The history of shifting cultivation can be traced back to about 8000 BC in the Neolithic period, which witnessed a revolutionary change in the mode of production of food – from hunter-gatherers to food producers. Since its very inception, shifting cultivation is identified with the following: rotation of fields, absence of draught animals and manuring, entirely based on human labour, employment of dibble sticks or hoe as tools, and short periods of cultivation followed by long fallow periods. This form of cultivation is considered to be a way of life for the societies practising it (Sachchidanand 1989). If the harvest from such cultivation is not good or it is damaged by wild animals and birds, the people fall back upon forest resources as alternative sources of food.

In the hilly region of Northeast India, shifting cultivation, locally known as jhum, continues to be an important mode of food production. The process of cultivation followed in the region starts with the selection of an area, which is done in the months of December and January by the village elders or clan leaders. Among some tribes, the community as a whole is involved in clearing the selected area, while among other tribes, the cutting of trees and shrubs is done by the respective families to whom a plot is allotted. At the time of allotment of plots, the demographics of the family are taken into consideration. The area allotted per family varies between half a hectare to one hectare among most tribes across the region today. The process of clearing the plots, which is labour intensive, is done with the help of locally available and simple equipment. The dry leaves and shrubs are set on fire in the month of March. The ashes are then scattered over the area, and the planting of seeds begins soon after that, or at least before the advent of the monsoon. The male members broadcast seeds of crops like paddy and millet, whereas the females plant the seeds of maize, pulse, cotton, sesame, and vegetables with a dibbler or hoe. Before sowing starts, spirits and deities are worshipped and sacrifices are made for a good harvest and prosperity of the family. This is also largely true of Christian families, although some of them have discontinued the practice of offering sacrifices (Deb et al. 2013).

With the advent of the rains, the seeds begin to germinate. After the crops grow to a certain height, they remove the weeds, which may be repeated once or twice depending on the crops. In some places, the crop is protected from stray cattle and wild animals by fencing the fields with the help of bamboo. Many shifting cultivators in the region have the custom of constructing a make-shift hut in the field itself to keep a watch on the movement of wild animals and birds. They practise mixed cropping, and the number of crops grown in any given area is often
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large. They grow soil-exhausting crops such as paddy, maize, millet, and cotton, as well as soil-enriching crops like peas, beans, and soybeans. The crops are harvested at different periods of time, thereby providing the farmers a variety of foods for nearly six to nine months in a year. The land is cultivated for two to three years, after which it is left to recuperate for various lengths of time. Traditionally, they grew only food grains and vegetables, but at present, they grow some cash crops as well.

Changing Perceptions

There are divergent opinions about the effects of shifting cultivation on the land, water, and biodiversity of the region. Some researchers believe that this form of cultivation may be continued with some technical inputs because the high humidity and fairly long duration of rainfall in the region do not permit the soil to remain uncovered for long, thereby checking the soil erosion. During such cultivation, no ploughing, hoeing, and pulverization of the soil take place, which would otherwise disturb the topsoil, thereby causing soil erosion. Moreover, the jhum lands are difficult to turn into terraces on account of their gradation. This form of cultivation has evolved over thousands of years as a response to the physiographical character of land under special ecosystems (Ramakrishnan 1992; ICIMOD 2004).

Another section of scientists holds the view that jhum cultivation is a primitive and unscientific method of land use. They say that felling of trees and clearing of bushes accelerate soil erosion and accentuate variability of rainfall which may lead either to droughts or floods. The overall impact is the decline in soil fertility. The agroecosystems lose their resilience characteristics, and the villagers face shortage of food, fuelwood, and fodder. Consequently, the food availability and nutritional status of the households go down. These situations culminate in poverty and ecological imbalance. This school of thought believes that shifting cultivation degrades the ecosystems and therefore it should be stopped completely (Borthakur 1992; Prakash et al. 2017).

Recent analyses of the issues related to shifting cultivation have shown that if the cycle is more than 10 years it is not harmful; instead, it provides food security and livelihood without causing any significant degradation of land. However, if the cycle is less than five years, it is not good for the land and, hence, requires to be improved or transformed (Deb et al. 2013; NITI Aayog 2018). There are also instances where the interventions made by government and donor agencies have made the system more productive and ecologically less degrading. This is called ‘modified jhum’ (Tiwari 2007).

Area and Households under Shifting Cultivation

Although the exact figures for the total area under shifting cultivation and the total number of households involved in the practice are hard to come by, the Task Force on Shifting Cultivation set up by the Government of India, in its 2003 Report, estimated a cumulative area of 1.73 million hectares under the practice in Northeast India during 1987–97. More recent figures provided by the Indian Council of Forestry Research and Education (ICFRE) published in the Statistical Year Book (2014) by the Ministry of Statistics and Programme Implementation suggest significant reductions in the area under shifting cultivation during the decade 2000–10. A comparison of the data, however, suggests that the data for the year 2010, presented in the ICFRE document, is more or less the same as the data published in the Wastelands Atlas of India (2010) for the year 2005–06 for Assam, Manipur, Mizoram, and Tripura. The Wastelands Atlas Map shows a reduction in shifting cultivation in the region from 16435.18 sq km to 8771.62 sq km in two years. The authenticity of this data remains a suspect because the reduction is unusually
high. A reduction of more than 92% in Assam and 82% in Manipur in a span of two years is unusual.

The variations in the data published by various agencies raise serious concern about the veracity of the figures and merit the need for urgently generating authentic data and/or reliable estimates for the present area under shifting cultivation on a time series basis. This should be possible with the application of remote sensing techniques. Such an exercise should be able to provide a reliable basis for assessing the area under shifting cultivation for each state and for generating trends of change over the last few decades (NITI Aayog 2018).

While the ICFRE report provides figures for the area under shifting cultivation, statistics for the number of households continuing the practice could not be retrieved from the websites of different concerned ministries. The Ministry of Agriculture Task Force of 1983 has given a figure of .62 million families. All subsequent publications on shifting cultivation in Northeast India have quoted this source. In the absence of any official data on this, inferences are to be based on published research findings available in the public domain. Researches conducted in the West Garo Hills, Meghalaya and Ukhrul district, Manipur, by the International Centre for Integrated Mountain Development (ICIMOD) in collaboration with the North Eastern Regional Community Resource Management Project (NERCORMP), and Meghalaya Rural Development Society (MRDS) during 2002–09, suggest that 70% of the households in Ukhrul and over 90% in West Garo Hills continue to practise shifting cultivation.

**Shifting Cultivation and Its Consequences**

*Forest and Environment Department*

The Forest and Environment Department implemented various afforestation programmes to stop shifting cultivation since pre-independence period. This was because almost all forest policies have considered shifting cultivation to be ‘bad land use’. The departmental personnel consider shifting cultivation as ‘agriculture on forest land’, which is why they always try and stop shifting cultivation. For this, they implemented schemes like Social Forestry and National Afforestation Programme for tree plantations on jhum lands. Mostly timber and fuelwood yielding species were provided for plantation. Bamboo plantations were also promoted under the National Bamboo Mission, and medicinal plants were promoted under the schemes of the Medicinal Plant Board. These plantations, however, did not address the food needs of the jhum farmers. Therefore, though the jhum farmers initially accepted the schemes they went back to jhum cultivation. Further, most plantation schemes were implemented for a period of 3 to 5 years, after which there was no mechanism for monitoring the success or failure of the same. Thus, in a number of cases, the afforested lands were converted back to shifting cultivation areas.

*Agriculture and Allied Departments*

The departments of Agriculture, Horticulture, Soil and Water Conservation, and Rural Development generally promoted the conversion of jhum into settled agriculture, encouraged the use of chemical fertilizers, high-yielding variety seeds, irrigation, and introduction of a variety of development models which were not suited to the people, their topography, their food preferences, and land tenure system of the region. Sericulture and horticulture were successful only in areas where the market was near. Spectacular results were noted in respect of rubber plantation in Tripura. Tea, cashew nut, coffee, floriculture, passion fruit, etc. were also introduced
as alternatives to shifting cultivation but these were successful only in areas that were well-connected to the market.

The convergence among various government departments has been generally lacking and each department is found working in silos, resulting in the lack of a holistic perspective of the development of shifting cultivation areas. Primarily due to this policy incoherence and institutional dissonance, most of the programmes meant for stopping jhum or providing alternative forms of cultivation to the jhum cultivators did not succeed.

**Task Forces**

Three task forces were appointed by the Government of India: (i) Ministry of Agriculture Task Force, 1983, (ii) Ministry of Environment and Forest (MoEF) Task Force, 2002, and (iii) Inter-ministerial Task Force of MoEF, 2008. Each of them suggested the actions to be undertaken by their respective ministries. That jhum cultivation is linked with food security, livelihood, culture, land tenure, climate, topography, etc. was not realized by the task force members consisting of ‘experts’. As a result, the extent of jhum remained almost the same after implementation of the recommendations of the task forces.

An analysis of various projects and programmes implemented by the government and development agencies, including the ones supported by the international donors, shows that socio-economic development has a greater impact on jhum reduction than afforestation works, promotion of modern agriculture, or the promotion of cash crops. Further, a general observation of change in the geographical distribution of shifting cultivation in the region shows that it has receded to remote areas where good roads, schools, markets, and hospitals are yet to reach.

**Tragedy of the Commons**

Most deforestation and land degradation in the region is directly or indirectly a result of the tragedy of commons. As the land does not belong to a jhum farmer individually, he has no incentive and motivation to develop the land. In the past, the traditional institutions were able to prevent the tragedies of the commons because there was sufficient time for recuperation of the jhum fields which began to degrade due to considerably reduced cycles. In some states of the region, the jhum lands were converted into plantation areas in the name of development. Since the plantations were based on mono-culture, it led to further reduction in food production, degradation of the land, and change in the ownership pattern of such lands from the earlier common to now individual ownerships.

**Crop Diversity and Food Availability**

Government schemes have, everywhere in the region, promoted settled agriculture by providing support for the construction of terraces or for plantation. This has caused reduction in the diversity of crops that the shifting cultivators were hitherto able to access. The new crops and cropping pattern severely limited the seasonal availability of food crops, while the plantations restricted food availability during the gestation period of five to ten years, resulting in greater food insecurity. Food and nutritional insecurity are two main reasons why many people returned to shifting cultivation after adopting some alternative farming systems for a while.

**Changing Land Use and Tenurial Security**

A shift to settled agriculture means a change in land use, community access, gender equality, ownership, and the tenurial system, among others. Thus, any such shift has implications for
livelihood and tenurial security for the shifting cultivators and for the traditional institutional mechanisms for management and control of the common resources. For instance, in villages where the community institutions have lost control over land, landlessness has already emerged as a major issue. Thus, in many villages the farmers continue with jhum cultivation only to continue with their right over land and not to become landless.

**Challenges to Ecosystem Services**

Changes in land-use patterns are happening in the region not only due to government initiatives but also due to the aspirations of local communities, who want to take advantage of the expanding market network. But with settled farming, the regenerative fallow cycles have undergone changes with the land being increasingly covered with non-forest vegetation, which in turn has led to the loss of vital ecosystem services and land degradation. Drying of spring water sources, depletion of soil fertility, and reduced availability of fuelwood, fodder, and wild edibles are the emerging concerns of those who abandoned the practice. Unfortunately, such issues were apparently not considered seriously by the government.

**Role of Culture**

Many tribal communities living in remote areas of the region have strong belief systems associated with jhum. Their socio-cultural life revolves around jhum and their cultural practices are integral to such economy. For them, jhum is not only an agricultural activity but also a ‘way of life’ (Sachchidanand 1989; Gupta 2005). They sow millets and glutinous rice in their jhum lands. They not only eat these crops as their staple diet but also use them for brewing alcoholic drinks partaking which is a part of their culture. Weaning them away from jhum and encouraging them to adopt alternative forms of cultivation have largely failed because of their lack of conformity with their culture and traditions.

**Conclusion**

The objective of the government-sponsored schemes in the shifting cultivation areas should perhaps aim at modernizing rather than stopping this form of cultivation because it is not only a source of livelihood for the tribal people of the region but also a fountain of their cultures. It should also be kept in mind that it is not always easy, nor ethical, to replace a pliant technology of cultivation that is suited to the local agro-ecological conditions, governed by traditional institutions and customary laws, and supported by their beliefs, values, folkways, and mores.

The sectoral approach adopted by various states to replace an age-old practice with a new practice did not work in the past and may not work in future. Each government department met with some success, but it was not up to their expectations. One may blame it on a lack of proper strategies for implementation or on an absence of understanding of the ecosystem of shifting cultivators, but the fact remains that many tribal families of the region are not convinced about the superiority of settled agriculture over shifting cultivation. It is also questionable to focus on stopping shifting cultivation instead of focusing on population control and jhum-appropriate technological innovations. Even borrowing such technologies from some of the Southeast Asian countries is not encouraged because the state wants this form of cultivation to go. But it appears that this form of cultivation is not going to disappear anytime soon, not at least till such time the cultivators themselves want it to go.
References


