

# **Sustainable Development and Shifting Cultivation in North-East India: An Analytical Study**

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## **Abstract:**

In the concept of sustainable development three classes of issues are inherent viz. society, economy and environment. Similarly, the practice of shifting cultivation (jhum) also has interconnected dimensions- society, economy and the environment which is an interesting area of research. This paper aims to examine the practice of shifting cultivation (jhum) from the integrative framework of sustainable development by using the concept of three pillars of sustainability -environmental sustainability, economic sustainability, and social sustainability and argues that shifting cultivation has its social, economic and environmental sustainability. The analysis is based on secondary sources and qualitative in nature.

**(Keywords:** Sustainable Development, Three Pillars, Sustainability, Tribes, Shifting Cultivation, North-East India).

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## **I. Introduction:**

The various human activities, consciously or unconsciously have an impact on the environment. The overall human activities and development over the decades has led to climate change and natural disasters, but also wars and political and socio-economic instability (Klarin, 2018). This subsequently endangered the survival of Earth and the future generations that conditioned for changes in behaviour to ensure the long term exploitation of resources, without threatening the future generations (2018, p. 67). This concern is treated under the concept of 'sustainable development' which evolves in the 1970s and become widely recognised in the 1980s. The concept of sustainable development since its evolution had been popularized in various fields and disciplines such as sociology, economy, politics, geography, architecture, urban studies, government and public policy, philosophy and ethics, environmental studies, ecology, transportation, etc and has become a buzzword. This has led to its variance in terms of definitions and interpretations and that we can safely said there is no common definition of sustainable development. But the Bruntland Commission's brief definition of sustainable development as the "ability to make development sustainable- to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" can be taken as a standard definition judging from its prevalent use.

The concept of sustainable development has three classes of issues are inherent viz. society, economy and environment. Similarly, the practice of shifting cultivation (jhum) also has the interconnection between the society, economy and the environment. The Three Pillars concept of sustainability - environmental sustainability, economic sustainability, and social sustainability shall be used to examine the sustainability of shifting cultivation.

## **II. Material and Methods:**

This paper will try to shifting cultivation from the integrative conceptual framework of sustainable development arguing that shifting cultivation has its environmental sustainability, social sustainability and economic sustainability. The paper will be based on secondary sources and analytical in nature. Using the Three Pillar concept of sustainability, the sustainability of shifting cultivation are highlighted from various studies as a counter arguments.

## **III. Sustainable Development: An Overview**

The history of the evolution of concept of sustainable development can be traced back to the formation of the United Nations (UN) in 1945 with headquarters in New York which has now 190 member states (Klarin, 2018) . Since its establishments, the UN has been active in the field of sustainable development by organizing

numerous conferences, taking actions and publishing various publications which aim to achieve the goals of sustainable development and the Millennium Development Goals (MDGS) (P. 71). Another significant event towards the formation of the concept was the gathering of scientists, economists and humanists from ten countries in Rome in 1968 to discuss the current problems and future challenges of human kind. These challenges according to Klarin (2018) include limited natural resources, population growth, economic development, ecological problems, etc. This event led to the formation of another independent global organization called the Roman Club, that consequently published two significant editions- *Limits of Growth* in 1972 and *Mankind at the Turning Point* in 1974. The first edition clarified the term sustainability in the framework of the contemporary concept of sustainable development and the Roman Club further warned the excessive industrialization and economic development would soon cross the ecological boundaries (p. 71). The concept of sustainable development was introduced in its truest sense in the report titled *Our Common Future* also known as the Brundtland Report named after the then leader of the Commission of 19 delegates from 18 countries in 1987, Gro Harlem Brundtland, the then Norwegian Prime Minister. The concept of sustainable development since its inception in 1970s, become a popular concept however there is no common agreement on the definition of sustainable development across the globe. It has been defined and interpreted by various individuals and various groups of organisations till today.

There are two fundamental elements in the concept of sustainable development, i.e. *development and sustainability* which even precede the creation of the concept itself (Klarin, 2018). Various scholars have contrasting opinions on the relationship between development and sustainability. According to Sharpley (2000), development and sustainability could be in juxtaposition, where both could have possible counterproductive effects. On the other hand neoclassical economists emphasize that there is no contradiction between sustainability and development (Lele, 1991). Sachs (2010) also highlighted how there is no development without sustainability or sustainability without development (cited in Klarin, 2018).

Classical theories of development consider development as synonym for economic growth that every state in particular stage has to undergo transformation from traditional agriculture into modern industrialized production of various products and services i.e. shifting from traditional society to the stage of maturity and high consumption (Klarin, 2018). Theories of development over the past years have been well developed and in different literature the meaning of the term development encompasses development as structural transformation, human development, development of democracy and governance, development as environmental sustainability (Vazquez & Sumner, 2013) or process of targeted change which include goals and resources to achieve goals (Lele, 1991). The term sustainability literally means “a capacity to maintain some entity, outcome or process over time” (Jenkins, 2009:380) and carrying out activities that do not exhaust the resources on which that capacity depends (Klarin, 2018). This general understanding, according to Klarin has been warned by Shiva (2010) stating that it is dangerous because this general understanding of sustainability does not respect environmental limits and the need for adapting human activities to the sustainability of natural system (p. 70). Thus the ecological aspect becomes integral in considering the issue of sustainability and Klarin (2018) states that ecological sustainability has become a fundamental framework for considering socio-cultural and economic sustainability, but also a subject of argument in the concept of sustainable development.

### **Shifting Cultivation in North-East India:**

In North-East India comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim, shifting cultivation is a predominant agricultural activity. It is the primary occupations for many communities in the region especially tribes inhabiting the hilly parts of the region. This agriculture system is commonly known as ‘jhum’ cultivation in the region. According to Basic Statistics of the North Eastern Region of India (North Eastern Council 2015), the total number of families practising shifting cultivation was 4, 43, 000 (table 1). Numerous numbers so of studies and project has been undertaken by various Scholars, Govt agencies, NGOs and others such as the Indian Council of Agricultural Research (ICAR), Nagaland Environmental Protection and Economic Development (NEPED), North Eastern Region Community Resource Management Project (NERCORMP), etc. These organisations undertake various projects in trying to improve the system and help the communities to improve their livelihoods through this practice.

**Table:** Status of Shifting (Jhum) Cultivation in NER 2008

States	Annual Area Under Shifting Cultivation (Ha)	Fallow Periods (Years)	Minimum Area Under Jhum at a Given Time('000 Ha)	No of Jhumia Families ('000)	Jhum Land/ Family
1	2	3	4	5	6
Arunachal Pradesh	70,000	3-10	210	54	1.29
Assam	69,000	2-10	139	58	1.20
Manipur	90,000	4-7	360	70	1.29
Meghalaya	53,000	5-7	265	52	1.01
Mizoram	63,000	3-4	189	50	1.26
Nagaland	19,000	5-8	191	116	0.16
Sikkim	NA	NA	NA	NA	NA
Tripura	22,300	5-9	112	43	0.51

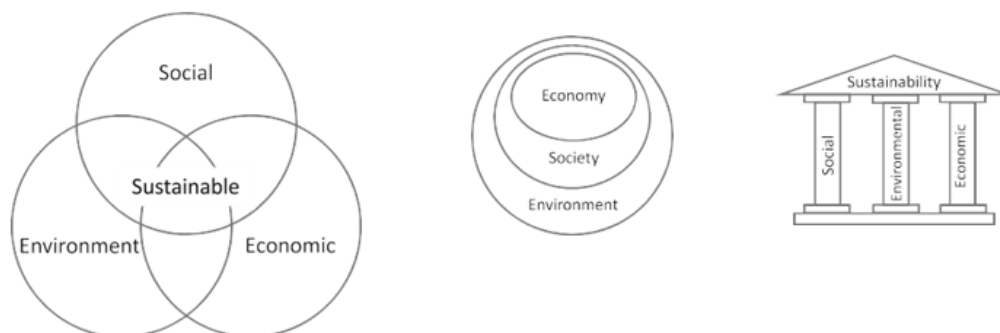
Source: Basic Statistics of North Eastern Region 2015, NEC, Shillong

Since the British rule in India, shifting cultivators have been a target for the government, environmentalists, anthropologists and policy makers, stressing how to stop or effort to give an alternative livelihood to the practitioners of this so called “unethical”, “anti-environmental”, “anti-developmental”, “antisocial” primitive form of agriculture (Bisal & Kumar, 2013). Shifting cultivation has been view in juxtaposition from different spheres of examination and also has been a long standing topic in academic and development discourses. The common argument about it can be broadly grouped into two- the ‘Positive View’ comprising of scholars mostly from Economics, Anthropology, Sociology, etc and the ‘Critical view’, mostly from the Ecologist or Environmentalist, where the former hold that this practice is a sustainable one for the practitioners while the latter hold that it is unsustainable leading to deforestation, soil erosion, depletion of soil nutrients and loss of biodiversity. However, a one-sided view of the practice can lead to misunderstanding about the practice and could have a negative impact on the part of the communities practising it, policy framers and to whole world in general (cited in Mero & Nongkynrih, 2012).

### Sustainable Development and Shifting Cultivation: Making connections

In the concept of sustainable development three classes of issues are inherent viz. society, economy and environment. Similarly, the practice of shifting cultivation (jhum) also has interconnected dimensions of the society, economy and the environment and makes an interesting area of research. Using the integrative conceptual framework of sustainable development, an attempt is made to link each of the three dimensions of both sustainable development and shifting cultivation to make sense of Klarin’s definition of three pillars of sustainability.

As already mentioned, concept of sustainable development implies the balance between the *three pillars* of sustainability. The origin of the ‘*three-pillar*’ paradigm have been variously attributed to the Bruntland Report, Agenda 21, and the 2002 World Summit on Sustainable Development (Moldan et al. 2012), yet in none of these documents is a clear framework or theoretical background made explicit (Purvis, Mao, Robinson, 2018). According to Giddings and Hopwood (2002), as early as 2001, this approach has been presented as a ‘common view’ of sustainable development, and it is further stated that it seems so commonplace not to require a reference (cited in Purvis et al. 2018). It is also observe that although the ‘three pillar’ paradigm has become a commonplace in literature, they are not universal which means that various scholars consider additional pillars such as institutional (Spangenberg et al. 2002; Turcu, 2012), cultural (Soini and Birkeland, 2014) and technical (Hill and Bowen 1997) (cited in Purvis et al. 2018), good governance and personal security (Sustainable Development Solutions Network, 2012).



**Fig. 1** Left, typical representation of sustainability as three intersecting circles and a concentric circles approach, Right, alternative depictions: literal ‘pillars’.

(Source: Purvis, B., Mao, Y., Robinson, D., (2018). Three Pillars of Sustainability: in search of conceptual origins, *Sustainability Science*, CrossMark.)

Although the Three Pillar paradigm may not be universal, the analysis of secondary sources on shifting cultivation is drawn from Klarin’s definition of the same. He highlighted that achieving a balance between these pillars is not easy and while a certain pillar becomes sustainable the others can become unsustainable, especially when ecological sustainability is unsustainable the other two pillars are greatly affected as the overall capacity of development depends on this. Let us examine shifting cultivation based on the definition of Klarin’s three pillars of sustainability to get a better understanding.

#### **(I). Environmental Sustainability:**

In the discourse of sustainability, environmental sustainability has been placed as the overall pillar where total sustainability depends and in case of shifting cultivation, the ecological dimension is the most targeted calling it unsustainable practice. According to Klarin, environmental sustainability focused on maintaining the quality of the environment which is necessary for conducting the economic activities and quality of life of the people (Klarin, 2018).

In environment perspective, shifting cultivation is highly criticised for causing immense environmental degradation which in brief is unsustainable to environment. The frequent shifting from one land to the other has affected the ecology of the region where it is being practised. The area under natural forest has declined; the fragmentation of habitat, local disappearance of native species and invasion by exotic weeds and other plants are some of the other ecological consequences of shifting agriculture (Ranjan & Upadhyay, 1999). It should also be noted that scholars writing on shifting cultivation have emphasized on aspects such as forestland-use, soil fertility, planting and the cycle of the fallow period (Mero & Nongkynrih, 2012). However, there are scholars who have argued strongly against this standpoint and provide counter justifications stating that it is environmentally sustainable if managed properly.

One of the main notions about shifting cultivation is that it causes deforestation and subsequently affect environment. This notion is however challenged by some scholars arguing that it is a smaller contributor to forest destruction (Mero & Nongkynrih, 2012) and Jarosz (1993) argued that ‘shifting cultivation is not the only human activity responsible for deforestation. Burning, grazing, fuel-wood, gathering, logging, economic development projects (like cash crops and others), cattle ranching and mining are also responsible (cited in Mero & Nongkynrih, 2012). Another targeted aspect is that fallow land are ‘barren land’, ‘abandoned wasteland’ ‘fallow forest’, ‘unclassified state forest’, etc and are considered degraded land. However, there are scholars who view fallow land in its proper development. Nye and Greenland (1960), Reynders (1961), Ahn (1974) and Ramakrishnan (1992) pointed out that there is an increase of soil fertility to the fallow period (cited in Kleinman, Pimentel, & Bryant, 1995). Young (1989) also mention some additional benefits of forest or bush fallow which include reduced wind and water erosion, lowered soil temperatures, closed nutrient cycling, nutrient mining from the sub soil, benefits to soil fauna, reduced acidity and improved soil structure, texture and moisture characteristics (cited in Kleinman, Pimentel, & Bryant, 1995). In regards to the degradative effects on soil productivity Kleinman, Pimentel & Bryant (1995) argued that with proper management swidden soil degradation is minimal and sediments and nutrient will not necessarily be lost from the agro ecosystem even if there is a small amount of soil erosion.

Kidd and Pimentel (1992) maintained that slash and- burn agriculture is one of the few truly ecologically sustainable agro ecosystems in the world because crop yields can be maintained without inputs of non-renewable fossil; energy resources for fertilizers, pesticides and irrigation (cited in Kleinman, Pimentel, & Bryant, 1995). According to NITI Aayog Report (2018), the fallows of shifting cultivation must be legally perceived and categorized as ‘regenerating fallows’ which can regenerate into ‘secondary forests’, if given

sufficient time (Pant, Tiwari, & Choudhury, 2018). It further stated that regenerating fallows add to the forest cover of that area and therefore this fact must be duly recognized and due credit accorded to the practice. However, it should be noted that shifting cultivation is a highly complex agricultural practice in which its ecological sustainability depends on several factors, if mismanaged can result in serious environmental degradation but if designed and managed, it serves a sustainable food production system and provides benefits in the form of fuel, building material and income (Kleinman, Pimentel, & Bryant, 1995).

In a recent study by Karthik Teegalapalli and his colleagues among the Adi communities of Arunachal Pradesh found that patches that lie fallow for several years have higher pools of nitrogen and phosphorous, elements that are crucial for successful development of crops (Pendharkar, 2018). The study also found organic matter in the soil of the oldest fallow is not significantly different to that found in uncut forests and these results indicate that long-fallow shifting cultivation can be sustainable. According to Pendharkar this study shows that if done in a systematic manner, as the Adi community does, *jhum* not only benefits the soils but also lets a community manage their landscape. Such traditional practices may perhaps come in handy to combat challenges like climate change and forest loss.

## **(II) Social Sustainability:**

In the words of Klarin (Klarin, 2018), social sustainability strives to ensure human rights and equality, preservation of cultural identity, respect for cultural diversity, race, and religion. Taking these elements into consideration the following aim to point out that shifting cultivation as an agricultural practice also has its social dimension which needs to be accounted.

It has been highlighted tribal shifting cultivation as a practice is rooted in the social world of human communities (Mero & Nongkynrih, 2012). It is closely incorporated with the socio-cultural practices and belief system. Besides, tribal communities in North East India have number of festivals associated with shifting cultivation, be it seed sowing festivals or post harvest festivals such as Wangala festival (Garos of Meghalaya), Lui-NGai Ni, Gaan-NGai & Chavang Kut (Nagas & Kukis of Manipur), Chapchar Kut of Mizoram, Moatsu Mong & Mim Kut (Aos and Kukis of Nagaland), Mnyokom- Yulo, Aran (Nishis and Adis of Arunachal Pradesh), Hojagiri festival (Reangs of Tripura), Ali Aye Ligang (Mishings tribe of Assam), etc.

A study in a Kutsapo Village in Nagaland shows that every household can have access to plot of land for cultivation even though land may be under the control of the village or clan or individual. It is also found that shifting cultivation can maintain communal control over the land and not result subjected to the process of privatisation and ownership of communal land (Mero & Nongkynrih, 2012). Further, they argued that shifting cultivation is a social land bank of the community in general and those without land in particular. In other words, it will be possible to say that it is the expression of collectivism and at the same time ensuring social equality and human right. However, writings on shifting cultivation since the colonial period have negative perceptions where shifting cultivation was described 'as being lower on a scale of human progress and achievement relative to that based on Western model of production and being. ...as a reflection of a lower state of cultural evolution in comparison with more sophisticated modern societies... having sense of mastery over the world' (p. 322). This colonial misconception on shifting cultivation continue to remain even after Independence and Majumdar (1976) opined that post-colonial writings on shifting cultivation confined to an 'elitist exchange of views on agro-engineering and agronomic problems of shifting cultivation without bringing within its purview vital problems of shifting cultivators (cited in Mero & Nongkynrih, 2012).

But in the larger interest of the communities practising shifting cultivation the International Centre for Integrated Mountain Development (ICIMOD) conducted studies in Eastern Himalayas countries such as Nepal, Bhutan, Myanmar, India and Bangladesh in 2006. According to these studies, shifting cultivation is an inseparable part of the social world of communities in the Eastern Himalayas and social security is one of the main functions of the social institutions of the shifting cultivators (2006).

As already mentioned, shifting cultivators are marginalised indigenous people whose agricultural activity is often misinterpreted as 'inappropriate for modern times' by the mainstream societies. If one looks properly at the practice and the practical view of the lives and livelihood incorporated in the customs and traditions of the indigenous people practising shifting cultivation, it can be said that it has strong justifications over modern laws where by its ideal nature shifting cultivation is a technique for utilisation and development of available land for cultivation under unfavourable geographical conditions (Bisal & Kumar, 2013).

## **(III) Economic Sustainability:**

Klarin (2018) said that economic sustainability is necessary to maintain the natural, social and human capital required for income and living standards. Shifting cultivation as an economic activity is vital to the survival of many indigenous peoples who are geographically isolated from the rest of India. Studies have found that *jhum* meets their basic food requirements, the excess products can be sell in the market which can be an income generation with families of low income who are generally the poor rural communities. It will be difficult for them to do away with this practice as it also a cultural activity as much as it is an economic activity.

Darlong (2008) in his work entitled “Harmonizing Jhum in Northeast India with PSG Organic Standards” stated that....‘Jhum encourages community bonding and strengthens village level institutions thereby enhances social capital’ (cited in Mero & Nongkynrih, 2012). Shifting cultivation is often interpreted as economically inefficient or low productivity agriculture. However studies in Garo Hills in Meghalaya by the Economic Research Centre, Jorhat in 1976 whereby the economics of shifting and terrace cultivation was made a comparative study. According to this study, except paddy and tapioca production, productivity per acres was higher in the jhum areas as compared to terrace areas in the case of all the crops. (Ninan, 1992). He also highlighted the studies from other villages by the same Research Centre they do not reveal any distinct advantage of settled cultivation over jhum cultivation in terms of their economic returns. Out of six villages under study one village (i. e., Khonsa), jhum cultivation was found to be more profitable than settled farming, the per hectare returns from jhum and settled cultivation being Rs 1,363.84 and Rs 722.55 respectively (p. 6).

Another study by Amba Jamir in two villages – Sungratsu and Chuchuyimpang in Mokukchung district of Nagaland, reported that 80 percent of the respondents (farmers) interviewed responded that although shifting cultivation did not fetch them bulk cash income as compared to other forms of land use, it continues to be major provider of rice and food security, as well as reliable and constant source of cash income (Jamir, 2015). It also pointed out that 20 cash crop cultivators from one village are on the verge of abandoning their cash crop farms due to lack of financial support, no further assistance or no market linkage and they said that shifting cultivation at least provide them food and income even if at lower scale (p.185). Also the issue of food availability and nutritional security need to be addressed as the later is one of the reasons why a good numbers of farmers continue this shifting cultivation.

#### **IV. CONCLUSION:**

The paper discusses about shifting cultivation from the lens of the three pillars of sustainability. It points out that shifting cultivation if managed properly is sustainable and deconstructs the misconceptions about its ecological effect. Various studies show that tribal communities with their indigenous agricultural knowledge manage their landscape through this practice. It argues that there is a need to recognise this practice as a distinct agricultural land use and also a distinct livelihood practice. On the aspect of social sustainability, it highlights that shifting cultivation has its social dimension which needs to be accounted. It has assured that shifting cultivation as a practice is rooted in the social world of human communities where the belief system, socio-cultural life including festivals, indigenous knowledge system, identity, etc are all embedded within the agricultural systems. Talking about economic sustainability, shifting cultivation is considered as a means of livelihood, an access to traditional food crops, provider of food security and nutritional security. Also, this agricultural practice facilitate social capital among the villages of shifting cultivators where exchange of labour based on mutual and reciprocating voluntary labour which the relationship between the communities.

Besides, sustainable development should also provide a solution in terms of meeting basic needs, integrating environmental development and protection, achieving equality, ensuring social self determination and cultural diversity, and maintaining ecological integrity (Klarin, 2018). In line with this statement Indigenous communities of North-east India whose dependence on the ecosystem is absolute and is vital to understand the interaction between the communities and the ecosystem it is crucial to bring all stakeholders together in planning, improving and sustaining the practice. Various scholars also agree that there are no ‘universally sustainable state’ and no single universal indicators to measure it. Since sustainable development is a context-specific, the conclusion that shifting cultivation is unsustainable is highly debatable as this is a broad scale global conclusion which do not take into account the sustainability of shifting cultivation that are local or regional. From the above sources and findings we should not be wrong in concluding that shifting cultivation for the Jhumias has environmental, economic and social sustainability, fulfilling many aspects of sustainable development goals in general. It also agrees that a particular place/context may or may not fulfil all the criteria of the three pillars of sustainability in shifting cultivation. This can be a scope for further research to provide a better understanding on the sustainability of shifting cultivation in a particular setting.

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