

Gender mainstreaming and participation in shifting cultivation among *Chakma* tribe: A comparative study in selected areas of Bangladesh and India

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Abstract. Shifting cultivation is prevalent in the uplands of eastern Bangladesh and Northeast India. Poverty and technical knowledge limitations favour its continued practice. This study assessed socioeconomic characteristics of 300 Chakma respondents' participation in shifting cultivation and the relationship of their socioeconomic characteristics with their decision making and implementation. The majority of respondents were middle aged, illiterate, medium-sized families with small farms and an annual income below their expenditure. Major patterns of participation were singles and couples. Males dominated in decision making in both countries but in implementation females dominated in India. In Bangladesh, earning family members had a significant, negative relationship with decision making, while training experience had a significant positive relationship with decision making. Education, family size and training experience had significant, negative relationships with implementation of decisions. In India, training experience and family size had significant negative relationships with implementation of decisions, whereas membership of associations had a significant, positive relationship. The study underpins gender-balanced programs for improving socioeconomics of the Chakma shifting cultivators.

Keywords: decision, implementation, jhum, extent and pattern

Introduction

Shifting cultivation or *Jhum* (commonly known by the natives of North eastern India and Chittagong hill tract of Bangladesh) is a practice that is as old as man's settlement. The term, in its simplest form, refers to the technique of rotational farming; where farmers clear and burn forest to cultivate various annual, perennial, and agroforestry crops. As productivity of the land decreases they move and return when the land has replenished itself through the process of regeneration. On a global scale, the system of *Jhum* still constitutes the basis for the livelihood of an estimated 300-500 million people in Central Africa, South America, Oceania, and Southeast Asia, and is practiced on about 30 per cent of all arable land but provides food to only eight per cent of the world population. Shifting cultivation, is still prevalent in the uplands of eastern Bangladesh and in north east India where both men and women are strongly involved in undertaking it for their livelihood. The traditional land practice is mostly practiced by the *Chakmas*, who are the major inhabitants of these uplands. Poverty and a lack of technical knowledge are the main reasons for continuation of the practice of *Jhum*, especially amongst women. Population pressure, inadequate land for cultivation, low education levels, policy planning and implementation without local participation are all factors that influence women's decisions to continue shifting cultivation. Intensive land management through agroforestry is a promising alternative that can sustainably manage the remaining forest resources. If adopted, such systems potentially provide good economic returns and may significantly reduce rural poverty (Hossain 2011). Shifting cultivation has been trapped in a low level and unstable equilibrium owing to two equally unviable paradigms that operate at the policy and institutional levels.

In Bangladesh, extensive and shifting agriculture due to an increasing demand for food and fodder is the main driver of drastic deforestation and land degradation (Rasul, Thapa & Zoenisch 2004). At present only 6.7 per cent of the country's surface area is covered by forest, with a net deforestation rate estimated at -0.3 per cent, the equivalent of 2,000 ha per year (FAO 2006). In the past, shifting cultivation was practiced in the same area with a fallow period of 15-20 years, which ensured the long-term sustainability of soil fertility and forestry growth. With the rapid growth in population, the fallow period has been dramatically reduced to 3-4 years, allowing very little time for soil or vegetative regeneration (Riessen 2000). In many parts of Southeast and South Asia, shifting cultivators are currently confronted with a resource crisis as the population-land ratio has reached critical levels (Erni2015).

In India shifting cultivation is an agriculture which is characterized by both a labour intensive and land extensive process of cultivation. A UN study in 1971-75 observed that there were slightly less than three million people primarily or partially dependent on shifting cultivation and the estimated area on which this type of farming was practiced annually was less than one million ha.

The National Commission on Agriculture, India (1976), indicated that in the seven north eastern states 4.92 lakh tribal families that include the *Chakmas*, practiced *Jhum* on 4.53 ha annually. The total area used by these families over the whole shifting cultivation cycle was 2.69 million ha.

The central foci of this study are therefore to: i) describe the socioeconomic characteristics of the *Chakmas* in the study area of Bangladesh and India; ii) determine the extent and pattern of participation of *Chakmas* in shifting cultivation in Bangladesh and India; and iii) explore the relationship between socioeconomic characteristics of *Chakmas* and their participation in shifting cultivation.

Methodology

The study was conducted in both Bangladesh and India. Therefore, the locale/area of the study was divided into two parts: in Bangladesh, Khagrachari, Rangamati and Bandarban districts and in India, Dhalai and North districts. All the *Chakmas* involved in shifting cultivation of the selected areas were the target population of the study. For smooth execution of a sampling procedure, a contact list of the population of the *jhum* cultivators was collected from District Agriculture Offices of both these countries. Fifty respondents were selected from each of three districts of Bangladesh and 75 respondents from each of two districts of India were selected using a disproportionate stratified random sampling technique. Thus, a total of 300 respondents were selected from five districts of Bangladesh and India as the sample for this study. Primary data and secondary information were both used in the study. Primary data were both quantitative and qualitative, and generated using an interview schedule and focus group discussion, respectively. Secondary information was obtained from the internet, journals, textbooks and relevant available sources. Data generated were analysed using both descriptive and inferential statistical tools. Descriptive statistics include frequency count, mean, standard deviation and percentage, while the inferential statistic used was coefficient of correlation. The extent of participation of the *Chakmas* respondents in shifting cultivation was measured in two dimensions viz. participation in decision making, and participation in the field implementation of the decisions made. The pattern of participation was measured in five different modes viz. respondent only, couple, respondent with son/daughter, couple with son/daughter and group (jointly with other fellow participants).

Result and discussion

Analysed data of the research findings are presented below in accordance with the objectives of the study:

Socioeconomic characteristics of the Chakmas respondents

The highest proportion of Chakma respondents were middle aged in both Bangladesh (67%) and India (74%). This implies that a majority of the respondents contribute meaningfully to productive activities in the middle years of their life. Based on the educational attainment scores, the respondents were classified into three categories (Faruk, Kashem & Rahman 2013) as shown in Table 1. In Bangladesh, 79 per cent of respondents were illiterate, while 54 per cent were illiterate in India. Regarding primary and secondary education, India was more advanced than Bangladesh. This may be due to the updated educational policy of the Indian government focusing explicitly on tribal people, which include the Chakma.

The respondents were classified into the following three categories adopted by Ali (2003). A little above half (52%) of them were in the medium family category, followed by small (31%) and large (16%) in Bangladesh, but in India, about half (49%) of them belonged to the small family size, followed by medium (36%) and large (14%). Thus, a big majority (83%) of them belonged to small to medium family categories in Bangladesh and a similar proportion (85%) of them fall under the same categories in India. However, in terms of adopting family planning measures, Indian respondents had higher family planning adoption rates than those of Bangladesh. This is because, in India, the number of respondents in the small family category (49%) was higher than that of Bangladesh's small family category (31%). In Bangladesh, 60 per cent of the *Chakma* respondents earned an income together with their spouse, while 96 per cent earned an income together with their spouse in India. In Bangladesh, only 1.7 per cent of *Chakma* respondents were the sole earners while, 1.5 per cent were the sole earners in India. These findings are akin to those of Sultana (2013).

The respondents were classified into three categories on the basis of their farm size according to BBS (2009). The highest proportion (91%) of them belonged to the small farm size category in both Bangladesh and India (86%). None of them has a large farm size in Bangladesh. These findings are akin to those of Islam (2000). In India, a very small proportion of respondents (1.4%) had large sized farms. This may be due to lower population density and more land space in India compared to Bangladesh.

Table 1. Distribution of the respondents according to the selected socioeconomic characteristics

Variables	Categories	Bangladesh		India	
		Respondents		Respondents	
		No.	%	No.	%
Age	Young (up to 28)	13	8.7	31	20.7
	Middle aged (29-54)	100	66.7	111	74.0
	Old aged (above 54)	37	24.6	8	5.3
Attainment educational	Illiterate	118	79	80	53.5
	Primary Education	26	17	54	36.2
	Secondary Education	6	4.0	16	10.3
Family size	Small (up to 4 members)	47	31.3	74	49.3
	Medium (5-6 members)	78	52.0	54	36.0
	Large (above 6 members)	25	16.7	22	14.7
Earning member	Respondent only	3	1.7	2	1.5
	Respondent and their spouse	90	60.0	145	96.5
	Respondent and other family members	57	38.3	3	2.0
Farm size	Small farm size (0.02-1.01 ha)	137	91.3	125	83.3
	Medium farm size (1.01-3.03 ha)	13	8.7	23	15.3
	Large farm size (>3.03 ha)	0	0.0	2	1.4
Training experience	No Experience	127	84.7	8.0	5.3
	Low Experience	18	12.0	87	58.0
	Medium Experience	5	3.3	55	36.7
Membership of Association	No Participation	96	64.0	84	56.0
	Low Participation	37	25.0	52	35.0
	Medium Participation	17	11.0	14	9.0
Contact with the source of information	Low (up to 14)	34	22.7	1	0.7
	Medium (14-22)	81	54.0	139	92.6
	High (above22)	35	23.3	10	6.7
Annual income	Low (up to Tk. 60000)	1	0.6	8	5.3
	Medium (Tk. 60001-100000)	100	66.7	102	68.0
	High (above Tk. 100000)	49	32.7	40	26.7
Annual expenditure	Low (up to Tk. 79000)	32	21.4	31	20.7
	Medium (Tk.79001- Tk.100000)	36	24.0	46	30.7
	High (above Tk.100000)	82	54.6	73	48.6
Total		150	100.0	150	100.0

In Bangladesh, a majority of respondents (84%) did not have any training experience, 12% had low experience and only 3.3% had medium experience, while in India only 5.3 % had no training experience, 58% had low experience and 36% had medium experience. Nevertheless, 12 and 3.3 per cent had low and medium training experience in Bangladesh respectively. On the other hand, in India 36 and 5.3 per cent were classified as medium and less experienced in terms training. It seems there is a large difference between the two countries in terms of training experience of the respondents. The implication is that while respondents of both countries live in remote areas, where training is less accessible, Indians had acquired more training. However, training support also encourages greater confidence in participation in development processes (Afrad 2009).

A majority of the respondents were not members of associations in both Bangladesh (64%) and India (56%), while 25% and 35% were classified as low participation in Bangladesh and India, respectively. This implies that most of the respondents showed a propensity to escape from undertaking social responsibility (commonly carried out by members of associations) through dynamic group action even though group pressure sometimes balances social conditions and many sensitive issues may be resolved through group interaction. In their study Islam et al. (2011) found similar results regarding organizational participation. The current study also showed more *Chakma* respondents had medium contact with the sources of information in both Bangladesh (81%) and India (92%). The information sources were mostly neighbours, relatives, and health workers in the two countries. Contacts with information sources that include Sub Assistant Agriculture Officer (SAAO), NGO workers and reading daily newspapers were found to

be rare. This lack of contact may contribute to poor communication and difficulties in the delivery and supervision of the extension workers' activities. Respondents living in remote and hilly areas and the nature of the areas were found to be more or less similar in Bangladesh and India.

It is evident that based on annual family income, the majority of *Chakma* respondents belonged to the medium annual income category in both Bangladesh (66%) and India (68%). Similarly, almost all of them in both countries (99% and 94%) ranged from medium to high annual income earners. It is well known that the higher the income of a family, the greater the control that family has over the society (Afrad 2009; Haider 2010; Chakma 2015).

Based on their annual expenditure *Chakma* respondents were classified into three categories: low, medium and high. More than half (54%) of the *Chakma* respondents in Bangladesh were in the high annual expenditure category, while in India less than half of the respondents (48%) made high annual expenditure. Furthermore, in Bangladesh; 24 per cent had medium annual expenditure and 21 per cent had low annual expenditure. Therefore, about four-fifths (78%) of the respondents in Bangladesh had an annual family expenditure of up to Tk. 100,000. In India; medium annual expenditure was 30 per cent and low annual expenditure was 20 per cent. Therefore, about four-fifths (79%) of the respondents in India had an annual family expenditure of up to Tk. 100,000 which was similar to Bangladesh (78%). Chakma (2015) reported similar results in her study in Bangladesh and Dutta (2014) also reported similar results in her study in India.

Extent and pattern of participation in shifting cultivation activities

The extent of participation of *Chakma* respondents in shifting cultivation was measured in two dimensions; participation in making decisions and participation in the field implementation of the decisions made. The pattern of participation in decision making and field implementation of decisions made were measured based on involvement in different shifting cultivation activities which include: plot selection, cutting, drying and setting fire, clearing of burnt vegetation, sowing the seeds, intercultural implementation, disease and pest control, collection of crops, processing and storing, selling crops, receiving loan from NGOs, receiving training from different organizations and participation in group meetings. The pattern of participation was measured in five different modes; single (respondent only), couple, respondent with son/daughter, couple with son/ daughter and group i.e. jointly with other people.

Extent of participation in decision making

Before implementation of any activity, planning or decision making is very important for the smooth operation of the work. It is demonstrated in Figure 1 that in decision-making, males had greater participation (58%) than their female counterparts (41%) in Bangladesh. Similarly, in India, males also had greater participation (53%) than females (46%) in decision making. This might be influenced by male's higher decision-making capacity due to their being more cosmopolitan, and more engaged in different group meetings, training and other external activities than the female respondents.

Among the female *Chakma* respondents of the two countries, Indian respondents had greater participation in decision making towards shifting cultivation than the Bangladeshi respondents. This might be due to government initiatives targeted at empowering women which enhanced their decision-making capacities.

Extent of participation in implementation of decisions made

In the field-level implementation of decisions regarding shifting cultivation, males and females solely or jointly engaged in different activities, based on the simplicity and complexity and the lightness or heaviness of the tasks. Results shown in Figure 2 reflect that in the field-level implementation of decisions regarding shifting cultivation activities in Bangladesh, males had 51 per cent participation, while females had 48 per cent participation, while in India, females (54%) participated more than males (45%). However, the differences were small.

Figure 1. Participation in decision-making

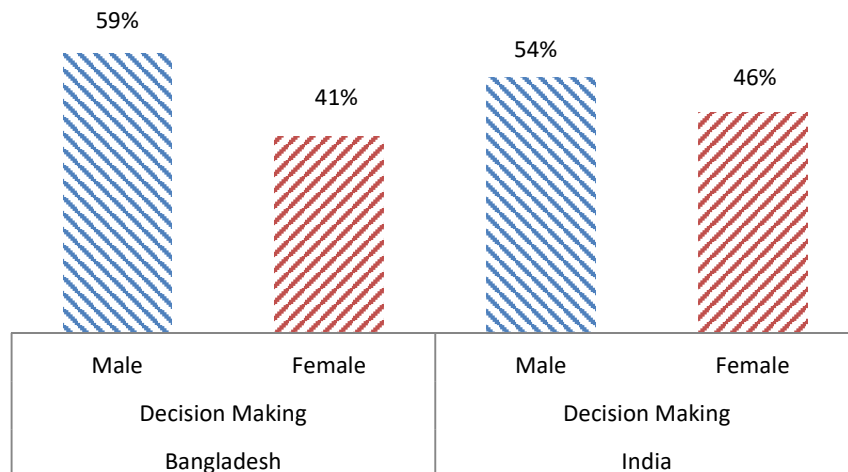
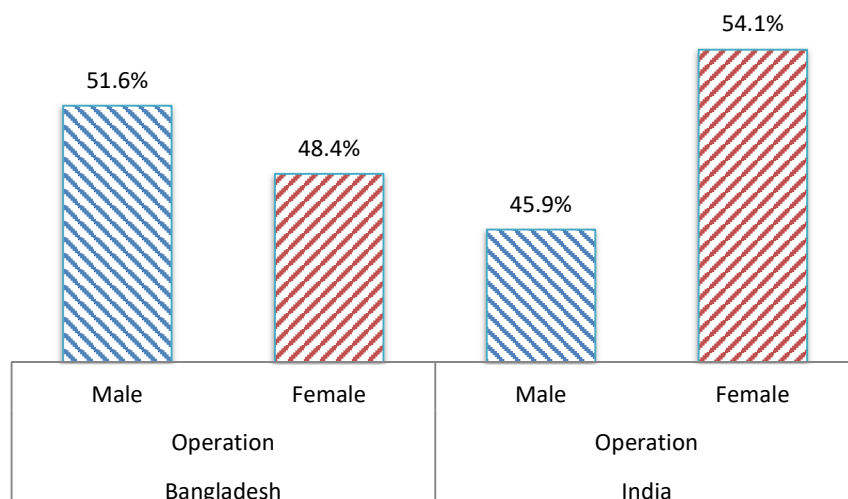


Figure 2. Participation in field-level implementation of decisions



Pattern of participation

The pattern of participation explains the mode of respondents’ involvement in implementing the field-level activities either on their own or with others. Results presented in Table 2 show that respondents in both countries mostly practiced two patterns in decision making and field level implementation of shifting cultivation activities, i.e. singles (solely the respondents) and couples (respondents along with their spouse). The results imply that *Chakma* respondents, along with their spouse, usually take the decision-making responsibility for their families. They rarely sought support from their sons and daughters, which might be because of their wards’ major engagements in educational activities. Results showed that regarding *Chakma* respondents’ pattern of participation in decision making in both single (respondent only) and couple (respondents along with their spouse), Bangladesh respondents (79%) had higher participation than Indian respondents (69%).

Table 2. Pattern of participation by the respondents in shifting cultivation

Pattern of Participation	Bangladesh		India	
	Decision making (%)	Implementation (%)	Decision making (%)	Implementation (%)
1) Single (respondent only)	40.0	43.3	36.7	44.0
2) Couple (respondent with their spouse)	38.7	30.0	32.0	41.3
3) Respondent (with son/daughter)	11.3	14.8	16.7	6.0
4) Couple (respondent with spouse and with son/daughter)	8.0	12.0	10.7	7.3
5) Group (jointly with other people)	2.0	6.7	3.9	5.4

On the other hand, the pattern of participation by respondents in field-level implementation of shifting cultivation activities, showed *Chakma* respondents in India were higher (85%) than Bangladesh *Chakma* respondents (73%) in both the two major patterns, i.e. single (respondent only) and couples. Thus, the major patterns of participation by respondents in decision making and field-level implementation of shifting cultivation activities were single (respondents only) and couples in both countries. This might be because *Chakmas* respondents and their spouses shouldered the total responsibilities for their families, while keeping their children engaged in the pursuit of educational activities.

Relationship between selected socioeconomic characteristics of the respondents and participation in decision making and field-level implementation of decisions on shifting cultivation

Results presented in Table 3 reveal that only the earning family member had a significant and negative relationship with their participation in decision making in Bangladesh. This implies that, the higher the number of earning members in the family, the lower the participation of the respondents in decision-making regarding shifting cultivation. This might be because with the increasing number of earning members in the family, there would likely be less participation in unanimous decision-makings, as they majorly involve financial commitments that could be shouldered by a capable few earning members, for the welfare of the family members (Table 3).

Table 3. Relationship between selected socioeconomic characteristics of the *Chakma* respondents and participation in decision making regarding shifting cultivation

Independent variable	Co-efficient of correlation (r)			
	Bangladesh		India	
Age	.041	NS	-.039	NS
Education	-.110	NS	-.004	NS
Family size	-.055	NS	.036	NS
Earning member	-.195	*	.114	NS
Farm size	.015	NS	.045	NS
Training experience	.190	*	-.009	NS
Organizational participation	-.072	NS	-.018	NS
Contact with Source of information	.063	NS	-.051	NS
Total annual family income	-.006	NS	.084	NS
Total annual family expenditure	.010	NS	.114	NS

*Significant at 0.05 level of probability, ** Significant at 0.01 level of probability, NS = Non-significant

Furthermore, training experience showed a significant, positive relationship with participation in decision-making towards shifting cultivation. This implies that the higher the training experiences of the respondents, the greater their participation in decision making. This might be due to the reason that with increasing training experience, respondents would have greater exposure to different aspects of theoretical and practical knowledge on shifting cultivation. Consequently, they instinctively join in decision-making about shifting cultivation in Bangladesh. Other variables that include age, education, family size, farm size, contact with source of information, total annual family income and total annual family expenditure had no significant relationship with the participation in decision-making in Bangladesh. In India, none of the variables showed significant relationships with participation in decision making. This compares with results reported by Sultana (2013) in her study of the Sherpur district in Bangladesh, where earning members of the family had positive, significant relationships with income earned from participating in rice husking mills.

Information shown in Table 4 indicates that educational attainment, farm size and training experience had negative, significant relationships with participation of the respondents in field-level implementation of decisions regarding shifting cultivation in Bangladesh. This implies that the higher the education, farm size and training experience of the *Chakma* respondents, the less their participation in field-level implementation of decisions regarding shifting cultivation in Bangladesh. This might be because with higher educational attainment respondents would be less inclined to work in the field, particularly on larger sized farms because of possible opportunities for alternative sources of work that might be available to them. Again, with the higher training experience, they might be more careful about the indiscriminate use of natural resources and this might lead to decreased participation in implementation of decisions regarding shifting cultivation activities in both countries. However, Mukta (2011) in her study reported that training experience had a positive, significant relationship with participation in homestead agricultural activities.

Table 4. Relationship between selected socioeconomic characteristics of the *Chakma* respondents and participation in field-level implementation of decisions regarding shifting cultivation

Independent Variable	Co-efficient of correlation (r)			
	Bangladesh		India	
Age	.095	NS	.085	NS
Educational attainment	-.171	*	-.003	NS
Family size	-.187	*	-.034	NS
Earning member	-.095	NS	-.033	NS
Farm size	.045	NS	-.104	NS
Training experience	-.187	*	-.214	**
Organization participation	-.067	NS	.227	**
Contact with source of Information	.083	NS	-.137	NS
Total annual family income	-.089	NS	.075	NS
Total annual family expenditure	-.079	NS	.099	NS

*Significant at 0.05 level of probability, **Significant at 0.01 level of probability, NS= Non-significant

On the other hand, in India, organizational participation showed a positive relationship, while training experience showed a negative relationship with participation in field-level implementation of decisions regarding shifting cultivation. Therefore, higher organizational participation of the *Chakma* respondents in India would lead to greater participation in field-level implementation of decisions regarding shifting cultivation. With the increasing participation in different social organizations, respondents might broaden their horizons of knowledge, increase their responsibilities for their respective families and ultimately increase their participation in field-level implementation of decisions regarding shifting cultivation activities in India. Other variables, viz. age, earning member, farm size, and contact with source of information, total annual family income and expenditure had no significant relationship with participation in implementing decisions in both Bangladesh and India (Table 4).

Conclusion and recommendations

Based on the study findings, the following conclusions and recommendations were drawn. In both countries, the majority of the respondents were middle aged, illiterate, had insufficient annual family income and small farm sizes. In the case of participation in decision making of shifting cultivation, male participation was higher than that of females, and participation was approximately equal for both males and females in field-level implementation of decisions regarding shifting cultivation in Bangladesh. In India, male participation was also higher than that of females regarding decision-making on shifting cultivation, but lower than female participation in field-level implementation of decisions regarding shifting cultivation. Two patterns i.e. single (solely the respondents) and couples (respondents along with their spouse) mainly practiced decision making and field-level implementation of decisions regarding shifting cultivation activities in Bangladesh and India. Respondents' characteristics showed the earning family member had a significant, negative relationship, and training experience had a significant, positive relationship with decision making, whereas education, family size and training experience had significant, negative relationships with field-level implementation of decisions regarding shifting cultivation in Bangladesh. In India, the training experience of respondents showed a highly significant negative relationship whereas organizational participation had a highly significant, positive relationship with field-level implementation of decisions regarding shifting cultivation.

The overall results suggest all were either less educated or illiterate, and economically low. Thus, government needs to intervene through developmental programs to improve their socioeconomic profile in that direction. The dominance of singles' and couples' participation in decision making and field-level implementation of decisions regarding shifting cultivation indicates an imperative

for the next generation of family members, i.e. sons and daughters, to be motivated to continue the traditional shifting cultivation or *Jhum* practice. However, awareness campaigns should also be organized on the proper utilization of hills and further studies on production with minimum environmental degradation in both the countries. This will ensure sustainability of this culture-rich, *Chakmas'* tradition.

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