

## Manpower Potential, Employment Status and Forest Based Livelihood Opportunities among Tribal Communities of Jharkhand, India

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**ABSTRACT** The study sought to investigate the manpower potential, employment status and forest based livelihood opportunities among tribal communities (*Munda, Oraon and Lohara*) of Bundu block in Ranchi district of Jharkhand state. The study is based on both secondary sources and primary field survey viz. personal interviews of the respondents through a well-structured pre-tested interview schedule, personal observations of the interviewer and participatory rural appraisal tools, that is, semi-structure interview and focus group discussion carried out in the sample villages using multi-stage random sampling technique. The study revealed that out of the 3738 labour force, 54.95 percent belonged to work force and rest (45.05%) is unemployed. A considerable percentage (41.46%) of households was having three workers engaged as family labour (62.19%) for 201-300 mandays per annum (71.95%). Nearly half (48.17%) of the households were having one migrant or day-outer member who travels a distance upto 50 km (72.56%) for a period upto 4 months (50.61%) for earning their livelihoods. The alleviation of unemployment and under-employment problems of the tribal people needs diversification of non-traditional and economically viable employment opportunities. The forest based livelihood interventions namely, agroforestry, energy plantation, pasture development, timber plantation, *tasar* (*Antherea mylitta*) silk rearing, lac cultivation, bamboo planting, fruit farming and value addition in *sal* (*Shorea robusta*) leaf plate and cup making are the best options having potential to generate employment opportunities of 108792.50 mandays per annum and an income of Rupees (Rs.) 327.77 lakhs per annum for the tribal people. Hence, the interventions envisaged needs to be implemented efficiently for all-round development of the tribal people and ecological stability in the study area.

### INTRODUCTION

Unemployment is today's basic socio-economic problem eroding national income and living standards, aggravating national development and poverty alleviation, raising government budget deficit, increasing macro-economic instability and depriving people of the dignity and satisfaction (Narasaiah 1996). The persistence of high incidence of unemployment has become an important challenge for planners and policy makers (Shukla et al. 2008). Employment in agriculture is the predominant form of economic activity providing employment to 58 percent of the workforce and contributing 18 per-

cent to the gross domestic products in India (Tuteja 2007). But the agricultural development alone cannot provide viable solution for alleviating unemployment, poverty and out-migration for growing labour force in rural India (Chadha 1993). The widespread use of forests as a source of subsistence income and employment by the forest fringe communities often make the forests an important contributor to the rural economy in the forested landscapes in the country (Islam et al. 2013; Bedia 2014; Nayak et al. 2014). Therefore, the forestry sector is attracting the policy makers as an alternative to boost employment and income in the rural India (Sarmah and Arunachalam 2011). Forestry is the second largest land use in India after agriculture covering 21.05 percent of the total geographical area of the country providing a wide spectrum of livelihoods for forest dwellers in the form of direct employment, self-employment and secondary employment (Anonymous 2011). About 275 million poor people accounting 27 percent of the total population depend on forest resources for

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their livelihoods and means of survival in rural India (Pandey 2009). The development of forest based livelihood interventions plays a significant role in employment and income generation, poverty alleviation, migration check, socio-economic development, self-sufficiency in forest resources, relieving pressure on forests and biodiversity conservation.

Unemployment and under-employment features are inherent among the tribal communities viz., *Munda, Oraon and Lohara* of Bundu block in Ranchi district of Jharkhand causing low income and miserable life of the households. The tribal people mainly depends on rainfed agriculture characterized by low productivity, unpredictable weather and calamities, degraded soils with low fertility, un-protective irrigation and degraded natural resources. These factors aggravated the serious problems of poverty, migration, unemployment, under-employment, food insecurity, malnutrition, superstitions, addictions, ignorance and exploitation among the aboriginal people. To prevent further deterioration, sufficient employment opportunities need to be generated for them. The development of forest based livelihood interventions has great potential to enhance employment security, poverty reduction and food security for vulnerable section of the society. The forest based livelihood interventions are labour intensive, non-manufacturing or service oriented, less capital and skill intensive, within the reach of the poor, satisfying socio-economic, cultural, religious, ethical, traditional and spiritual aspirations and hence, ideally suited to local populace. Studies on pattern, magnitude and direction of employment in forest based livelihood interventions is lacking. Keeping these facts in view, the present study has been designed to investigate the manpower potential, employment status and forest based livelihood opportunities among tribal communities of Bundu block in Ranchi district of Jharkhand.

## MATERIAL AND METHODS

### Study Area

The study was conducted in purposively selected Bundu block of Ranchi district in Jharkhand state. The block lies on the undulated surface of Chhotanagpur plateau between 23°11' - 23°18' North latitude and 85°35' - 85°58' East lon-

gitude at an altitude of 337 meters above mean sea level with a total geographic area of 25097 ha. The existing land use pattern in the block is characterized by un-irrigated cultivable land (69.25%), forest (17.44%), irrigated cultivable land (8.41%), culturable wasteland (3.59%), un-culturable wasteland (1.29%) and non-agricultural use (0.02%). The block falls under Bundu Range of Khunti Forest Division with mostly northern tropical dry deciduous forest (5B/C2) as per classification of Champion and Seth (1968). The block consists of 88 revenue villages with a population of 62509 (31624 males and 30885 females) living in 11495 households consisting of 60.74 percent schedule tribe, 4.76 percent schedule caste and rest 34.50 percent belongs to other groups. The population density, number of persons per family and sex ratio are 249.07 km<sup>-2</sup>, 5.44 and 978 female/ 1000 male, respectively. The literates in the block are 23572 (16084 males and 7488 females) accounting 44.02 percent of the total population. The block has tropical climate with three distinct seasons that is, seasons, summer, monsoon and winter. The average annual normal rainfall is 1413.60 mm, the mean minimum and maximum temperature remains 24°C and 37.2°C, respectively in the Bundu block.

### Tribal Communities

#### *The Munda*

The *Munda* is one of the strongest Kolarian tribes of Jharkhand, occupying third position in the numerical strength. The *Munda* live with other tribes and castes in the villages and speak *Mundari* language. The historical traditions revealed that the *Munda* were the original inhabitants of north-western India. After Aryan invasion, they came to Azamgarh and from there they migrated to Jharkhand crossing the river Son. The *Munda* have about 340 clans consisting of small monogamous nuclear families. The kinship system of the *Munda* is based on parentage and marriage. The economy of the *Munda* depends on agriculture, animal husbandry, wage earning, collection of Non-Timber Forest Produces (NT-FPs), permanent labour or service. The *Munda* have their traditional political system like village *panchayat* and the inter-village *panchayat*. The religion of the *Munda* presents a mixture of Tribalism, Hinduism and Christianity. The village head is called "*Munda*" and each village has

three important sites viz. *Sarana*, *Akhara* and *Sasan* (Sahu 2008).

### **The Oraon**

The Oraon, one of the important schedule tribe of the Jharkhand state is found in mixed villages with other tribes and castes. They have rectangular shaped *kutch*a houses constructed with mud, wood, bamboo, *kher* grass (*Heteropogon contortus*) and tiles having 2 to 4 rooms, a verandah, a courtyard and cattle shed. According to endogenic rule, an *Oraon* boy is married only to an *Oraon* girl and vice-versa and the family is small in size and nuclear in structure. Inter-tribe and inter-caste marriages are treated as social offence. The kinship system of the Oraon presents a model of relationship based on parentage and marriage. The economy of the Oraon presents a mixed picture of agriculture, animal husbandry, labour, collection of NTFPs and service. The *Oraon* religion presents a mixture of Animism, *Bongaism*, Spiritualism, Naturalism, Hinduism and Christianity. *Singbon-ga* or *Dharmesh* is the chief deity of the Oraon. Every village has a headman and hereditary priest, a number of neighboring village constitute a confederation, the affairs of which are conducted by a representative council (Sahu 2008).

### **The Lohara**

The Lohara is the artisan tribe associated with iron-craft making. The *Lohara* erect their houses with mud, bamboo, tree branches, leaves, *kher* grass (*Heteropogon contortus*) and tiles. They have low cost wooden furniture, earthen pots, rope made articles, bamboo articles, agricultural implements, hunting tools, *khajur* (*Phoenix acaulis*) mats, brooms, aluminium, brass, steel or bronze pots, etc. in their houses. The Lohara men wear *ganji*, *kurta*, *dhoti*, *gamachha* and shoe or slipper purchased from the weekly market (*haat*). The Lohara women wear ornaments in nose, ear, neck, hand, wrist, feet and fingers made up of brass, bronze, steel, nickel, thread, shell, seeds, glass, silver and imitation of gold/ silver. The monogamous family is nuclear in structure maintaining division of labour based on age and sex for smooth functioning. All brothers and sisters start leading family life after marriage and they maintain relation by re-

ciprocal exchange of invitation, visit, gift, presentation, service, food materials, request and hospitality. The *Lohara* boy is married *only to a Lohara girl* and vice-versa. Inter-tribe marriage is strictly prohibited. Intra-clan marriage is also a taboo. The usual way of acquiring marriage mates is by bride price. The relation of the Lohara family with the families of the lineage, clan and tribe is generally good. The kinship system gives rise to the concept of blood relation based on which every individual has ascendants and descendants (Sahu 2008).

### **Land Use Pattern and Socio-economic Profile of the Sample Villages**

The data pertaining to land use pattern (Table 1) indicated that out of the sample villages, Korda has the largest geographical area while the minimum is covered by Nehalgara. The average land area under cultivation is 53.06 percent of the total geographical area in the sample villages. The sample villages have considerable percentage of forest areas ranging between 11.83 to 42.81 percent. The area under cultivable wasteland in the villages varied between 15.58 to 115.85 ha. A sizeable proportion (10.51-10.61%) of the geographical area in the sample villages are under non-agricultural usages.

The socio-economic profile of the sample villages has been summarized in the Table 2. The data revealed that the sample villages have a considerable total human population (161 to 973) living in the households varying between 34 to 196. Majority (75.74-100%) of the population in the villages are dominated by schedule tribes with an average sex ratio of 1028.22 females per 1000 males. The literacy rate varied between 24.52 to 44.87 percent. Average size of land holding per household was found to be 1.89 ha. The total livestock population ranged from 660 to 1752. The sample villages have a very low infrastructure development. The educational, medical, social, economic, agricultural, irrigation, communication and transportation facilities in the sample villages are very poor.

### **Household Survey**

Multi-stage random sampling technique was applied to select the villages and the respondents. Nine sample villages namely, Korda, Jojoda, Husirhatu, Banaburu, Nehalgara, Ghagrab-

era, Hesapiri, Roredih and Kuchidih having around 10 percent sampling intensity of the block were selected using simple random sampling technique. A sample consisted of 164 respondents having 20 percent of the total number of the households comprising all categories of the land holders were drawn by simple random technique from the sample villages for household survey. Household heads were treated as respondents. The data on manpower potential, employment status and forest based livelihood opportunities were collected by using both secondary sources and primary field survey viz. personal interviews of the respondents through a well-structured pre-tested interview schedule, personal observations of the interviewer and participatory rural appraisal tools, that is, semi-structure interview with key informants and focus group discussion. The data on manpower potential included labour force (actual number of people available for work), work force (labour pool in employment) and unemployment. The data regarding employment status included the number of workers in the family, nature of employment, extent of employment (mandays per annum), number of migrants or day-outers in the family, migration or day-outing distance and migration or day-outing period. Based on appraisal of the land use pattern, resources availability, socio-economic profile, manpower potential and employment status, the forest based livelihood interventions were planned for tribal development in the area. The income and employment opportunities expected from the projected forest based livelihood interventions were computed following standard methods of previous workers (Binkley 2005; Sarkar and Chatopadhyay 2006; Mutanlal et al.

2007; Rawat et al. 2008; Pal 2009; Ansari and Ansar 2011; Bhatia et al. 2011; Pandey and Roy 2011; Dagar 2012). The income estimated from the interventions included all the revenues from various main and by products while the employment potential of the interventions included labour requirement in all the activities from plantation to marketing. Suitable statistical tests viz., range, frequency (f), mean (x) and percentage (%) were used for analysis of data (Snedecor and Cochran 1967).

## RESULTS AND DISCUSSION

### Manpower Potential

The manpower potential and occupational status of the sample villages is given in the Table 3. Out of the total labour force (both the earners and non-earners) 1862 (49.81%) are male and 1019 (49.61%) are female. Out of the total labour force, 2054 (54.95%) belong to the work force, of whom 1035 (50.39%) are male and 1019 (49.61%) are female. It is noticed that out of 2054 work force, 1315 (64.02%) are main workers and 739 (35.98%) are marginal workers. Of the total 1315 main workers 957 (72.78%) are male and 358 (27.22%) are female and out of the total marginal work force 78 (10.56%) are male and 661 (89.44%) are female. Of the total 1315, main workers 956 (74.16% male and 25.84% female) are cultivators, 231 (90.91% male and 9.09% female) are wage labourers, 10 (80.00% male and 20.00% female) are engaged in household industry and 118 (88.14% male and 11.86% female) were involved in other occupations. There are 1684 unemployed persons in the sample villages, of whom 827 (49.11%) are male and 857 (50.89%) are female.

**Table 1: Land use pattern of the sample villages**

Particulars	Villages								
	Korda	Jojoda	Husir-hatu	Bana-buru	Nehal-gara	Hesapiri	Roredih	Kuchidih	Ghagr-abela
<i>Land use (ha)</i>									
Village area	617.58	185.40	497.63	322.49	143.33	308.23	195.59	211.67	397.02
Forest	264.37	21.93	242.84	65.56	31.03	54.20	24.48	44.79	70.30
Cultivable waste	115.85	22.56	15.58	19.99	24.41	16.39	20.26	39.25	33.22
Non-agricultural land	27.48	23.10	25.77	21.36	15.07	22.22	20.74	26.43	42.12
Net sown	209.88	117.81	213.44	215.58	72.82	215.42	130.11	101.20	251.38
Irrigated	11.18	18.06	11.89	77.12	2.02	3.90	1.25	10.73	35.34
Un-irrigated	198.70	99.75	201.55	138.46	70.80	211.52	128.86	90.47	216.04

Source: State of Jharkhand- Overview (2009)

**Table 2: Socio-economic profile of the sample villages**

Particulars	Villages								
	Korda	Jojada	Husir-hatu	Bana-buru	Nehal-gara	Hesapiri	Roredih	Kuchidih	Ghagra-bera
<b>A. Human Population (no.)</b>									
Households	196	60	110	122	63	83	34	77	71
Total population	973	305	629	682	360	431	161	378	467
Male	400	125	292	294	148	183	62	156	202
Female	424	138	264	279	143	190	76	154	208
Children	149	42	73	109	69	58	23	68	57
<b>B. Sex Ratio (Females Per 1000 Males)</b>									
ST	1080	1104	897	973	893	1000	1277	1000	1030
SC	-	-	-	821	-	-	-	-	-
Others	973	-	1091	1056	1308	1778	1067	920	-
All	1060	1104	904	949	966	1038	1226	987	1030
<b>C. Literacy (No.)</b>									
Total	241	118	248	239	77	146	55	76	180
Male	190	74	172	173	57	95	33	55	126
Female	51	44	76	66	20	51	22	21	54
<b>D. Caste Structure (No.)</b>									
ST	678	263	533	434	231	348	107	262	410
SC	-	-	-	102	-	-	-	-	-
Others	146	-	23	37	60	25	31	48	-
<b>E. Land Holding (Households)</b>									
Landless	17	2	2	5	5	-	-	5	-
Marginal	102	24	52	45	29	28	10	34	22
Small	44	18	24	36	17	26	9	24	18
Medium	25	10	22	28	9	18	8	9	16
Large	8	6	10	8	3	11	7	5	15
<b>F. Livestock Population (No.)</b>									
Bullock	209	115	152	193	83	127	40	65	105
Cow	232	219	309	204	153	287	49	114	95
Buffalo	78	39	43	63	32	44	17	40	36
Goat	554	129	381	444	135	370	116	206	184
Sheep	45	13	26	29	14	18	9	17	16
Pigs	68	18	43	47	18	26	13	24	30
Poultry	711	263	491	524	289	399	147	367	355
Duck	39	20	22	31	16	24	15	19	18
Turkey	4	-	-	2	-	2	-	1	-

Source: State of Jharkhand- Overview (2009)

Among 1684 unemployed persons, 1532 (52.02% male and 47.98% female) are working people and rest 152 (48.03% male and 51.97% female) are aged people. The percentage of work force to labour force constituted around 55.59 percent and 54.32 percent among male and female respectively.

The main workers are generally employed for more than 6 months per annum, while the marginal workers get employment below 183 mandays per annum. The imperfect occupational pattern of the workforce has become unviable; consequently they are unable to derive subsistence from their jobs. Likewise, the continuous unemployment causes poverty, diminishes the standard of living and ruins dignity and lives among the rural populace. Hence, there is an urgent need to generate sufficient employment opportunities for unemployed and under-em-

ployed people in the sample villages. Ramkrishnan (2013) reported that as the technological growth and industrial development has greatly reduced the demand for unskilled and low-skilled labour, there is massive need for global efforts to reduce the unemployment crisis in rural India.

### Employment Status

It is obvious from Table 4 that about 41.46 percent of households had three workers whereas, the percentage of households with two workers was 27.44 percent. The 19.51 and 11.59 percent households possessed more than three and one worker, respectively. As regards to nature of employment, majority of the respondents (62.19%) were engaged as family labour followed

**Table 3: Manpower potential and occupational status in the sample villages**

S. No.	Particulars	Male	Female	Total
1.	Labour force	1862 (49.81%)	1876 (50.19%)	3738 (100.00%)
2.	Work force	1035 (50.39%)	1019 (49.61%)	2054 (100.00%)
	(a) Main	957 (72.78%)	358 (27.22%)	1315 (100.00%)
	(i) Cultivators	709 (74.16%)	247 (25.84%)	956 (100.00%)
	(ii) Wage labour	210 (90.91%)	21 (9.09%)	231 (100.00%)
	(iii) Household industry	08 (80.00%)	02 (20.00%)	10 (100.00%)
	(iv) Others	104 (88.14%)	14 (11.86%)	118 (100.00%)
	(b) Marginal	78 (10.56%)	661 (89.44%)	739 (100.00%)
3.	Unemployed	827 (49.11%)	857 (50.89%)	1684 (100.00%)
	(a) Working people (15-60 years)	797 (52.02%)	735 (47.98%)	1532 (100.00%)
	(b) Aged people (above 60 years)	73 (48.03%)	79 (51.97%)	152 (100.00%)
4.	Percentage of work force to labour force	55.59%	54.32%	54.95%

Source: State of Jharkhand- Overview (2009)  
 Figures in the parentheses indicate percentages

by casual labour (21.34%), self employment (10.98%), temporary service (3.66%) and regular employment (1.83%). So far as extent of employment (mandays per annum) is concerned, a sizeable proportion (71.95%) of the family workers were engaged for 201-300 mandays per annum while 16.46 percent of them got employed for more than 300 mandays per annum and rest (11.59%) had opportunity to be engaged for only upto 200 mandays per annum.

The findings indicated that an overwhelming proportion of the respondents were having 2 to 3 workers in their families engaged either as family labour or casual labour for 201-300 mandays per annum. Agriculture being main constituent of rural economy, most of the workers were engaged in farming activities, family enterprises or some other economic activities as family labour. But, due to lack of irrigation facility and infrequent and unreliable rain, people generally way out to mono-cropping of paddy only, providing insufficient employment only for 201-300 mandays per annum. The alternative sources of employment opportunities besides agri-

culture is casual labour in agricultural fields, brick making, stone crushing, road construction, house construction, mining, rickshaw pulling, earth works, forestry works, domestic help, factories, hotels, carpentry and other miscellaneous works. As employment generation through these sources is seasonal, occasional, erratic and limited, the people could get employment only for a certain period *i.e.* 201-300 mandays per annum. The present findings confirm the earlier reports of Kumar (2009), Malathesh et al. (2009), Shendage et al. (2009), Singh et al. (2009), Thakur and Sharma (2009) and Mitra and Verick (2013).

### Migration or Day-outing for Employment

The households having one, two and more than two migrants or day-outer members were 48.17, 24.39 and 9.76 percent respectively whereas, the families without migrants or day-outers were 17.68 percent. In respect to migration or day-outing distance, a considerable majority of the workers (72.56%) cover a distance upto 50 km while 7.93 percent of them move 51 to 100 km

**Table 4: Employment status of tribal people in the sample villages (N=164)**

S. No.	Number of workers in the family		Nature of employment		Extent of employment (Mandays per annum)	
	Category	Household	Category	Household	Category	Household
1.	1	19(11.59)	Family labour	102(62.19)	Upto 200	19(11.59)
2.	2	45(27.44)	Self employment	18(10.98)	201 to 300	118(71.95)
3.	3	68(41.46)	Casual	35(21.34)	> 300	27(16.46)
4.	>3	32(19.51)	Temporary	06(3.66)		
5.			Regular	03(1.83)		

Figures in the parentheses indicate percentages

and only a negligible percentage (1.83%) of the workers travel above 100 km for earning their livelihoods. As regards to migration or day-outing period, the working members of over half (50.61%) of the families were migrating or day-outing upto 4 months, whereas, the migration or day-outing tenure for the workers of 20.12 percent households varied between 5 to 8 months and the workers of about 11.59 percent households extended their migration or day-outing tenure above 8 months. Rest of the families (17.68%) has exhibited no migration or day-outing at all (Table 5).

Poverty, illiteracy, subsistence and unviable farming, insufficient resources, low availability of subsidiary occupations and scanty alternative sources of employment opportunity leads to miserable economic condition and starvation of the tribal communities in the area. To meet basic family requirements, cope up with drought like conditions, enhance economic condition, pay off debts and look for better remuneration opportunities most of the tribal people resort to migration or day-outing in nearby areas during lean season of employment. The findings comply with the results of Karthikeyan et al. (2005), Sharma (2005), Dayal and Akhouri (2008), Reddy and Jaysree (2008), Chakraborty et al. (2009) and Anonymous (2013a).

#### Forest based Livelihood Opportunities

The agroforestry plantation of multi-purpose tree species (MPTs) on 61.11 ha of agricultural bunds, energy plantation of MPTs on 36.28 ha of uncultivable wastelands, pasture development on 57.51 ha of cultivable wastelands by planting MPTs and intercropping of fodder grasses, timber plantation of *gamhar* (*Gmelina arborea*) and teak (*Tectona grandis*) on 50 ha of

cultivable waste, *tasar* silk rearing by block plantation of *arjun* (*Terminalia arjuna*) and *asan* (*Terminalia tomentosa*) on 50 ha of cultivable wastelands, lac cultivation by establishing block plantation of *ber* (*Zizyphus mauritiana*) on 50 ha of cultivable wastelands, bamboo (*Dendrocalamus strictus*) planting on 50 ha of cultivable wastelands, fruit farming through block plantation of mango (*Mangifera indica*) and guava (*Psidium guajava*) on 50 ha of cultivable wastelands and value addition in *sal* (*Shorea robusta*) leaf plate and cup making by installation of household pressing unit and mechanized pressing and moulding will generate an employment opportunities of 108792.50 mandays per annum in the study area. The sale of *gamhar* and teak timber, silk cocoons, lac, bamboo culms, mango fruit (cv. Langra and Mallika), guava fruit (cv. Allahabad Safeda), machine pressed *sal* leaf plates and cups, fuel wood, green forage, tree fodder, minor fruits and agricultural products produced from various livelihood interventions proposed will generate an income of Rs. 327.77 lakhs per annum in the sample villages (Table 6).

Owing to limitations of employment opportunities in agriculture and wage labour and scarcity of alternative sources of income, the tribal people are striving to secure their livelihoods in the study area. The development and diversification of non-traditional and economically viable rural livelihood options based on local resources can mitigate livelihood scarcity of the tribal people in the sample villages. The considerable knowledge and adoption of forestry practices, favourable attitude towards forestry and conventional dependence on forest resources for livelihoods among tribal people, facilitate intervention of forest based livelihood options in the area. The analysis of land use pattern revealed that the sample villages have a vast tract

**Table 5: Migration or day-outing for employment among tribal people in the sample villages (N=164)**

S. No.	Number of migrants or day-outers in the family		Migration or day-outing distance		Migration or day-outing period	
	Category	Household	Category	Household	Category	Household
1.	Nil	29 (17.68)	No migration or day-outing	29 (17.68)	No migration or day-outing	29 (17.68)
2.	1	79 (48.17)	Upto 50 km	119 (72.56)	Upto 4 months	83 (50.61)
3.	2	40 (24.39)	51 to 100 km	13 (7.93)	5 to 8 months	33 (20.12)
4.	>2	16 (9.76)	Above 100 km	03 (1.83)	Above 8 months	19(11.59)

Figures in the parentheses indicate percentages

of land under agricultural bunds (61.11 ha), uncultivable waste (36.28 ha) and cultivable waste (307.51 ha) which can be efficiently utilized for agroforestry, energy plantation, pasture development, timber plantation, *tasar* (*Antherea mylitta*) silk rearing, lac cultivation, bamboo planting and fruit farming. On the other hand, the value addition in *sal* leaf plates and cups making by installation of household pressing unit and mechanized pressing of ordinary *sal* leaf plates and cups into moulded plates and cups has considerable livelihood potential for the tribal people. There is multitude of studies suggesting livelihood development through forest based interventions such as agroforestry (Dagar 2012; Prasad 2014), energy plantation (Mutanlal et al. 2007), pasture development (Pandey and Roy 2011), timber plantation (Binkley 2005), sericulture (Bhatia et al. 2011; Bhatia and Yousuf 2013), lac cultivation (Pal 2009; Anonymous 2013b), bamboo planting (Rawat et al. 2008; Hogarth and Belcher 2013.), fruit farming (Ansari and Ansar 2011) and *sal* leaf plates and cups making (Sarkar and Chatopadhyay 2006). Hence, the forest based livelihood interventions proposed needs to be implemented and the land use should be re-oriented accordingly to enhance the income and employment opportunities for tribal people in the sample villages.

## CONCLUSION

The analysis revealed that the employments of tribal communities in the area have traditionally been dominated by subsistence agriculture having clear-cut limitations as an employment and income provider for growing labour force. However, the employment diversification through forest based livelihood interventions is the prominent option for ever-increasing employment crisis of the populace. Therefore, the employment security among tribal people needs a shift of paradigm focusing on forest based livelihood interventions to cope up with current development and future challenges. More attention from the policymakers and planners should receive to formulate specific policies integrating forest based livelihood interventions visualized and implement efficiently for all-round development of the tribal people and ecological stability. The people's participation, involvement of local leaders, *panchayat* members, self help groups, voluntary organizations *etc.* and institutional support should be ensured to make the livelihood strategies more participatory, interactive and effective.

## RECOMMENDATIONS

The potential of forest based livelihood interventions projected for tribal development re-

**Table 6: Forest based livelihood opportunities for tribal people in the sample villages**

S. No.	Livelihood intervention	Area (Ha)	Rotation (Year)	Income (Lakh Rs. per annum)	Employment (Mandays per annum)	Source
1.	Agroforestry	61.11 <sup>a</sup>	12	-	1388.38	Pant (1984)
2.	Energy plantation	36.28 <sup>b</sup>	12	8.82	3472.84	Pant (1984), Mutanlal et al. (2007)
3.	Pasture development	57.51	12	29.26	6901.20	Acharya and Rao (1995), Mutanlal et al. (2007), Pandey and Roy (2011)
4.	Timber plantation	50.00	20/25	123.74	4424.50	Pant (1984), Binkley (2005), Mani (2006)
5.	<i>Tasar</i> silk rearing	50.00	20	42.89	16708.15	Pant (1984), Mani (2006), Acharya and Alam (2009)
6.	Lac cultivation	50.00	10	29.21	6957.78	Pant (1984), Mani (2006), Pal (2009)
7.	Bamboo planting	50.00	5	23.62	24502.19	Pant (1984), Pandey and Naik (2003), Mani (2006), Rawat et al. (2008)
8.	Fruit farming	50.00	20	50.34	15187.50	Ansari and Ansar (2011)
9.	Sal leaf plate making	-	-	19.89	29250.00	Padhi et al. (2001), Sarkar and Chatopadhyay (2006)
10.	Total	404.90	-	327.77	108792.50	

a Agricultural bunds

b Uncultivable wasteland of non-agricultural land



mained largely untapped due to lack of appropriate policy, institutional framework, extension and communication, training, capacity building and skill upgradation, technology refinement, value addition, marketing infrastructure and financial assistance. Further, the forest based livelihood interventions commensurate to the way of tribal life. Therefore, the Central or State Governmental Organization as well as Non-Governmental Organization should implement the proposed forest based livelihood interventions through their developmental schemes for sustainable development of the aboriginal people in the area.

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**APPENDIX**

Akhara: A place of gathering for organizing community programmes.

Bongaism: A religious complex of beliefs in supernatural power 'Bonga' found among the Indian tribe. Bonga is manifestation of a vague supernatural power one that is the cause of all energy.

Dharmesh: The most powerful and most important deity of the Oraon tribe.

Dhoti: A long unstitched loincloth worn by men in lower body in India.

Gamachha: A thin, coarse, traditional Indian cotton towel tied as a headscarf.

Ganji: An undershirt.

Kolarian: An indigenous non-Aryan race of India.

Kurta: A piece of upper clothing worn by males in India.

Kutch house: A temporary type structure made of crude materials such as mud-clay un-burnt bricks, bamboos, grass, reeds or thatch.

Mundari: The Munda language of the Austro-Asiatic language family spoken by the Munda people.

Panchayat: The local self-government at the village or small town level in India.

Sarana: The worship place corresponding to a temple in the Munda tribe.

Sarpanch: An elected head of a village level statutory institution of local self-government in India.

Sasan: The cremation ground of the Munda tribe.

Singbonga: The supreme god among the Munda tribe.