

# **Policy Approaches in Management of Shifting Cultivation : Compromising Equitable Access, Food Security and Common Property Institutions**

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## **ABSTRACT**

Policy approaches across countries where shifting cultivation is practiced has been singularly designed to eradicate shifting cultivation and replace the practice with settled agriculture. Promotion of settled agriculture as an alternative to shifting cultivation has brought second generation issues in its wake. The process has marginalized the practice of shifting cultivation and its practitioners, encouraged private property in common property regimes. The changes in property regimes have diluted the influence of traditional institutions and gradually increased vulnerability of community members as well as their natural resources. The example of Garo Hills in Meghalaya, NE India is cited to show that community based natural resource management as practiced by shifting cultivators in Garo Hills was more effective in ensuring environmental conservation, equitable access to resources and livelihood security than the policy of promotion of sedentarised agriculture as encouraged under different governmental programmes. If equity, livelihoods and commons are to be conserved, a synthesis of traditional framework and modern approaches, as practiced by many Garo villages needs to be encouraged and adopted. Policy changes recognizing community innovations and the traditional wisdom need to be initiated if common property management regimes are to be conserved.

*Keywords: Shifting cultivation, Property regimes, Equitable access, traditional institutions*

## **INTRODUCTION**

Shifting cultivation is frequently viewed as a major contributor to deforestation, land degradation and more recently, to the widespread smog in Southeast Asia and hence, to global warming. This reputation is largely undeserved as the majority of swidden systems are sustainable and feature a high labour productivity at low population densities. Distortions arise from destabilization of the previously sustainable system as a result of factors such as rapidly increasing populations, encroachment of commercial logging, forced migrations, changing production incentives as a result of market incorporation, or other significant changes in the institutional and policy environments within which swidden farmers work (Voss, 2007).

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Despite the changing perceptions, policies and management approaches to shifting cultivation have globally largely centred around replacement with alternate landuses (or more recently, on 'stabilising' the practice - an euphemism for 'eradication'), than on finding ways to make the practice economically viable and productive and environmentally sound (Thomas, 2003). For most governments dealing with shifting cultivation, the only solution has been to 'weane' away the cultivators from the practice towards sedentarised agriculture, predominantly horticulture and cash crops. To address staples security, governments have encouraged the establishment and expansion of wet rice cultivation, including terrace cultivation. However, in spite of the best efforts of most governments, the practice of shifting cultivation refuses to be eradicated and millions of upland households continue to practice shifting cultivation in many parts of the world, particularly in the uplands of South and South East Asia.

In the northeastern region of India, shifting cultivation – locally known as *jhum* - is the predominant (and often the only) means of agriculture for most upland ethnic communities. One of the most formidable challenge faced by successive Indian governments (both at the Centre and the State), is to bring the north eastern states, particularly those in the uplands, into the folds of mainstream economic development enjoyed by their counterparts elsewhere in the country. The northeastern uplands are inhabited by diverse ethnic communities – officially categorized as Scheduled Tribes – each with its distinct language, customs and territory, almost all of whom practise shifting cultivation. Successive governments have tried repeatedly to replace shifting cultivation with sedentarised agriculture, perceiving the practice as subsistence and economically unviable as well as environmentally destructive. Development planners and policy makers perceive this practice as a major hurdle to the development of the region and hence have consistently tried to replace it with settled agriculture, investing substantial financial resources in the process but with limited success. A report by the Task Force on Shifting Cultivation (Jhum) in Meghalaya, quoting figures by the Forest Survey of India, puts the extent of shifting cultivation in the region at 1.73 million hectares (Tariang, unpublished). Although the figures are the cumulative total of a decade (1987-97), it is suggestive of the extant of the practice and also indicative of the limited success of government efforts to replace it.

Given this persistence of shifting cultivation, the simultaneous policy efforts of the government for transformation as well as the aspiration and desire of communities for change, it is pertinent to explore and assess the impact of such transformations and the implications of replacement (or more recently, of stabilization) on the practice as well as on traditional access and tenure regimes, income and vulnerability and the status, relevance and functioning of traditional institutions in the context of this change. It has been suggested that agricultural landuse transformations will destabilize shifting cultivation by drastically reducing fallow cycles, thereby decreasing productivity, ultimately marginalizing the practice and the practitioners (Choudhury and Sundriyal, 2003). This trend has also been reported in other parts of the world, particularly South east Asia (Fox, 2000). However, what remains of concern is the impact of transformations on access and tenurial regimes and the implications for the functioning of common property regimes which seem less studied and explored. It is these aspects

that the present paper attempts to explore, taking the case of the Garos, an indigenous community inhabiting the Garo Hills district in the northeastern state of Meghalaya, India.

## THE STUDY SITE

The district of West Garo Hills in the northeastern state of Meghalaya was chosen as the study site, mainly because transformations have been the most prominent and rapid in the district compared to other districts in the region and also because agricultural transformations and their impacts in the district has been the subject of over a decade's research by the first author. The Garos are of Tibeto-Burman origin, concentrated in Garo Hills and conjoining areas of the northeast region of India as well as parts of Bangladesh. Garos are a matrilineal society with inheritance traced through the mother. This attribute assumes special significance in the context of agricultural transformations within shifting cultivation as sedentarisation could lead to privatization of land resources and given the property ownership framework followed in the rest of the country, can have significant implications in this regard for women, subsequently disintegrating the matrilineal inheritance regime followed by the Garos.

The present study was based on primary surveys covering six villages, selected on the basis of their exposure to and inclusion in development programmes. Four villages - Chidoagre, Tapra Alda, Bolsagre and Rongsep Adugre – were part of the villages where an International Fund for Agricultural Development (IFAD) sponsored project is being implemented. Adu Klangre was chosen as a village that has been included in a Government of India sponsored Watershed Development Programme designed to 'weane' away shifting cultivation. As a control, the village of Boldanngre was included in the survey as a village which has not been subjected to interventions by government programmes or the IFAD project. Household surveys were carried out in each of the villages to cover at least twenty percent of the households and this resulted in a total of eighty one households being surveyed. The household surveys were based on a semi-structured questionnaire and interviews conducted for the male as well as female elders of each household using the same questions. The preliminary results of the survey are presented in this paper, highlighting the salient findings. The paper also deals with community initiatives taken in response to transformations (based on earlier work by the first author) and suggests that changes in shifting cultivation can be managed if lessons are learnt from community initiatives and management approaches designed accordingly.

## RESULTS

### *Agricultural landuse changes*

Agricultural landuse has changed in West Garo Hills over the past few decades. Agricultural statistics from 2001 to date suggests the rapid expansion of cash and

plantation crops and also confirms the gradual decrease in the area under shifting cultivation (Table 1). As evident from the figures, a phenomenal expansion has taken

**Table 1 :Changes in Agricultural landuse in West Garo Hills, Meghalaya (India)**

(in hectares)

Landuse categories	2001-02	2004-05	2007-08	% change (from 2001-02)
Total Arable area	33911	34182	na	nc
Total Jhum area	3704	3588	3568	(-) 3.67
Wet rice/terraces	na	13753	7118	nc
Pineapple	978	997	na	nc
Cashew	1283	1298	1334	(+) 3.98
Arecanut	1088	1108	1530	(+) 40.63
Tea	120	163	367	(+) 205.83
Rubber	60	45.54	82	(+) 36.67
Total Cash crops	3529	3611.54	3313	(+)29.87*

(\* percentage change calculated excluding area under pineapple; na – data not available; nc – not calculated due to lack of complete time series data)

place in cash crops in the last few years, especially in regard to tea cultivation. Despite such expansions, villagers continue to practise shifting cultivation and this is evident from the fact that nearly all households continue with the practice in all the villages studied, although a change is evident in Adu Klangre, where the watershed programme interventions seems to have reduced the households continuing with the practice (Table 2). An interesting revelation of the survey is the fact that access to shifting cultivation has not changed despite transformations (and a reduction in area under shifting cultivation as suggested by the agricultural statistics), and all households retain their access to shifting cultivation plots, with the exception of Adu Klangre. Of more interest and perhaps of intrigue, is the fact that all households report having access to orchards, including those in the control village. This universal access, however, shows a drastic departure from the trend in regard to wet rice terraces and it appears that majority of the households are deprived from having access to this system (Table 2). A factor that contributes to this limited access is the attribute of terrain – the limited land suitability given the sloping topography – but given the demands on resources (both human and financial) required for conversion to terraces and valley bottom cultivation and the initial need for importing labour adept in wet rice cultivation, it is not surprising that a large majority of households remain unable to develop this farming system. It is fairly reasonable to assume that such households would belong to the poor and deprived.

**Table 2: Agricultural landuse profile in sampled villages, West Garo Hills**

S l n o	Village	No of HHs		% sample HH practicin g Jhum	% sampled HH having access to			
		Tota l	Sampl ed		Jhum plots		Orchard s	Terraces
					Annua l	Occasiona l		
1	Chidoagre	41	20	100	100	0	100	33
2	Tapra Alda	35	16	87	100	0	100	33
3	Bolsagre	20	10	100	86	14	100	12.5
4	Rongsep Adugre	22	9	100	100	0	100	62.5
5	Adu Klangre		15	66.7	100	0	100	18
6	Boldanngre		11	100	100	0	87.5	0

(Source: Primary survey, 2007-08)

An assessment of the proportion of households reporting farming systems diversification – shifting cultivation, orchards and terraces (or wet rice cultivation) – and the simultaneous possession of such diverse farming systems shows interesting trends, pointing to changing disparities in access to productive resources. Although marked variations exist between villages, it is evident that a fairly sizable section of the households in all villages are more well disposed in regard to possession of mixed farming systems. The only exception in this trend is Boldanngre where none of the households have mixed farming. At the other extreme is Rongsep Adugre with more than fifty percent of the sampled households - a significant proportion of the households - having mixed farm holdings (Table 3).

The compilation also suggests that although many households do not have all the farming systems, a significant proportion of the households have orchards in addition to their traditional shifting cultivation plots indicating the gradual diversification of farming systems and the transformations towards plantation crops. This is interestingly true of the control village as well. Of significance, however, is the fact that a small proportion of households in Adu Klangre have only orchards and those in Boldanngre only shifting cultivation fields (Table 3). Although the proportion in both cases is small, the proportion in Adu Klangre suggests the shift of dependency from shifting cultivation to pure plantation crops, while that in the control village seems to suggest the proportion of households that have been deprived of the transformations and may belong to the disadvantaged. The concern here is the reasons of deprivation and factors governing this situation as well as the marginalization and potential vulnerability they may be susceptible to.

**Table 3: Profile of access to different farming systems in sample villages**

SI no	Village	% of sampled HHs having					
		Mixed Farming Systems*	Jhum and		Orchard and Terrace	Orchard only	Jhum only
			Orchard	Terrace			
1.	Chidoagre	35	65	0.0	0.0	0.0	0.0
2.	Tapra Alda	33	60	6.7	0.0	0.0	0.0
3.	Bolsagre	12.5	88	0.0	0.0	0.0	0.0
4.	Rongsep Adugre	62.5	37.5	0.0	0.0	0.0	0.0
5.	Adu Klangre	14	71	0.0	0.0	14.0	0.0
6.	Boldanngre	0.0	87.5	0.0	0.0	0.0	12.5

(\* mixed farming systems signify households practising jhum, orchards and wet rice terraces; source: Primary survey, 2007-08 )

#### *Transformations and impact on Shifting Cultivation*

The promotion of settled agriculture, particularly wet rice systems and orchards and cash crop plantations have been encouraged on shifting cultivation fallows, which for official landuse purposes, are categorized (and perceived) as 'abandoned wastelands'. Government programmes offer subsidies and incentives to shifting cultivators to establish horticulture or cash crop plantations in order to encourage shifting cultivators to replace the practice. Similar support is also provided for developing wet rice systems. The establishment of such sedentarised systems is invariably done in erstwhile shifting cultivation fallows, to which the shifting cultivators would have return to at the end of the cycle if transformations had not taken place. The present study confirms the trend with nearly all households reporting the establishment of orchards and plantations in the shifting cultivation fallows. The interesting exceptions are a small percentage in two

**Table 4: Promotion of settled farming systems and impact on shifting cultivation**

SI no	Village	% HH Established orchard or terraces		% HH Perceive reduction in jhum cycle	Present Fallow Cycle
		In jhum fallow	Near house		
1.	Chidoagre	100	0	100	5
2.	Tapra Alda	100	0	100	6
3.	Bolsagre	89	11	100	7
4.	Rongsep Adugre	100	0	100	5
5.	Adu Klangre	100	0	100	7
6.	Boldanngre	71	29	100	7

(Source: Primary survey, 2007-08)

villages who have established such systems near their homesteads and not in the fallows. All households, however, unanimously agree that the promotion of settled

systems in fallows have brought about a reduction in the shifting cultivation fallow cycle. This is also confirmed by the length of the fallow cycles in the study villages which range from five to seven years – a period, insufficient for the system to recuperate and rejuvenate (Table 4).

#### *Transformations and impacts on control of resource governance by Traditional Institutions*

A comprehension of the impact of such transformations on control and access regimes governed by traditional institutions of the Garos requires a clear understanding of the structure and functioning of the governance framework at the village or *Akhing* (traditional kingdom) level. Garos are a matrilineal society and all land resources in the *Akhing* or village kingdom is owned by the youngest daughter (or the daughter who agrees to take care of the aging parents), known as the *Nokni*. Her husband, known as the *Nokma*, is the custodian of the *Akhing* resources and manages these in conjunction with the *Maharis*, who are the *Nokni*'s maternal uncles. Decisions on tenure and access by households within the village for any land based activity are conducted by consensus, but only with the consent and approval of the *Nokma*. Thus, selection of the site for shifting cultivation is decided and approved by the *Nokma* together with all households, following the schedule of the shifting cultivation fallow cycle. Allocation of the shifting cultivation field to individual households is done during this meeting with the *Nokma* providing the final approval. As decisions are taken by consensus, the potential of conflicts is inherently avoided.

An interesting aspect of plot allocation is the rationale underlying plot size allocation. Plot sizes depend on 'mouths to feed' within the household as well as able-bodied labour availability within the household in question. In instances where members may have migrated out of the village – either for permanent employment or temporary migration – the size of the original plot reduces to a scale which will adequately support the remaining 'mouths to feed', also taking into consideration the available labour within the household. This optimizes on land management, reducing wastage and low returns to labour while ensuring that sufficient productivity and adequate food security for the household is assured. In cases where labour availability is constrained, community labour contributions are given on a reciprocal basis to the household. The 'surplus' land that arises out of such cases of rationalization of plot size to 'mouths to feed' are then made available to those households that may not have access to shifting cultivation plots within that year's parcel due to their migration into the village at a period later than the village's establishment. This ensures universal access to productive land for all, without discriminating between the well to do and the disadvantaged and under privileged. This framework of plot size rationalization is common to most upland communities in northeast India (Choudhury, 2006).

Customary norms of access governance also have clear frameworks in regard to agricultural land use other than shifting cultivation. Households are allocated land for their homestead, which are fairly large holdings and sufficient for the homestead as well as for homestead gardens. Such land holdings are effectively private holdings and families can use these holdings for building their homestead as well as for planting perennial horticultural crops. In cases where households desire to establish cash crop plantations or other perennial crops outside the homestead area, they are required to take approval from the *Nokma*. On approval, the household can plant cash crops in the allocated plot and the tenure remains with the household as long as they use these plots for such cultivation. No household can conduct shifting cultivation in plots allocated under such arrangements. In case cultivation in such plots are abandoned or discontinued, the plot reverts back to the *Akhing* and can be reconverted to *Akhing* forests or shifting cultivation. Further, although the tenure to such plots can be inherited by the daughter and her daughters, the tenure cannot be transferred to others under any circumstances, effectively negating any land sale or ownership transfer. This arrangement controls and prevents the conversion of *Akhing* lands – effective common property resources – to private holdings that can be sold or transferred.

With the rapid transformations resulting from promotion of cash crops and plantations by different government programmes, the traditional access and control framework and the firm hold of the traditional institution seems to be under threat of dilution. A disturbing trend that seems to be emerging from the survey in this regard is the perception of households in regard to the requirement of seeking permission from the *Nokma* for establishing orchards or permanent plantations. Although a high degree of

**Table 5: Perception of sampled households in regard to requirement of Traditional Institution /Nokma's permission for establishing orchard**

S I n o	Village	Traditional Institution's permission for orchards (% HH)			
		Required		Not required	
		males	females	males	females
1.	Chidoagre	63	50	39	40
2.	Tapra Alda	31	36	69	53
3.	Bolsagre	75	56	25	44
4.	Rongsep adugre	12.5	22	87.5	67
5.	Adu Klangre	50	30	50	60
6.	Boldanngre	86	87.5	14	12.5

(Source: Primary survey, 2007-08)



intra-village variation exists, a substantial percentage of the households in some of the surveyed villages perceive that no permission is required from the *Nokma* to establish orchards or plantations on their plots. It is interesting to note that such a change in perception is evident in villages where government programmes have been actively promoted and is in marked contrast to the control village. Another interesting trend is the difference in perception on the matter between males and females (Table 5).

The preliminary findings in this regard suggesting a trend of departure from customary norms demanded further examination and the responses of the households were analysed further. The analysis provides some insights into this changing trend and reflects an interesting response of the villagers to the opportunities (and needs) arising out of the changing scenario. While some percentage of the respondents were themselves *Nokmas* (and hence did not require to take permission from anyone), a growing number of households have been incorporating horticultural cash crops into their shifting cultivation fields without completely converting the field into plantations or established such plantations in or near homesteads. In both cases, the need for permission from the *Nokma* did not arise, and hence their response to the survey indicating that such permission was not required. However, a sizable proportion still remain who are neither *Nokmas* nor incorporating such crops into their shifting cultivation fields or homesteads and yet perceive that permission of the traditional institution is not required to establish permanent plantations. Such households are significantly large in villages where programmes for settled agricultural transformations have been active (Table 6).

**Table 6: Permission from Nokma for setting up orchards**

Sl no	Village	% HH confirming					
		Permission not required					
		Nokma		Not necessary		Incorporation With crops	
		M	F	M	F	M	F
1.	Chidoagre	5.3	10	31.6	35	0.0	5.0
2.	Tapra Alda	0.0	0.0	37.5	57.1	31.3	7.1
3.	Bolsagre	12.5	11.1	12.5	33.3	0.0	0.0
4.	Rongsep Adugre	0.0	0.0	62.5	55.6	25	22.2
5.	Adu Klangre	0.0	0.0	50	70	0.0	0.0
6.	Boldanngre	0.0	0.0	0.0	0.0	28.6	22.2

(Source: Primary survey, 2007-08)

In order to further examine this trend, the survey also included enquiries to assess the issue of land registration with the authorities (revenue or district council, where the registration could mean a legal ownership title being awarded which then could legally

allow privatization, including the ability to sell the plot – an effective conversion of a common property resource to private property). Although a substantial proportion of the households have not registered their plantations or wet rice holdings, a growing proportion reported to have done so (Table 7). A marked variation seems to exist between villages (and in the response between males and females), but the response from some villages seem to be high and disturbing. The interesting findings in this regard are (i) the contrast in numbers between the IFAD project villages and the control and watershed villages, with virtually the absence of any household that has registered in the non-IFAD villages, and (ii) the variation between the male and female responses. Although this calls for further detailed field assessments, preliminary enquiries reveal that the registration in IFAD villages has indeed been encouraged, but such registrations are done with the *Nokma*'s permission for wet rice terraces. Registration by the concerned authorities is done only when approved and ratified by the concerned *Nokma* without which the authorities will not register the holding and award land titles. This explanation is somewhat unsatisfactory and merits detailed study.

**Table 7: Land Registration**

SI No	Village	% HH reporting orchards					
		Registration		In process		Not registered	
		M	F	M	F	M	F
1.	Chidoagre	22	10	0	0	78	90
2.	Tapra Alda	53	27	7	7	40	67
3.	Bolsagre	25	11	0	0	75	89
4.	Rongsep Adugre	12.5	11	0.0	0.0	87.5	89
5.	Adu Klangre	10	0	0	0	90	100
6.	Boldanngre	0	0	0	0	100	100

(Source: Primary survey, 2007-08)

The final aspect which was probed during the survey dealt with the perception of the villagers in regard to the role of the *Nokma* if they wanted to sell their plantation. The findings of the survey are presented in Table 8. It is clear that while villagers in Boldanngre have no doubts in their mind regarding the controlling role of the *Nokma*, perceptions in the other villages vary. Again, the results would suggest the need for further investigations in this regard, but it is sufficiently indicative of a changing perception of the role of the traditional institution, particularly given the clear response from Boldanngre in contrast to other villages – the results seem to indicate a gradual trend of dilution of the control, functioning and relevance of the institution of the *Nokni* and *Nokmaship*.

**Table 8: Permission to sell**

Sl no	Villages	% HH reporting							
		Permission required		Not required		Registered		Don't know	
		M	F	M	F	M	F	M	F
1.	Chidoagre	39	50	28	0	0	0	33	50
2.	Tapra Alda	33	21	17	14	25	21	25	43
3.	Bolsagre	75	67	12.5	22	12.5	0	0	11
4.	Rongsep Adugre	78	73	11	27	0	0	11	0
5.	Adu Klangre	25	11	50	44	12.5	0	12.5	44
6.	Boldanngre	100	100	0	0	0	0	0	0

(Source: Primary survey, 2007-08)

*Transformations, increasing demands on labour: probable implications for vulnerability*

With the gradual increase in agricultural transformations in the uplands of northeast India, the incidence of households having multiple agricultural holdings is proportionately increasing. Almost all households have at least one production system in addition to their traditional shifting cultivation fields (Table 3). Labour demands, even in conventional shifting cultivation, is high given that families would have two fields (current and previous year's shifting cultivation fields) to tend to. Labour is required throughout the year for clearing, sowing, weeding and harvesting. With diversification of production systems brought about by transformations, the demands on labour have increased many fold. With additional systems, households have to divide their time and labour between all the different systems they possess. The household surveys reveal

**Table 9: Household Labour**

Sl no	Village	% HH reporting							
		Insufficient labour		Household labour		Cannot employ		Engage labour	
		M	F	M	F	M	F	M	F
1.	Chidoagre	59	70	35	24	35	41	29	35
2.	Tapra Alda	60	87	27	15	45	38	27	46
3.	Bolsagre	75	56	50	33	50	33	50	67
4.	Rongsep Adugre	75	67	29	17	0	50	72	33
5.	Adu Klangre	50	82	37.5	25	37.5	25	50	75
6.	Boldanngre	57	89	100	100	100	100	0	0

(Source: Primary survey, 2007-08)

that labour is insufficient to manage the systems. Almost all households have to manage their fields with household labour and a substantial proportion cannot afford to

engage paid labour due to insufficient income. The lack of availability of able bodied labour has been reported to be responsible for lowered productivity in shifting cultivation (Choudhury and Sundriyal, 2003). With diversification of production systems and the persistence of inadequate labour availability, management and productivity from all systems seems questionable. Moreover, with many households reporting their inability to engage paid labour, the long term vulnerability of such households seems uncertain and unaddressed. This aspect seems to be completely overlooked by agencies promoting transformations and may prove to be counter-productive unless the choice of crops are made judiciously and focus on those that are hardy and non-labour intensive.

#### *Community Innovations: Some examples*

The response of any community to change is to gradually evolve innovative responses. Upland communities of northeast India have been no different. As the need for cash generation gradually increase, shifting cultivators in Garo Hills have responded by slowly 'commodifying' their conventional crops (Choudhury et al, 2003). The uniqueness of this transformation has been the crop shifts and change in proportion of area under

**Table 10: Commodification of Shifting Cultivation as a response to Marginalisation**

CROPS GROWN IN JHUM FIELDS							
Relative area occupied	THEN			NOW			
<b>70 % (= Principal Crops)</b>	<b>Cereals</b>	<b>Tubers</b>	<b>Vegetables</b>	<b>Cereals</b>	<b>Tubers</b>	<b>Veg.</b>	<b>Spices</b>
	Paddy	Tapioca ©	Pumpkin ©	Maize ©	Ginger ©	Pumpkin ©	Chillies ©
	Maize ©	Yam ©	Cucurbits ©				
	Millet		Sorrel leaves				
	(3:5)			(0:4)			
<b>20 % (= Intermediate crops)</b>	<b>Spice</b>	<b>Tubers</b>	<b>Veg.</b>	<b>Others</b>	<b>Cereals</b>	<b>Tubers</b>	<b>Veg.</b>
	Chillies	Ginger	Brinjal	Cotton ©	Paddy	Tapioca ©	Cucurbits ©
		Tumeric	Tomato	Jute © Mesta ©	Millet	Yam ©	Beans © Spring Onions ©
							Tobacco © Cannabis ©
	(5:3)			(2:7)			
<b>5 % (= Minor crops)</b>	<b>Oil seeds</b>	<b>Others</b>	<b>Vegetables</b>	<b>Oilseeds</b>	<b>Vegetables</b>	<b>Others</b>	
	Sesamum	Tobacco ©	Beans	Sesamum ©	Hill Tomatoes ©	Cotton ©	
		Cannabis ©	Spring Onions ©		Beans ©	Mesta © Jute ©	
	(2:3)			(0:6)			
<b>Total</b>	<b>(10:11)</b>			<b>(2:17)</b>			

(© = commodity crops (for consumption *and* sale); ratios are for consumption: commodity. Note the significant decrease in consumption crops and increase in commodity crops in present-day shifting cultivation, compared to the proportion earlier, suggesting the rapid "commodification" of the system. Source: Choudhury et al, 2003)

such crops within an upland farmer's plot rather than the prescription of complete replacement as advocated by the technical specialists and policy framers. Thus many of the crops that were previously grown as principal crops within a shifting cultivation plot have given way to those crops that have a commodity value in the market. Choudhury et al (2003) reported a shift in the ratio of food crops to commodity crops to the order of eight times the traditional ratio of 10:11 (Table 10). In recent times, it is common to find ginger, a cash crop as one of the principal crops in shifting cultivation fields of Garo Hills. With such 'commodification', farmers seem to be addressing the economic viability and returns from shifting cultivation.

Community innovations have not been confined to only the cultivation (agricultural phase), but are also evident in fallow management. As reported in the preceding sections, shifting cultivators incorporate cash crops as well as non-crop forestry resources into their fields as they manage their current year's crops. The incorporation of many forestry species – both woody as well as non-woody – is common. Thus, upland farmers incorporate *Macaranga* sp., a highly popular fuelwood species into their fields. Similarly, black pepper vines, many NTFPs, timber species are introduced into the fields and nurtured during the fallow phase. Such an approach cleverly synthesizes natural regeneration of native species with commercially important trees and NTFPs, thus giving returns to the households in a long term basis. Such innovative approaches should be encouraged and adopted for forestry purposes, particularly in the context of shifting cultivation. Indeed, it is widely recognized that several highly productive and sustainable agroforestry systems have their origins in response to the need to reduce fallows (Voss, 2007).

Innovations by communities have not been confined to the shifting cultivation fields and fallows alone. In response to the growing landuse pressures on shifting cultivation areas and as a response to increasing pressures on their time, shifting cultivators have 'brought the jhum into their households'. This innovation was first seen in the village of Chandigre in the buffer zone of Nokrek National Park, West Garo Hills as a response to increasing pressures on their shifting cultivation land resultant to government programmes for agricultural development and conservation. As pressure on their shifting cultivation land increased, Chandigre farmers brought most of their jhum crops into their homestead gardens. As they realized the advantages of this, particularly in regard to time saving (their fields were on average at least two hours away from the village) and the better management they could afford to crops in the homegardens, households intensified cropping within homegardens and in some cases, expanded into 'extended homegardens' (Roy and Choudhury, unpublished). Chandigre farmers were among the first to cultivate tea, coffee and citrus within the homestead area – which are extensive – instead of in the fallows and 'abandoned wastelands' as encouraged by government agencies. This, again, was innovative as it did not encroach on shifting

cultivation fallows and hence, did not affect the fallow cycles while allowing for the introduction of cash crops.

In addition to intensifications of homegardens, commodification of shifting cultivation or fallow enrichment, community innovations have also been initiated in landuse planning. Landuse planning, particularly in regard to plot consolidation and optimization has been the thrust of innovation among many upland communities of northeast India, taking strong cues from traditional land management practices. The rationalization of plot sizes based on need (as described in a preceding section) has generated 'surplus' land in each land parcel, particularly with the increased migration of household members out of the village. With increasing labour unavailability within households due to out-migration, plot sizes have decreased, allowing villages to reduce the area under shifting cultivation for a particular year. Villagers have redrawn plot parcels to accommodate designated areas for plantations, grazing, growing thatch and fodder as well as for forestry, particularly for conserving catchment forests without compromising on the fallow cycle length of shifting cultivation. In many areas, this has even resulted in longer fallow cycles and contributed to improvement of productivity from the shifting cultivation system. Innovations in landuse planning offer the best solution for strengthening shifting cultivation while simultaneously allowing perennial cash crop introductions. These are lessons that need to be emulated by policy planners and the government.

### *Conclusion*

The findings of the present study as well as earlier studies conducted in the region (Choudhury et al, 2003; Choudhury, 2006; Roy and Choudhury, unpublished) seem to indicate that upland communities have been responding to the needs for change without compromising on common property access regimes. Innovations based on traditional tenurial access frameworks that ensure long term tenurial security but safeguard ownership patterns, by preventing ownership transfer rights address the needs for transformations without encouraging privatization. Government policies and approaches require to understand, acknowledge and honour such frameworks. The desire of governments for agricultural change and economic development is shared equally by upland communities; the difference lies in the introduction of such initiatives within traditional landuse and access frameworks as against that of replacement.

Examples of community innovations and initiatives from across the northeastern region, in particular from the Garo Hills of Meghalaya, suggest that government policies need to be more flexible and sensitive to the innovations that communities are constantly evolving in response to such changes, if government efforts are to be successful and second generation problems avoided. Recognition of community initiatives and innovations and attempts to incorporate such approaches to government efforts of transformations will be more acceptable and fruitful than a rigid policy of replacement

and hence, help find ways to make the practice economically viable, productive and environmentally sound. In addition, community initiatives demonstrating the possibility of making shifting cultivation economically feasible demonstrates the need to reorient scientific and technical research to make them more appropriate and location specific. It also suggests that technical approaches for agricultural development in the upland systems need to incorporate the traditional wisdom shown by the communities. Governments, thus, require to be more responsive and effect changes in policy approaches if common property resources are to be conserved and prevent replacement with private property regimes.

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