Fund* programme. It is the world's biggest microfinance scheme (The Economist 2013). In 2001, the government transferred one million THB, at that time about US\$24 000, to around 77 000 villages across the country (Kaboski and Townsend 2012: 98). All villages received the same amount of 1 million THB, regardless of the size of its population (ibid.: 99). Under this programme, borrowing is limited to 20 000 THB and the payback period is one year. Although the fund has been criticized as being a key component of then Prime Minister Thaksin's populist political agenda, it seems to have had "the desired effect of increasing overall credit in the economy. (ibid.: 131). Menkhoff and Rungruxsivorn also conclude that the village funds "reach the target group of lower income households better than formal financial institutions" (2009: 1). However, they also found that village funds do "not really reach the poorest households, do not provide lending very similar to the informal institutions and do not eliminate credit constraints for female headed households" (ibid.: 20). They also found that the village funds do not help people absorb shocks due to the "inflexibility of VF loans which can only be approved at committee meetings which take place at longer intervals, such as several months." (ibid.: 21) One of the problems pointed out by the people in Tambon Mae Tho is the short duration of the loan. When borrowers have problems paying back the loan but want to avoid being barred from taking loan in future, they are forced to take loans from informal moneylenders at very high interest rates to pay back the first loan. Very poor people can become heavily indebted when they take loans for cash cropping and prices for their produce drops.

The narrow scope of our study did not allow us to look deeper into the questions of access to credit and the impact of loans and debt on household economies, but whatever limited data we have indicates that people are actively making use of both formal and informal credit opportunities. At the time of our fieldwork, 66.7 percent of all households surveyed had debts, with an average of 34 208 THB and a median of 20 000 THB per household.

Table 6. Household Debts

	No. hh surveyed	No of hh with debts	%	Average debt per hh	Median
Mae Cho Tai	25	15	60.00	20 173	15 000
Mae Tho Noi	19	11	57.89	28 800	20 000
Mae Tho Tai	30	23	76.67	44 870	40 000
Mae Um Phai Tai	25	17	68.00	37 360	15 000
	99	66	66.67	34 208	20 000

Most loans were taken for investing in agriculture (inputs for corn production, buying a motorized sprayer, a hand tractor or paddy land), housing (construction and repair of houses), transport (buying motorbikes and cars) and education (school fees and related expenses). Paddy rice cultivation is still done with little external inputs. Hand tractors have become affordable, and whatever money is spent beyond that in paddy cultivation is just for some petrol to operate them, an occasional sack of chemical fertilizer and, more frequent, for insecticide. Monetary investment in shifting cultivation, the third pillar of Mae Tho agriculture, is almost nil.

4. Livelihood and food security

As briefly described, the Pgaz k'nyau of Tambon Mae Tho employ diverse strategies to make ends meet. Very few have permanent jobs or are full-time entrepreneurs. By far most of them combine different forms of land use, growing crops, raising animals, hunting, fishing and gathering forest produce for consumption and sale. They do daily wage labour, running small shops, weaving, doing carpentry work and other jobs on the side. Earning enough cash is a concern to all, but what always comes first, what determines their decisions and thus their adaptive strategies is their concern to have enough rice to eat.

Despite an increasing engagement in cash cropping, all but two households covered by the survey grow their own rice.²³ What is happening throughout the northern hills has not yet taken place in Tambon Mae Tho—the complete abandonment of rice cultivation in favour of potentially more lucrative cash cropping with rice being purchased from the market. But changes in land use are taking place, and their trajectory is not yet clear. We will have a closer look at these transformations in the next chapter.

People interviewed stressed how important it is to them to be self-sufficient in rice. “We are rice eaters” or “you can’t eat corn” are typical statements. For most households, cash cropping, as with other income-generating activities, is considered subsidiary to rice cultivation; their focus is first and foremost to ensure self-sufficiency

in rice. In this 'dual economy',²⁴ on one hand they try to produce enough rice to feed the family for the whole year and, on the other hand, they try to produce or obtain all other goods, and the cash required for that, to cover all their other needs.

Delang (2003) calls this 'subsistence orientation' and in his analysis of social and economic adaptation among Karen communities of Tambon Bo Keo in Samoeng District, Chiang Mai Province, he compares this with 'cash orientation' of other households. He explains:

"By 'subsistence orientation' I mean an economy that is based on the production of food for consumption and the extraction of most other necessities from the natural environment. Although subsistence orientation does not mean that no goods are bought in the market, these goods form a relatively small part of the people's total consumption. In contrast, a cash-oriented economy is one in which people sell most of the crops that they grow, using the income earned to purchase food and other necessities." (2003: 157)

Delang acknowledges that there is no clear-cut threshold between subsistence and cash orientation but finds it useful, "particularly in terms of the reliance of the Karen on the natural environment." (ibid.)²⁵ We will return to this topic in more detail in the next chapter. For the time being, we would simply like to explore how the Karen communities in Tambon Mae Tho meet their consumption needs, i.e. whether and, if yes, how they are able to maintain food security.

As the degree of rice self-sufficiency given in Table 7 shows, the average combined annual rice yield per household for the past two years was 154.2 thang²⁶. The average annual rice need for the same households, based on their own estimates, is 150.9 thang. The calculated average rice need per household (based on the number of household members and an estimated annual rice need per person of 40 thang²⁷) is a little lower, i.e. 139.2 thang. In any case, the rice produced in the past two years seem to have been sufficient to cover needs. But these are average figures for the 99 households surveyed. There is variation between villages and households. In Mae Tho Noi, the reported two-year average rice yield of 124.75 thang is not sufficient to meet their average estimated needs (148.6 thang), and only almost meet the calculated needs (130.4 for two years; it was sufficient though in 2012 when an average of 134.7 thang was harvested).

People's own assessment was that nowadays they usually have enough rice for the whole year and rice shortages occur only occasionally. When asked whether they had experienced any shortage over the past five years, 23 percent of all households surveyed said yes. But it varied considerably among villages: Only one of 25 households surveyed did so in Mae Cho Tai but, not surprisingly, eight of 19 (42 percent) in Mae Tho Noi. In Mae Tho Tai and Mae Um Phai Tai, the rate was lower, with 27 percent and 25 percent respectively.

The reason for Mae Tho Noi's more precarious situation with respect to rice self-sufficiency is that they have less paddy land than other villages. There is less fluctuation in rice yields from paddy fields than from swidden fields. As mentioned earlier, 72 percent of the households surveyed in Mae Tho Noi depend entirely on shifting cultivation for rice. However, as we have also seen, most households in the four villages covered in this study at least depend partly on shifting cultivation to feed their families. Only 12.4 percent of all households get their rice only from paddy fields. Many people we interviewed stressed that they would not have enough rice if they could not practice shifting cultivation.

Table 7: Degree of rice self-sufficiency

	No. hh surveyed	Av. hh members	Average combined rice yield per hh*			Annual rice need		Reported rice shortage	
			2012	2013	2 years average	Self-estimated	Calculated	No. of hh	%
Mae Cho Tai	25	3.28	154.1	154.1	154.1	125.6	131.2	1	4
Mae Tho Noi	19	3.26	134.7	114.8	124.75	148.6	130.4	8	42.1
Mae Tho Tai	30	3.83	148.75	163.04	155.9	121.3	153.2	3**	10
Mae Um Phai Tai	25***	3.68	192.9	196.9	194.9	186.8	147.2	6	25
Total	99	3.5125	157.6	157.2	157.4	145.6	140.5	18	18.2

* *i.e. from both paddy and swidden fields*

** *Reported are 4, but one did not plant any rice!*

*** *Hh 19 was excluded in the calculation, a widow dependent on her daughter's household*

Average annual need per person: 40 thang, calculated on the basis of estimated need for men 30 thang, women 50 thang (includes chicken etc.)

Rice shortages occur when fields are plagued by pests such as insects, termites, ants, rats or by diseases (mostly fungus infection). Swidden fields are more vulnerable to pests like ants or termites than paddy fields because the latter are flooded. Irrigation of paddy fields during the rainy season not only controls weeds and pests but also ensures sufficient water, while swidden fields can be severely affected by untimely dry spells, like in 2013. However, some people also mentioned some risks associated only with paddy fields. These concern the possibility of riverbank erosion, especially along larger creeks and rivers in lower-lying villages. Whole paddy fields have been washed away during times of flood, destroying years of labour, investment and one of the most valuable assets a Karen family can have. Nevertheless, the higher vulnerability of shifting cultivation is recognized by the Pgaz k'nyau in the saying that: "Shifting cultivation is like stepping on bamboo poles" – which are round and slippery and one may fall off easily. At the same time, there is the saying that: "Shifting cultivation is

the elder brother, paddy the younger brother”, which expresses the recognition that shifting cultivation is older and the Karen have depended on it for a longer time than on paddy cultivation.

Rice shortages have occurred much more frequently in the past when swidden fields were regularly beset not just by rats but also by large flocks of birds²⁸, by wild boar, sambar deer and monkeys. A rout of wild boar could destroy almost an entire swidden field in just one night. For that reason, we were told, swidden fields used to be much larger in the past. People had to reckon with losing part of their rice much more than today. There are hardly any wild boar and no more sambar deer and monkeys around, and those large flocks of birds have not been seen in a long time. Rats are still a problem but apparently not as much as they used to be, mainly because rat poison is now easily available. Insects, termites and ants are still a threat but when fields are badly affected this can be dealt with by applying pesticides.

Today, there are several ways to address rice shortages and nobody has to go hungry anymore. Rice banks have been established in all villages on the initiative of a Catholic priest. In Mae Um Phai, a rice bank was founded around 1975. After an initial donation of rice by those establishing it (usually the village members; sometimes with help from donors), people in need of rice can borrow rice from the rice bank and they usually have to return the same amount with a 20 percent interest after the next harvest.

Rice banks have been very successful in helping households to bridge times of rice scarcity. But people also simply ask for rice from relatives, they sometimes borrow or buy rice. When there is severe scarcity, they use more than one of these options. For example, 12 of 20 households that reported rice shortages over the past five years borrowed rice from the rice bank, 10 households asked for rice from relatives and five of these did both.

Since people are very much aware of the risk of rice shortages, they do not like to sell rice. At least part of surplus rice is usually kept as insurance against future crop failure.²⁹ More households have surplus rice these days not just because there are fewer threats to their rice fields but because households are smaller as young people are moving out for education and in search of jobs. We will return to this subject in the next chapter.

As briefly described in the previous chapter, the Karen of Tambon Mae Tho obtain a broad range of food other than rice from fields, forests, rivers and streams. Swidden fields are the main source of vegetables and tubers for about eight months of the year. As the dry season progresses and cattle start to graze on the abandoned fields, less becomes available and from February to May there is hardly anything left

except for some tubers in the ground, such as yam and taro. Wild vegetables also get scarcer during this time of the year. Tubers and pumpkin can be stored for a couple of weeks, and some vegetables that have been dried and the seeds of beans for a few months, but in general, there are far fewer vegetables available between December and April. However, the dry season is the time when fishing is easier and thus more productive and it is also the time when people have more time for hunting. In March and April, trees and shrubs start making new and tender leaves, some of which can be eaten, and edible bamboo and other plants are making new shoots. In June, the first vegetables, like lettuce or pumpkin shoots, can again be collected from swidden fields.

With improved road access and electricity, food and other consumer goods are now easily available. Small grocery shops are found in all villages, particularly along the main road in Mae Tho Tai and Mae Tho Klang. Some of the latter sell vegetables, fresh fish and meat. In addition, itinerant traders with pickup trucks ply the roads to remote villages, visiting them once or twice a week to sell not just dry goods, but also vegetables, fish and meat. Thus, purchased food plays an increasing role in people's diet, especially during the dry season, and for those without swidden fields throughout the year.

Most households spend between 100 and 600 THB per week on food from the market. It changes between the seasons. In the rainy season, well over half of all households spend between 100 and 300 THB; in the dry season it's only 35 percent, i.e. more households spend over 300 THB per week on food. Table I.1 in Appendix I gives an overview of the distribution of weekly household expenditures for food among households in the four villages.

People spend less on food during the rainy season because they have vegetables from their swidden fields. Shifting cultivation is the single most important source of non-rice food. This includes both cultivated and non-cultivated food since fallowed fields continue to provide a broad range of edible plants. Secondary forests are said to contain more edible plants than old-growth forests, and studies³⁰ have shown that open forest landscapes like those created by shifting cultivation are more attractive to the preferred game of hunters (like deer, wild bovines and pigs) since they provide more food for them.

Most people interviewed pointed out that overall, there is greater food security now than in the past because it is easy to buy food and they have sufficient income to do so. But many also stressed that they have to buy more food now because wild resources have decreased in recent years. Above all, there are fewer fish in the creeks and less game in the forest. And the young generation allegedly does not like 'jungle

food' any more, because they have developed a taste for commercial and processed food from the shops. A simple ranking exercise on household expenses showed that in people's own assessment, most believe that they spend most of their money on food, followed by expenses for petrol and education. (see Table I.2 in Appendix I). The ranking is different for those households who have children attending institutions of higher education. For them, education expenses top the list. We will return to this in our next chapter.

These observations on food consumption and security indicate that there are changes taking place in the P'gaz k'nyau villages of Tambon Mae Tho. But these changes that go beyond food production and food security affect the whole livelihood system as well as social relations in the communities. These changes will be the subject of the next chapter.

IV. Continuity and Change

Change in indigenous societies is often examined with a 'binary' approach that juxtaposes 'traditional' and 'modern', 'customary' and 'statutory', or 'subsistence' and 'cash' or 'market orientation'. Delang (2003: 160ff) has compiled a list of scholars who, over the past 150 years, have used the 'traditional-modern' dichotomy in comparative analysis of societies and social change. However, Delang stresses that such dichotomies:

"are to a large extent theoretical, and should be used [...] as a tool to analyse and understand what is observed rather than to make sweeping generalizations. All societies are somewhere in between the two extremes, and elements of both characteristics can exist side by side – in different domains – as well as amongst different individuals, [] Moreover, the differences in this polarity are to a great extent graded, and when societies change, what changes is the balance between, for example, 'folk' and 'urban'." (ibid.: 160).

The 'traditional-modern' dichotomy is also a part of the 'Karen consensus', as briefly discussed in our introductory remarks to Chapter III, in which the 'traditional', subsistence-oriented way of life of the Karen is seen as threatened by external pressures from the state and the market (Walker 2001). Indeed, change in indigenous societies has often been considered mainly as a result of external intervention and pressure, and indigenous peoples have thus come to be seen as 'victims of progress' (Bodley 1982).

But realities on the ground are far more complex. Without intending to deny the significance of external pressures, especially when they take the form of outright dispossession, disenfranchisement and oppression, indigenous peoples have never been just passive victims in encounters with 'modernizing' or 'civilizing' forces that have come and gone over the ages in the guise of colonizers, missionaries, development

agencies and companies. As Geiger (2009: 104) points out, frontiers are not simply “an arena of conflict and the setting for indigenous displacement” but a “territory or a zone of interpenetration between (...) societies” (Lamar and Thompson, quoted in *ibid.*). The same applies very much to the present, ‘post-frontier’ era.

For centuries the Karen in Thailand’s northern hills have been part of and actively engaged in shifting economic and political power relations. While enjoying far-reaching autonomy in the pre-modern era, they “were linked with the major lowland kingdoms through loose, symbiotic ties” (Keyes 1979 quoted in Laungaramsri 2001: 35). They have been engaged in trade of agricultural and forest products (Walker 2001: 154) and toward the end of the 19th century as labourers and elephant mahouts in the teak logging industry (*ibid.*; Laungaramsri 2001: 132). Thus, Walker (with reference to Jonsson 1998) comes to conclude that subsistence orientation that is often considered part of the traditional Karen way of life, “is probably a relatively recent phenomenon that has developed since the collapse of Karen trading networks” (*op. cit.*: 154).

Interestingly, many Karen themselves juxtapose their present or other people’s way of life with ‘the Karen way’. Underlying this is sometimes a rather nostalgic view of how life used to be or how it ought to be. The distinction between ‘traditional’ and ‘modern’, as problematic as it may be as an analytical concept, does have a real-life basis in the self-understanding of the people. However, ‘the Karen way’, their life in the past, is not always, or not only romanticized. Older people remember vividly the challenges they faced while trying to make a living in the hills in those days.

1. Scarcity, uncertainties, laws and policies

Older people in Tambon Mae Tho often talk about times of hardship and hunger in the past. Rice shortages were frequent and reached critical levels every few years. Rice became scarce from three to one month before the new harvest. Sometimes there were shortages of up to six months. The worst time was October, just before the harvest, when no rice at all was left. People tried to get rice from other villages or from the lowlands, but often they were forced to fall back on wild yam, bamboo shoots or the pith of wild bananas which were mixed with rice as long as they had any, and later became the only thing they had to eat.

The reasons given for rice shortages included wild animals and pests destroying the rice crop. Another reason was opium addiction, which drained domestic resources, as addicts would spend time growing opium, working for others, or spending whatever money they had to buy opium. There were villages with high rates of opium addiction and thus these villages suffered severe poverty.

None of the people interviewed mentioned land shortage and declining fertility of swidden land as causes for rice shortages. However, Walker (ibid.: 151) found,

“The ‘pioneer’ situation of land abundance appears to have come under increasing and, in some cases, critical pressure by the early decades of the twentieth century. Almost all of the ethnographic accounts of Karen communities conducted between the 1950s and the 1970s refer to upland cultivation systems ‘under severe stress’ with population pressure on land resulting in shorter fallow periods, lower yields and subsistence shortfall. [] In 1961, Young wrote that Karen are ‘not by any means self sufficient’ and that rice was obtained from surrounding Thai communities or from hill tribes when lowland prices were too high.”

In the 1980s, land and resource scarcity due to population pressure, where it already existed, was further exacerbated by restrictive forest conservation and upland development policies. In Thailand, state forest conservation started in the early 20th century with the passing of the Forest Conservation Act of 1913 and the subsequent Forest Protection Act of 1938 and the Forestry Act of 1941. In 1954, the newly passed Land Code declared 50 percent of the country as forestland, which was put under the authority of the Royal Forest Department. The Land Code was promulgated through the Land Code promulgation Act of the same year (Luithui and Lasimbang 2007: 268). The latter provided that “anyone occupying any forest land as of November 30, 1954 can receive a land use claim certificate provided he/she can prove his/her claim within 180 days” (ibid.). In the remote villages of the Northern hills, hardly anybody was aware of the passing of the act and the need to register claims within the six-months period given (see also Uraivan *et al.* 1988: 73). At that time, we were told, there were only two literate people in the whole of Tambon Mae Tho (both school teachers) and none of the older people we talked to had heard about all this. In any case, the possibility to register land was limited to paddy fields and did not apply to shifting cultivation. With the expansion of state administration and the passing of these laws, Uraivan *et al.* observed: “The Karen soon found out that they had violated state land according to the Forest Act of 1941 even though they had cultivated that land for generations as their village common land” (ibid.).

The Reserved Forest Act of 1964 further consolidated state control over forest areas. Similar to the Land Code Promulgation Act, section 12 of the RFA provided for the possibility to claim rights over land in the reserved forest area by submitting a written request to the district government within “ninety-days as from the effective date of such Ministerial Regulation”, and that if they fail to do so “it shall be deemed that such person renounce his or her right or benefit” (Pakorn and Samaporn Nilrapunt 2005: 3). Section 14 of the RFA thus unambiguously states, “Within the national reserved forest, no person shall hold or possess land, make a construction, destruct or burn forest, do logging, collect forest product, or do any matter what so

ever with purport to harm or decay a condition of national reserved forest”, and, section 15 states, “A person may do logging or collecting forest product after receiving license from competence officer or by from time to time permission of a competence officer of each national reserved forest” (ibid.: 4).

Therefore, it does not come as a surprise that none of the 99 households covered by our survey had any formal land title, 47 have temporary land use certificates (STKs).³¹ These have been issued only for house lots and paddy land. None has any certificate of any nature covering swidden or any other upland.

The 1980s was the decade of large-scale and mostly foreign funded highland development programmes. In the late 1980s, 168 agencies from 31 government departments and 49 international donors were involved in various development projects and programmes across the northern hills (Ganjanapan 1997 in Pugnier 2002: 75). In order to coordinate all these initiatives, ‘hill tribes’ were included for the first time in the *5th National Economic and Social Development Plan*. “Security issues, opium reduction, reforestation, the reduction of hill tribe population growth and the conversion of hill tribes to good Thai citizens were the main emphasis” (Pugnier 2002: 75). Powerful agencies were created, such as the Centre for the Coordination of Hill Tribe Affairs and Eradication of Narcotic Crops (COHAN) under the Third Army and large-scale land-use planning was done by means of a watershed classification system that divided the watersheds in the entire uplands into five main classes and two sub-classes (ibid.), in two of which (class 1A and 1B) no human settlement was supposed to be allowed. (Luithui and Lasimbang 2007: 274). This heralded the era of resettlement of hill tribe villages. For that purpose, villages were classified according to size and actual or potential permanence. All settlements that did not fulfill the requirements for recognition as a permanent village were to be relocated and forced evictions were to be started. For example, in 1986, 924 families with a total of 5 557 people were forcibly relocated in Tak Nakhon Sawan and Kamphaeng Phet Provinces (Chupinit 1988). In the late 1980s and increasingly in the 1990s, civil society organizations and academics started to criticize these programmes just as communities also organized to oppose them (see e.g. Chupinit op. cit.; IWGIA 1998: 240ff). The government appears to have realized (though never openly admitted) that it was practically and politically not feasible to implement these plans as most ‘hill tribe’ villages were actually located inside class 1A and 1B watersheds. While these resettlement plans were never fully implemented, legally, villages located in critical watershed areas are still not supposed to remain there.

Similarly, no settlements are supposed to be inside protected areas like national parks and wildlife sanctuaries. Relocation of villages from protected areas has taken place throughout the country. Relocation efforts slowed during the past two decades,

but did not completely cease, as illustrated by the recent forced eviction of Karen communities from Kaeng Khachan national park in Phetchaburi Province (IWGIA 2012: 300ff). While in many protected areas, the law has not been enforced and communities still continue to live in their settlement areas, their situation is more precarious than that of communities outside protected areas.

Comparing the situation in a village inside a national park to one inside a national forest reserve, Maniratanavongsiri (1999: iiff) found that,

“The creation of strictly regulated national parks severely affected traditional ways of life and created undue hardship in Pgaz K’nyau communities. A ban on swidden agriculture in national parks reduced the already marginal size of family farmland and park authorities have blocked most development assistance to villages located within part territory. The effect has been to relegate Pgaz K’nyau villages in national parks to a lower standard of living in comparison to villages located outside park boundaries.”

In contrast, Pgaz K’nyau villages located in national forest reserves have had a better quality of life because of greater flexibility permitted in local use and control of natural resources.

Tambon Mae Tho lies within a reserved forest and, much like what Maniratanavongsiri encountered in his research area, even though there are by law severe restrictions on land and forest use, RFD officers and local governments seem to show quite a lot of ‘flexibility’.

People interviewed are very much aware that shifting cultivation is illegal. With rising concern over climate change and the need to reduce carbon emissions, in the recent years, pressure on the provincial government of Mae Hong Son to stop shifting cultivation and the annual burning of forest underbrush³² has increased. However, unlike in other provinces, where people get arrested and fined for making swidden fields,³³ there is no record of such happenings in Mae Hong Son in recent years. Nobody in Tambon Mae Tho reported any harassment by RFD officers or the authorities for practicing shifting cultivation.

In an attempt to respond to the rising pressure from Bangkok to do something about the annual ‘forest fires,’ the Mae Hong Son government, through the district government, instructed swidden farmers of each village to burn their fields on a particular date in February.³⁴ This ‘coordination’ of burning was probably supposed to reduce air pollution and the haze problem. While well intended, the instruction missed the target simply because at the requested time the fields were not yet ready for burning. They had barely been cut and needed another month for drying. Swidden farmers in MaeTho thus proceeded as usual and the Tambon government reported to the district the dates on which fields had been burned.

Laws and policies on forest conservation are not that strictly enforced in Tambon Mae Tho and elsewhere in Mae Hong Son Province because the authorities are very much aware that this would threaten the livelihood of a large part of its population. Furthermore, many government and RFD officers are indigenous themselves and therefore, have more understanding and sympathy for ordinary villagers in the hills. Nevertheless, RFD officers keep reminding people that they are not allowed to cut and burn forest and the Department of Agriculture is telling them to do agroforestry instead. However, there is no programme to actually promote agroforestry.

Thus, while government laws and policies at the moment do not pose an imminent threat to people's livelihood, the authorities' constant reminding of the illegality of forest and land use in reserved forest does create uncertainty and insecurity among the villagers. There is a strong sense of being treated unjust, in our interviews some acknowledged that they feel discriminated against since they are not given the same rights as the lowland people, even though they have been living in their villages and have been practicing shifting cultivation for many generations. At the same time they know that even if they wanted to change their ways of land use, they would hardly have any alternative. Bunmee of Mae Um Phai Tai aptly expressed his and his fellow villagers' sentiments when he explained:

"We have no alternative but to continue with shifting cultivation. Coffee grows here but cannot provide enough income. Corn is a new possibility which gave income of 20 000 per year to some people, but the money is gone fast. Only rice gives enough security."

There are signs, though, that pressure on villages inside reserved forest may be stepped up also in Mae Hong Son Province. Just after the last field visit, we received reports that army and police units have toured neighbouring Mae La Luang and Mae La Noi Sub-districts and confiscated large amounts of wooden planks. They seem to have been rather lenient with people who could convince them that these planks were used for building their own house, but arrested others who seem to have been engaged in logging for commerce. At the time of writing this report, these law-enforcement units have entered Tambon Mae Tho. However, their work seems to be temporarily put on hold because army units have been moved to strategic positions in towns in the wake of the military coup of 22 May 2014. Furthermore, the Royal Forest Department is presently conducting consultations with civil society on a new forest conservation strategy which, according to the limited information so far received, does not differ much from the old "fence-and-protect" approach, and many civil society organizations are worried that this will lead to a renewed tightening of the RFD's grip on forests and the strict enforcement of forest conservation laws.

In other provinces, and above all where protected areas have been established, strict law enforcement has already lead to a drastic scarcity of land and consequently the complete abandonment of shifting cultivation. In Tambon Mae Tho, there is apparently no general scarcity of land yet, and most households that depend on shifting cultivation are able to maintain sufficiently long fallow cycles. In fact, there are indicators of relaxed pressure on swidden land. At the same time, there is an observable trend toward an expansion of land use for cash crops which appears to be leading to scarcity of certain types of land.

2. On cycles, migration and education

Most of the households in the four villages have enough swidden land to maintain cycles of one-year cultivation and the required six to eight years of fallow for controlling weed and restoring soil fertility before a new cultivation cycle can start. By virtue of their joint (family) ownership of swidden land, households have priority use rights over an average of around six plots of swidden land (see Table 8), and there is always the possibility to get the permission to use a plot of land from another family in the village. Many pointed out that there is more land available for shifting cultivation these days because fields are smaller than in the past. Often, only a part of a swidden plot is brought under cultivation and the rest is left fallow for a longer period of time. As briefly discussed earlier, there is a lower risk of damage of fields by wild animals unlike the past and, as pointed out by some of our informants, there is no need to make large fields in anticipation of a partial loss of the crop. The other reason often mentioned is that less rice is needed because households are smaller due to many young people leaving the village to study and work.³⁵

	No. hh surveyed	Households with swidden land				Number of plot numbers owned		
		No. hh	% of all hh	Total no. of plots	Average no. of plots owned	1-3 plots	4-6 plots	7-11 plots
Mae Cho Tai	25	24	96.00%	164	6.8	0	2	22
Mae Tho Noi	19	15	78.95%	90	6.0	4	1	10
Mae Tho Tai	30	23	76.67%	60	2.6	19	3	1
Mae Um Phai Tai	25	23	92.00%	159	6.9	4	2	17
Total	99	85	85.86%	473	5.7	27	8	50

Households surveyed in the four villages are small, on average comprising only 3.55 persons (median 4).³⁶ Most households in the four villages surveyed are composed of nuclear families, only a few have extended families that may include a married daughter and her husband, an elderly father or mother or other close relatives. As reported elsewhere for the Karen of Thailand (e.g. Delang 2003), there is a trend toward having fewer children too in Tambon Mae Tho. The overall average number of children of all women is 3.29 (median 3). The average number of children of women between 35 and 49 years of age is 3 (median 3), while women of 50 years and older have an average of 4.56 children (median 4).

As long as children attend elementary school or lower secondary school, they can stay at home. For most of those who go to lower secondary school in Mae Tho Klang, a school bus takes them back and forth to school, those from more remote settlements stay during the week at a boarding house run by a catholic priest and nuns. But all those who seek higher education and by far most of those in search for employment have to leave the sub-district and even the province.

Table 9 below provides an overview of the survey results on the actual residence of children 15 years of age and above. These include all those who are married and have set up their own household either in their own village or elsewhere, those who left temporarily or permanently for studies and work.

	No. of hh	Children ≥ 15	In village	%	Village same province	%	Outside province	%	In cities (all)*	%	In Bangkok	%
Mae Cho Tai	25	87	32	36.78	10	11.49	45	51.72	45	51.72	16	18.39
Mae Tho Noi	19	39	15	38.46	5	12.82	19	48.72	18	46.15	12	30.77
Mae Tho Tai	30	50	27	54.00	2	4.00	21	42.00	21	42.00	5	10.00
Mae Um Phai Tai	25	69	26	37.68	7	10.14	36	52.17	28	40.58	16	23.19
	99	245	100	40.82	24	9.80	121	49.39	112	45.71	49	20.00

**This includes the district capital Mae La Noi, which is just a small town, where students attend higher secondary school.*

The table shows that only 40.8 percent of all the offspring aged 15 years and above lived in their own village at the time of the survey. 9.8 percent lived in a village in the same province (either married or working there), but almost half (49.4 percent) of them lived outside the province, most of them studying and working in cities.

Our data confirm what many expressed with some concern in interviews: Many people have left the village to try and make a living in cities. With fewer people staying in the village, pressure on land in general, and swidden land in particular, is lowered. However, what cannot be assessed at this moment is the long-term trend. An in-depth investigation of migration patterns over a longer period of time would be necessary in order to assess the impact of outmigration on demography and land use in the research area, something the limited scope of this study did not allow. People's assessment was that, overall, more young people will try to make a living in towns and cities. Some elders commented that today, many of the young do not want to lead the hard life of a farmer in the village and are leaving with the hope to find a job somewhere in town. Many parents also want their children to have an easier life. For that, as all over the world, obtaining a good education is considered the key. In a group interview with youths of Mae Um Phai Tai Village, a young man summarized the prospects of today's youth in his village: There are those who are good in their studies; they will get a job in the city. Those who are not good in studies will go back to the village and work with their families like everybody else. And there are those who don't bother to get an education, those who prefer a simple and easy life in the village. The youth we talked to that evening all agreed that only a few would make it in the city and stay there for good. Many, they say, will eventually return since settling down in the city is not easy; everything is expensive and finding well-paid jobs is difficult. People will continue to go to the city and do odd jobs when they are young and strong, but after a few years they will go back to their village. Or they go back to the village when they are getting old. The general opinion of the youth was that only very few will do well in the cities, most will just get by and a few will have a hard life and may not even be able to earn the money needed to return to their village.

Not all of the children who moved to the city are able to earn enough money and support their parents and siblings at home. Many, we were told, barely have enough for themselves, especially once they are married and have their own children. Around half of all households (48 of 99) have children working outside the village; 35 of these (73 percent) receive financial support from them, on an average of 9 860 THB (US\$296) per year. Since most households spend between 100 and 600 THB per week just for food (see Table I.1 in Appendix I), this amount can indeed make a difference for households that are short of cash. However, those whose children are undergoing higher education have much higher monthly cash expenses, of up to several thousand Thai Baht (see further below). The contributions from their older

sons and daughters certainly help, but are not sufficient for many and usually it doesn't last. Once they get married and have their own families, most sons and daughters do not have much left to share. Only those who complete education and after that succeed in getting a well-paid job in a company or, most desired, a permanent government job will be able to continue supporting their parents and siblings. However, in people's own assessments, the chances of getting such jobs are slim. A young woman told us that after graduation, maybe three out of ten in her group were able to get good jobs. This is supported by our own, if limited, survey data, according to which out of 46 children who finished higher education, three got employment in private companies and nine in the government.³⁷

Neptotism and corruption are considered the main problem when looking for jobs. Those without connections and/or money for bribes have little chance to get a good job, especially a government job which is the most attractive because it includes the prospect of eventually getting a permanent position that not only means income security and a pension after retirement, but also comes with other benefits like access to cheap government loans.

Despite the rather small chance of getting such jobs, parents are pushing their children to study hard and are making sacrifices in order to raise the money needed to pay for their higher education. Parents have estimated the costs of allowing a child to graduate to be between 500 000 and one million THB (US\$15 000 to US\$30 000), depending on the college chosen (not including expensive private colleges). Poor households can apply for education loans for children in higher education, which have to be paid back over a 15-year period after their education is completed. These loans amount to about 35 400 THB per year (for term fees and monthly expenses), which, however, is not sufficient and parents have to find money to cover the difference. Expenditure estimates for 25 households with children in higher education show that, depending on the level and the place of studies, they spend between 500 and 9 000 THB per month for children's education, the overall average being 5 380 THB.

For those with children in higher education, expenses for school fees and costs of living put the heaviest burden on their domestic economies and increase the pressure to earn cash. As we have seen in the previous chapter, overall, expenses for food rank at the top on any short list of major expenses. But it is education that ranks top among those households who presently have children attending higher secondary school, college or university. Of 33 households with children in higher education, 19 ranked education top, eight ranked it second among all major household expenses. Of these 33 households, 16 took loans to cover all or part of education expenses (see Table I.3 in Appendix I).

Education has often been mentioned as the main reason for increasing cash needs in Tambon Mae Tho. Over the life cycle of an average household, it may indeed be one of the largest investments people make. There are of course other larger expenses like when someone buys paddy land or a car. With improved road conditions and affordable prices for motorbikes, people generally became more mobile and regularly spend money for transport. Many consumer goods like electronic and household equipment also became more affordable and almost every household owns a TV and other electronic equipment (see Table I.4 in Appendix I). However, as we have seen, there is also an increasing need for cash to meet consumption needs. Increasing scarcity of wild food resources, changing consumption preferences and the easy availability of processed and fresh food have resulted in higher regular expenses for food.

As discussed in the previous chapter, the average household is engaged in various economic activities that help cover their cash needs. These include selling livestock, handicraft, forest products, part-time employment, daily wage labour, petty trading etc. But today, the single most important source of cash income is the growing of cash crops, especially corn.

Growing corn represents a major shift in livelihood strategy and transforms the way people try to ensure food security. However, the importance of corn cash cropping goes much beyond its role in the domestic economy. There are indications that it may lead to profound changes in the local economy and with it the relationship between people and the land and among people themselves.

3. The rising corn

A few households started to grow cash crops about five years ago. Some experimented with soybeans, but failed. The yield was not good and it was hard work to thresh the beans. Realizing that soybeans were not a suitable crop for their area, they switched to corn. People from Mae Tho Tai had visited Mae Chaem District where they observed the rapid spread of corn and after returning home a few of them tried to grow it themselves. A woman who was among the first in Mae Tho Tai to try and grow corn told us that the first year was a failure since they didn't know how to correctly apply fertilizer and chemicals. She invested 5 000 THB but made only 2 000 THB. So they want back to Mae Chaem to learn how to do it properly.

Between March and May, fields are prepared. Shrubs and larger vegetation are cut, dried and burned. If it is not an old fallow, cutting does not take much time. Then a strong herbicide like Gramoxone or Round Up³⁸ is sprayed to do away with any remaining plants. The corn seeds are dibbled in June and a softer herbicide of the Amide³⁹ family is sprayed once during the growing period to control upcoming weeds. Chemical fertilizer is applied two to three times in a cropping cycle, depending on the fertility of the soil. The corn is ready for harvest in December or early January.

After the first successful harvest, corn spread rapidly throughout the district since at that time corn fetched a good price and gave those farmers an income, which they have never had before. So, many others followed suit and by 2013, as mentioned in the previous chapter, 71 percent of all households surveyed in our study had planted corn. In Mae Tho Tai, where it all started, 95 percent of all households surveyed had planted corn in 2013. Corn cash cropping is taking root much more slowly in other villages, like in Mae Cho Tai where only 28 percent had planted corn in 2013. (For more detailed figures, on which this and the following paragraphs are based, see tables in Appendix II.)

Between 2012 and 2013, the number of households planting corn increased by 39.2 percent (from 51 to 71) and the total area planted with corn almost doubled: It grew by 98.6 percent from an estimated 229.5 to 449.5 rai. The average area per household planted with corn increased from 4.5 to 6.33 rai, an increase of 40.7 percent. But their enthusiasm didn't last long. The corn price dropped drastically in 2012, from 6 to 7 THB in 2012 to 3 to 4 THB. This still allowed making a profit, but the margin was much smaller than the year before.

Mr N.D. of Mae Tho Tai has planted corn since 2010 and has experienced considerable price fluctuations over the past four years. The table below compiles the information provided by Mr N.D.⁴⁰

Year	No. of sacks of corn planted	Price per kg	Income	
			Total	Per sack planted
2010	1	3.5	8 500	8 500
2011	3	5.5-6.2	40 000	13 333
2012	4.8	6.5	75 000	15 625
2013	6	3.5-4.0	52 000	8 667

In 2013, the price offered for corn was between 38.5 and 46.1 percent lower than in 2012. For Mr N.D., profitability dropped by 44.5 percent. Despite the price fluctuations Mr N.D. has been able to make a profit every year, even though it wasn't much when prices were low. Other people were less lucky. Allegedly, a few people had problems with soil quality and with rats and experienced such bad losses that they ended up losing money due to low corn price.

The small profit – or even losses – made because of the low corn price in 2013 made some people reconsider whether it is worth growing corn after all. According to our survey, only 47 of the 71 households who had planted corn in 2013 decided to grow corn again this year. A few were undecided but most others clearly said they

didn't want to plant corn again. Some of those who decided to continue growing corn pointed out that they did not have much choice simply because they needed cash, especially for their children's education.

As discussions with farmers in Mae Tho showed, people are well aware of the benefits of different forms of land use. For example, paddy cultivation is appreciated for the relative stability of rice yields, shifting cultivation for the diversity of crops and corn for the cash it brings. However, there seems to be an overrating of the actual value generated from corn cash crop fields, if all aspects are taken into consideration. This has a lot to do with the fact that, as we were told, many households do not keep detailed accounts of their expenses and income, and non-monetary benefits from different forms of land use are often not considered.

A short exercise with Mr N.D. led to results that surprised him, and which he felt would be very helpful in making decisions on land use in the future. The exercise was a simple comparison between shifting cultivation, paddy cultivation and corn cash cropping in terms of income per amount of labour invested. The estimated value of the rice crop was based on current prices for unhusked rice, and the value of the corn crop was based on the price at the time of harvest. For shifting cultivation, the estimated value of non-rice crops (vegetables and tubers etc.) was based on the amount of money spent in a week for vegetables during the time these need to be bought from the market. Cash expenses for inputs (fertilizer, herbicide, petrol etc.) were deducted from the income, and the net income divided by the amount of labour (in number of days of work) spent. This resulted in an estimated income in THB per day of labour invested in these three forms of land use. Table 11 summarizes the results of this exercise.

Corn indeed can generate high returns in years with high yields and a high corn price, much higher than paddy or swidden cultivation. But it shows considerable fluctuations, and its average return is not higher than that of shifting cultivation, if the value of vegetables is included. So, theoretically, people could choose to plant more or a larger swidden field for cash instead of corn. However, vegetable would be hard to sell and the value of swidden rice only is on average lower. Furthermore, the productivity of swidden rice also fluctuates considerably. It is the chance of getting a good price, 'hitting the jackpot,' so to say, that is attractive in growing corn.

While the majority of all households grew corn in 2013, almost 30 percent still did not. When asked why they did not plant corn like all the others, most replied that they did not have the money to buy the seeds and agrochemical inputs needed. A few, however, expressed their concern over the impact of the use of agrochemicals on the environment and people's health.

Table 11: Comparison of labour productivity of land forms

Paddy	
Net income per day labour 2013 (average yield)	289
Net income per day labour high yield	326
Net income per day labour, low yield	253
Shifting cultivation	
Net income per day labour 2012 (average yield incl. vegetable)	251
Net income per day labour 2012 (average yield rice only)	199
Net income per day labour high yield incl. vegetable	339
Net income per day labour high yield rice only	287
Net income per day labour, low yield incl. vegetable	192
Net income per day labour, low yield rice only	140
Corn	
Net income per day labour in 2013 (low price, good yield)	164
Potential net income per day high price and high yield	519
Potential income per day high price and low yield	273
Potential income per day low price and low yield	42

Environmental and health concerns

The use of agrochemicals for cash crop production spread rapidly since its introduction in the era of the highland development programmes in the 1980s. Opium substitution programmes promoted growing temperate vegetables, among others, which relied on heavy inputs of chemical fertilizers, herbicides and pesticides. In recent years, concerns over environmental and health impacts from extensive use of agrochemicals have increased. Lowland farmers are worried about chemicals in rivers, pesticide residues have been found in soil, food and breast milk; and there have been cases of farmers being poisoned because of careless handling of pesticides (Ciglasch *et al.* 2007: 54).

A positive correlation was found between the use of mineral fertilizer and market integration among Karen Villages in Chiang Mai Province, while the same study found that the intensity of pesticide use depended more on the type of crop than the level of market integration (Tipraqsa and Schreinemachers 2009: 50).

Forsyth and Walker (2008: 170ff) take a critical look at the prevalent discourse on agrochemical in the Northern highlands of Thailand and point out,

“These idealized characterizations of both landscape and people previously untarnished by modernization have influenced how agrochemicals are represented in public discussions. In this simplified narrative, chemically supported agriculture is framed as an

inappropriate presence in fragile upland ecosystems []. There is no room for alternative valuation if agrochemicals, such as their role in supporting poor farming livelihoods, nor is there room for considerations of the ways in which idealized images of pristine watershed forest and ethnic traditions might give an inaccurate picture of environmental and social processes in the uplands.” (ibid.: 171)

Forsyth and Walter are certainly right in reminding us to look at the whole picture and consider the advantages that using agrochemicals may have for poor upland farmers; and they are probably also right when concluding that the environmental impact of agrochemicals may have been somewhat overstated (ibid.: 190ff) and that it is more the impact on the health of the farmers themselves that gives reasons for concern (ibid.: 197).

The Thai government seems to share this concern and is monitoring the health impact of agrochemicals on upland farmers through regular blood tests. The test results of 2012 for Mae Um Phai Tai Village are as follows:

Table 12: Blood test results in Mae Um Phai 2012				
	No. of persons tested	Levels of contamination		
		Safe	At risk	Not safe
Mae Um Phai Tai				
Men	10	2	6	2
Women	18	5	10	3
Mae Um Phai Nuea				
Men	6	1	1	4
Women	18	3	9	6
All tested	52	11	26	15
		21%	50%	29%
Men	16	3	7	6
		19%	44%	37%
Women	36	8	19	9
		22%	53%	25%

Source: Mae Tho Health Centre data provided to the village head of Mae Um Phai

Of all the 52 persons tested, only 21 percent had safe levels; 50 percent were considered ‘at risk’ (i.e. at the threshold) and 29 percent were clearly not safe.

The health centre data for the other three villages was not available at the time of the fieldwork, but questions regarding these blood tests were included in the household survey. However, there were only a total of 32 respondents who were tested out of which 24 knew the result, although not in detail. It seems around half of them have safe levels.⁴¹

There is much awareness among the people of Tambon Mae Tho of the potential health impact of agrochemicals, not the least because some of them have been directly affected. In addition to many of those tested who have critical levels, other people who were interviewed also mentioned that they were having health problems due to the use of chemicals. Symptoms that were mentioned range from dizziness and headache to pain in arms and legs, sore throat, vomiting, and skin rashes. We were also told of the untimely death of two middle-aged men in Mae Tho Tai who had allegedly often been hired by others to spray their fields. The people we interviewed were convinced that their death was directly caused by overexposure to chemicals.

People we interviewed also told of fish and other aquatic animals that were killed after farmers had washed their herbicide sprayers in streams and creeks, and they expressed worries about their drinking water as corn-growing areas continue to expand. Some interviewees also observed the loss of domesticated plant species and varieties as a result of corn cash cropping and the increasing use of herbicides in swidden fields. Cornfields are monocrop fields; nothing else is grown there since the application of herbicides does not allow it. Because herbicides have also found entry into swidden farming fewer vegetables are grown there now. Only the larger vegetables and tubers like pumpkins, cucumbers, yam and taro are grown in patches since they are easier to avoid when spraying herbicides.

Using herbicides simply replaces labour. Ever since, the main limiting factor for the size of swidden fields has been the labour requirement for weeding. A couple can cut a new field in at most a few days, even in old fallow. But a swidden field has to be weeded at least twice, in most cases three times. Since children can help with this task, larger families can maintain larger fields. As already discussed, with reduced household sizes due to a drop in fertility and urban migration, less rice is needed, so swidden fields tend to be smaller. However, cornfields are made in addition to paddy or swidden fields and the average family would not be able to cope with weeds if they did not use herbicides. Furthermore, cornfields are used permanently and without sufficiently long fallow, therefore, weed control would be next to impossible without herbicides.

Soil degradation in the form of lost soil organic matter and hardening of the soil are often considered some of the most serious long-term impacts of agrochemical application (Forsyth and Walker 2008: 192ff). However, Walker and Forsyth ask us to be cautious and to properly study what evidence there actually is. They quote studies conducted in Northern Thailand that come to “relatively optimistic” conclusions regarding soil organic matter, and that there is “no reason to worry” as long as it “stays above a certain ‘critical level’” (ibid.: 193). As the quoted researchers acknowledge themselves, these ‘critical levels’ are difficult to determine, but due to the

generally high organic matter content of the upland soils in Northern Thailand, decline of organic matter “does not seem to be an issue of concern” (ibid.). The question is what time frame we are thinking about. The no-tillage (dibble) method of corn cultivation disturbs the soil much less than plowing and mineralization of soil organic matter is slower. However, without any addition of organic matter to compensate mineralization, it is unavoidable that the ‘critical level’ of soil organic matter is reached. Current cultivation techniques in which fields are burned and treated with herbicides do not add much organic matter except for the weeds that decompose or what is left in the soil from dead root systems of the previous crops. Under these conditions, at least a drop in inherent fertility and the need to increase fertilizer inputs has to be expected. A study conducted in the midlands of Phrae District, where corn has been planted on permanent fields since over 20 years, found that “Over 90 percent of surveyed midland farmers believe that soil erosion affects their land production negatively []. Furthermore, 67 percent claim that runoff and erosion are leaching the soil of valuable nutrients, with a negative impact on productivity, while 33 percent stated an increase in expenditure on fertilizers in recent years.” (George *et al.* 2009: 25f). Similar findings were made in a study on intensified land use of a former shifting cultivation community in Mae Pae watershed, Chiang Mai Province. The study concluded, “Significant soil erosion was also found, confirmed both by farmers and experimental data. The consequences of increasing use of fertilizers and pesticides have therefore negatively influence (sic!) on soil and water quality, perceived as decreasing also by the farmers.” (Aly *et al.* 2007: 49).

Evidence reported from farmers in the Hmong Village Huay Phueng Mai in Mae Cho Sub-district, where vegetable cash cropping has been practiced since decades, seem to confirm the possibility of going beyond the critical level. Allegedly, some farmers had to give up planting vegetables since the soils are too degraded. They planted lychee trees instead and are now trying to buy suitable vegetable cash-crop land in other villages. Reports of badly degraded soils that are no longer fit for cultivation after decades of intensive cash cropping were also received from Khun Pae in Chomthong District and from Mae Chaem District in Chiang Mai Province.

But the environmental impacts that were noticed by Mae Tho farmers are not limited to the application of agrochemicals. Cornfields are permanent fields, therefore, there are hardly any trees left in corn areas. The reason why cornfields are used annually and rarely left fallow is the need to have these fields close to a road. Corncobs need to be brought to the thresher and therefore, transport is a challenge because they are bulky and heavy. Where cornfields are not immediately adjacent to roads, sacks of corn are brought by motorbikes on small feeder roads or trails to the pickup trucks waiting on the road. Even this is not possible if the fields are too far away from a road or in rugged locations.

Because fields near roads are limited they tend to be used for corn permanently, which is possible due to the availability of labour-saving herbicides. In traditional swidden fields, some trees are not cut or they are cut in such a manner that the stumps soon grow new shoots again. On the contrary, permanently used fields become completely barren of any trees. Furthermore, we were told, patches of forest that were not used for swiddening before have been cut for cornfields since they were conveniently located near roads. Overall, people reported a loss of forest near roads and some found that their place “has become hotter as there are fewer trees left”. And, of course, as more and more land is used to grow corn, there is less land available for shifting cultivation. Thus there are two contradictory trends with respect to the availability of land for shifting cultivation: smaller fields require less land so more fallow is available, but increasing conversion of fallow land to permanent corn land reduces fallow for swidden fields. So far, corn farming has not lead to a decrease in swidden farming. On the contrary, as Table 13 shows, despite the considerable increase of corn production, the number of households engaged in shifting cultivation has also, though not as markedly, increased between 2012 and 2013. What will happen in the long run is difficult to predict, but through comparison with areas that have been involved in cash cropping for a longer period, it is possible to identify likely scenarios. We will return to this in the next chapter.

Table 13: Engagement in corn and shifting cultivation

	No. hh surveyed	2012		2013	
		Corn	Swidden	Corn	Swidden
Mae Cho Tai	25	6	21	7	22
Mae Tho Noi	19	15	15	18	16
Mae Tho Tai	30	17	16	26	19
Mae Um Phai Tai	23	13	11	20	16
Total	97	51	63	71	73

The introduction of herbicides into farming in Mae Tho is allegedly one of the reasons for the loss of agrobiodiversity. Today, fewer species and varieties of vegetables are allegedly grown in swidden fields than in the past. This seems to have much to do with the changing consumption preferences and the increasing importance of purchased food. A few people have started using selective herbicides (of the amide family) also in swidden farming, and there is a drastic drop of vegetables planted in these fields. Only the larger kinds of vegetables and tubers such as pumpkin, cucumber, yam and taro are planted in patches or at the edges so that they can easily be avoided when spraying herbicides. Corn cash-crop fields are mono-crop fields. Nothing else but corn is grown there because the repeated application of both non-selective and selective herbicides does not allow vegetables to grow.



Figure 5. Cornfield on steep slope near the road leading to Mae Tho.

Photo: Christian Erni

As we have seen, so far almost all households grow their own rice; the majority of the households do that, at least partly, on swidden fields, which are also the most important sources of vegetables. The importance of swidden fields for vegetable production has so far prevented the widespread use of herbicides in swidden farming. However, with increasing market orientation and the dependence on and/or preference for purchased food, this may change.

In comparing subsistence-oriented farmers with cash-oriented Karen farmers in Samoeng District, Delang (2003: 157) concluded:

“Subsistence-oriented farmers must earn the small amount of cash that they require from time to time in ways that are compatible with their subsistence economy. Earning cash must not compromise their ability to grow subsistence crops and to use the natural environment to obtain what they do not produce (such as timber to build houses and food to supplement their crops). Cash-oriented farmers can be less vigilant, and can afford to degrade the environment if they can earn sufficient cash to buy in the market what the environment can no longer provide.”

Besides the fact that the distinction between subsistence- and cash-oriented farmers is not clearcut, we believe that few of the Karen of Tambon Mae Tho would think that they actually have a choice. Getting into cash cropping may for some be

motivated by expectations of becoming a little more wealthy – becoming rich is out of the question altogether – but for most it is out of sheer necessity. Most of the villagers of the four villages we worked with are poor and it is the pressure to make ends meet that makes them grab any opportunity to earn the cash, which they can't do without any longer.

There is still a strong emphasis on rice self-sufficiency but people do, even though often at a low scale, produce commodities. Therefore, we believe it more fruitful for our analysis to make a clear distinction between subsistence production, as modes of production which do not have any market involvement, and, what in Marxist theory is called, simple commodity production. This concept is more useful because it not only takes production and consumption into account but also looks at ownership of the means of production.

“The marxist account of [simple commodity production] as the embodiment – distorted or well preserved – of an older form of precapitalist production is usually presented as follows: much like independent subsistence workers, simple commodity producers own their means of production; unlike them, however, they do engage in commodity transactions and are dependent upon the corresponding market mechanisms for the acquisition of those goods and services which they have not produced but need. Thus they sell what they produce and do not use and buy what they need but do not produce.”
(Chevalier 1982: 93)

As we have tried to show, while there is a strong focus on rice self-sufficiency, there is variation in terms of reliance on vegetables from swidden fields, the gathering of wild plants, fishing and hunting. Seasonal changes in dependence on food from the market correspond to the seasonal changes in availability of non-rice food products from swidden fields, forests, streams and rivers and can be taken as an indicator of a production logic characterized as simple commodity production. As one of our informants put it, “People don't keep account of expenses and income; they just go to earn money when they need, or they borrow”.

People we talked to in Tambon Mae Tho are pretty much aware of the environmental and health impacts of corn cash cropping. However, they seem to be less aware of other consequences, potential or already materialized, which are less conspicuous. While changes in the landscape are easy to see when corn cash cropping is on the rise, barbed wires around a few fields here and there are noticed only by those living close to them. Small, incremental changes do not attract attention if they don't impact an individual directly. This applies to changes in the environment – like the gradual degradation of forest over time – but even more so to relations among people. Furthermore, even when the impact of actions and particularly the negative consequences are understood, it does not mean that corrective changes will necessarily follow.

As a farmer from Mae Tho Noi put it, “People are strange, like a machine. They know it’s not good but they don’t stop”, and his friend added:

“There is no way back from corn; it’s like a monitor lizard climbing a tree. It cannot go backward, it has to continue climbing all the way to the top.”⁴²

4. Farmers, fences, threshers and traders: The political ecology of corn

Using a random sample of 240 farm households, the study by Tipraqsa and Schreinemachers (2007: 43) in Chiang Mai Province showed that “contrary to widespread belief—Karen farm households are well-integrated into markets”. In our own study in Mae Tho District of Mae Hong Son Province, we were not in the position to assess the extent to which households are *integrated* into the market, according to the criteria applied by economists like Tipraqsa and Schreinemachers. What we were able to show is that the Karen of Tambon Mae Tho are at least increasingly *linked* to the market, both with respect to consumption (buying goods) and production (selling cash crops). Crucial is to what extent the link to or integration into the market determines the logic of production, i.e. to what extent production is market oriented.

“Market-oriented farming is driven by making profits through selling farm products in the market on a regular basis. Market-oriented farms can still be strongly linked to a farm household, but the goals and decisions for the farm are less directly influenced by the goals and decisions of the farm household. They are more influenced by markets, prices of produce and the costs of farm inputs.” (Kahan 2013: 12f)

As we have shown in the preceding chapters, most households are primarily concerned with self-sufficiency in rice and we argued that their form of economy could best be described as simple commodity production. A key aspect of simple commodity production is that producers own their means of production (Chevalier op. cit.). Legally, most of the land used by the Pgaz k’nyau in Tambon Mae Tho is owned by the state, but, de-facto, access to land, the main means of production in these villages, is regulated by customary law. Table 5 shows that most farmers planted swidden and paddy rice on their own land. They used land belonging to somebody else only in two of 51 cases for paddy and five of 71 cases for swidden. In corn production, we find a similar pattern, as Table 14 shows.

An important fact is that the people who used other people’s land, either for rice production or for corn production, were not required to pay rent. Furthermore, no household covered by the survey was landless. All at least owned paddy fields or (sometimes jointly) swidden land, or had permanent fields or gardens. As we have shown in the previous chapter, around 44 percent of all households plant rice on both

Table 14: Ownership status of corn land used in 2013

	Own land	Other people's land
Mae Cho Tai	7	0
Mae Tho Noi	19	0
Mae Tho Tai	27	1
Mae Um Phai Tai	18	3
Total	71	4

paddy and swidden and almost all did that on their own land, and thus, own both paddy and swidden land. Likewise, those who own permanent land for corn also own paddy land, swidden land or both. Therefore, all households own the main means of production that alone can ensure livelihood security in an agricultural society.

While nobody is landless, land ownership is unequal. In the previous chapter, we have shown that around 40 percent of all households do not own any paddy land, the most valuable land and productive resource for the Pgaz k'nyau. Among those 60 percent who own paddy land, the majority (63 percent) own between two and four rai or between 0.32 and 0.64 ha (see Table III.1 in Appendix III). Only four owners (two each in Mae Cho Tai and Mae Um Phai Tai) have 10 rai or more (10, 12.5 and two with 15 rai, or 1.6, 2 and 2.4 ha respectively), and jointly they own 11 percent of all the paddy land. Thus, ownership of paddy land is fairly well distributed among those who own any.

Eighty-six percent of all households own swidden land (see Tables III.2 and III.3 in Appendix III). All others own either paddy or permanent land, or both. Overall, 59 percent of those who own swidden land have (shared) ownership of enough swidden land to maintain at least a full seven-year cycle. This means the others have no direct access to sufficient swidden land and have to borrow land once in a while.

However, it is revealing to have a closer look at the variations between villages in Table III.2 in Appendix III. In Mae Cho Tai, Mae Tho Noi and Mae Um Phai Tai, 67 percent, 74 percent and 92 percent respectively of the households who own swidden land have enough for a full cycle, or more. In Mae Tho Tai, only one household in the survey owns more than six plots. Most own between one and three plots. The total average area of swidden land owned in Mae Tho Tai is also considerably smaller than elsewhere. With 24.69 thang seeds (or about 18.52 rai), it is only about half of what people have in Mae Cho Tai and Mae Tho Noi, and about one-third of the average swidden land owned in Mae Um Phai Tai (see Table III.3 in Appendix III).

People from neighbouring villages commented on the scarcity of swidden land in Mae Tho Tai, saying it is a result of the increasing conversion of swidden land to corn land. But a look at the figures for the average area of permanent fields owned by the households covered by our survey in Table IV.4 in Annex IV show that it is not significantly higher in Mae Tho than in other villages. With 7.97 rai, it is only 4.6 percent larger than the average of all four villages or 7.2 percent larger than the average of the three villages excluding Mae Tho Tai itself. This indicates that there is an overall shortage of swidden land, which is not necessarily caused by, but may be exacerbated by the conversion of swidden land to permanent land. An unavoidable consequence will be a shortening of the swidden cycle and the resulting difficulties in maintaining soil fertility and coping with weeds. An increase in the application of agrochemicals is also a very likely result.

Swidden land is scarcer in Mae Tho Tai than in the other villages, but, as the tables in Annex IV show, ownership of swidden land and permanent fields is not more unequal than in other villages. There, similar to all villages, most people own one plot of corn land, some two, and a few more than two. More important, the overall area owned is also fairly equal.

In the context of the local customary law regulating access to swidden land briefly described in the previous chapter, the question we have to ask ourselves is what 'ownership' of permanent fields actually means. Just like swidden fields under cultivation, cash crop fields are considered as belonging to the people cultivating them. The difference is that since they are cultivated permanently, they, at least in theory, do not go back to the pool of collectively owned swidden land available to other family members, or village members. We write here 'in theory' because cash cropping is a fairly recent development and, since cash-crop land is (former) swidden land, permanent individual ownership rights over it are not yet clearly recognized and thus contested. Even though a kinship group's prior use rights over swidden plots are recognized and respected, there is also a strong sense of collective ownership over fallow land and that it should not just be open for anyone to grab. Thus, people reacted with consternation as fellow villagers started to make barbed-wire fences around plots of land. The latter justified this within reference to customary law, i.e. prior use rights they inherited from their forefathers who had allegedly opened the land. In another case, land was enclosed to which another kinship group claimed priority rights, and while pressing the claim, the 'encroacher' retorted they should present a land title, if they had any. An indicator that ownership of corn land is still not yet fully individualized like paddy land is that none of the people we interviewed knew of any case of corn land being sold. The reason for that cannot be abundance because, as we have seen, there have already been conflicts over corn land.

Conflict over land is nothing new. There have been competing claims over particular swidden areas in the past too. Now, conflicts seem to be increasing, even between villages as some were planting corn on land claimed by the neighbouring village. Some of our informants maintained that in the past, village boundaries were clear but that they are not well respected anymore. In the context of the increasing value of limited cash crop land and an overall increasing scarcity of land, boundaries and claims as well as the way they are legitimized appear to be re-negotiated. And there are some who have more clout in this than others.

Erecting a barbed-wire fence is costly. The people who have the means to do so are the few wealthier and politically influential ones in the village. It is these people who are able to buttress their claims over land with their wealth and the power they hold in the village. Holding a government position, such as that of the village head, TAO member and above all, the position of the TAO mayor, not only gives a regular income but also provides the possibility for 'extra income' in the form of bribes. Until recently, there haven't really been any opportunities for entrepreneurship aside from running small stores, food stalls and, the most lucrative, a rice mill.⁴³ Cash cropping has changed that. There is an increasing demand for agrochemicals and equipment like sprayers etc., and corn needs to be threshed and transported to the large buyers in towns. Currently, in the four villages covered by our study, there are three corn threshers operated by two owners. Both are corn traders and are also selling agrochemicals; one of them owns the largest shop (that sells other things too) in the sub-district.⁴⁴ They sell the purchased corn to a trader, who is also a *Pgaz k'nyau*, in Mae La Noi town, and from there the corn is brought to and sold in Lamphun.

Farmers have the option of having their corn threshed and transport it to and sell it themselves in Mae La Noi. Even though the price in Mae La Noi is better, only few people do that and most sell their corn to the owner of the thresher. When corn is harvested, most need to hire a truck to get the corn to the thresher. For that they pay 0.5 THB per kilogram (kg) (measured after it has been threshed). Threshing costs also 0.5 THB per kg. The owner of the thresher offered a price of 4.20 THB per kg of corn, including threshing, at that time the price in Mae La Noi was 6 THB per kg. Transport to Mae La Noi was another 0.5 THB per kg. So it would have been possible to make 0.8 THB more per kilogram of corn, if it had been sold in Mae La Noi. However, the corn thresher in Mae La Noi does not pay immediately and people have to go back to get their money, so most did not bother.



Figure 6. Mobile thresher in operation. Mae Tho Tai Village.

Photo: Christian Erni

Unlike in other areas where cash crop corn is grown, there is no contract farming in Mae Tho District.⁴⁵ Corn traders – the owners of the threshers – are merely middlemen. They do offer credit or loans for those who don't have the cash to buy seeds, agrochemicals or equipment, but there are other possibilities to borrow money and only a few farmers were in debt with the corn traders. However, the two traders have considerable control over the local corn trade since they allegedly have a silent agreement on the price they are paying for corn, and don't allow other traders to buy corn unless they also offer the same price. It seems this is how they are pretty much able to keep their monopoly for buying corn. Corn farmers are not happy about this situation. Furthermore, in 2013, corn threshers could barely cope with the demand and some farmers had to wait for many days until they could have their corn threshed. Of course, the owners of the threshers give priority to those selling the corn to them; a subtle way of maintaining control over the corn trade in the area.

We were not able to establish how much corn traders lost when the corn price dropped in 2012. In any case, it is more likely that the producers were hit much harder, since traders pass on their losses as much as possible to the producers. Commodity price fluctuations are of course determined by changes in supply and demand on the market. In 2013, it was apparently a drastic change in the demand that

made the corn price tumble. A news report from September 2013 explains: “There was an excess maize production in domestic market due to the closure of a private company, which earlier bought maize at 800 000-1 000 000 tonnes each year. The country’s total maize production is 4.8 million tonnes.” (Global Times 2013)

There is little farmers can do to cope with uncertainties in the market as long as they are producing a single cash crop. So it does not come as a surprise that after the price drop for corn in 2013, many of those we interviewed decided not to grow corn anymore, and some of them stressed that security lies only in rice.

The shift from collective to individual ownership of land among indigenous shifting cultivation communities as a result of the introduction of cash crops has been amply documented (see e.g. Nongkynrih 2005, Li 2014). In all cases, this has led to increasing discrepancies in land ownership, i.e. the accumulation of land on one hand and loss of land, and even complete landlessness on the other hand. This is not yet the case in Mae Tho District, but people are aware that there is an increasing wealth gap between a few families and the majority in the village. Government jobs gave some a regular income and the possibility to invest. It goes without saying that those who had the considerable capital needed to buy a corn thresher and who now control the local corn trade are also politically well connected, i.e. they have close relatives or are themselves in the local government. Thus a few families have accumulated considerable wealth and power and they are determined to hold on to and expand both. One way of doing this is to consolidate and expand control over prime corn land. As we have tried to show, there are no serious inequalities with respect to access to land and resources in Mae Tho, yet. So far, all farmers have land, and most seem to have enough land. But there is at least one case where a young couple in Mae Tho Tai does not own enough land to grow both corn and rice. So they decided to grow corn only and buy rice. It is the only household we have come across that doesn’t grow its own rice. But it may represent an indicator of what is about to happen as land is getting scarcer and wealth and power gets concentrated in the hands of a few who are able and willing to defy customary law and enclose land over which claims are contested.

However, one informant pointed out that the wealthy people in his village are still helping others when they are in need of cash, and lend them money with no or very reasonable interest rates. At the same time, and maybe partly because of that, fellow villagers have difficulties confronting these more powerful families with respect to land enclosure. The Pgaz k’nyau generally have a rather non-confrontational attitude and thus have difficulties in dealing with these more assertive community members. Thus, a lot of ‘behind-the-back’ talking is going on while the problem is not directly and collectively addressed.

At least some people in Tambon Mae Tho are aware of the potential problems of land enclosure as much as they are aware of the environmental and health impact of corn cash cropping. Many are worried, but there is also a sense of powerlessness in the face of these changes and the underlying forces driving them. People we interviewed pointed out that there is a need to discuss all these issues collectively, and to decide on how to deal with them. However, it looks like this is not happening anywhere, and there are also strong interests that do not want this to happen.

5. Maps and contested futures: Governance challenged

Community affairs are supposed to be looked after by the Pho Luang, the village head, with the help of a village committee. The village head is the elected leader of a Moo Baan. In the past, it was an appointed position and the Pho Luang was put there to ensure government control rather than to have someone representing the interests of the villagers vis-à-vis the government and the outside world. It was changed into an elected position with a five-year term under Democrat Party rule in 1992. Recently, it was again changed in 2008 into an elected but permanent position until retirement, unless unseated by the District head (Nai Amphoe) in response to petitions from the villagers. Just like TAO membership, the position of village head is hotly contested. Vote buying in various ways is standard and without it nobody seems to stand any chance of getting elected. All over the rural areas in the country, local government positions are some of the very few possibilities of employment in the villages, and they are much desired because of other 'financial benefits' they offer. Graft and corruption are rampant and widely accepted in the country (see e.g. The Nation 2009, Warsta 2004). Thus, rent seeking is a strong motivation for running for government office. Furthermore, elections for the village head and TAO are highly divisive and the divisions often remain after elections are over. Often whatever divisions may have existed prior to the election are deepened afterward.

Village heads call for village meetings whenever there is a need for information sharing and discussions. Often, these meetings are only called for in connection with government matters, like when people need to be informed about government projects, elections etc. A Village Committee (Khanakamakaan Moo Baan) is supposed to assist the Pho Luang. It can have between nine and 15 members. Government officers (like teachers) and TAO members have to be part of it, the rest can be chosen by the Pho Luang. They are supposed to deal with six subjects: education, culture and religion, development planning, environment, finance and governance. The village committees also administer the funds provided directly to villages under the SML programme.⁴⁶ However, in many villages these committees are allegedly not functioning. As one of the Pho Luang complained, when he called for the first committee meeting only a few showed up. Later he offered some food and drinks at the meeting, but some still didn't attend.

The creation of the TAO and elected Pho Luang was supposed to have been an act to decentralize governance and make it more participatory. However, many if not most people still continue to see it as a tool used by the government to control people, and for many of those holding positions, an opportunity to further their own and their family's interests. There are apparently only few communities in which the intended participatory, bottom-up governance is really functioning. It happens where committed and responsible leaders were able to get elected or where civil society organizations such as Watershed Conservation Networks with their village-level committees have mobilized people around critical issues such as land rights and environmental conservation. Often, the two are closely connected as leaders of civil society organizations get elected into local government positions and when non-governmental local resource management committees are drawing up and actively enforcing rules and regulations for land use and other matters.⁴⁷

The importance of good leadership has long since been recognized by the Pgaz k'nyau. One of their traditional songs goes:

Pgā pgā àu' hsau yit' sei
Yihpā dó' kai yì hasau hsei

*"If the elder building up the village is not doing it well,
 a big village will become a Tailor Bird [poor]⁴⁸ village"*

Before the expansion of state administration into the hills of Northern Thailand, Pgaz k'nyau communities were governed by hereditary leaders, the *Hi Hko*. They were both spiritual and political leaders, in charge of guiding and holding major rituals, facilitating decision-making and conflict resolution. The latter were done in consultation with other elders of the community. The institution of the *Hi Hko* disappeared with the introduction of Christianity. In some respects, priests and catechists replaced them, but they never assumed the same role because not all villages had one and most were only concerned with spiritual matters. So it seems that, as argued above, under the present state of administration, local governance in many villages is weak or virtually defunct.

The fact that the Pho Luang and the Village Committee are mandated to work on, among others things, development planning, it should offer the opportunity to have a collective discussion on the problems emerging in the wake of corn cash cropping. But, this has not happened yet in any of the four villages we worked with, even though many people, among them Pho Luang and TAO members, expressed the need for such discussions.

However, some steps in that direction have been taken. Upon invitation of one of the Pho Luang, IMPECT, a Chiang Mai-based NGO, participated in meetings in

two villages to discuss the possibility of community mapping. For several years now, IMPECT has supported indigenous communities in mapping their village territories with two purposes: to give them a tool with which they can make claims over their community territories and to push for the recognition of their land and forest rights; and to provide them an opportunity to discuss current land-use practices, problems and challenges; do collective land-use planning and formulate corresponding rules and regulations.

While enthusiastically received during the initial meetings when the idea was presented, it soon turned out that not everybody was happy with the idea of community mapping. Rumors were spreading that the 'NGO people' do this only because they 'get a salary for it' and because they 'want to control the people'. It turned out that some people apparently fear that mapping and zoning of the village territory, land-use planning and the formulation of rules and regulations for land use and resource management will go against their interest. It has been suspected that some community members want to prevent open discussions on the issues of inter-village boundaries, enclosure of swidden land and environmental consequences of corn cash cropping because of the fear that they may not be able to continue using or occupying the land the way they want.

Thus, so far, village boundary delineation has taken place only in one village, in others the process has been stalled. At least, the community mapping initiative has provided the opportunity for some discussions, even if these haven't yet touched upon the most critical, core issues. However, the discussions on the mapping initiative have already revealed that there are diverging and conflicting opinions and interests regarding the directions land use, and thus, livelihood in the communities of Tambon Mae Tho should take. These diverging views find their expression in different opinions on the future of shifting cultivation, with some being convinced that shifting cultivation is there to stay, while others predict that it is bound to disappear. Likewise, preferences for the preferred type of land titles differ. In the three villages (Mae Cho Tai, Mae Tho Tai and Mae Tho Noi), 74 households were asked whether they would prefer individual or communal land titles. This is of course a hypothetical question because being part of a forest reserve means there cannot be any land titles, and there is still no firm legal basis for issuing communal land titles, even though this has been demanded by civil society organizations for decades and some steps have been taken in that direction. Nevertheless, asking this question remains relevant because customary law is *de facto* still applied in these communities, but, as we have tried to show, it is increasingly contested precisely with respect to the recognition of collective rights. Of the 74 households, 51 said they would prefer communal titles, the remaining 23 individual titles.

Being in favour of a communal title is not an expression of a wish to collectivize all land rights but rather about regulating access to and rights over land at the village level and thus a statement in favour of continuity in upholding and applying customary law. It also tallies with explicit confirmations of their identity as Karen (or Pgaz k'nyau) and the determination to uphold a distinct identity, a 'Karen way of life', no matter how much it is changing. In our group discussions with youth in Mae Um Phai Tai, we asked them whether they wouldn't prefer to have a job in the city because life as a farmer is hard. In response, there was the general sentiment that they 'belonged to this village' and are ready to live here, even if they have to work hard. One of them, a young man named Pha Thi explained: "Our parents worked hard, so I can work hard too. Nobody ever died of hard work."

V. A better life, after all? Some conclusions and recommendations

One of the last questions we asked in our household survey was simply: "Do you think life is better now than in the past?" It was specified that we are referring to the time when they were teenagers. Due to age differences of the respondent, the time span this covers differs considerably among them. However, most could look back to at least 20 or 30 years, the period of time during which the developments took place that brought about the most profound changes in livelihood and food security of the people in Tambon Mae Tho.

The result of the survey is very clear: most of the respondents (73.5 percent) said they have a better life now than in the past. They pointed out that life is more convenient; there is enough food, it is easier to earn cash for buying the things they need, and there is electricity and a good road so they can travel more easily.

Table 15: Self-assessment of quality of life

	No. hh surveyed	Life is better	Not better	Undecided
Mae Cho Tai	24	16	1	7
Mae Tho Noi	19	18	1	
Mae Tho Tai	30	16	14	
Mae Um Phai Tai	25	22	3	
Total	98	72	19	7
		73.47%	19.39%	7.14%

This confirms one of the main findings of our study; there is more food security now. In most years, people get enough rice to cover their needs, and access to food from the market allows them to compensate for shortfalls in food production, especially vegetables, meat and fish, and to sell crops to earn the cash needed for that and other expenses, especially children's education. Shifting cultivation plays a vital role in ensuring rice self-sufficiency and in providing the bulk of vegetables for home consumption, and many people interviewed said that for this reason shifting cultivation would be there in the future. Fallow fields and the forest are important sources of a broad range of food and other products for daily use. Cash is earned in many ways, but since a few years, cash crops, and above all corn, have become the main source of cash income.

Government services and infrastructure, such as credit, basic health care, roads and electricity have been critical for the improvement of overall living conditions in the villages of Mae Tho. It is above all the all-weather road granting access to the market, both for buying goods and selling products, that has made a big difference.

As briefly mentioned earlier, Tipraqsa and Schreinemachers (2007: 43) also found that the Karen households studied in Chiang Mai Province are integrated into the market with respect to acquisition of inputs, sale of products and buying consumer goods. They concluded that their results "broadly confirm other studies that show that agricultural commercialization improves farm productivity and household well-being", but they also point out that "In spite of these positive developments that accompany agricultural commercialization, there are concerns about sustainability, especially in relation to pesticide use, soil erosion, loss of biodiversity, deforestation, and water shortages" (ibid.).

It is precisely these concerns that add more than a shade of grey to the otherwise rather rosy picture we could draw for changes in livelihood and food security in Tambon Mae Tho over the past decades. The majority of those 19.4 percent of the respondents who do not think that life is better now than in the past mentioned precisely these problems: the degradation of forest, loss of wild resources and chemicals in food, as the reasons for their judgment. Some of the respondents couldn't decide whether the advantages outweigh the negative impacts of change.⁴⁹ Many of those who found that they have a better life now also pointed at the same drawbacks of change.

However, nobody mentioned problems with erosion and soil fertility. This is most likely because these problems have not yet emerged since permanent field cash cropping began only a few years ago and its impact on soil quality is still limited.

Overall, there is much awareness that having a better life comes at a price. Dependence on regular cash income creates new kinds of insecurities, and some of our

interview partners expressed that today people worry a lot about money. Their livelihood strategy is still a simple commodity production with rice self-sufficiency from paddy and shifting cultivation at its core. In this 'dual economy' shifting cultivation and paddy fields are providing a safety net that allows engagement in more risky, cash-oriented production.⁵⁰ However, the cash crop part of it is gaining importance and it becomes more challenging when people get into debt.

Aly *et al.* (2007: 46) found in their study in Karen Villages in Chomthong District:

“The constant dependence on the credit system is evidenced by the annual cash flows of the case studies []: firstly, the income from cash crop sales comes temporally after the main expenditures that are for agricultural inputs [] during the months before crop production []; secondly, the income generated is not big enough to pay back the cost incurred the same year plus accumulating cash in order to buy the inputs of the following year, even in a good year [].”

And they conclude (*ibid.*: 49):

“On one hand, cash crops introduced liquidity and increased considerably the production costs. On the other hand, scarce monetary resources forced the farmers to take loans in order to buy the agricultural inputs. Moreover, they have experienced difficulty repaying the loans due to the high variability of yields and market prices. This dilemma has put many farmers in a vicious circle of indebtedness. From the present study the actual economical situation of Ban Bon Na farmers seems to be hardly sustainable.”

As we have seen, 66.7 percent of all households surveyed in the four villages have debts, on average of 34 208 THB. This is more than the average income made with corn in 2013, which was 30 847 THB. Levels of indebtedness of course vary among households, but also among villages. Household debts ranged from as little as 1 000 THB to 160 000 THB. Mae Tho Tai, where cash cropping has been practiced the longest, has the highest number of indebted households and the highest level of debt of the four villages surveyed. Almost 77 percent of all households have debts averaging 44 870 THB. More significantly, the median is 40 000 THB (while the median for all four villages is 20 000), indicating that more households have debts at around that level. The average income from corn in Mae Tho Tai, as the main source of cash, is only 32 580, indicating a considerable gap between the level of debt and the level of income.

Several of our interview partners who do not have debts mentioned that they had debts before but had paid them back. With the existing level of indebtedness and the high probability of considerable corn price fluctuations, it is very likely that many will end up being caught in a vicious cycle of continuous loans and debts as described by Aly *et al.* for other Karen Villages.

Thus, while market integration has improved the overall living conditions of Pgaz k'nyau farmers in Tambon Mae Tho, they are confronted with sustainability challenges on two fronts: sustainability of land use in the context of intensified, permanent cropping, and household budget sustainability in the context of increasing debts. The danger of long-term loss of soil fertility and the threat of falling into a debt trap are undoubtedly the biggest risks for livelihood security for the farmers of Tambon Mae Tho.

In Chapter I, we quoted a definition of sustainable livelihood, which says that, "A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base." (IRP and UNDP 2010: 1) The steep drop of the corn price in 2013 has undoubtedly caused stress, and for some even shock, from which those who had taken big loans may have difficulties to recover quickly. Price fluctuations are an inherent risk of commodity markets, but as long as a household economy is sufficiently diversified and is able to provide for the basic needs of a household, such ups and downs can be cushioned. The current simple commodity production approach centred on rice self-sufficiency that is still prevalent among the Pgaz k'nyau in Tambon Mae Tho provides that security, and with it a level of control over food production which others call 'food sovereignty'.⁵¹ Whether and how long this will last, given the uncertainties with respect to land and resource rights, is difficult to assess. With increasing cash cropping and a still growing – if slowly – population, an equally critical issue is sustainability of the natural resource base.

So far, only a few people are concerned with environmental risks, but many worry about money. The dependence on cash income has led to a feeling of vulnerability and insecurity. It does not come as a surprise that the only household covered by our survey that does not produce its own rice was one of the households that did not think life is better now than in the past. They explained that in the past people "did not have to buy food, did not use chemicals. There was more freedom."

One of the TAO members in Mae Tho Tai expressed sentiments that others also shared in their discussions with us, sentiments of nostalgia, a sense of lost freedom by those who have to worry about money all the time. He said that there are still those 'light headed' people in the village who grow what they need and don't need to buy anything and they have no debt. "They have no worries. If offered work, they sometimes accept, when they need a little money. At other times they say no, just lie down and relax. They have a free life."

Of course, few are those who would want to go back to the 'old way' because, overall, life has become more comfortable and more secure, even though there are new worries. What the TAO member and others have expressed is a certain feeling of being

trapped, of having no options but to continue with corn cash cropping. Improving livelihood security thus means broadening the range of alternatives for income, so that people have a choice and can maintain or regain self-determination over their livelihood. Since most of them are farmers, most people of Mae Tho will continue to depend on land for their livelihood. Therefore, even in the long run, livelihood security will depend on land-use practices that conserve soil fertility and also water sources, both of which are closely connected to forests.

A similar sense of powerlessness has been expressed with respect to enclosure and land grabbing and the implicit challenge of customary land ownership concepts by the more wealthy and powerful. There is a real danger that a *laissez-faire* attitude will result in deepening inequality not just of wealth and power in general, but also of access to land as the most important means of production and precondition for livelihood security of the farmers of Tambon Mae Tho. Scarcity of land or even complete landlessness has happened elsewhere in Karen communities in Thailand, it may also happen in Mae Tho.

Ultimately, the ability to adapt and to maintain sustainable livelihoods and equity will to a large extent be determined by future legal and policy frameworks and how they are implemented. Land rights of upland communities are still not clearly recognized and the recognition of collective rights such as community titles is still not a realistic option. There are signs of a resurgence of a stricter forest conservation regime that will impose restrictions on people's access to resources and land-use practices that would not allow for the adaptive flexibility needed to continue making a sustainable, secure and decent living in the hills.

Recommendations

Supportive intervention will have to take the following facts about Tambon Mae Tho as a point of departure:

- Self-sufficiency of rice still lies at the heart of people's livelihood strategies
- For many, shifting cultivation continues to be indispensable for ensuring self-sufficiency in rice
- There will be an increasing need of cash and thus dependence on producing marketable crops
- Corn will continue to be the main cash crop, at least for near future
- The present system of corn cash cropping is environmentally unsustainable
- Due to the volatility commodity prices (i.e. corn), farmers are in danger of falling into a debt-trap

- The state does not recognize land rights and customary law regarding access to land and resources are increasingly contested, which may add to insecurity and increasing inequality of access to land and resources.

To support the Karen of Tambon Mae Tho to address the key problems identified for a secure and sustainable livelihood, both short-term and long-term interventions should be considered.

Short-term support

1. Due to the considerable health and environmental impact of corn cash cropping, it should be considered as the first short-term intervention to further raise awareness of these problems and provide education on how to reduce health risks from pesticide use. For example, by minimizing the amount of pesticides applied and by using protective clothing and masks, etc. Furthermore, there is also a need to raise awareness of the potential long-term impact of agrochemicals and permanent cropping on soil fertility and of methods that can reduce the amount of agrochemicals applied and ways to add organic matter to the soil.
2. A key precondition for sustainable land use is tenure security, which in Thailand first of all means recognition of the rights over land and resources of indigenous communities. The delineation and mapping of village land has proven successful elsewhere, not just in Thailand.⁵² It cannot replace, but it can complement the continuation of legal and policy advocacy conducted by civil society organizations in Thailand. Thus, it is recommended to support community mapping and land-use planning and promote networking of the communities of Tambon Mae Tho with other indigenous communities engaged in land rights struggles in Thailand. Stepping up legal and policy advocacy is needed to convince the Thai authorities of the need to go beyond the tacit recognition of traditional land-use practices (as e.g. in the Cabinet Resolution on Karen livelihood or the inclusion of rotational farming in the national list of intangible cultural heritage) toward secure land and forest rights for upland communities.
3. Community mapping can also be a tool for facilitating community-wide discussions on current land use and the planning and regulation of land use for the future. Equally important is that it can provide a platform for a discussion on customary land rights, the changes taking place and the direction the changes should take to ensure equitable access to land and resources. It is recommended that such discussions are promoted and facilitated.

4. Community mapping could also lead to a discussions on the advantages and disadvantages of different forms of land use. A comparison of the relative labour productivity of different forms of land use, like we did with Mr N.D. (see Chapter IV), could be a point of departure and even expanded to include other concerns, like long-term soil fertility or the health impacts of extensive agrochemical use.

Long-term support

1. Alternatives to the current form of cash cropping, which depends on extensive agrochemical use, should be explored to ensure long-term soil fertility of agricultural land. This should include more sustainable farming methods for today's common annual crops as well as the exploration of alternative cash crops, including perennials like coffee, tea, etc. Most important is diversification to avoid the risk of being caught in a debt trap due to falling prices. There are decades of experiences with, and a vast body of literature on, the development of alternative forms of upland agriculture, including improved forms of shifting cultivation. Such knowledge should be made available to the farmers, not just in Tambon Mae Tho, but also in other areas with similar conditions and challenges.
2. Most people in Mae Tho want to continue practicing shifting cultivation. Therefore, possibilities should be explored to increase its productivity and the monetary values derived from it. In addition, since most farmers maintain traditional cultivation methods, i.e. without the use of agrochemicals; these should include the identification of niche markets, e.g. markets for organic rice and vegetables, which would fetch a much better price than those conventionally produced. There is growing concern over pesticide and nitrate contamination of vegetables and therefore, middle class consumers are increasingly willing to pay a premium for organic products (see e.g. Vandergeest 2006, Sangkumchaliang and Huang 2012).
3. If the market for high-value organic vegetables, spice and herbs can be accessed, growing more vegetables in swidden fields may represent a viable alternative to commercial corn monocropping. It should also be considered that prices for cattle, especially buffaloes, have in recent years risen considerably. Thus, reviving the integration of livestock breeding with farming, especially shifting cultivation, is another option to be considered.
4. Finally, there is a significant potential to increase the value generated from fallow. Fallow fields in various stages are an important source of food and other products, but very little enters the market. Only a few households sell non-timber forest products and the overall income from this is modest. The

main problem preventing swidden farmers from getting an income from fallow and forest are laws that make it illegal. Thus, there is a considerable potential for income generation that remains untapped, even wasted. For example, a seven or eight year old fallow has trees of commercial value. Wooden poles of various sizes are used in construction and other purposes and there is a steady demand for them on the market. The same applies to charcoal. Karen swidden farmers usually meet their needs for wooden poles from mature fallow forest, and their needs for firewood from fallow and newly cut and burned fields. Most of the larger trees are not burned completely and do not contribute much nutrient rich ash to the fertility of a new swidden field. They decompose only slowly, during the years of fallow. Therefore, a considerable amount of biomass is not put to direct use and can be considered wasted. If shifting cultivators were allowed to make use of this by removing the valuable poles and by producing charcoal from some of what is left, they could generate a considerable income from their fallows when they prepare a new field. People from Mae Um Phai Tai, with whom we discussed this idea, confirmed that these activities could be well integrated in the cutting and preparation of a new field, and that it would be technically feasible to transport the poles to a road from where they could be picked up and transported to the market in the lowlands. In Appendix IV, we make a rough calculation of income from wooden poles and charcoal for an average field.

However, owners of construction material retail shops told us that they are selling only eucalyptus poles from plantations since the authorities would ask questions if they offered poles from natural forest trees, because the quality of poles from natural forest trees would be superior and so they would be preferred by customers. This once again reveals that legal barriers are a major problem for upland communities in Northern Thailand. While the situation is not as bad in Tambon Mae Tho as in neighbouring provinces, they still are a major impediment to developing alternatives in land use that could help improve both livelihood and environmental sustainability.

5. Legalizing shifting cultivation and allowing people to make use of fallows and forests would create incentives for better management. For example, ensuring sufficient fallow periods, stock improvement to increase the value of poles, enrichment of the forest by planting a variety of tree and non-tree species to produce non-timber forest products, etc.

Thus, we propose that the Royal Forest Department issue a permit to at least one village in Tambon Mae Tho for a pilot project designed to strengthen livelihood security through shifting cultivation by increasing income both

from fallow (poles, charcoal, non-timber forest products) and fields (e.g. exploring marketing possibilities for organic products, etc.).

6. Finally, there is an urgent need for P'gaz k'nyau and other indigenous upland communities to discuss livelihood options, especially for those who are called the 'Karen in the middle', i.e. those who have maintained a dual economy and are not yet only engaged in market-oriented production. FAO could facilitate such a discussion with the involvement of key government agencies such as the Department of Agriculture, the Ministry of Environment and the Royal Forest Department.

Appendix I. Household expenses

Table I.1: Weekly expenses for food from the market

	No. hh surveyed	Rainy season						Dry season														
		Less than 100 THB		100-300 THB		400-600 THB		700-1 000 THB		More than 1 000 THB		Less than 100 THB		100-300 THB		400-600 THB		700-1 000 THB		More than 1 000 THB		
Mae Cho Tai	25	1	13	8	3	3	0	1	13	1	13	1	7	3								
Mae Tho Noi	19	0	3	14	0	2	0	0	1	14	1	1	1	3								
Mae Tho Tai	30	0	19	11	0	0	0	0	9	20	1	1	0									
Mae Um Phai Tai	25	1	19	2	2	1	1	2	13	7	1	1	2									
Total	99	2	54	35	5	3	3	3	36	42	10	8	8.08%	36.36%	42.42%	10.10%	8.08%					

Table I.2: Summary of expenses ranking

	No. hh surveyed	Food	Education	Petrol	Mobile phone	Health
Mae Cho Tai	25	1.3	1.8	1.7	1.7	2.9
Mae Tho Noi	19	1.1	2.7	2.1	4.4	3.1
Mae Tho Tai	30	1.7	3.7	2.6	4.8	4.4
Mae Um Phai Tai	25	1.8	2.4	2.3	4	3.3
Average	99	1.5	2.7	2.2	3.7	3.4
Overall rank		1	3	2	5	4

	Hh with children in higher education	Rank 1	Rank 2	Other rank/ no. rank	No. of these with education loan
Mae Cho Tai	7	5	1	1	3
Mae Tho Noi	3	1	2		
Mae Tho Tai	11	7	3	1	8
Mae Um Phai Tai	12	6	2	4	5
Total	33	19	8	6	16

	No. hh surveyed	Motor bike	Mobile phone	Television	Refrigerator	Washing machine	Computer	Car	Hand tractor	Small rice mill
Mae Cho Tai	25	22	21	21	18	2	3	3	7	
Mae Tho Noi	19	17	17	13				3	3	1
Mae Tho Tai	30	26	24	23	13	2	6	4	8	1
Mae Um Phai Tai	25	23	22	20	9	1	3	4	17	5
Total	99	88	84	77	40	5	12	14	35	7

Appendix II. Data on corn cash cropping

Table II.1: Income from corn 2012 and 2013							
	No. hh surveyed	No. hh planting corn		Average income/hh		Median income/hh	
		2012	2013	2012	2013	2012	2013
Mae Cho Tai	25	6	7	35 200	25 083	30 000	22 750
Mae Tho Noi	19	15	18	35 860	43 056	36 000	40 000
Mae Tho Tai	30	17	26	22 412	32 580	20 000	30 000
Mae Um Phai Tai	25	13	20	18 692	22 505	20 000	20 000
	99	51	71	26 233	30 847		

Table II.2: Number of households planting corn							
	No. hh surveyed	2012		2013		2014 (planned)	
		Number	%	Number	%	Number	%
Mae Cho Tai	25	6	24.0	7	28.0	3	12.0
Mae Tho Noi	19	15	78.9	18	94.7	12	63.2
Mae Tho Tai	30	17	56.7	26	86.7	22	73.3
Mae Um Phai Tai	25	13	52.0	20	80.0	10	40.0
Total	99	51	51.5	71	71.7	47	47.5

Table II.3: Area planted with corn							
	No. hh surveyed	2012		2013		2014 (planned)	
		Total area	Average area	Total area	Average area	Total area	Average area
Mae Cho Tai	25	34	5.66	44	6.28	12.0	4
Mae Tho Noi	19	101	6.74	170	9.44	62.0	5.16
Mae Tho Tai	30	47.5	2.79	109.5	4.21	65.5	2.98
Mae Um Phai Tai	25	47	3.62	126	6.30	32.0	3.2
Total	99	229.5	4.50	449.5	6.33	171.5	3.65

Appendix III. Data on land ownership

Table III.1: Ownership of paddy land													
	No. hh surveyed	Hh with paddy		Paddy area owned (in rai)								Average area/hh	Total paddy area
		No. hh	% of all hh	0.25-1	2-4	5-7	8-10	>10					
Mae Cho Tai	25	14	56.00		9		3		2			4.36	61
Mae Tho Noi	19	5	26.32	3	2							1.85	9.25
Mae Tho Tai	30	20	66.67		16	3	1					3.46	69.25
Mae Um Phai Tai	25	20	80.00		10	6	2		2			5.54	110.75
Total	99	59	59.60	3	37	9	6	4	4	6	4	4.24	250.25
				5.08	62.71	15.25	10.17	6.78					

Table III.2: Ownership of swidden land (number of plots)													
	No. hh surveyed	Hh with swidden land		Number of plots owned								Average no. of plots	Total no. of plots
		No. of hh	% of all hh	1-3	%	4-6	%	7-11	%				
Mae Cho Tai	25	24	96		0.00	2	8.33%	22	91.67			6.83	164
Mae Tho Noi	19	15	79.9	4	26.67	1	6.67%	10	66.67			6	90
Mae Tho Tai	30	23	76.7	19	82.61	3	13.04%	1	4.35			2.61	60
Mae Um Phai Tai	25	23	92	4	17.39	2	8.70%	17	73.91			6.91	159
Total	99	85	85.86%	27	31.76	8	9.41%	50	58.82			5.56	473

Table III.3: Ownership of swidden land (land area)						
	No. of hh surveyed	Average no. of plots	Total no. of plots	Average plot size thang	Average total thang seeds	Average total rai
Mae Cho Tai	24	6.83	164	8.33	56.89	42.67
Mae Tho Noi	15	6	90	9.13	54.78	41.09
Mae Tho Tai	23	2.61	60	9.46	24.69	18.52
Mae Um Phai Tai	23	6.91	159	11.67	80.64	60.48

Table III.4: Ownership of permanent cash-crop fields						
	No. hh surveyed	No. of hh who own	No. of fields	Total area	Average no. of fields	Average area owned in rai
Mae Cho Tai	25	5	8	38	1.60	7.6
Mae Tho Noi	19	15	19	108.4	1.27	7.23
Mae Tho Tai	30	23	31	183.4	1.35	7.97
Mae Um Phai Tai	25	14	17	104.4	1.21	7.46
Total	99	57	75	434.2	1.32	7.62

Appendix IV. Potential income from fallow fields at the time of field preparation

In order to get a rough idea of the potential income that could be generated from fallow at the time a new field is cleared, we tried to estimate the number of poles suitable for common construction purposes that could be produced from an average field. And an estimate was made of the number of sacks of charcoal that could be produced during the second burn of a field.

For an estimate of the value of marketable poles in a fallow field, we proceeded as follows. The circumference of all poles of sufficient quality (minimum diameter and straight growth) were measured at chest height in five sample plots of 10 × 20 metres located in five fallow areas each of seven to eight years of age. With the help of a biomass and carbon calculator developed for different forest types in Thailand and the estimated length of the tree trunk that could be used, the approximate weight of the pole was calculated. Retail shops buy eucalyptus poles for 0.8 THB per kg. Thus the total value of the poles in the sample plot could be established and extrapolated for an average field size of five rai.

The table below summarizes the findings. It shows that there is considerable variation in the number of marketable poles in the five fallow areas, and thus the potential income that can be made by extracting the poles at the time when the fields are cut.

The costs for transporting the poles to the retailer would have to be deducted. However, due to the superior quality of these poles, it is also likely that a higher price could be fetched than the 0.8 THB paid for eucalyptus.

	Coordinates	Number of poles per rai	Weight of poles per rai	Value per rai	Value per field of 5 rai
Field 1	N 18°36.105' E 28°01.243'	304	4 757	3 806	19 028
Field 2	N 18°36.668' E 98°00.794'	152	1 032	826	4 128
Field 3	N 18°36.690' E 98°00.842'	152	1 458	1 166	5 832
Field 4	N 18°36.384' E 28°02.269'	376	5 120	4 096	20 480
Field 5	N 18°36.077' E 98°01.264'	336	4 009	3 207	16 036

According to the information of Mr Phokhwae of Mae Um Phai Tai, around 10 piles of wood are made for the second burn of a swidden field of average size. Instead of just burning them, this wood could be converted into charcoal. Mr Phokhwae estimated that around 20 sacks of charcoal could be produced and sold for between 2 000 and 3 000 THB.

Appendix V. The Legend of the quarrel between money and rice

Slightly edited version of the legend translated by Tony Boys (2008)

For the *Pgaz K'nyau* rice is of the utmost importance. There is a saying passed on over generations that goes: "If we have enough rice to eat, then everything else will follow on its own accord" (*bu mei koov auf, taj le av gaz qu keiz le hki sei*). And there is a legend reminding people that there is nothing that can replace rice.

"Once upon a time, the Money Spirit said to the Rice Spirit that even if there were no rice, he could continue to live. The Rice Spirit said to the Money Spirit that this was not so. If you don't have me, you cannot live. However, the Money Spirit stuck to his opinion. Because of this, the Rice Spirit went away from the Money Spirit and hid in a cave, which no one could enter because the mouth of the cave was opening and closing all the time.

The next morning, the children and grandchildren of the Money Spirit were crying. The Money Spirit tried to pacify the children and grandchildren by giving them money, but no matter how much he gave them they would not stop crying. By chance the Money Spirit spotted a small amount of rice stuck to the bottom of the pot, so he gave it to his children and grandchildren to eat and it turned out that the children and grandchildren stopped crying quite nicely.

The Money Spirit thus understood that the only thing which could make his children and grandchildren stop crying was rice, so he asked his servants to enquire where the Rice Spirit had run off to. The servants made enquiries and found that the Rice Spirit had hidden in a cave that was very difficult to get into. The person who can go into the cave must be very swift and nimble. The Money Spirit called the bird *htof hpgiv* (Indian pipit) and asked it to go and get the Rice Spirit back out of the cave. The *htof hpgiv* bird flew into the cave and catching the Rice Spirit, flew out again with him. When the bird was flying out of the cave, the mouth of the cave pinched the bird's throat just a little, and made its wattle move onto the back of its neck, where it is to this day. When the Rice Spirit returned, the children and grandchildren had rice to eat once again. The life of the Money Spirit and his children and grandchildren returned to its usual happy state."

Bibliography

- Adger *et al.*, 2007, cited in: Forsyth, Tim and Natalie Evans 2012. What is Autonomous Adaption? Resource Scarcity and Smallholder Agency in Thailand. *World Development* Vol. 43
- Aly, Suzie *et al.* 2007. Environmental and economical impacts of the changes in farming practices in Ban Bon Na, Northern Thailand. *Interdisciplinary Land Use and Natural Resource Management (ILUNRM) report*. http://sluse.dk/courses/ilunrm/project/07_banbonna_thailand
- Bodley 2008 (1982). *Victims of Progress*. 5th edition. Altamira Press
- Boserup, Ester (1965). *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure*. London: George Allen and Unwin Ltd.
- Chambers, Robert and Gordon Conway 1992. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. IDS Discussion Paper 296. Brighton: Institute of Development Studies
- Chevalier, Jacques 1982. There Is Nothing Simple About Simple Commodity Production. *Studies in Political Economy* 7(1982): 89-124
- Chupinit Kesmanee 1988. Hilltribe Relocation Policy in Thailand. *Cultural Survival Quarterly* 12.4 (Winter 1988) Resettlement and Relocation Part 2. <http://www.culturalsurvival.org/ourpublications/csq/article/hilltribe-relocation-policy-thailand>
- Ciglasch, Holger *et al.* 2007. The Environmental Fate of Agro-Chemicals: A Case Study in the Mae Sa Noi Watershed; in: Franz Heidhues *et al.* *Sustainable Land Use in Mountainous Regions of Southeast Asia. Meeting the Challenges of Ecological, Socio-Economic and Cultural Diversity*. Environmental Science and Engineering. Berlin, Heidelberg, New York: Springer, pp. 54-67
- Cramb, R.A. *et al.* 2009. Swidden Transformations and Rural Livelihoods in Southeast Asia. *Human Ecology* 37: 323-346
- De Koninck, Rodolphe 2004. The Challenges of the Agrarian Transition in Southeast Asia. *LABOUR, Capital and Society* 37(2004) pp. 285-288
- Delang, Claudio O. 2003. Social and economic adaptations to a changing landscape. Realities, opportunities and constraints; in: Claudio O Delang (ed.). *Living at the Edge of Thai Society. The Karen in the highlands of northern Thailand*. London: Routledge Curzon

- Dove, Michael R. 2011. *The Banana Tree at the Gate. A History of Marginal Peoples and Global Markets in Borneo*. New Haven and London: Yale University Press
- Erni, Christian (ed.) 2008. *The Concept of Indigenous Peoples in Asia. A Resource Book*. IP concept book. IWGIA Document No. 123. Copenhagen/Chiang Mai: International Work Group for Indigenous Affairs (IWGIA) and Asia Indigenous Peoples Pact (AIPP)
- _____ 2014. IP concept article
- FAO 2003. *Trade reforms and Food Security. Conceptualizing the linkages*. Rome: FAO. <ftp://ftp.fao.org/docrep/fao/005/y4671e/y4671e00.pdf>
- Forest Peoples Programme 2013. *Global conference in Lake Toba, Indonesia, highlights multiple benefits of community mapping for indigenous peoples*. <http://www.forestpeoples.org/topics/participatory-resource-mapping/news/2013/10/global-conference-lake-toba-indonesia-highlights->
- Forsyth, Tim and Natalie Evans 2012. *What is Autonomous Adaption? Resource Scarcity and Smallholder Agency in Thailand*. *World Development* Vol. 43
- Fox, Jefferson *et al.* 2009. *Policies, Political-Economy, and Swidden in Southeast Asia*. *Human Ecology* 37: 305-322
- Geiger, Danilo (ed.) 2008. *Frontier Encounters. Indigenous Communities and Settlers in Asia and Latin America*. IWGIA Document No. 120. Copenhagen/Chiang Mai: International Work Group for Indigenous Affairs (IWGIA) and Swiss National Centre of Competence in Research North-South
- _____ 2009. *Turner in the Tropics. The Frontier Concept Revisited*. Doctoral dissertation, Faculty of Cultural and Social Science, University of Lucerne, Switzerland
- George, Alana *et al.* 2009. *Potential and limitations of Payments for Environmental Services (PES) as a means to manage watershed services in mainland Southeast Asia*. *International Journal of the Commons*, Vol. 3, No. 1 May 2009, pp. 16-40
- Global Times 2013. *Thai corn farmers protest for guaranteed price*. *Global Times news* of 26.9.2013. http://www.globaltimes.cn/content/814205.shtml#.UzKs7_mSzh4
- Government of Thailand 1964. *National Reserved Forest Act, B.E. 2507 (1964)*. *Thailand Acts of Parliament: Panwa's Series*, by Pakorn & Samaporn Nilprapunt; accessed at: http://www2.austlii.edu.au/~graham/AsianLII/Thai_Translation/National%20Reserve%20Forest%20Act.pdf

- Government of Thailand Public Relations Department 2008. Budget Allocation for the “SML” Programme. Government Public Relations Department website. http://thailand.prd.go.th/view_news.php?id=3267&a=2
- Government of Thailand 2010. Recovering the Karen Livelihood in Thailand. Cabinet Resolution of the Royal Thai Government, August 3rd, 2010
- Government of Thailand Intangible Cultural Heritage website: <http://ich.culture.go.th/index.php/en/ich/knowledge-and-practices-concerning-nature-and-the-universe/269>
- Guibert, Susan 2012. Microfinance Yields Mixed Results in Thailand, Economist Joseph Kaboski Finds. University of Notre Dame, College of Arts and Letters website. May 14, 2012. <http://al.nd.edu/news/30811-microfinance-programs-benefits-not-clear-cut-study-shows/>
- Hall, Derek, Philipp Hirsch and Tania Murray Li 2011. Powers of Exclusion. Land Dilemmas in Southeast Asia. Singapore: NUS Press/Honolulu: University of Hawai'i Press
- Hvalkof, Søren 2008. In Geiger
- IFAD, IDRC, ICRAF and IIRR 2001. Shifting Cultivation: Towards Sustainability and Resource Conservation in Asia. International Institute of Rural Reconstruction, Cavite, Philippines
- IKAP 2006. Pga k'nyau Knowledge on Rotational Farming in Northern Thailand. A Case Study of three Karen Villages. Chiang Mai: IKAP Network
- IRP and UNDP 2010. Guidance Note on Recovery: Livelihood. International Recovery Platform. Kobe, Japan; p. 1
- IWGIA 1998. Thailand; in: The Indigenous World 1997-98. Copenhagen: International Work Group for Indigenous Affairs (IWGIA)
- _____ 2010. Thailand; in The Indigenous World 2010. Copenhagen: International Work Group for Indigenous Affairs (IWGIA)
- _____ 2013. Thailand; in The Indigenous World 2013. Copenhagen: International Work Group for Indigenous Affairs (IWGIA)
- _____ 2014. Thailand; in The Indigenous World 2014. Copenhagen: International Work Group for Indigenous Affairs (IWGIA)
- Jacques Chevalier, “There Is Nothing Simple About Simple Commodity Production,” *Studies in Political Economy* 7(1982): 89-124

- Jonsson, Hjørleifur 1998. Forest Products and Peoples: Upland Groups, Thai Politics, and Regional Space. *Sojourn*, Vol. 13, No. 1 (1998)
- Kaboski, Joseph P, and Robert M Townsend. "The Impact of Credit on Village Economies." *American Economic Journal: Applied Economics* 4.2(2012): 98-133. © 2012 AEA
- Kahan, David 2013. Market-oriented Farming: An overview. Farm management extension guide 1. Rome: Food and Agriculture Organization of the United Nations
- Keyes, Charles (ed.) 1979. Ethnic adaptation and identity: the Karen on the Thai frontier with Burma. Philadelphia: Institute for the Study of Human Issues
- Knoema website. Thailand Regional Dataset, October 2013. <http://knoema.com/wtxids/thailand-regional-dataset-october-2013?region=1000380-mae-hong-son-province>
- Kunstadter, Peter, E.C. Chapman, S. Sabhasri 1978. Farmers in the forest; economic development and marginal agriculture in northern Thailand. Honolulu: University Press of Hawaii for the East-West Centre
- Laungaramsri, Pinkaew 2001. Redifining Nature. Karen Ecological Knowledge and the Challenge to the Modern Conservation Paradigm. Chennai: Earthworm Books
- Li, Tania Murray 2014. Land's End: Capitalist Relations on an Indigenous Frontier. Duke University Press
- Luithui, Chingya and Jannie Lasimbang 2007. Thailand. The Challenges of Joint Management in the Northern Hills; in: Helen Leake (ed.), Bridging the Gap. Policies and Practices on Indigenous Peoples' Natural Resource Management in Asia. Chiang Mai: UNDP-RIPP and AIPP
- Lubanski, Jason 2012. Land is Life: The Northern Thailand Land Reform Movement. SIT Graduate Institute. Accessed at: <http://digitalcollections.sit.edu/cgi/viewcontent.cgi?article=3588&context=capstones>
- McCaskill, Don and Ken Kampe (eds.) 1997. Development or Domestication. Indigenous Peoples of Southeast Asia. Chiang Mai: Silkworm
- Maniratanavongsiri, Chumpol 1999. People and Protected Areas: Impact and Resistance among the Pgak'Nyau (Karen) in Thailand. Ph.D. Thesis, University of Toronto (mimeo)
- Menkhoff, Lukas and Ornsiri Rungruxsirivorn 2009. Village Funds and Access to Finance in Rural Thailand. Discussion Paper No. 417. Universität Hannover. http://diskussionspapiere.wiwi.uni-hannover.de/pdf_bib/dp-417.pdf

- Nongkynrih, A. Kyrham 2005. The Privatisation of Indigenous Community Land in Meghalaya. *Indigenous Affairs* 2/05. Shifting Cultivation. Copenhagen: International Work Group for Indigenous Affairs (IWGIA)
- Padoch, Christine, Kevin Coffey, Ole Mertz, Stephen J. Leisz, Jefferson Fox & Reed L. Wadley 2007. The Demise of Swidden in Southeast Asia? Local Realities and Regional Ambiguities. *Danish Journal of Geography* 107(1): 29-41, 2007
- Pakorn and Samaporn Nilrapunt 2005. Thailand Acts of Parliament: Panwa's Series, National Reserved Forest Act, B.E. 2507 (1964). Accessed at: http://www2.austlii.edu.au/~graham/AsianLII/Thai_Translation/National%20Reserve%20Forest%20Act.pdf
- Pfeffer, Pierre 1974. Fauna of Humid Tropical Asia. Paris: UNESCO
- Puginier, Oliver 2002. Hill tribes struggling for a land deal: Participatory land use planning in northern Thailand amid controversial policies. Dissertation zur Erlangung des akademischen Grades Doctor rerum agriculturarum (Dr rer. agr.). Berlin: Landwirtschaftlich-Gärtnerische Fakultät der Humboldt-Universität. Accessed at: <http://edoc.hu-berlin.de/dissertationen/puginier-oliver-2002-05-16/PDF/Puginier.pdf>
- Renard, Ronald D. 2001. Opium Reduction in Thailand 1970-2000. A Thirty-Year Journey. Chiang Mai: Silkworm
- _____ 2003. Studying peoples often called Karen; in: Claudio O Delang (ed.). Living at the Edge of Thai Society. The Karen in the highlands of northern Thailand. London: Routledge Curzon
- Renard, Ronald D. *et al.* 1988. Changes in the Northern Hills. An Examination of the Impact of Hill Tribe Development Work 1957-1987. Chiang Mai: Research and Development Centre, Payap University (mimeo)
- Sangkumchaliang, Parichard and Wen-Chi Huang 2012. Consumers' Perceptions and Attitudes of Organic Food Products in Northern Thailand. *International Food and Agribusiness Management Review*, Volume 15, Issue 1, 2012. http://ageconsearch.umn.edu/bitstream/120860/2/20110057_Formatted.pdf
- Scott, James. C. 2009. The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia. New Haven and London: Yale University Press
- The Economist 2013, Microfinance in Thailand. The biggest microlender of them all. The Economist, Jan 1st 2013. <http://www.economist.com/blogs/schumpeter/2013/01/microfinance-thailand>

- The Nation 2009. Corruption is 'part of Thai mindset'. The Nation March 7, 2014. <http://www.nationmultimedia.com/politics/Corruption-is-part-of-Thai-mindset-30228576.html>
- Tipraqsa, Prasnee and Pepijn Schreinemachers 2009. Agricultural commercialization of Karen Hill tribes in northern Thailand. *Agricultural Economics* 40(2009) 43-53
- Trakansuphakon, Prasert 1998. *Traditional Agricultural Practices of the Indigenous Peoples of Northern Thailand*. Chiang Mai: IMPECT
- UNESCO Bangkok. Livelihoods for Ethnic Minorities programme website. <http://www.unescobkk.org/culture/diversity/livelihood/mae-hong-son>
- Uraivan, Tan Kim-Yong *et al.* 1988. *Natural Resource Utilization and Management in the Mae Khan Basin. Intermediate Zone Crisis*. Chiang Mai: Faculty of Social Sciences, Chiang Mai University
- Vandergeest, Peter 2006. *Natural Markets: Remaking food and agriculture in Southeast Asia*. Paper presented at the 2006 Annual Meeting of the Association of American Geographers, Chicago, March 7-11, 2006. <http://www.yorku.ca/ycar/CCSEAS%20Papers/Natural%20Markets%20-%20Remaking%20food%20and%20agriculture%20in%20SEA.pdf>
- Walker, Andrew 2001. The 'Karen Consensus', Ethnic Politics and Resource-Use Legitimacy in Northern Thailand. *Asian Ethnicity*, Volume 2, Number 2, September 2001
- Warsta, Matias 2004. *Corruption in Thailand*. International Management: Asia. Swiss Federal Institute of Technology. Zurich, April 22nd 2004. http://aceproject.org/ero-en/regions/asia/TH/Corruption_in_Thailand.pdf
- World Bank 2011. *Thailand Now an Upper Middle Income Economy*. <http://www.worldbank.org/en/news/press-release/2011/08/02/thailand-now-upper-middle-income-economy>

Endnotes

- ¹ One of the earliest definitions of food security by the United Nations was formulated for the World Food Summit of 1974. Since then, the concept has evolved and become more complex as demonstrated in the definition cited.
- ² In Thai *chon phao phuen mueang* (ชนเผ่าพื้นเมือง). On the use of the term ‘indigenous peoples’ in Thailand see Erni 2008: 443f; in Asia in general *ibid.* and Erni 2014.
- ³ Among these are various ethnic-based organization such as the Karen Network for Culture and Environment (KNCE) or the Hmong Association for Development in Thailand (MDT), regional organizations such as the Inter Mountain Peoples Education and Culture in Thailand (IMPECT) and the national-level Indigenous Women’s Network of Thailand (IWNT), and the country-wide Network of Indigenous Peoples in Thailand (NIPT).
- ⁴ See Scott 2009 for a discussion on hill-valley relationships in Southeast Asia
- ⁵ For an in-depth discussion of the frontier concept and its application in the analysis of the present-day situation of indigenous peoples, see Geiger 2008 and 2009.
- ⁶ Enclosure is a term coined in 16th century England. It is the process, which ends traditional rights to the use of common land and resources. Once enclosed, these uses become restricted to the owner, and it ceases to be common property.
- ⁷ Office of National Security, workshop on finding solutions for illegal immigrants, 18 June 2009 at Rimkok resort. More recent figures are not available. In March 2014, the National Health Security Office assured that more than 90 000 hill-tribe people without citizenship will be given access to health care services. Thai PBS website 10 March 2014. <http://englishnews.thaipbs.or.th/non-citizenship-hill-tribe-people-assured-health-care-rights/>
- ⁸ Ten groups are sometimes mentioned, i.e. the Palaung are also included in some official documents. The directory of ethnic communities of 20 northern and western provinces of the Department of Social Development and Welfare of 2002 also includes the Mlabri and Padong.
- ⁹ The figure given is sometimes 1 203 149 people, which includes immigrant Chinese in the north.
- ¹⁰ Swidden farming and swidden agriculture are other terms commonly used for shifting cultivation. They are derived from the Old English term ‘swidden’, meaning ‘burnt clearing’ (IFAD *et al.* 2001: 24f). We will use shifting cultivation and swidden farming, or shifting cultivation fields and swidden fields (or just swiddens) interchangeably throughout the text.
- ¹¹ The original definition is given in: Chambers, R., & Conway, G. (1991). Sustainable Rural Livelihoods: Practical Concepts for the 21st Century. IDS Discussion Paper 296. Institute of Development Studies
- ¹² Pgaz k’nyau is how the Sgaw Karen call themselves (see Chapter II). For Karen terms we are using the Roman-script based way of writing developed by Fr. Joseph Sequinotte about 60 years ago. He replaced the five tone marks that have been previously used by letters at the end of a word or syllable in order to make it easier to write on typewriters (and later computers). Thus, x is used instead of ˆ, v instead of ˊ, j instead of ˋ, f instead of ˌ, and z instead of ˍ.
- ¹³ Information provided at: http://en.wikipedia.org/wiki/Mae_La_Noi_District

- ¹⁴ These are the numbers of houses which, according to information from people interviewed, does not correspond to the actual houses inhabited, i.e. the actual number of households.
- ¹⁵ On the origin of the name “Karen”, Karen identity and the known historical records on the Karen, see Renard 2003.
- ¹⁶ In Myanmar, large numbers of Karen also live in the plains of the Irrawaddy Delta (Renard 2003: 8)
- ¹⁷ Due to data entry error, two of the survey results for this question had to be excluded, this N = 97. In Mae Tho Tai, one household had recently moved in and therefore had not planted rice, the other had not planted over the past two years.
- ¹⁸ These gardens are different from permanent fields for cash crops.
- ¹⁹ Apparent discrepancies between Table 5 and Table 3 and 13 are due to the fact that some farmers use both owned and borrowed land.
- ²⁰ In Pgaz k'nyau, the general term for prohibitive or prescriptive rules is commonly referred to as ‘taboos’ is *Taj duf*. It is applied to a broad range of prohibitive rules like not to kill gibbons and hornbill birds, not to cut trees in particular forests, not to work when a child is born or someone dies in the village etc.
- ²¹ *Bgau quv* is the traditional ritual complex connected to rice farming. It consists of four specific rituals for shifting cultivation, or three for paddy cultivation performed at different times during the cultivation cycle. *Luj Meij* is giving thanks to the fires spirit (in shifting cultivation only); *Taj i'mauw* is thanking the Supreme Being; *Taj bkav kaiv* is asking the spirits for protection of the field by ‘shooting’ outside threats like pests or thieves; *Taj saiv* is asking the spirits to ‘sweep out’ all bad things from the field.
- ²² Khrong Kan Kae Khai Panha Khwam Yaak Jon – โครงการแก้ไขปัญหาคความยากจน (กช.คจ)
- ²³ One of these households grows rice with the wife’s parents on the latter’s land. The other household own only little swidden land and no paddy fields.
- ²⁴ Michael Dove (2011) has used the concept of dual economy in his analysis of the household economy of the Kantu’ of West-Kalimantan in Indonesia, in which swidden rice production and rubber are two complementary, non-replaceable economies, one providing rice for subsistence, the other cash income.
- ²⁵ The emphasis on self-sufficiency in rice, still common among the Karen, has deep cultural roots. It is transmitted in the form of sayings, songs and legends. One of the legends also deals with the issue of, we may call it, ‘subsistence vs. cash orientation’. It’s the legend of the quarrel between Money and Rice, which concludes that it is only rice that can feed people. A version of this legend is reproduced in Appendix V.
- ²⁶ One thang is equivalent to 20 litres
- ²⁷ Rice needs were estimated to be 30 thang for men and 50 thang for women, which includes paddy and rice left-over fed to chicken and pigs.
- ²⁸ Parakeets (Psittacidae), the Scaly-breasted munia (*Lochura punctulata*), and in particular a bird called *thokhlo* (not identified), which is considered to be very destructive
- ²⁹ For example, Ekachai and his wife Aphinya of Mae Um Phai Tai harvested 270 thang rice in 2012. Since there are only three people left in the household, they sold 50 thang at 100 THB per thang to pay for their son’s education. At the time of the new rice harvest last November, they still had an estimated 80 to 100 thang left, which they kept as reserve in case there is rice shortage this year.

- ³⁰ See e.g. Pfeffer 1974 on wild cattle in Java, or [Wildcattleconservation.org](http://www.wildcattleconservation.org) on the Gaur which is said to tolerate habitat degradation due to human activities well “and in fact may benefit from limited forest disturbance [] shifting cultivation provides openings in the canopy and increases the vegetation density of ground cover.” <http://www.wildcattleconservation.org/SpeciesFactSheets/BosGaurus.htm>
- ³¹ STK (Sor Tor Kor) is the acronym for the name in Thai of the National Forest Land Allotment Programme launched by the RFD in 1982. STK certificates are temporary agricultural land use certificates in degraded forestland that were, and still are, issued in order to address land rights problems of lowland landless farmers and communities in protected forest areas (Lubanski 2012: 15). They are supposed to be issued to people who possessed the land prior to 1981. They have a duration of five years and are limited to 15 rai (Pugnier 2002: 86).
- ³² The burning of litter and underbrush is a widespread forest management practice in lower hill forests throughout the North. It is the main cause of the annual haze, considered to be particularly bothering major cities like Chiang Mai and Mae Hong Son.
- ³³ In 2008, two Karen were arrested in Tak Province and for the first time charged not just with destroying forest but also causing climate change, i.e. a “rise in temperature” (IWGIA 2010: 354).
- ³⁴ For example, the villages in Tambon Mae Tho were asked to burn their fields by February 22.
- ³⁵ As one of our interview partners pointed out, bigger households those days were not a problem, since more children meant more labour for maintaining fields. However, the situation changes throughout the life cycle of a household, as we know at least since the English publication of Alexander Chayanov’s *Theory of Peasant Economy* in 1966, a book that made scholars in peasant studies pay more attention to the balance between consumers and labour in farm households.
- ³⁶ This tallies well with the population data of 2012 that we obtained from the headman of Mae Um Phai. It shows an average household size of 3.96. However, it includes the Hmong Village Mae Phung Mai which has a much larger average household size. If calculated for only the seven Karen Villages, the average household size is 3.57 (see Table 1 in Chapter II).
- ³⁷ Our data on education and subsequent employment is very limited and does not differentiate between different levels of education beyond secondary level three.
- ³⁸ Gramoxone and Round Up are herbicides often used to control existing vegetation before planting in no-till farming such as corn and for post-harvest clearing. They are both non-selective, which means they affect all green plants, which start wilting within hours and completely die a few days after application. Round Up is particularly effective for killing annual and perennial grasses. Gramoxone is a highly toxic substance for humans and other mammals. Round Up is not toxic. <https://weedecology.css.cornell.edu/herbicide/>
- ³⁹ Amide is a family of highly effective selective herbicides, often used not only in corn but also in rice production to control weeds. It is moderately toxic for humans. <http://www.agropages.com/agrodata/AgroDataList-2-109.htm>; <https://weedecology.css.cornell.edu/herbicide/>
- ⁴⁰ We do not have the complete date for his investment in corn production for all 4 years, but since investments in agrochemicals correspond to the amount of seeds planted and assuming that prices for inputs remained more or less stable, we can take the number of sacks of corn

seeds planted as an indicator for the level of investment and thus assess the changes in profitability of corn growing over the years.

⁴¹ We have repeatedly tried to get the additional data from the health centre but neither the junior officer nor the senior officer approached was forthcoming.

⁴² The Bengal monitor lizard (*Varanus bengalensis*), in P'gaz k'nyau *T'bkooov*, usually live and forage on the ground but climb trees to escape.

⁴³ As long as someone was the only owner of a rice mill in a village, a secure, regular and good income was guaranteed. With the coming of electricity and the availability of cheaper, smaller rice mills, this is not the case anymore. A rice mill owner in Mae Um Phai Tai used to make 7 000 to 8 000 THB per month while he was running the only rice mill in the village. Now he makes only 1 000-2 000 THB per month.

⁴⁴ The introduction of new equipment and cultivation methods also offered possibilities for rendering services at village levels. In some villages, spraying of fields is done with a powerful stationary diesel pump sprayer instead of back-carried hand or motor pump sprayers. The pump is brought to the field, the chemical solution prepared in a barrel and then pumped with long hoses over the field. It is said to be highly efficient and the job gets done in a large field within one to two hours. Field owners rent the pump, barrels and hoses for a few hundred Baht.

⁴⁵ Corn contract farming is done on a large scale in the North of Thailand (and elsewhere) by Charoen Pokphand Produce, a subsidiary of Charoen Pokphand, Thailand's largest agribusiness company. In 2012, 370 farmers in Mae Chaem, the district to the east of Mae La Noi District and where farmers from Mae Tho learned how to grow cash crop corn, participated in Charoen Pokphand Produce's contract farming project, with a total area of 4 700 rai. (Bangkok Post 2012) With the introduction of corn in Mae Chaem, farmers expanded fields into forest areas "to increase their profits" (ibid.). Thus, Charoen Pokphand Produce was implicitly blamed for causing deforestation, which was rejected by the company saying that it had "no policy to encourage farmers to grow corn in forests" (ibid.).

⁴⁶ The Small-Medium-Large (SML) programme was launched by former Prime Minister Thaksin Shinawatra in 2005. This programme provides community development funds to villages, the amount depending on the size of the village, i.e. small, medium, and large. The amounts range from 50 000 to 350 000 THB per year and are supposed to be used for community development in accordance with the self-define needs and priorities of the villages (Government of Thailand 2008). It was conceived to be complementary to the Million-Baht Fund programme that gives loans to individuals.

⁴⁷ Examples are the local committees of the Highland Natural Conservation Group of Chomthong (HNCC) in the upland communities of Chomthong District. There are several cases of successful intervention by the committee in cases of illegal logging, land sale to outsiders, causing of forest fires etc.

⁴⁸ Tailor birds are tiny birds that build their nest in one folded leaf. The Karen consider them the poorest among all birds because they do not know how to make nests. There is a taboo prohibiting killing that bird.

⁴⁹ The reason for the fact that all of these respondents are from Mae Cho Thai is the way the survey interview was conducted, i.e. the surveyor was not pushing people so much for a yes-no answer.

- ⁵⁰ See also Cramb *et al.* (2009: 323) who come to similar conclusions: “Cash crops have often improved livelihoods but complete specialization for the market increases vulnerability. Thus swidden can still provide an important safety net in the face of market fluctuations.”
- ⁵¹ Food sovereignty is a concept that emerged in the mid-1990s. It refers to the right of people to define their own food systems and has been developed in response to dissatisfaction with the global discourse on food security, which has been criticized as promoting food regimes controlled by corporations and market demands and causing dispossession of small producers and ecological degradation. It is a concept that emphasizes the right of people to define their own food systems, i.e. what kind of food people plant where and how. See e.g. La Via Campesina (<http://viacampesina.org/en/index.php/main-issues-mainmenu-27/food-sovereignty-and-trade-mainmenu-38>); World Development Movement (<http://www.wdm.org.uk/food-sovereignty>).
- ⁵² In a conference on community mapping for indigenous peoples on 25-28 August 2013 in Lake Toba, Indonesia, 110 representatives of indigenous peoples, community mapping experts and members of support NGOs and academia from 17 countries in Asia, Latin America, the Pacific, North America and Europe participated (Forest Peoples Programme website). The participants agreed that maps can serve many purposes, among others:
- Delineation and demarcation of indigenous territories and lands;
 - Obtaining titles to ancestral lands and domains;
 - Enabling self-determined development;
 - Identifying diverse land use and monitoring of land and resource use changes; tracking the extent of use or decline of traditional knowledge, indigenous languages and customary governance;
 - Monitoring biodiversity and ecosystem integrity;
 - Resolution of conflicts related to boundary, water and land disputes;
 - Development of territorial management plans; and advocating for policy reforms. (ibid.)



ISBN 978-92-5-108761-9



9 789251 087619

I4580E/1/04.15