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FROM JHUM TO SETTLED CULTIVATION

Changing Livelihood Practices among the Buguns tribe of Arunachal Pradesh

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Abstract: Shifting cultivation or Jhum/ slash and burn agricultural practice has been the main livelihood options for many tribes in India, and is predominantly found to be practiced in the hill regions of the North Eastern states. In Arunachal Pradesh too the practice of Jhum cultivation has been the main mode of sustenance among almost all the major tribes. Jhum cultivation among these tribal communities carry much larger significance in terms of their social and traditional culture. The social organisation of these tribes is often built around the concepts of community ownership of the jhum lands, participation and responsibility of cultivation. It is not surprising therefore, that being in the stage of primordial social setup till recently these tribal communities of Arunachal Pradesh depended upon the indigenous subsistence mode of jhum agriculture and forest based natural resources for their day-to-day existence or livelihood. However, of late growing population and expanding urbanisation have started exerting pressure on the availability of land for the jhum cycle, there by affecting the process of Jhum practice. Further the impact of globalisation has ushered in the demands for more cash and consumer durable items. The Buguns who are one of the minor tribes settled in the Singchung circle of the West Kameng District stands out as one such example and has been taken as the area of study for the present research. The effect of the changes has not left the Buguns and as well and hence the farmers of Bugun tribes have changed their land use pattern and agro-ecosystem of the region moving from Shifting Cultivation *or Slash burn* agriculture to practice of Settled or Permanent Cultivation (Sedentary) with emphasis on those crops which fulfils their daily consumption and also generates income like the horticulture crops. The present study is an attempt to understand these dynamics of traditional livelihood patterns and change among the Buguns along with its allied activities and the emerging trajectory thereof.

Index Terms **- Jhum Cultivation, Primordial, Livelihood, sustenance, trajectory.**

I. INTRODUCTION

The history of shifting cultivation is believed to have started about 8000 B.C. in the Neolithic period which witnessed the remarkable and revolutionary change in man's survival process on this earth in the form of discovery of a mode of production of assured food i.e., agriculture. The shift from hunters and gatherers to food producers was the most remarkable step ever taken in the human history that laid the base of population growth and remodelling of his adaptable habitat. Shifting cultivation since its inception is identified with rotation of fields rather than rotation of crops, absence of draught animals and manuring, use of human labour only, employment of dibble sticks or hoe, and short period of occupancy alternating with long fallow periods to assist the regeneration of vegetation, culminating in secondary forests.

Shifting cultivation is a part and parcel of socio-cultural life of the tribal people in North-East India and as such all its operations are inseparably linked with their religious rites and festivals (Singh and Sharma, 1999) Arunachal Pradesh, the easternmost state of India exhibits the similar pattern. Being a tribal dominated state with 26 major and about 105 minor tribes who exhibit variegated heritage, culture and vibrant lifestyle nurtured and guarded over generations. Each of practices, customs and practices reflects the intricate man nature relationship and the process of adaptation of the geographical space occupied by them. The state of Arunachal Pradesh which came in to existence as full-fledged state of Indian Union in 1987, is geographically the largest among the Nort-Eastern states and has been blessed with nature's bounty in all form starting from the lofty mountains to rolling foothills of the Himalayas punctuated with river valleys and lowlands. However, the topography is heterogenous at many counts and therefore restricts the process

of settled and permanent agriculture among most of the tribes, particularly those who inhabit the geographically difficult terrain. It not surprising therefore that in these areas more than 50% of agriculturally feasible land along the hill slopes are land under *Jhum* cultivation. (Statistical year book Arunachal, 2017). The present study area located in the West Kameng District, and is inhabited by the Bugun Tribe along with the Monpas, Mijis, Akas, Sartang, and Sherdukpen. Though numerically a minor tribe with a mere population total of 2043 (as per 2011census) the Buguns stand out distinctly with their inherent culture and traditions. The Bugun tribe is confined to Singchung circle termed or called it as ***'Rekh-tsai or RekhLowi,*** derive from two local Bugun words "*Rek*" means farmland and "*Tsai*" means to slash, *Lowi* means Shifting. Thus, Rek-tsai means slashed farmland in term of local Bugun dialect and *Rekh Lowi* means shifting the farmland. The clearing of fresh forest land for cultivation is known as *Rekh Rachua* and clearing a plot of forest land for cultivation which was left for fallow by the grand parents or by their ancestors for rejuvenation of the fertility of the soil is called as *Rekh Ranyu*. According to *Rekh Ranyu*, Bugun people claim for their ancestral land. The cultural significance of Jhum among the Buguns can be understood from the fact that the most important festival known as ***Gung Sowai,*** is celebrated along with this beginning of 'Shifting Cultivation'

II. THE PROCESS OF SHIFTING CULTIVATION

Shifting Cultivation or slash and burn agriculture refers to the techniques of rotational farming in which a plot of land is cleared for cultivation & then left to regenerate for few years. In other words, it is a process of growing crops by clearing the land by felling trees/vegetation and burning then after. The burnt remains add potash in soil, which increases the nutrient content of soil.Williams (2004) Slash-and-burn shifting cultivation involves slashing, burning, and field rotation. The principal function of slashing is forest clearance. Burning completes the clearing process and it adds nutrient-rich ash to soils characterized by otherwise low fertility. Because crop deplete nutrients from the ash rather quickly, field are abandoned after two or three years, and another section of forest is cleared. After a period of several years, the forest regenerates itself and is once again rejuvenated and ready for clearing and cultivation and hence field are used on rotation. Further, shifting cultivation fields and their surrounding forests provide two alternative sources of subsistence to the dependent population. In case the crops are not good or fail, the forest resources aid the farmers by augmenting their food supplies in addition to the provision of house building material, fuel wood and timber. The usual process in shifting cultivation followed in the region demands the selection of a plot on or near the hill side or jungle, usually done during the months of October to December by the village elders, clan leaders and households. In some tribes, community as a whole is collectively responsible for clearing of the selected jhum plots while in others, the clearing of trees and shrubs is made by the respective family to whom the plot is allotted. At the time of allotment of plots, the size and workforce in the family are taken into consideration. This is the fundamental basis for ensuring equitable and universal access to land as well as rationalisation of labour availability and is based on the principle of 'mouths to feed'. The area allotted per family varies between half hectare to one hectare among the different tribes, and states in the region. The process of clearing the plots which takes over a month is labour intensive, being undertaken almost with indigenous and traditional equipment. Households remove useful biomass – big branches, trunks and boles – for house building, timber and fuelwood requirements and the remaining debris are left to dry. The dried slash as well as the tree trunks standing in the clearance area are set on fire between the months of February and March, care being taken during the firing operations to ensure that fires do not spread out of control. The ashes are then scattered over the ground and dibbling of seeds begin right after that, before the advent of monsoon. The dibbling and planting of seeds is an exclusive job of the female members. Most interestingly, before sowing starts, evil spirits and village deities are worshipped and sacrifices are made for a good crop and prosperity of the family. At the advent of rains, the seeds begin to germinate. In shifting cultivation, the soil is never ploughed and no irrigation is used. After sowing the crops, the shifting cultivators pay attention to the crops regularly removing weeds from the field. In some places the crop is, however, protected from stray cattle and wild animals by fencing the fields with bamboo. Many shifting cultivators in the region have the custom of constructing a hut in the field to look after the crop. Shifting cultivators practice mixed cropping however the composition of crops varies from tribe to tribe within the region. The land is cropped for two or three years, thereafter, it is fallowed to recuperate. Traditionally the shifting cultivators grew only food grains and vegetables however during present times most communities have shifted to cultivation of cash crops such as ginger, turmeric, pineapple, jute etc. Among food grains, the traditional varieties of rice, followed by maize, millet, job tears and small millets are the principal crops. Among vegetables, a variety of legumes, potato, pumpkins,

cucumbers, yams, tapioca, chillies, beans, onion and arum are mostly cultivated. In fact, the choice of crop is mostly consumption oriented.

Clearing of Forest

setting of fire

Clearing of unburned grasses and woods

Mixed cropping

Figure 1: step wise preparation of Jhum fields for shifting cultivation

Rituals related to shifting cultivation

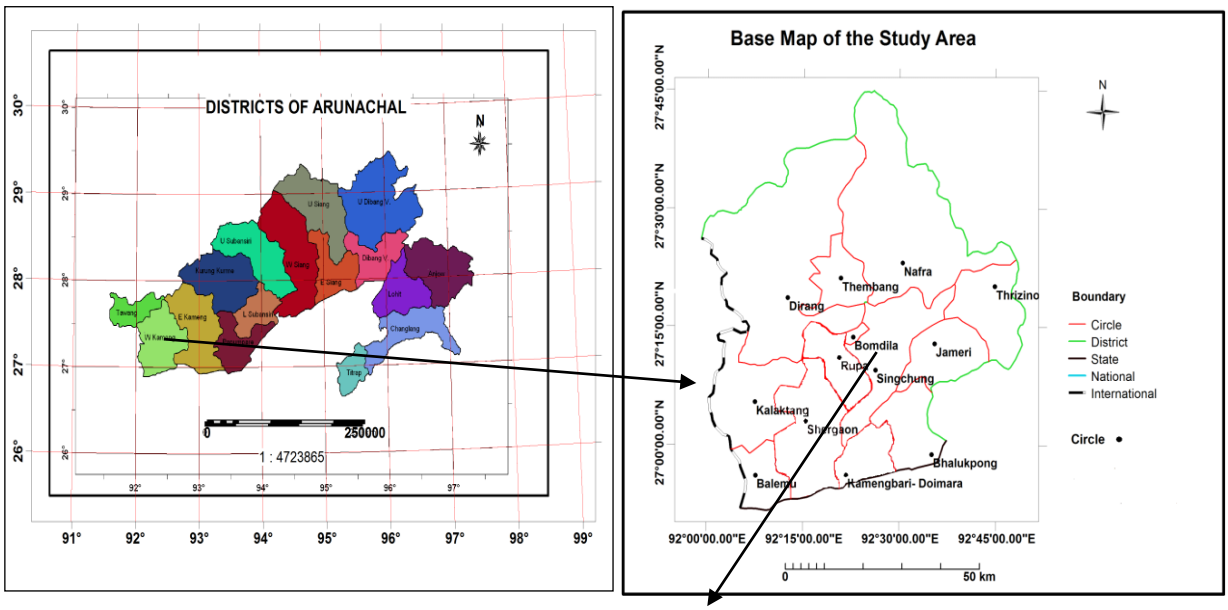
Feast after rituals

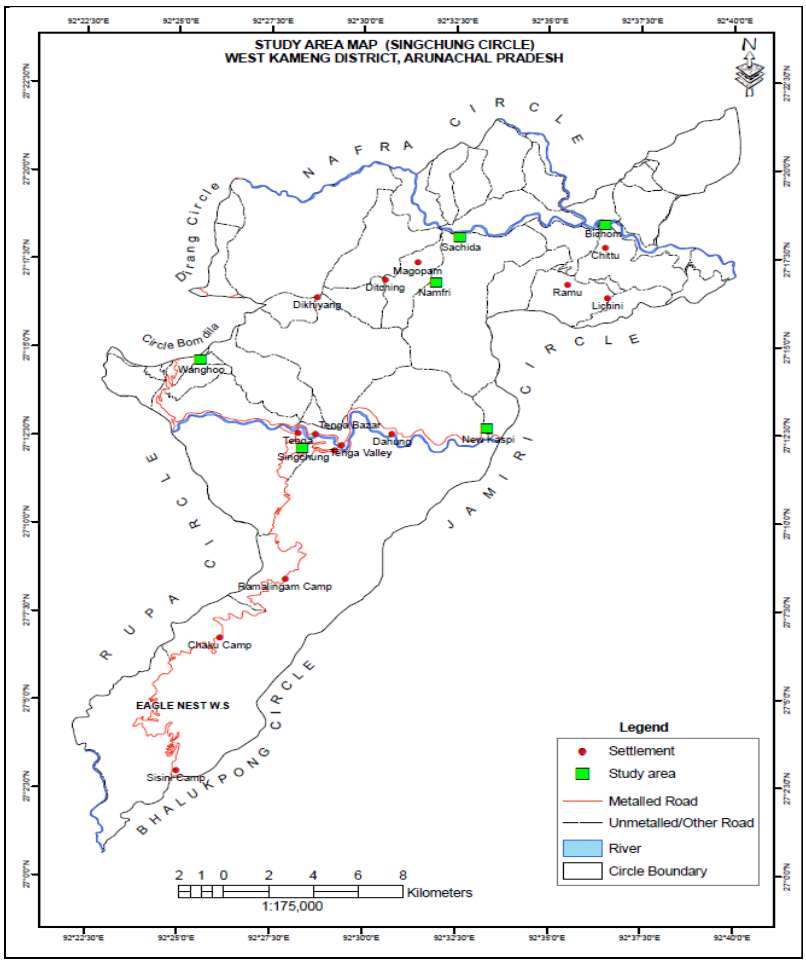
Figure 2: traditional indigenous rituals related to shifting cultivation

III. STUDY AREA

The study area i.e Singchung Circle is inhabited by the *Bugun* tribe which is situated in the West Kameng district of Arunachal Pradesh and is bounded by Mijis & Sartangs (Nafra Circle) in the North, Monpas (Dirang & Thembamg Circle) in the East and Hruso Aka (Thrizino & Jamri Circle) in the South and Sherdukpens (Rupa & Shergoan Circle) in the South-West (fig.3). The area is characterized by a number of hills, mountains and the valleys and have dissected topography by numerous small streams and rivers, majority of which are perennial while a few are seasonal in nature and remain active during the monsoon only.

The *Buguns* are one of the least known tribes of Arunachal Pradesh who inhabits in south-eastern part of West Kameng district. “Ministry of Tribal Affairs, Govt. of India has enlisted the Buguns (Khowas) as one of the minor tribes of India in the Schedule Tribes list in 1950 (Vide Order 1950, C.O.22) and date of notification was on 06-09-1950 in the constitution of India”. According to Census 2011, Singchung Circle comprises total population of 14534 and the indigenous community constitutes 2043 persons only with 984 males and 1059 females. Racially belonging to the Tibeto-Burmese stock the Buguns have their distinct dialect and continue with the oral tradition in form of storytelling and folk lore, which are memorized and passed on from one generation to other. The Buguns usually celebrates their ritual ceremony in the form of festivals. The festivals like *Phum Kho Sowai* (Worship Mountain and river), *Chhat Sowai*, *Gung Sowai*, *Diying-kho Sowai*, *and Ragiah Sowai or Ziliakh Sowai* are the main festival and ritual ceremonies of Buguns. The Bugun are originally follower of animistic but they are gradually become Mahayana sect of Buddhist and some are converted to Christians.





Source: *Generated from Census map of India, 2011*

Figure 3: location map of study area

IV. OBJECTIVES OF THE STUDY

Within this background in order to understand the agricultural practices performed by the Buguns of the study area following two broad objectives were taken into consideration.

a) To assess the changes in the livelihood practices of the Bugun tribe in the study area.
b) To assess the impact of these change on the economic and social life of the Buguns.

V. DATABASE

The paper is based on mainly primary datacollected from field survey by observations, interview and group discussion methods, carried out during a five months field survey between August-December 2019 and also incorporated the data collected during 2021.While some secondary data has been also been used, (there is paucity of data since very little work has been done on the said tribe). Remoteness of the area further adds to the constraints of collection of data from the interior villages as many of these villages do not have all weather roads for accessibility.

Secondary data is limited and some information could be collected state Agriculture Development Office of Singchung circle, District Statistical Handbook of West Kameng District, and Statistical Abstract of Arunachal Pradesh. Besides some articles and unpublished work from Tejpur District Library.

VI. METHODOLOGY

Since the entire study is empirical in nature, collection of primary data had to be obtained with maximum accuracy so that the objectives could be achieved. To obtain the primary data, Purposive samplingtechnique has been used. Out of total eleven villages inhabited by indigenous scheduled tribe population (Bugun) in the Singchung circle, six villages accounting to 55% (percent) of the total villages have been purposely selected on the basis of location and number of households in each village. In the second stage of sampling 60% (percent) of households of each of these six villages were selected following the random sampling method. The data collected from these sampled household with the help of structured questionnaire, interactions and interviews, as well as participant observations has been subjected to tabulation with the help of SPSS and excel package for the summarizations and analyze the emerging trends to derive at suitable conclusion.

The results obtained have been explained and substantiated with the help of table and diagrams and maps for better visual interpretations. The Arc-GIS software has been used for the preparation of location map of study area.

VII. RESULT & DISCUSSION

Any type of diversification whether temporal or spatial has a bearing on the changing livelihood patterns of rural people. Such changes influence transformational process of livelihood across variant age group categories. The change among the Buguns across the trajectory is gets reflected through the processland use which becomes from the compiled tables (table 1-3). Table 1 reflects the total sample size of the study area, which was taken into account to asses the changes that is occurring in the area.

Following the sample size, the type of agriculture being practiced has analyzed taking a time gap of 10 years that is from 2011 to 2021. The comparative analysis of the selected villages and the households show the trend of change in the nature of agricultural practice in the study area. The absolute figures have been converted into percentage in order to understand the extent of change over the decade.

As already stated for the present paper the field survey was conducted in between 2019-2021 in the study area. It is evident from the table 3 that, till 2015 about 54.3 percent of the households were engaged and practicing shifting cultivation and about 45.7 percent of households were recorded under sedentary or permanent cultivation. However, in the last five years that is from 2016 onwards, there is decline in the practice of shifting cultivations among the *Bugun* tribe and households under shifting cultivation show a declining trend and is reduced to about 18.8 percent and become 35.5 percent in the year 2016-2021 from 54.3 percent as was in 2011 (table 3 & fig. 5). On the other hand, number of households practicing sedentary cultivation shows a continuous upward trend and a significantly increased figure of 64.5 percent in 2021.

Table 1: details of villages where village level interviews were conducted

Sl. No.	Name of Villages	Total No. of Household	Population	No. of H-H taken for interview
1	Singchung	68	356	41
2	Bichom	64	320	38
3	Wanghoo	60	285	36
4	New Kasi	42	188	25
5	Namfri-Mangopam	36	136	22
6	Sachida	21	98	13
Total	6	291	1383	175

Source*: Field Survey, 2019* (H-H means House Hold)

The reason behind such drastic change can be attributed to increase in the commercialization of crops in the form of horticulture crop, better and assured profit in comparison to low productivity of crop in the Jhum cultivation. Also construction of Kameng Hydro Electric Project (600 MW) and initiation of its associated developmental work in the present study area since 2016. Added to the change of agricultural practices as the power project has provided new avenues in the form of market developed for the new residential areas of the Hydro project employees, thereby giving a boost to the local farmers to produce and sell their crops, especially vegetable crops which were grown in permanent agricultural fields.

Table 2: agriculture practice in study area

Name of villages	No. of H-H Surveyed	No. of H-H under shifting Cultivation	No. of H-H under Permanent Cultivation	No. of H-H under shifting Cultivation	No. of H-H under Permanent Cultivation
		2011-2015		2016-2021	
Singchung	41	21	20	12	29
Bichom	38	28	10	18	20
Wanghoo	36	13	23	08	28
New Kasi	25	12	13	09	16
Namfri-Mangopam	22	13	09	12	10
Sachida	13	08	05	03	10
Total	**175**	**95**	**80**	**62**	**113**

Source: *Field Survey, 2019- 2021*

Further, construction of roads and other associated infrastructure facilities open up newer opportunities in form of demand of labour force as well activities like dairying though limited at the household levels. Thus, there was a remarkable shift in the agricultural pattern of the local indigenous people of the study area, which evidently shifted from cereal cropping to short cycled horticulture started cultivation of vegetables as well as fruits in their plot of agricultural land where they used to practice *jhum* culture/cultivation till recent past. At present they (*Buguns*) are growing vegetables like potato, cabbage, cauliflower, chilly, tomato, ginger, yam, tapioca, sweet potato, along with some horticulture fruits like orange, apple, banana, guava, pomegranate, persimmon fruit etc., in their plot of agriculture land and sell these locally produced crops in the local market near power project settlement area and further supply to other urban areas like Tezpur, Guwahati and Itanagar for earning some amount of cash to meet their daily needs.

Table 3: types of agriculture practice in study area

Sl. No.	Agriculture Types	2011-2015		2016-2021	
		Frequency	Percentage	Frequency	Percentage
1	Shifting	95	54.3	62	35.5
2	Permanent	80	45.7	113	64.5
Total		175	100	175	100

Source: *Field survey, 2021.*

Apple plantation Tomato cultivation Vegetable cultivation Kiwi cultivation

Figure 4: permanent cultivation in the study area

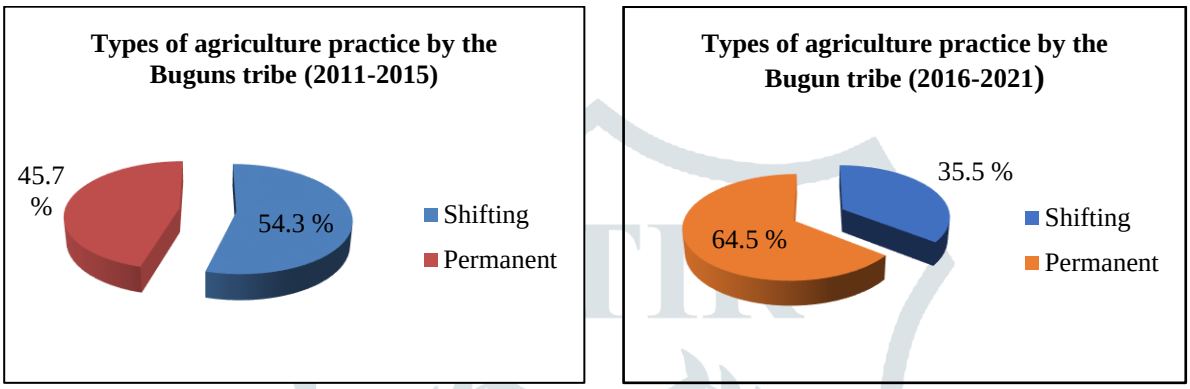


Figure 5: types of agriculture practice in study area

Though, shifting cultivation is least practiced today in most of the earlier surrounding area, but it still continues among the Bugun communities more as a part of culture than as an occupation alternative, because their food habits, emotions, sentiments are linked with sifting cultivation. So, shifting cultivation still exist in the study area to maintain and commemorate their tradition and culture associated with *jhum* cultivation.

VIII. IMPACT

In the study area, farmers started sedentary type of cultivation by adopting terrace farming where the horticulture and commercial crops are mainly grown in the agricultural fields. The farmers have started clearing large area of forest permanently to develop terrace cultivation and horticulture garden*;* thereby affecting the ecosystem of the periphery area. It has been also observed that, there is a phenomenon of rain water saturation on the ground, which also causes soil erosion due to excessive deforestation. Due to the lack of knowledge, idea, and exposer to new type of agriculture, the farmers the Bugun communities, a majority of whom are illiterates, are unable to cope up with the needed methods and technical knowhow of the settled cultivation process and consequently there is lack of adequate knowledge for the process of decimation, particularly on the use insecticides and pesticides in a safe and judicious manner. The unregulated uses of pesticide for doubling their production, and excessive use of fertilizers in the agricultural land has actually reduced the fertility of the soil and also have started having negative impact on human health. The entire process is therefore becoming a threat to health hazards and is ultimately resulting in to decline in crop productivity and profit for sustenance.

IX. CONSTRAINS

Given the nature of physical and social structure in the study area the process of settled cultivation has been facing a number of constrains towards proper implementations, among all some of the major issues faced by the farmers a are.

Lack of integration and co-ordination between the farmers and the extension staff in terms of linguistic barrier approachability and accessibility in participation, which is further accentuated by illiteracy and ignorance about agricultural development programmes as well as unavailability of adequate service facilities such as credit, input supply and marketing to support agricultural development activities.

Relative isolation and poor accessibility of most of the village settlements due to .the transport and communication bottleneck and the resultant high transport costs in the region.

The ruggedness of terrain is the important environmental constraints in the study area which is not very congenial for development of settled cultivation because the technology and implements used in it are not ideally suitable to rugged terrain, slope and soil conditions.

Dry Terraces: The dry slope terraces are generally rainfed and of smaller size in comparison to lower slope terraces which are usually irrigated and larger in size. Crop production is relatively lower in the former. Micro-agro-climatic conditions in the hill slopes. It allows abundant growth of weeds and insect pests which are detrimental to the domesticated crops. Hence there is problem of adaptation of high-yielding varieties (HYV), causing poor production.

Socio-economic and cultural constraints: Due to poor economic condition because of lack of development as these areas were sustained by the shifting cultivators there is shortage of fund or capital for investment in to the agricultural need and therefore except a few of the slightly well-off farmers, others are unable to afford additional inputs like improved plough, fertilizer, pesticides, irrigation, etc. which are actually required for settled cultivation along with this lack of skill and work force adds further hindrance as the practice of settled cultivation demands a greater skill, work load, attention and management from the cultivators.

In the study area therefore, they key hindrance to settled agriculture is the lack of financial input for initial investments and regular purchase of HYVS, fertilizers and pesticides.To note further, though Govt. has provided many schemes for the farmers support, such as; Watershed Development project, Chief Minister's Krishi Rinn Yojna (Crop Loan Programme), Integrated Pest Management (IPM), availing of HYV seeds, but it is hardly known to them.One of the important reasons for the failure of settled cultivation is that it could not provide all the crops that are grown in shifting cultivation. Further, in the tribal social structure shifting cultivation is seen and practiced as a community factor with egalitarian social order, however in settled cultivation, it more of an individualized from land use and this being new to the tribal social order has been juggling to be accepted, practiced and continued. While it is true that under the impact of globalization private ownership and profit-oriented class division has already set in, but it yet to be massified in the given set up as farming and farming practices has been intricately linked to their culture in the form of rituals & festivals that are usually observed throughout the sifting agriculture cycle.

X. CONCLUSIONS

The indigenous communities in the NEH region in general and the Bugun tribe of the present study have been successful in transforming the practice of shifting cultivation to a certain extent through local innovations like bund cultivation and transplanting species such as chestnut and olive trees. However, in absence of the state providing appropriate technology, the cultivators continue to face issues with making the practice of shifting cultivation relevant and sustainable in the current scenario. Despite the fact that Shifting Cultivation so far has been conventionally viewed as an economically inefficient and environmentally hazardous form of cultivation. While critics believe that the practice is hazardous for the environment as it destroys the soil, water, and the region's flora and fauna (Rahman et al., 2012), various scientific and agroecological studies prove otherwise. Terming this view as a 'false narrative', proponents of the practice say that shifting cultivation is perhaps more sustainable than settled agriculture and monoculture; practices that the government overtly promotes in the region (Behera et al., 2016; Kerkhoff and Sharma 2006; Raj 2010) Through policy interventions like the New Land Use Policy [NLUP] 2011, Forest Policy 1988, and Jhum Land Regulation 1948, governments have made consistent efforts to terminate shifting cultivation and replace it with high revenue generating settled-agriculture. However, these policies have been unsuccessful in putting an end to the practice in the region. While the area under shifting

cultivation has reduced to some extent, in states like Mizoram and Manipur it has continued to grow. According to a recent NITI Aayog report (2018: 6), about 8500 sq. kilometres of land in the NER is still used for shifting cultivation.

Thus, to make initiation of the system what is earnestly required is the need of proper awareness about the new agriculture system that is the permanent agricultural system in the area which can be further developed through capacity building by orientation of farmers, creation of awareness about excess use of pesticides and manures, and encourage farmers to use organic manures & fertilizer through their indigenous techniques.

There is a need of formulation of various schemes & projects of Govt. depending on how integrated the practice is within communities' economy and life style mainly to initiate sustainable agriculture system by combining the indigenous knowledge, so that a smooth transition can become possible and simultaneously efforts should be made to take up research programs on improving the agriculture production and productivity, along with entrepreneurship training and promotion of agro-forestry (land use management system in which trees or shrubs are grown around or among crop or pastureland.

Thus, it is essential to take cognisance of the fact that instead of forcing communities to surrender traditional systems of agriculture and natural resource management, policies need to be put in place to strengthen these systems, in order to combat the second-generation issues that have cropped up. What is urgently required is revisiting and revising land use and landcover classifications to improve adaptation approaches. This would be central to effectively managing change in shifting cultivation and ensuring inclusive rural transformation.

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