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REVISITING STATUTORY LAWS AND CUSTOMARY NORMS GOVERNING SWIDDEN AGRICULTURAL SYSTEMS

A study based on swidden farmers in southern Odisha

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Introduction

From the Neolithic period, shifting cultivation (also known as swidden) has been a widespread form of land use that has varied in character through space and time (Conklin, 1961). Although it is difficult to comprehensively define shifting cultivation due to the variety of its characteristics, it is generally recognized as a system of cultivation in which fields are temporarily cleared, burned and cropped for fewer years than they are subsequently fallowed.[1] The practice of shifting cultivation is widespread in Southeast Asia, sub-Saharan Africa and Latin America. It varies in both nature and extent, embracing different types of topography and a vast diversity of ecological conditions, and providing livelihoods to a wide range of ethnic groups with a multiplicity of demographic patterns. Moreover, the form of practice also varies in terms of cropping patterns, frequency of land use, tools and methods.

The conventional view of shifting cultivation is one of an economically inefficient and ecologically destructive form of cultivation. Recently, it has been seen in institutional terms as an inflexible and static system that is incapable of adapting to changes brought about by modernity. This latter view, expressed in a World Bank study (1992), holds that it slows agricultural production and causes ecological degradation. Thus, shifting cultivation and population growth are conventionally seen as ecological villains destroying the forested landscape. The regular perception is one of growing numbers of poor people using a nomadic style of cultivation that forces shorter fallow periods that fail to allow the soil to rejuvenate. Solutions are typically defined in terms of population control and the introduction of standardized, intensive agriculture. The key issue here is how various groups construct definitions

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of deforestation in order to establish that this form of cultivation is destructive.[2] In particular, this shows how a standard approach has always been used to establish a nexus between population, shifting cultivation and deforestation. Institutional rules established by state policies, specifically forest policies, have had an undesirable impact on the livelihood of shifting cultivators. Makers of forest policies have consistently failed to perceive the relationship between farming and forestry. Forest laws have been modified to gain more administrative control over forest resources and this has further marginalized shifting cultivators, who have long depended on this form of agroforestry.

Swidden cultivation is an age-old practice in the forested and hilly tracts of tropical regions. It is primarily practised by indigenous groups and has developed under institutional rules that are distinctive from those of mainstream society. Changes to the institutional face of swidden underscore the differences between the traditions of its practitioners and those of the mainstream. Two of the important institutional forms that have undergone changes are land-use choices vis-à-vis changing property-rights structures and labour sharing arrangements. Integration with markets and the form that integration takes is also changing institutional structures and underscoring the differences between swidden practitioners and others. Technology is also changing, in the form of the kind of tools swidden farmers use and where these tools are made, emphasizing the economic interface with institutions. Finally, one of the analytically complex aspects of these changes is the development of 'in-built flexibility' in newly-established 'norms' that are changing the institutional face of swidden.

In this chapter we explore the role and implications of statutory law on swidden. We also attempt to understand whether swidden is the major cause of deforestation in the eastern Indian state of Odisha. Subsequently, we attempt to understand the role of customary norms and institutions at micro level.

Statutory laws governing swidden agricultural systems: Are there inherent biases?

Most of the tropical countries in which shifting cultivation is practised were subjected to colonial rule in the course of their history. Colonial governments oversaw the evolution of state policy in a very systematic fashion in all of these colonies. Most colonial governments in Africa and south Asia considered swidden to be unplanned, aimless, nomadic, unproductive, uneconomical in its use of land and labour, and destructive of the environment (Whittlesey, 1937). One of the important driving forces behind the effort to stop swidden may have been the desire to ensure timely and efficient collection of tax revenue. Swidden was generally practised by scattered, extended family groups with members living in temporary shelters near their fields as harvest approached. In the eyes of colonial officers, swidden encouraged tax evasion and made collection difficult and time-consuming.[3] Therefore, it became state policy to settle swiddeners near major transportation routes. The other driving force was the need to procure a labour force for logging and the timber needs of ship-making,

as well as building railway tracks. The intention was clearly to enhance trade in valuable commodities with the colonizing powers.

In the second half of the 19th century the introduction of modern communication systems began with the railways in India. This required more sleepers as well as land for laying the tracks. This meant a greater need for timber and, hence, more cutting of forest. The obvious move was to streamline forest management to the government's advantage so that more forest land could be acquired and exploited to meet the needs of the Imperial Railways. In 1855, colonial India saw the beginnings of a systematic forest policy when the then Governor General, Lord Dalhousie, issued a memorandum on forest conservation. Dietrich Brandies, a German botanist, was appointed as the first Inspector-General of Forests in India and given the job of organizing a forest department for 'scientific exploitation' of forest resources. Rules and regulations were framed to manage forest resources. This gave rise to the first Forest Act of 1865. However, the state exerted increasing control over forest resources in order to produce the basic raw materials for industries. Like land, forests became a source of revenue for the colonial government and subsequent forest laws were shaped accordingly – with the exception of India's most recent forest policies. Historically, forest policies had serious implications for shifting cultivation communities.

The Forest Act, 1865

This law provided power to the government to declare any land covered with trees or jungle as government forest by notification (Nath, 1991). Certain restrictions were placed on the collection of forest products by forest dwellers. Timber, such as teak, was declared state property and trade in such timber was restricted. This first attempt by the state to manage forests confronted the rights and liberties of the people. It adversely affected forest-dwelling communities; specifically, the ethnic minorities.

The Forest Act, 1878

This amended Act followed some years after the profitability and growing commercial need for India's forests became obvious. For the first time, this Act divided the forest into reserve forest, protected forest and village forest. It further curtailed the rights of individuals over the forest and introduced more stringent laws concerning the cutting of trees for use as timber. The 1878 Act gave the state heavy powers to encroach upon the rights of individuals over forest land and threatened the basis of the food and fodder habits of ethnic communities and other forest dwellers, who were solely dependent on the forest as a source of livelihood (Nath, 1991).

The first forest policy resolution, 1894

The first forest policy resolution had the stated objective of administering the forest for the benefit of 'the public'. One of its important components provided for the

relinquishing of land for agricultural use while at the same time forbidding cultivation of small scattered patches or any other activity that would reduce the forest below minimum needs. This provision directly hindered swiddeners who cultivated forest land in rotational systems. It was, in fact, formalization of the colonial attitude towards shifting cultivation as a destructive form of agriculture with damaging effects on the forest.

The Indian Forest Act, 1927

The aim of this legislation was to consolidate laws relating to forests, the transit of forest produce and the duty payable on timber and other forest products. It also defined government procedures to be followed when declaring areas of reserved forest, protected forest or village forest. While not applying a blanket restriction on shifting cultivation, this Act made it a privilege subject to government control, restriction and abolition. Under this Act, any application to practise shifting cultivation was to be submitted to the government for appropriate action by a Forest Settlement Officer. This officer would then submit a statement explaining the details of the claim, the existence of any local rules permitting shifting cultivation, and his opinion as to whether it should be allowed or banned, in part or in whole. If the State permitted part or all of the practice, the Forest Settlement Officer then had to make necessary provisions for it, either by altering the limits of land under settlement or demarcating portions of land under settlement for the purpose of shifting cultivation. This Act provided some hope for swidden communities, even while it held the view that shifting cultivation had the potential to damage the forest ecosystem.

National Forest Policy, 1952

The first forest policy promulgated by the government of independent India stressed that at least 33% of the country's national territory lay under forest, and it suggested that this percentage should be raised to 60% in mountainous regions prone to denudation and erosion. A lesser percentage – about 20% – was seen as permissible on plains. This policy also classified forests into four groups: protection forests, national forests, village forests and tree lands. Shifting cultivation was regarded as damaging to forests, which it said should be guarded against the practice. The policy described shifting cultivation as an age-old and wasteful practice engaged in by aborigines. But it also prescribed a missionary and persuasive approach to wean swiddeners away from shifting cultivation by enlisting their cooperation and gaining their confidence. It suggested exploring the possibility of regulating shifting cultivation by combining it with forest regeneration, or *taungya* systems.[4]

The Forest Conservation Act, 1980

This Act followed the 42nd amendment to the Constitution in 1976, which divided legislative and administrative powers over forests between the states and the central

government. The Act restricted the ability to reverse decisions creating reserved forests and to use forest land for non-forest purposes. It also made it mandatory for state governments to seek the approval of the central government in matters related to diversion of forest lands for non-forest purposes. Although this Act did not refer directly to shifting cultivation, the way it defined 'non-forest purposes' effectively prohibited the clearing of forest land for shifting cultivation. It defined 'non-forest purposes' as breaking up or clearing any forest land, or portion of it, for cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants, horticultural crops or medicinal plants, or for any purpose other than reforestation. However, it allowed the clearing of forests for any work relating to, or ancillary to, conservation, development and management of forests and wildlife. Therefore, in a way, the Forest Conservation Act, 1980, completely prohibited the practice of shifting cultivation.

National Forest Policy, 1988

The main aim of this policy was to ensure environmental stability and maintain an ecological balance. It stressed that the derivation of economic benefits from forests had to be subordinated to this principal aim. The policy provided for recognition of rights and allowed concessions for grazing, collecting firewood, fodder, minor forest products and timber for construction by ethnic groups, scheduled castes and other poor communities living within and near forests. However, it emphasized the need to find substitutes for these and to make them available from conveniently located depots at reasonable prices. The policy regarded shifting cultivation as adversely affecting both the environment and the productivity of land, and suggested designing alternative land uses to discourage swidden. But it allowed shifting cultivation to continue in areas where it was already established, provided there was an effort to improve agricultural practices. The use of social forestry and energy plantations was also suggested as a means of rehabilitating areas already damaged by shifting cultivation.

The Forest Rights Act, 2006

This Act granted legal recognition of the rights of traditional forest-dwelling communities and created a partnership between these communities and the public in conserving forests and wildlife. The Act was of historic significance. It was seen as an outcome of struggles led by ethnic and other forest-dwelling and forest-dependent communities against the injustices of earlier laws. It recognized shifting cultivation as a 'traditional right', and allowed both individuals and communities to lay claim to land on which to practise swidden. Such claims had to specify the boundaries within which shifting cultivation would take place, the time taken by the rotational cycle, and so on. They had to be backed up by evidence from government reports, records of religious traditions and statements of elders from the village concerned, or a neighbouring village. However, later evidence on implementation of the Act across the country found many gaps in the law with respect to recognition of shifting

cultivation and other forest rights (Shutzer, 2013; Sarangi, 2014). For example, in a study on the implementation of the Act in Odisha, Sarap et al. (2013) found that in practise it did not recognize all of the areas brought under shifting cultivation by ethnic groups. Moreover, if there were secondary forests on slopes used for shifting cultivation, clearing them to begin a new swidden cycle would entail violating the Forest Act, 1927, which explicitly forbade the felling of trees and setting of fires.

Forest administration in Odisha prior to Independence[5]

Forest administration began in Odisha (then known as Orissa) more than 130 years ago, in 1883 and 1884, when the state was still a part of the lower province of Bengal. For the first time, areas of forest were declared as reserved forest under section 19 of the Indian Forest Act, 1882. The total area of reserved forest in Orissa's Angul subdivision was 691.5sq. km (RCDC, 1996). The tenants were permitted to collect firewood, brushwood and thorny bushes for domestic consumption on payment of four annas (25 paise).[6] By 1888-1889, there were 968.6sq. km of reserved forest, of which 725sq. km were in Angul subdivision and the remaining 243.4sq. km in Khurda subdivision. The extent of protected forest was about 850sq. km. In 1891-1892, the Orissa Forest Division was divided in two and the separate halves named Angul and Khurda, with 725 and 303sq. km of reserved forest, respectively.

In 1912, the province of Bihar and Orissa was created, joining together parts of Bengal presidency and central provinces. Out of seven forest divisions in this newly formed province, three were in Orissa, with a total of 1920sq. km of reserved forest and 2769sq. km of protected forest under its administration. In April 1936, the new Orissa province was formed by merging part of the old Orissa-Bihar province with the Koraput and Ganjam districts and Baliguda subdivision of the former Phulbani district, Madras presidency (Figure A8-1). The areas of reserved forest and demarcated protected forest in the new Orissa province, including reserve land, were 3628.5sq. km and 1510sq. km, respectively.

The forests of Ganjam had been brought under forest administration in 1850, but regular reservation and forest settlement had not started until 1885-1886. By 1900, almost all of the forest blocks had been reserved under the Madras Forest Act, 1882. In 1901, attempts were made to create a regular and systematic working plan for the Ganjam forests, which had earlier been subjected to revenue felling only. Thus, Orissa had nine forest divisions with 3615.6sq. km of reserved forest, 541.3sq. km of demarcated protected forest and a reserved area of 3286.7sq. km, giving it a total demarcated area of 7443.6sq. km. In 1948, 25 feudatory states merged with Orissa. Later, two of these states – Sareikela and Kharsuan – were given to Bihar. The former state of Mayurbhanj was merged into Orissa in January 1949. After all of the mergers, Orissa's total area of reserved forest, demarcated protected forest and reserved land was 26,332.5sq. km.

Each of these former states had a separate forest administration. In Mayurbhanj, systematic forest management began in 1897, but in the other former states it appears

FIGURE A8-1: The districts of modern-day Odisha state.

to have begun in 1910. The Indian Forest Act, 1927, was extended to most of these former states after their merger. However, the forest areas of the Koraput and Ganjam districts and Baliguda subdivision of Kandhamal district continued to be administered under the Madras Forest Act, 1882.

There are no authentic records of management of these forests, although the former rulers were known to have exploited them for maximum revenue. The Orissa Preservation of Private Forests Act, 1947, was extended to many of these former *zamindari* forests.[7] The Maharaja of Jeypore owned the forests of Koraput district, excluding small areas belonging to the Makhasadars and Inamdars, who were tenure holders under the Maharaja. Almost all of these areas were declared reserved forests under the provisions of the Madras Forest Act, 1882. The former *zamindars* of Ganjam district did not have any working plans or management schemes for the forests. For about six years between 1944 and 1950, the forests of the former *zamindari* of Paralakhemundi were administered by the District Forest Officer in the ancient town of Paralakhemundi, in the present Gajapati district.

The status of forests in Odisha following independence

In March 1959, the Government of Orissa's Forest Enquiry Committee reported that the state's total forest area amounted to 65,677.7sq. km. The committee pointed out that the forest area constituted about 42% of Orissa's total land area. However,

most of the unreserved *khasra* forests,[8] undemarcated protected forests, unreserved land and open forests, including those on former *zamindari* areas, were barren land and hills without vegetation, subject to shifting cultivation and unauthorised dry cultivation. The committee estimated that the state's 'real forest' area was not more than 38,850sq. km, or 25% of the total land area.

Up until 1972, there were two forest acts in Orissa. The Madras Forest Act, 1882, was in force in the Koraput and Ganjam districts and Baliguda and G. Udayagiri subdivisions of Kandhamal district. Elsewhere, the Indian Forest Act, 1927, was the final authority. One result of this was an inability to update the physical status of the forest in Forest Department records. Thus, it was difficult to rely on the official figures. In spite of many adverse opinions from various committees and experts, the legal status of the forest remained almost unchanged in Forest Department records. Tables A8-1 and A8-2 provide a comparative picture of Odisha's forest area in the years from 1959 to 2012.

Forest areas cleared for shifting cultivation in districts dominated by ethnic communities were perceived as a constant problem, and there were various provisions in forest Acts and regulations aimed at putting an end to swidden. However, official figures on deforestation and its different causes create a different picture. It can be seen in Tables A8-1 and A8-2 that more and more forest area was being declared reserved or protected forest. This indicates that the colonial attitude towards forest and forest dwellers continued, even after independence. Table A8-2 also shows that there was a decline in total forest area between 1969 and 1985. This decline is often casually attributed to the practice of shifting cultivation. However, Table A8-3 shows that most of this deforestation was due to river valley projects and resettlement of displaced people. In fact, shifting cultivation does not figure in the overall process

TABLE A8-1: Legal status of forests in Orissa (Odisha) in 1959.

Description	*Area (sq. km)*
Reserved forests	
A class	20,619.09
B class	1865.44
Reserved land	2495.02
Demarcated protected forests	537.83
Undemarcated protected forests, unreserved land, *khasra* forest and unclassified forests	19,840.25
Former zamindari *forests*	
a. Reserved land, *zamindari* or reserved, protected land and protected forests	8060.25
b. *Khasra* forests, open forest, unreserved and village forest	12,072.35
Private Forests	187.64
Total	65,677.76

Source: Government of Orissa (1959).

TABLE A8-2: Comparative status of forest areas in Orissa (Odisha) (sq. km).

Year	*Reserved forest*	*Demarcated protected forest*	*Undemarcated protected forest*	*Total*
1959	24,979	538	39,973	65,489
1969	24,166	562	42,733	67,461
1985	28,311	19,625	7848	55,784
1990	27,087	16,113	13,967	57,167
1991	28,586	16,675	14,293	59,554
1993	27,087	16,113	13,967	57,167
2004	26,349	15,525	16,261	58,135
2012	26,329	15,525	16,282	58,136

Source: Regional Centre for Development Cooperation (1996).

of deforestation. Even if the category 'miscellaneous purposes' is attributed solely to shifting cultivation, the figure represents a meagre fraction of the whole process of deforestation.

Even after enactment of the Forest Conservation Act, 1980, forest land was still being diverted for non-forestry purposes. The figures in Tables A8-4 and A8-5 show that a major chunk of forest was converted for a variety of reasons other than purposes that were specified. These other reasons may also include shifting cultivation. Although shifting cultivation was perceived to be a destructive practice and various rules were framed to control it, there was no political will to measure its full extent in Odisha, nor was it even identified separately by the Forest Department. This led to arbitrary judgement of the role of shifting cultivation in destroying forests.

TABLE A8-3: Deforestation in Orissa (Odisha) from 1947 to 1984 (sq. km).

Purpose	*Reserved forest*	*Demarcated protected forest*	*Undemarcated protected forest*	*Total*
River valley projects and resettlement of displaced people	397.52	288.08	1170.16	1855.76
Industrial purposes	31.49	2.84	0.15	34.48
Capital conservation	7.79	13.14	--	20.93
Minor irrigation projects	11.3	--	0.11	11.41
Public purposes	30.57	0.20	49.47	80.24
Roads	0.23	--	--	0.23
Railways	24.10	0.10	--	24.20
Miscellaneous purposes	39.79	4.28	2.65	46.72
Total	542.79	308.64	1222.54	2073.97

Source: Council of Professional Social Workers (1994).

TABLE A8-4: Non-forest uses of forest areas in Orissa (Odisha) from 1980 to 1993 (hectares).

Purpose	*Reserved forest*	*Demarcated protected forest*	*Undemarcated protected forest*	*Total*
Irrigation	5842.213	23.98	--	5866.193
Mixing	3713.986	--	--	--
Roads	156.797	44.918	1.971	203.686
Railways	1200.115	--	--	1200.115
Power transfer and pipeline	589.245	824.002	--	1413.247
Others	4789.795	94.761	384.633	5269.189
Total	16,292.151	987.661	387.494	17,667.306

Source: Council of Professional Social Workers (1994).

TABLE A8-5: Diversion of forest area to non-forest uses in Orissa (Odisha) from 1994 to 2012.

Forest area diverted to non-forest uses (hectares)	
1994-1995 to 2003-2004	15,293
2005-2006 to 2011-2012	9,690

Source: Economic Survey of Odisha, various years, www.indiastat.com.

Forest areas diverted to non-forest use by activity (hectares)		
	2007	*2011*
Irrigation	251	230
Mining	2151	542
Industry	0	1.2
Others	24	58
Total	2425	831

Source: Economic Survey of Odisha, 2008-2009, 2012-2013, Government of Odisha.

The forest rules of the feudatories, namely Bamra, Bonai and Keonjhar, permitted the practice of shifting cultivation (*podu*) by members of the Kondh, Bhuyan and Juang ethnic groups and a few other aboriginal communities. In Phulbani, Ganjam and Koraput districts, only scheduled tribes were allowed to practise shifting cultivation. In Ganjam and Koraput, swidden was prohibited inside reserved forests but allowed in unreserved areas, with the permission of the district collectors. *Podu* was freely practised in the unreserved areas of Baliguda subdivision of Phulbani district.

The Partially Excluded Area Committee recommended that *podu* cultivation should be abolished as quickly as possible.[9] The Committee also recommended levying taxes on *podu* cultivation (RCDC, 1996). Provisions were made in the Indian Forest Act, 1927, to control shifting cultivation. These laws were made more stringent in the Odisha Forest Act,1972, section 10 of which refers specifically to '*podu* cultivation'. It is made clear that claims relating to the practice of shifting cultivation on any land under section 4 would not be permitted. But the Forest

Settlement Officer is given the authority to recommend excluding that area, or a part of it, from an area demarcated for declaration as a reserved forest. As in the Indian Forest Act, which preceded it by 45 years, the Odisha Forest Act, 1972, made the pledge to abolish '*podu* cultivation'. It was said that the practice of shifting cultivation should, in all cases, be deemed a privilege subject to control, restriction and abolition by the state government.

Tables A8-6 and A8-7 show that during the first three decades after independence, the area of Orissa under shifting cultivation increased by 4010sq. km. However, the

TABLE A8-6: Area of Orissa (Odisha) covered by shifting cultivation in 1959.

District or subdivision	*Area affected (sq. km)*	*Population*	*Ethnic groups*
Koraput	1,295	455,200	Kondh, Saura, Koya, Jatapa, Paraja, Gadaba and others.
Balliguda and Paralakhemundi	11,655	---	---
Khariar, Ganjam, Kandhamal	518	303,000	Kondh, Saura, Jatapa and others.
Kalahandi	16,317	112,300	Kondh, Kutia.
Sundargarh and Kolha	777	11,000	Bhuiyan, Erange and Kolha.
Keonjhar	11,912	8,000	Bhuiyan, Juang.
Sambalpur	1,062	15,800	Bhuiyan, Kandh.
Dhenkanal	259	2,600	Bhuiyan.
Total	33,074	927,900 (2805 people per 100sq. km).	

Source: Government of Orissa (1959).

TABLE A8-7: Area of Orissa (Odisha) under shifting cultivation in 1990.

District	*Area affected (sq. km)*	*Percentage of total area (%)*	*Population*	*Ethnic groups*
Koraput	11,528.07	31	340,000	Kondh, Saura, Koya, Bonda, Didayi, Gadaba.
Ganjam	2980.11	08	79,000	Lanjia, Saura.
Phulbani	8435.20	23	195,000	Kondh.
Kalahandi	1323.50	04	33,000	Kondh.
Sundargarh	2270.06	06	15,000	Paudi, Bhuiyan.
Keonjhar	2527.73	07	28,000	Paudi, Bhuiyan, Juang.
Sambalpur	6852.44	18	12,000	Kandh.
Dhenkanal	1167.00	03	4,400	Bhuiyan.
Total	37,084.11		706,412 (1904 people per 100sq. km).	

Source: Pattnaik (1993).

number of people depending upon it reportedly declined by 221,488. This was in spite of the fact that the number of people depending upon 11,655sq. km of *podu* in Balliguda and Paralakhemundi subdivisions was not counted in the Forest Enquiry Committee Report, from which the early figures were drawn. This prompts us to hypothesize that there is much about these measurements that can be regarded as arbitrary. One factor contributing to this change may be migration, but this is less than convincing: first because the time elapsed between 1959 and 1990 is too long to discern any feature of migration, and second, the composition of the population shows no changes along with changes in area. For example, there is a drastic increase in the area affected by shifting cultivation in Koraput, but there is no corresponding change in population. The case of Phulbani is similar (see Khariar, Ganjam and Kandhamal in Table A8-6 and Phulbani in Table A8-7). Another incidental point is that if the area under shifting cultivation increased without much improvement in technology, and if the population depending on it declined, then these factors should have been reflected in an increased duration of the shifting cycle. But according to many studies, including this one, this has not been the case.

Although shifting cultivation showed an increasing trend in Orissa until the late 1990s, the area under swidden in the state began to decline in the early 2000s (Table A8-8). It is now confined to regions that have long been home to large ethnic

TABLE A8-8: Area of Orissa (Odisha) under Shifting Cultivation in 2002 and 2003 (hectares).

District	*2002*	*2003*
Anugul	792	0
Balangir	30	0
Bargarh	7	0
Baudh	143	0
Debagarh	439	393
Dhenkanal	125	0
Gajapati	18,490	20,732
Ganjam	313	1991
Jharsuguda	40	5
Kalahandi	385	14,552
Kandhamal	30,946	61,003
Kendujhar	387	2034
Koraput	24,601	4303
Malkangiri	1406	5250
Nabrangapur	425	0
Nayagarh	62	3353
Nuapada	1262	0
Rayagada	1890	3764
Sambalpur	415	310
Sundargarh	871	38

Source: State of the Environment Report, Odisha (2007), www.moef.nic.in/soer/state/SoE-orissa.pdf, accessed 29 March 2015.

populations who have traditionally practised shifting cultivation (Figure A8-2). According to the Forest Enquiry Committee report (Government of Orissa, 1959) a maximum amount of land was 'reclaimed for agricultural purposes' from the 'cultivable waste' category. This indicates that there has never been exorbitant pressure on the forest for agricultural reclamation. The same can be said about shifting cultivation. Therefore, it is essential that the causes of deforestation be sought elsewhere.

Biases and ramifications of laws governing swidden systems in Odisha

The official bias in favour of settled arable cultivation in both colonial and recent times has resulted in deep conflicts between government authorities and shifting cultivators. The British believed that ethnic farmers were very inefficient cultivators. To cite an example, Erskine[10] described the entire district of Mandla in Madhya Pradesh as 'a large jungle with patches of cultivation'. The hill people were described as wild, roaming and ignorant; most of them having only hatchets and no draught cattle and incapable of engaging in productive agriculture on account of their material poverty (Rangarajan, 1996). Moreover, the very practice of shifting cultivation brought ethnic communities into conflict with the government's interest in harvesting timber. For example, between 1860 and 1862 alone, about 15,000 logs were required for the Jabalpur branch of the Great Indian Peninsula Railway and more than 100,000 trees were felled (Rangarajan, 1996). The attitude of India's colonial government towards shifting cultivation was clear from the Royal Commissions Report of 1928,

FIGURE A8-2: A hillside swidden in southern Odisha.

which stated that whenever it produced harmful results, shifting cultivation should be brought under control with a view to the practice being entirely stopped (Madan and Smith, 1928).

Ecological changes in landscapes inhabited by ethnic communities were not due merely to the internal dynamics of their agricultural system per se, but rather to external pressures. Ecological changes were often a consequence of social change. For example, the transition to a more rigid separation of farm and forest, as legal and administrative categories, failed to recognise the interlinkage between these ecological domains in the economy of ethnic communities. This resulted in undesirable consequences on the forested landscape. Swidden farmers were denied rights to their forests in order to protect them for commercial exploitation. More and more forests were declared as reserved forests and taken under government control, while forest laws stopped people from entering reserved areas for cultivation. The ban on shifting cultivation in government forests led to its concentration in former *zamindari* and feudatory jungles, where both cultivable and forest lands were of marginal quality. The concentration of large populations on limited areas of marginal forested land soon resulted in ill effects on the forest landscape and the ecology in general. This is often attributed solely to swidden. Moreover, there soon arose the myth that increasing populations resulted in a shortening of the fallow, thereby diminishing the capacity of forests to regenerate.

There were 25 feudatory states that merged into Orissa in 1948. The concentration of shifting cultivation in most of these former *zamindaris* and feudatory states reveals that swidden itself was shifting towards these areas. However, the impact of such changes differed among the various ethnic communities.

In 1990, Hong observed that the despoliation of the physical environment inhabited by shifting cultivators and the negative attitude towards them were threatening their very existence. In many regions of Southeast Asia, shifting cultivators have been displaced from their natural environments, deprived of their livelihood and made to suffer extreme deprivation and cultural alienation. European administration reinforced and extended systems of private ownership of land and state control of the public domain. Existing incompatibilities between loosely administered pre-European land systems and those of shifting cultivators were greatly increased and made more emphatic. The result was often the restriction of shifting cultivators' territorial ranges to the point where maladjustment became severe and shifting cultivation began to exhibit all of the faults that are commonly ascribed to it as an agricultural system (Spencer, 1966). In Odisha, it wasn't until 2006 that the Scheduled Tribes and Other Forest Dwellers (Right to Forest) Act recognized the importance and livelihood of forest-dwelling communities. Although it can be regarded as 'too little, too late', it remains to be seen what implications this Act has for traditional shifting cultivators. In the next section we discuss institutional changes observed during fieldwork in 2000 and subsequent departure from these noted when revisiting the region in 2015.

Customary norms governing swidden: Studies in a few southern Odisha villages

To investigate the institutional aspects of shifting cultivation, we studied five villages in the southern part of Odisha in 2000. We visited the region again in 2015 and observed similar institutions and practices in another six villages (Figure A8-4). Communities that practise shifting cultivation in these areas are of the Dongria, Kondh, Paraja, Saura and Jadia ethnic groups. The practices of the villages differed in terms of the shifting cultivation cycle, cropping patterns, topography and other forms of agriculture associated with their swidden systems. A few important aspects of the villages studied in 2000 are highlighted in Table A8-9a. Similar details of the villages observed in 2015 are listed in Table A8-9b. Our observations of micro-level institutional changes had two related approaches. In the first phase of study in 2000 we identified and characterized the changes as observed and explained by villagers. In our second visit to the region in 2015, our explanations of institutional changes were made specifically according to the parameters outlined 15 years earlier. A comparison of the tables will show that there has been no reduction in the duration of the shifting cultivation cycle between these two points in time.

FIGURE A8-3: One of the study villages in southern Odisha.

TABLE A8-9a: Various institutional indicators from swidden villages in 2000.

Village	*Bh. Jodi*	*Sakota*	*Gandli*	*B. Singh*	*Kalinga*
Community	*Paraja*	*D Kondh*	*D Kondh*	*Saura*	*Saura*
Total households	29	21	26	32	17
Population	136	84	116	148	77
Total geographical area (hectares)	420.84	560.07	866.49	358.275	234.41
Plains land (hectares)	58.5	66.92	15.06	11.4425	20.155
Wasteland (hectares)	333.75	470.07	825.01	268.2425	107
Plains as a percentage of total area	13.90	11.95	1.74	3.19	8.60
Wasteland as a percentage of total area.	79.31	83.93	95.21	74.87	45.65
Shifting cycle (years)	8	10	7	6	6
'R' value	25.00	20.00	28.57	33.33	33.33

Note: 'R' value is the land-use intensity as described by Ruthenberg (1976) (see endnote 1).
Source: Researchers' studies.

TABLE A8-9b: Various institutional indicators from swidden villages in 2015.

Village	*Jalaguda*	*Khaipadar*	*Mathiliumba*	*Nalachuan*	*Panshaput*	*Ranjeetguda*
Community	*Jadia*	*Kondh*	*Kondh*	*Kondh*	*Kondh*	*Jadia*
Total households	67	108	55	14	35	72
Population	238	385	283	68	163	278
Total geographical area (hectares)	97.93	98.54	29.14	14.56	34.4	34.8
Plains land (hectares)	15.38	15.38	0	0.41	2.43	13.35
Wasteland (hectares)	27.11	27.52	0.41	0.41	11.33	17
Plains as a percentage of total area.	15.70	15.61	0	2.82	7.06	38.36
Wasteland as a percentage of total area	27.68	27.93	1.4	2.82	32.94	48.85
Shifting cycle (years)	8	8	8	7	5	7
'R' value	37.5	37.5	37.5	28.57	40	28.57

Note: 'R' value is the land-use intensity as described by Ruthenberg (1976) (see endnote 1).
Source: Researchers' studies.

Land use choices vis-à-vis property-rights structures and labour-sharing arrangements

Swidden farming involves the use of forest land where property rights are ill defined, mostly because it necessitates encroachment on forest areas to which the state claims ownership. However, the prevalence of swidden suggests that these cultivators have established their right to use the land. Although in practice each plot of land is used by an individual household, the community as a whole plays the vital role of selecting the area of forest that has to be cleared and cultivated and assigns different plots to different households. In the northeastern state of Mizoram, Singh (1996) observed the role of a village council in drawing lots for allocation of plots to village farmers. She also observed the importance of the village council's mandate to regulate shifting cultivation, pointing out that the village council restricted individual decision-making, which could lead to degradation of land and forest. Xu et al. (1999) recognized the importance of customary institutions in the sustainable management of land resources. In a study in Yunnan, China, they observed that customary institutions structured the attitude of the villagers, the social relationships, and even the technology in such a way as to ensure secondary generation of fallow fields, protect forests from over exploitation and secure the cultivation of swiddens through exchanges of labour.

In the course of the first phase of our fieldwork in Odisha in 2000, we observed that the property-rights structure, as well as the labour-sharing arrangement, varied according to the type of land use. After a shifting cultivation cycle in a long-fallow system, where the user's rights are weak, the plot of land need not necessarily be cultivated by the same household. The cultivation arrangement is made according to the convenience of the patches of land chosen. Similarly, in labour sharing, strong parametric norms are followed, dictating that all households in a village are represented for clearing, cutting and harvesting of crops. On the other hand, when the shifting cycle is shorter, user rights over the land become stronger because the same plot of land is cultivated by the same household. In the latter case, the parametric norms are weak; not all village households join together to clear, cut and harvest. Rather, just a few households join these activities, according to their convenience. There are other instances of how the norms are growing weaker (or changing) over time. However, when revisiting the region after 15 years, we found that the assertion of user's rights had become stronger during cultivation. This implies that the assertion of household ownership rights, even from a normative perspective, has become stronger over the decades. But the most striking change was observed in the norms of labour-sharing arrangements. The norms have become weaker for all types of land use, including shifting cultivation. Table A8-10 lists changes in property-rights structures and labour-sharing arrangements according to the type of land use.

It is also important to identify the changes in strategic norms (at individual-household level and collectively) that follow changes in parametric norms. To cite an example: during the course of fieldwork in one of the study villages, we found that the swiddeners were harvesting their crops and taking them to their respective homes without the involvement of the community. They left some of the crop standing

TABLE A8-10: Status of property rights and labour use in different land-use types in Odisha, 2000 and 2015.

Land use		*Property rights structure (2000)*	*Labour use (2000)*	*Property rights structure (2015)*	*Labour use (2015)*
Old growth/Prime forest.		Open access. Use and extract up to individual needs.	Family labour.	Open access. Use and extract up to individual needs.	Family labour.
Long fallow swidden farming.	In cultivation	Weak user's rights.	Sharing of labour for cultivation (Strong parametric norms).	Strong user's rights.	Sharing of labour for cultivation (Weak parametric norms).
	During fallow	Open access. Use to meet needs. Extraction restricted.	Not applicable.	Open access. Use to meet needs. Extraction restricted.	Not applicable.
Short fallow swidden farming.	In cultivation	Strong user's rights.	Sharing of labour for cultivation (Weak parametric norms).	Strong user's rights.	Sharing of labour; sometimes payments equal to prevailing wage for cultivation (Weak parametric norms).
	During fallow	Open access. Use to meet needs. Extraction restricted.	Not applicable.	Open access. Use to meet needs. Extraction restricted.	Not applicable.
Perennial.		Strong user's rights. Ownership rights in a few cases.	Conditional mutual sharing; exchanges at socially acceptable values and as per requirements.	Strong user's rights. In most cases defined as ownership rights.	Labour hired at prevailing wage rates.
Permanent.		Strong user's rights. In some cases ownership rights.	Conditional mutual sharing; exchanges at socially acceptable value and as per requirements.	Strong user's rights. In most cases defined as ownership rights.	Labour hired at prevailing wage rates.

Notes: This table is based on the field observations of the authors in the first phase, and by Mr Benudhar, who assisted in the fieldwork, in the later phase.

in the field simply to maintain the norm of collective harvesting. This strategy can be attributed to the weakening of the parametric norm of collective harvesting. One of the reasons why the parametric norms are weakening may be the huge cost incurred by households in maintaining post-harvest rituals, including the sacrifice of animals and arranging community feasting. The bigger the harvest, the higher the cost in terms of birds, goats, sheep or buffaloes sacrificed.

Integration with markets, and forms of integration

Empirically, the main forms of integration in an economy are reciprocity, redistribution and exchange (Polanyi, 1977). As a form of integration, reciprocity describes the movement of goods and services (or disposal of them) between corresponding points of symmetrical arrangements. Redistribution is a movement towards a centre and out of it again, whether the objects are physically moved or only the disposition over them shifted. Exchange represents a vice-versa movement between dispersed and random points under a market system. In order to serve as a form of integration, exchange requires the support of a system of price-making markets. Three kinds of exchange should therefore be distinguished: the mere locational movement involving a 'changing of places' between hands (operational exchange); and the appropriational movements of exchange, either at a set rate (decisional exchange) or at a bargained rate (integrative exchange). In so far as exchange at a set rate is in question, the economy is integrated by the factors that fix the rate and not by the market mechanism. Price-making markets are integrative only if they are linked up in a system which tends to spread the effect of prices to markets other than those directly affected (Polanyi, 1977).

It is apparent that different patterns of integration assume definite institutional support. However, forms of integration do not represent 'stages' of development. Several subordinate forms may be present alongside the dominant one. Ethnic societies practise reciprocity and redistribution, while archaic societies are predominantly redistributive, though to some extent they may allow room for exchange. Conversely, in the course of human history, markets have played a part in the economy; although never with an institutional comprehensiveness comparable to that of contemporary industrial societies. Hence, shifting agriculture systems, as a form of integration that is largely performed by ethnic groups, (historically) cannot be understood in a market form of exchange alone. A meaningful understanding of Polanyi (1977) is important because he recognizes the importance of institutions in economic behaviour.

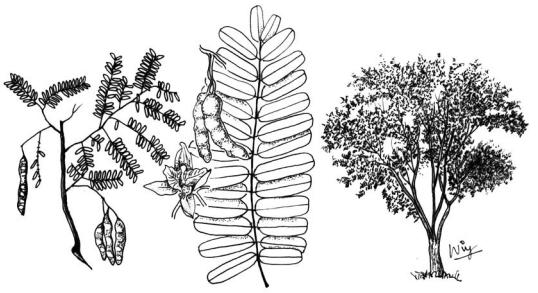
To be part of the market economy, one must have something to offer and in return something to receive. The market can then operate according to a bargained rate of exchange, if such interactions are frequent and continuous. In this context, one observes two prominent markets among the ethnic communities in the study area:[11] the labour market and a product market (specifically agricultural and forest products), as sellers.[12] Although two other markets, a land market and a credit market, were present in the study villages, interaction in these markets was neither

frequent nor continuous, at least from a household point of view. Similarly, the dependency of these people on an anonymous market as buyers was frequent only for daily consumption needs (groceries, and so on). However, infrequent but regular dependency was also seen in relation to a few other items like cloth, cattle, tools and implements.

As we have observed in the field, reciprocity is one of the dominant forms of labour sharing in shifting cultivation, but this is not the case for other agricultural land uses. Such arrangements might have evolved to ensure the participation of community labour in an economy where manual labour was scarce. Although redistribution was grossly absent in its comprehensive form, it was nevertheless observed in the case of joint families where land was not divided among family members. In such cases, there was joint production specifically on swidden land and the harvest was redistributed among the various component families of the joint structure.

In the case of the product market, exchange at a set rate was dominant. A few crops sold to fixed buyers (local traders) at a set rate gave rise to a kind of monopsony. In other practices, it was observed that crops like ginger, turmeric, tamarind and jackfruit were leased to the petty traders of the region at a set rate before harvest. This formed another type of distress market that was sometimes interlocked with the credit market. Broadly, the characteristics of market structures fitted into five different categories: (1) a price-sensitive monopsony; (2) a non-responsive monopsony; (3) leasing at a set rate; (4) leasing at a bargained rate; and (5) use of a cooperative bargained rate.

In the price-sensitive monopsony market, although the price was set by the local trader, it was influenced by market conditions, specifically, the state of supply. This rate varied at different times of the same year and between years. For example, the price of an agricultural product was low at harvest time and gradually increased in following months. On the other hand, in the non-responsive monopsony market, the price responded neither to the local state of supply nor to demand and supply situations outside the locality, to any great extent.



Tamarindus indica L. [Leguminosae]

Tamarind appeared in many marketing arrangements, particularly when trees were leased at a bargained rate or the fruit was marketed by village cooperatives.

Leasing at a set rate normally occurred in a distress situation, when the producer needed credit for some purpose. Therefore, in the study area this type of market was often interlocked with the credit market. In such instances, the moneylender would lease the harvest of the land or specific fruit-bearing trees at a predetermined rate, independent of the quantity of output. Leasing at a bargained rate occurred when the owner or

producer bargained for a price, usually after harvest. This usually arose because of a shortage of family labour to perform various other agricultural activities, or because of the hectic process of transporting and marketing the products.

A cooperative bargained rate prevailed in two of the five study villages, where cooperatives formed by households through Self Help Groups bought various products like brooms, tamarind, turmeric and so on and marketed these products themselves at bargained rates. A clear typology of markets is given in Table A8-11.

There have been significant changes in the market structure applying to the study villages. The non-responsive monopsony market, which is considered to be one of the most exploitative market forms, has faded. The counter proposition to this market is the cooperative structure. This market is also grossly absent in the marketing of agricultural and forest produce. One of the prime reasons for this is ease of access to money and the resulting absence of an oppressive credit market. This, in turn, can be attributed to generally available employment opportunities, especially through programmes like the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).[13] In the absence of credit markets linked to usurers and traders, some of the inefficient market structures have disappeared. Leasing at set rates and

TABLE A8-11: Typology of markets existing in study villages in 2000 and 2015.

Market typology	*Products in this market in 2000*	*State of this market in 2015*	*Remarks*
Price-sensitive monopsony.	All agricultural products and specifically oil seed and pulses, firewood.	Oilseed and pulses, firewood.	This market is so named because prices go up according to time since harvest.
Non-responsive monopsony.	Jackfruit, pineapples, plantain, forest products, leaves and so on.	Absent	This most regressive market structure is currently almost absent.
Leasing at a set rate.	Turmeric, ginger, jackfruit, pineapples, tamarind.	Turmeric, jackfruit.	More than the need for credit, lack of availability of labour has supported this kind of system in recent years, compared to 2000.
Leasing at a bargained rate.	Turmeric, ginger, jackfruit, pineapples and tamarind.	Turmeric, tamarind, broom grass.	The need for credit and a lack of available labour has supported this kind of system in recent years, compared to 2000.
Cooperative bargained rate.	Broom, rope, turmeric, tamarind.	Absent	A cooperative structure which played a critical role against regressive market structure is also absent.

Source: This table is based on the authors' personal field observations and those of Mr Benudhar, who assisted in the current phase of fieldwork.

bargained rates remains prevalent, but whereas the persistence of these markets was earlier attributed to credit, it can now be attributed to a scarcity of labour.

Musa x paradisiaca L. [Musaceae]

Ease in growing and care made bananas a popular market product in most villages.

Technology and institutions: The kind of tools vis-à-vis the make of tools

Technology serves the dynamics of production systems associated with complex institutional structures. Shifting cultivation systems are considered to be primitive agricultural practices in the forest-farming continuum, in which the use of implements is limited and simple. In fact, the axe and the machete are the main tools. It generally appears that the method of practice and the tools used depend on the prevalent agricultural system, and as a system advances, so do the methods and tools. However, not all kinds of technological change can be linked to changes in a particular agricultural system. As Boserup (1965) describes swidden, the method of shifting cultivation may involve use of stone axes, crude iron axes made by village blacksmiths, or factory-made steel axes. It must be noted that although there may be a narrow range of choices among kinds of tools when a particular agricultural system is given, this does not exclude the possibility of a wider range of choices between more or less efficient makes of one particular kind of tool. In fact, any cultivation system may be practised with either very primitive or much more advanced makes of tools. The distinction between the 'kind of tool' (linked to the system of agriculture) and the 'make of tool' (which is not connected to the system of agriculture) leads us to consider four basic types of agricultural change:

1. No change in either the make of tools or the kind of tools;
2. Agricultural communities change from one kind of tool to another, e.g. from digging sticks to hoes to ploughs, but they continue to use primitive makes of these tools produced by the cultivators themselves or by the village blacksmith;
3. Communities change to a better make of tools, but without changing the kind of tools, e.g. Indonesian shifting cultivators have replaced stone axes in recent decades with factory-made axes, but they still cultivate without the use of hoes or ploughs;
4. Communities change not only from one kind of tool to another, but also gradually change from home-made tools to those made by artisans or factories in towns.

Such an analysis of tools is essential in order to observe changes in mobility patterns and identify wider implications in the dynamics of social change. In two Dongria Kondh ethnic communities – the villages named Sakota and Gandli – it was observed in 2000 that both the kind of tools and the make of tools were relatively primitive, in an economy predominantly based on shifting cultivation and forest products (Figure A8-4). Although few families owned bullocks, they hired them as draft animals to nearby villages where paddy cultivation was prominent. The make of their tools was also confined to local blacksmiths (Figure A8-5). By comparison, among the Parajas of Bhrahmarjodi village there was obvious change in both the make of tools and the kind of tools. In this village also, shifting cultivation was the predominant agricultural practice in 2000. However, the tools used were made in factories and the role of the local blacksmith was confined to making repairs. In two other villages among the Saura people, Kalinga and Badamasingh, it was observed that both the make of tools and the kind of tools were advanced. In fact, they had even started ploughing their slopes. In these two villages – unlike the other study villages – chemical fertilizers were also being used. When we revisited the region in 2015, observations across all villages revealed modernity in both the make and kind of tools. New tools were purchased from weekly markets, or markets in nearby towns. They were repaired by local blacksmiths. In practising shifting cultivation, the kinds of tools remained unchanged. But where it came to fallow land, ploughing had become a norm, marking a distinct change from 15 years earlier.

FIGURE A8-4: The tools of an Odisha swidden farmer.

FIGURE A8-5: The local blacksmith at work in a study village.

Conclusions

The studies described in this chapter attempted to observe the various institutional factors related to shifting cultivation. In the first section, we analysed the forest policies of the state and their impact on shifting cultivators. In the colonial era, forest policies were intended to facilitate the commercial exploitation of forests, and these policies were carried forward into the period following independence, with increasing areas being declared reserved and protected forests. One strong observation is that external pressures due to state policies have created maladjustments in the practice of shifting cultivation, rather than the common perception of degradation and deforestation arising from flaws in the internal dynamics of shifting cultivation as an agricultural system. This is because state policies have consistently failed to understand the linkages between farm and forest, i.e. the agroforestry nature of swidden and the way in which strong segregation of the two domains causes maladjustment in the system. However, the Scheduled Tribes and Other Forest Dwellers (Right to Forest) Act, 2006, recognizes shifting cultivation as a form of livelihood. The impacts of this Act are yet to be observed in the field.

The second section discussed various localised institutional factors that determine the stagnation or mobility of this group of people. Within this context, we considered the prevalence of markets, property-rights structures and technology. Even norms were seen to be changing, at least in practice, due to various internal and external forces. One certainty arises from these observations: shifting cultivation cannot be

generalized as a uniform practice. Therefore it cannot be regarded as institutionally stagnant. Ill-defined property rights, flexible strategic norms due to the weakening of parametric norms, distorted markets and multi-directional technological changes demonstrate the plurality involved in swidden as a production system and raise debate about it as a mode of production. Our revisit to the study region in 2015 further confirmed the processes of change. Specific changes observed in 2015 were due to easier access to the monetized economy, cash in hand and a better evolved labour market. This in turn had influenced the nature and characteristics of the credit market, which had earlier played a critical role in developing product markets. Similarly, there had been noticeable changes in the use of technology in swidden systems as a whole. Similar changes were observed in the property-rights structure, making the ownership claims of individual households stronger and weakening community norms. As a whole, the observed changes are commensurate with a developing market economy. Therefore, it would not be appropriate to claim that swidden is an inflexible and static system that is incapable of adapting to change.

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Notes

1. A relatively simple and appropriate criterion is the relationship between crop cultivation and fallowing within the total length of one cycle of land use. Shifting cultivation can be modeled as follows: let 't' be a year in the cropping-and-fallow cycle. In the year of initial clearing and first year of cropping, t=1. The final year of cropping is t' and the final year of fallow (and of the entire crop-fallow cycle) is t". Based on this, several alternative and common definitions can be reached: Allan's land-use factor L=t"/t' (Dvorak, 1992); Ruthenberg's R value=(t'/t") x100 (Ruthenberg, 1976); and Boserup's land-use intensity=t'/t" (Dvorak, 1992). Allan defines systems in which his L factor is greater than 10 as shifting cultivation; when his R is less than 33, Ruthenberg distinguishes shifting cultivation from semi-permanent farming, and his definition of semi-permanent farming applies when the R value lies between 33 and 66.
2. One definition provided by the World Resources Institute (WRI) holds that the term deforestation describes a complete change in land use from forest to agriculture, including shifting cultivation and pasture or urban use. It does not include forest that has been logged and left to regrow, even if it is clear-cut (Angelson, 1995; WRI et al., 1996). This definition is contradictory, since forest opened

for shifting cultivation is often secondary forest, previously used for the same purpose and then left fallow. While temporary clearing for shifting cultivation is regarded as deforestation, temporary clearing by logging is not. Much confusion arises because there is no proper distinction made between permanent and temporary conversions, between conversions and alterations, or between deforestation and forest degradation. The Food and Agriculture Organization of the United Nations (FAO) defines deforestation and forest degradation in the following terms: 'Deforestation … refers to the transfer of forest land to non-forest uses and includes all land where the forest cover has been stripped and the land converted to such uses as permanent cultivation, shifting cultivation, human settlements, mining, building dams, etc.' Degradation, on the other hand, refers to 'reduction in the extent and quality of forest cover due to such factors as indiscriminate logging, inappropriate road-making methods, forest fires, etc.' (Rao, 1989, cited in Fox et al, 1999). It is notable that the FAO defines deforestation as both a change in land cover (i.e., loss of forest cover) and a change in land use (i.e., conversion to other permanent uses). Studies show that traditional swiddening does not entail permanent conversion, but only temporary use of forest land (Angelson, 1995; Fox et al, 1999; Xu et al, 1999). Hence, regarding as deforested cleared areas that regenerate into secondary forests after shifting cultivation leads to an overestimation of deforested areas. In fact, some estimates suggest that the area under swidden is more or less stagnant, even after 40 years, and the part played by shifting cultivation in deforestation is negligible (Fox et al, 1999; Xu et al, 1999). However, land cover has been observed to change from a fairly homogeneous forest cover (closed and open canopy) to a highly heterogeneous and fragmented cover of secondary vegetation. If a substantial portion of forest is regenerating, the rate of felling of primary forest overestimates the overall net rate of change in forested areas. Hence, there is every chance that observations tainted by unclear definitions and uncertain estimates actually widen the scope of biases against the practice of shifting cultivation.

3. Similar observations are also made by Jarosz (1993) about *tavy* in Madagascar; Rangarajan (1996) about *bewar* in central India; Pouchepadass (1995) about *kumri* in the south Canara district of Southern India; and Saldhana (1990) about *rab* and *dalhi* in Tahna district of Maharashtra, India.
4. *Taungya* is a modified form of shifting cultivation in which the cultivator is permitted to raise crops in a forest only when they are interplanted with a growing forest species. The cultivator is responsible for the upkeep of the forest plantation and is allowed to grow agricultural crops for one to three years, or until the young forest species becomes dense enough to shade the agricultural crops. On reaching this stage, the cultivator is allowed to move to another area to repeat the cycle.

   There are three types of *taungya*.

   (1) Departmental *taungya*

   In this category, agricultural crops and the forest plantation are raised by the Forest Department. The main aim of raising agricultural crops along with young forest trees is to keep the land free of unwanted vegetation. These systems use daily paid labour.

   (2) Leased *taungya*

   The forest land is leased to a farmer who can generate the highest income from raising agricultural crops for a specified number of years while ensuring care for the tree plantation that grows alongside the crops.

   (3) Village *taungya*

   This is the most successful of all three *taungya* categories. People settle in forest villages for this purpose and grow crops for three to five years while nurturing forest trees. Each family usually has about 0.8 to 1.7ha of land. (See http://www.agriinfo.in/?page=topic&superid=2&topicid=1687).
5. Until its name was officially changed in 2011, Odisha was known as Orissa. The names are still used interchangeably in some places.
6. An Anna is a currency unit formerly used in India. There were 16 annas to a rupee. The anna was subdivided into four paise or 12 pies (thus, there were 64 paise in a rupee and 192 pies).

7. The *zamindars* were aristocrats, typically hereditary, who held enormous tracts of land and exercised control over the peasants, from whom they reserved the right to collect taxes, often for military purposes. They often took princely and royal titles. The tracts of land they owned were known as *zamindaris*.
8. A *khasra* is a legal agricultural document that specifies land and crop details. *Khasras* traditionally detail all of the fields and their areas, who owns them and what cultivators they employ, what crops are grown, what soils they have and what trees are on the land.
9. The Constituent Assembly was given the task of drafting the Constitution for Independent India in December 1946. It had several committees and subcommittees. One such subcommittee was headed by A. V. Thakkar, and called the Excluded and Partially Excluded Areas (Other than those in Assam) Committee. Those regions of Orissa that were inhabited predominantly by Scheduled Tribes covered an area of about 54,050 sq. km, or about one-third of the province. Such areas were under direct control of the Governor General until 1949 and were called 'Partially Excluded Areas'.
10. H. N. B. Erskine was the District Collector of Nasik from 1870 to 1874. However the book mistakenly refers to him as E. N. B. Erskine.
11. 'Shifting cultivators' and 'ethnic community' are terms used alternatively here because shifting cultivation is practised only by ethnic communities in the study area.
12. The analysis raised an interesting feature of development of market institutions. Although markets never develop in a comprehensive form of exchange at a bargained rate bearing few commodities, one can hypothesize that in the early phases of development, reciprocity was dominant in both labour and product markets. In these early phases, exchange took place only in barter form instead of via a monetary unit, where the value of money made its meaning different. One striking point here was that money played a role in these economies only after land settlement, when land revenue was collected in monetary units rather than the earlier practice of paying rent in kind.
13. The Mahatma Gandhi National Rural Employment Guarantee Act is known as MGNREGA. This Act provides guaranteed employment of 100 days for the rural poor. This programme is instrumental in enhancing the income of rural labourers as well as providing employment opportunities.