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## **A Livelihood Comparative Study of Chepangs and Tamangs, Both Applying Agroforestry Intervention in Central Nepal**

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### **Abstract:**

*This study is designed to identify the situation of agroforestry practices and its livelihood change within two ethnical communities such as chepangs<sup>1</sup> and tamangs<sup>2</sup> in Bharta Punyadevi village development committee (VDC) under Makwanpur district. A total of 63 agroforestry households (32 from Chepangs HH and 31 from Tamangs) on the basis of purposive sampling within three (2, 4 and 6) wards of Makwanpur district was chosen. Researcher collected primary data from standard questionnaires within a period of December 2014 to January 2015. The survey data were analysed, converted into frequency and percentages using IBM SPSS Vol. 20. After compilation of data reveals a summary report that both 93 per cent chepangs and tamangs reply that agroforestry is the main causes of improved livelihood, higher income gain due to it; 49 per cent chepangs and 51 per cent tamangs students are going to school for education, 100 per cent of both groups are using temporary toilets besides sufficient availability of water source from own, chepangs are higher to get loan than tamangs as both are applying local merchants to take loan with an average of 18-24 per cent interest rates per month. Wild foods was the common coping food habit in insecurity period for both the groups, development support is greater among chepangs than tamangs, 100 per cent agroforestry users (both chepangs and tamangs) are now affiliated and active in social committee than previous situation was none of them before agroforestry practices, more than 90 per cent reply that traders collect agroforestry products from villages and sent per cent reply that they are not getting the real market price of the product.*

**Keywords:** Agroforestry, Khoriya, livelihood, ethnicity, slash and burn

### **1. Introduction**

Agro forestry farming practices provide multiple benefits including high productivity and additional income while maintaining soil health (Kang, 1984). Makawanpur is one of the high rainfall receiving districts among others in this region. The fruit crops successfully grown are banana and pineapples. These are grown in altitude ranges from 300 m to 900 m. Tree fodders include Ipil-ipil (*Leucaena leucocephala*) and Bakaino (*Melia azedarach*) which are intermixed with banana and pineapples. Stylo grasses (*Stylosanthes* spp) which are protein rich perennial grass are also promoted in fruit orchards. Stylo grass is a legume grass which consists rhizobium bacteria in its root nodules can supplement nitrogen to the adjacent crops through its symbiotic functions (MDI, 2011). The Chepang, one of the 59 groups of indigenous peoples of Nepal have practiced 'shifting cultivation' or *Khoriya* for centuries. The *Chepang* people, also called *Praja*, are regarded as the most marginalized and resource poor group in Nepal. They are distributed in Chitwan, Dhading and Tanahun. Out of the total population of 52,236 (CBS, 2003), most of them live in Makawanpur. (Institute, 2008) The northwestern Makawanpur where Chepang and Tamang family live are most dependent on Khoriya farming (Institute, 2008) According to a governmental statistics, the total population of the Chepangs in Nepal is around 66,399. In Makawanpur, the number of the Chepangs is about 23,210 (NCA, 2013) Forest is also an important source of cash income. However control over and access to forest resources has been severely restricted due to unfavorable state policy which in turn threatens their livelihood situation. As a result only the food self-insufficient household resort to collection of commercial forest product for cash income generation. Income

<sup>1</sup> Chepangs: - Chepangs are known as praja who are 59<sup>th</sup> groups of indigenous ethnic nationalists (Adivashi-janajati) that have been recognized in Nepal, They are marginalized and socio-economical deprived ethnical community depends on natural forest resources.

<sup>2</sup> Tamangs: - an indigenous inhabitants of the Himalayan region of Nepal, they are major tibeto-burmen speaking communities, they have their own distinct culture. Language and religion. Among tamangs most of the people are marginalized and have traditional socio cultural activity within Makawanpur.

thus generated is utilized to produce food from the market. Promotion of commercial forest product seems to be promising alternative to improve food security situation of chepangs (Piya et al., 2011)

Much changes has taken place in the traditional economic structure of the chepangs as a result of a long period of interaction with non-tribal, they are now selling their products in the markets, responsible factors for the modernization and gradual changes in the chepangs region are construction of roads, growth of marketing centers, establishment of educational institution and introduction of the praja(chepang) development Programme (Gurung, 1990)

## 2. Literature Review

In north-western Makwanpur, shifting cultivation is observed mostly in rugged terrain on steep slopes and stony red soils in the sloping uplands. The system functioned well while the population pressure on the land was low and the livelihood of the shifting cultivators were based on subsistence (Federico and Bhaju, 2009). Around 43 per cent Chepangs of north-western part of Makwanpur are engaged in agroforestry plantation (CCDN, 2012). Around 1015 households are engaged in agroforestry plantation (NCA, 2013). A total of 3203 HH were supported within 104 Users Committee (UC) by MDI within a period of three years, where the participation of Chepangs is 1602 HH (50 per cent). Similarly the participation of Chepangs HH was 48 per cent in 2011, 59 per cent in 2012 and 48 per cent in 2013 year, respectively, Manahari, Handikhola, Raksirang, Kankada and Bharta Punyadevi vilages are the supported areas by various agencies in terms of agroforestry plantation (Chetry, 2014)

Report shows that agroforestry plantation increases income opportunity; and more than half of Chepangs community has been involved by implementing organization, MDI. The trend of adopting agroforestry plantation is growing. Banana and amriso plantation is popular and higher in the ground. Agroforestry mainly elevates poverty due to high demands of its product in markets and good income opportunity from its sale. Since school going children are not used in agroforestry practices, the education sector can be strengthened in the area (Chetry, 2014). Both tamang and Chepangs found adopting this modern technology instead if traditional slash and burn practices, past research work shows that agroforestry support has been provided to both the ethnic communities (Chepang and tamang) also various news agencies also reported frequently that the livelihood of ethnic group within this area is increasing as a result of agroforestry production, therefore keeping the above facts in mind this study will carried out in details with the objective mentioned below:-

- To analyse the change in livelihood situation of Chepangs and non chepangs (tamangs) groups.
- To analyse the income status of chepang and non chepangs.
- To examine out the market situation of agro forestry product.

## 3. Methodology

### 3.1. Study Area

Only three (2, 4, 6) ward nos of Bharta punyadevi VDC within Makwanpur district were purposively selected to conduct this research. Through various study and literature, it was found that agroforestry was massively planted only in ward no-2, 4, 6 of Bharta punyadevi VDC, therefore these wards are selected purposively, around 32 HH from Agroforestry adopter of Chepangs family and 31 HH from Tamangs were selected as a sample size for this study. Since researcher is doing Ph.D with the similar topics within the Chepangs groups only (one with AF adopter and another with non adopter) within five VDCs of Makwanpur VDC, Therefore one of the potential VDCs of the study area is Bharta Punyadevi, So in order to check the relation and differences between the groups this study was designed to mainly identify the comparative change between chepangs and tamangs (nearby neighbours of chepangs) groups in order to find the proper result for the future study which will support the researchers findings and conclusions.

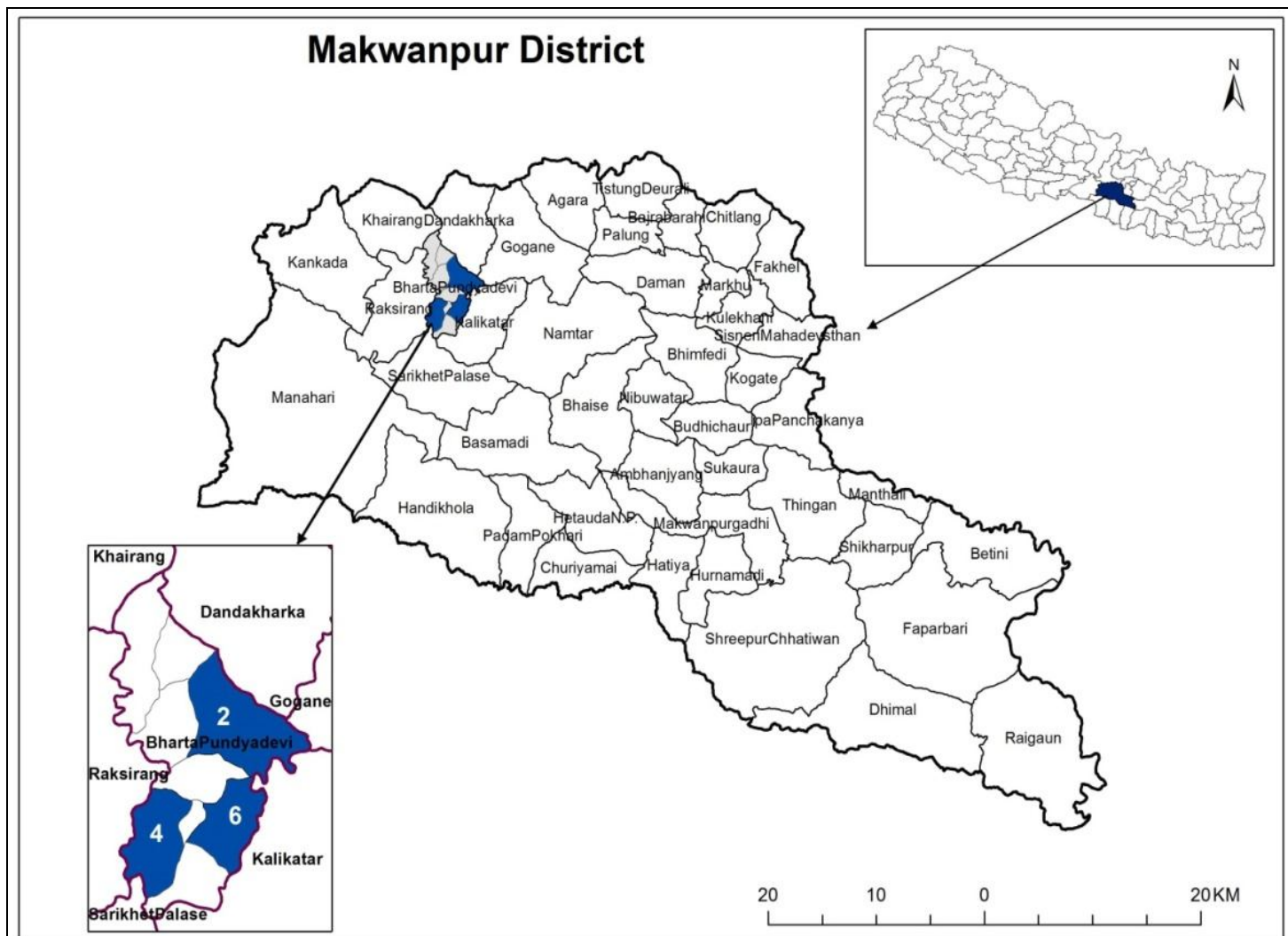


Figure 1: Map of study area

### 3.2. Respondent Selection and Pretest through Questionnaires

A total of 63 HH was chosen among which purposively 32 HH belongs to chepangs and rest 31 HH belongs to tamangs, in study area each ward is distributed with 10 HH, therefore ward no 2,4 and 6 was interview a total of 32 HH from Chepang HH who using agroforestry plantation and similarly 31 HH from tamang HH will be chosen to conduct this study. Before collecting the data for HH survey a pretest of 5 questions 3 questions for chepang HH and 2 question for tamangs HH within ward no 2 of Bharta punyadevi VDC were tested, also a draft schedule were conducted as per objective of the research articles.

### 3.3. Data Collection

The data collection cover a period of whole one months starting from December 14,2014 to January,15,2015. Number of field visit were done in the study area. Both primary and secondary methods of data collection were done. A semi structured data was collected through systematic purposive random methodology. Questionnaire was prepared in Nepali for easier understanding and capture of true data of the respondent. A secondary data (published/unpublished) such as journals, report, article by government, non government and other sources was deeply analyzed to make a good link between the objective and fact of the study area. A total of 4 case study (2 from chepangs and another 2 from tamangs) were collected to support the result of this study. Wherever the information was also collected through field observation and regular diary notes from the field visit.

## 4. Findings

According to survey data (64 per cent chepangs, 36 per cent tamangs HH are illiterate), 40 per cent chepangs and 60 per cent tamangs HH are literate), (None of the chepangs and 100 per cent tamangs did up to primary level education, and Finally 50 per cent chepangs and tamangs both did study up to matriculation; data educe that educational qualification of chepangs is less than tamangs community.

An average, 24 HH i.e 49 per cent number of student from chepang, 51 per cent students from tamang HH are going to school. Tamangs leading in this case too.

		Chepang	Tamang	Total				
Type of Toilets	Temporary	32	31	63				
Type of Electricity	Electric Light	12	8	20	<b>Chi-Square Tests</b>			
	Solar Tuki	17	21	38		<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
	Gobar gas	0	2	2	Pearson Chi-Square	6.207 <sup>a</sup>	3	.102
	Torch or Tukimara	3	0	3				
Took Loan.	Yes	21	17	38	Pearson Chi-Square	.765 <sup>a</sup>	1	.382
	No	11	14	25				
If, Yes, Source?	Co-operatives	2	0	2				
	Farmers Groups	0	1	1	Pearson Chi-Square	3.820 <sup>a</sup>	3	.282
	Local Merchants	18	17	35				
	Person	1	0	1				
School going childrens	One children	5	1	6				
	Two children	12	9	21	Pearson Chi-Square	6.744 <sup>a</sup>	4	.150
	Three Children	3	9	12				
	Four Children	2	4	6				
	Above than 4 children	2	2	4				
Livelihood condition before agroforestry	Traditional farming	24	22	46	Pearson Chi-Square	1.071 <sup>a</sup>	2	.585
	Slash and burn practices mostly	8	8	16				
	Wage Labour	0	1	1				
Coping strategy before agroforestry/food insecurity	Wild Food consumption	25	21	46	Pearson Chi-Square	1.582 <sup>a</sup>	2	.453
	Less preferred food	7	9	16				
	Skipping meals	0	1	1				
Main reason of Livelihood	Development Intervention	2	1	3	Pearson Chi-Square	.318 <sup>a</sup>	1	.573
	Agroforestry	30	30	60				
Any developmnet support	Yes	32	31	63				
If, Yes, Source?	Forest community	6	12	18	Pearson Chi-Square	3.074 <sup>a</sup>	1	0.08
	NGO	26	19	45				
Social involvement before agroforestry	No there was not	32	31	63				
Social involvement after agroforestry	Yes involvement in local committe	31	31	62	Pearson Chi-Square	.984 <sup>a</sup>	1	.321
	no there was not	1	0	1				

Table 1: Change in livelihood-socio economic status, basic demographic situation

Source: Field Survey, December 2014 to January 2015

\*Wild foods: Gittha (*Dioscorea bulbifera*) and Bhyakur (*Dioscorea pentaphylla*,) (\*\*Chi Square test is acceptance)

According to table-1; None of the HHs build permanent toilets besides the water was sufficiently available. The reason behind temporary use of toilet is insufficient distribution of toilet materials by development organization as well as lack of awareness, in case of types of electricity the figure conclude that both groups has access to source of electricity and majority using solar tuki is higher. In case of loan, it was found that Chepang majority is higher than Tamang community with a similar source of loan (local Merchant) for both, this happening due to lack of loan processing, coordination among financial institute from nearby Manahari area, due to this users are even paid 18-24 per cent per months from local merchants as, relatives. In case of school going children, chepang majority is higher in sending to school than tamangs, this indicates that schools awareness and development advocacy towards chepangs community is useful in this case. Previous than agroforestry both were using traditional farming (maize, millet cultivation). In case of coping situation both groups were using wild food consumption as a first coping during food insecurity situation, among which data shows that chepangs using higher than chepangs in insecurity, It was also mentioned by several researcher that wild food is most common and useful practices among chepangs, More than 93 per cent of both group reply that "agroforestry is the main reason of improved livelihood" situation. Development support to chepangs HH is higher than tamangs due to more focus provided to chepangs

community. More than 80 per cent support given by Non Government Organization such as Manahari Development Institute(MDI), Women Skill Creating Center(WOSCC), rest 40 per cent support given by community forestry, 100 per cent reply that they are now positively participating in local institute(committee) such as School Management Committee, Agroforestry groups, Women and empowerment committee, Women groups, Local cooperatives groups and NGOs based committee.

		Chepang	Tamang	Total				
Total cash income before agroforestry (Nrs) per month	Between 500 to 1000	27	23	50	<b>Chi-Square Tests</b>			
	Between 1000 to 3000	4	6	10				
	Between 5000 to 8000	0	2	2	Pearson Chi-Square	3.705 <sup>a</sup>	3	.295
	Between 8000 to 10000	1	0	1				
Total cash income after agroforestry (Nrs), per month	Between 500-1000	1	0	1				
	Between 5001 to 8000	0	1	1	Pearson Chi-Square	4.854 <sup>a</sup>	5	.434
	Between 10001 to 15,000	9	14	23				
	Between 15001 to 20000	12	10	22				
	Between 20001 to 30000	9	6	15				
Total cash expenditure this months (Nrs)	Less than 1000	1	0	1				
	Up to 2000	8	3	11	Pearson Chi-Square	11.080 <sup>a</sup>	7	.135
	Up to 3,000	14	9	23				
	Up to 4000	4	6	10				
	Up to 5000	5	7	12				
	Up to 6000	0	4	4				
	Up to 10000	0	1	1				
Land used in Khoriya (kattha)	up to 5	11	6	17				
	Between 6 to 10	20	21	41	Pearson Chi-Square	3.480 <sup>a</sup>	3	.323
	Between 11 -20	1	3	4				
	Between 21 and above	0	1	1				
Income from sale of Banana (Nrs)	Between 501 to 1000	0	1	1	Pearson Chi-Square	6.323 <sup>a</sup>	3	.097
	Between 1001 to 2000	6	12	18				
	Between 2001 to 5000	26	16	42				
	Between 5001 to 10,000	0	1	1				
Income from the sale of Kurilo (Nrs)	Between 2001 to 5000	3	1	4				
	Between 5001 to 10,000	13	15	28	Pearson Chi-Square	2.234 <sup>a</sup>	3	.525
	Between 10,001 to 20,000	6	5	11				
	Between 20,001 to 40,000	0	1	1				
Income from sale of Amriso (Nrs)	Between 501 to 1000	1	1	2				
	Between 1001 to 2000	0	4	4	Pearson Chi-Square	7.118 <sup>a</sup>	5	.212
	Between 2001 to 5000	20	17	37				
	Between 5001 to 10,000	11	7	18				
	Between 10,001 to 20,000	0	1	1				
	Between 20,001 to 40,000	0	1	1				

Table 2: comparative income status and contribution of agroforestry

Source: Field Survey, December 2014 to January 2015) (\*Kurilo (*Asparagus Racemosus*), Broom grass is known as "Amriso" in Nepali contest (*Thysanolenia maxima*). (\* Chi square test is acceptance)

According to table-2, More than 84 per cent chepangs and 74 per cent tamangs are earning between 500 to 1000 Nrs (Nepalese rupees)/months before than agroforestry plantation whereas after agroforestry it is huge, survey shows that 28 per cent chepangs and 45 per cent tamangs are earning now between 10001 to 15000 Nrs/months and more than 32 per cent of both are even earning between

15001 to 2000Nrs/months. Average expenditure is found higher in chepangs than tamangs. Khoriya is the main source of income of chepangs and tamangs said by so many scholars. It was also proved through this figure that 63 per cent chepangs and 68 per cent tamangs are now using khoriya with 6 to 10 kattha for plantation in average. It was found that due to mobilization of local NGOs chepangs are now more diverted to do plantation within their own land than khoriya, income from sale of kurilo (farm gate price-250Nrs/kg) is found higher than amrisho (farm gate price-70Nrs/kg) than banana (farm gate price-1-2 Nrs/single piece). Trend of amrisho and banana plantation is higher due to demands; More than 84 Per cent tamangs and chepangs (up to 91 per cent) replied that traders come to village to collect these agroforestry products.

				Total	Chi-square test			
		Chepang	Tamang			Value	df	Asymp. Sig. (2-sided)
Sale	Within the village	3	5	8	Pearson Chi-Square	.648 <sup>a</sup>	1	.421
	Business people directly collects from village	29	26	55				
Market price	No we are not getting the desired price	32	31	63		.653	1	

Table 3: Trend of market and price situation

Source: Field Survey, December 2014 to January 2015>(\*Chi square test is acceptance)

According to table-3; 9 per cent chepangs and 16 per cent tamangs replied that they sell their agroforestry product within the village (nearby manahari market). On the other hand majority of HH respond that more than 90 per cent both replied that traders collect the product from village. As response to a question of market price, 100 per cent both groups replied as they are not getting the real market price of the agroforestry product. Fact derives from the field that there is no proper road link within community and link with the farmers to traders is almost nil as a result farmers did not receive the sufficient market price. On other hands there is no availability of market collection center found within the study area.

## 5. Conclusion

The following conclusion is drawn from the survey data:-

Educational qualification and school going childrens of chepangs is lower than tamangs community. Toilet facility within both community is found poor (using temporary) besides plenty of water resources and development presence. Both groups have access to electricity. Chepangs is higher than tamangs in terms of loan users, both are using local merchant as a source and paying 24 per cent average rate of interest. Agroforestry is the main cause of improved livelihood for both the groups as income opportunity gain higher after plantation, where as it was lower before agroforestry. Before, coping strategy was higher among Chepan than Tamangs where as both were using wild food consumption as a first coping than skipping meals as second most strategy.

41.3 per cent Chepangs and 30.2 per cent tamangs were supported by NGOs where as 9.5 per cent Chepangs and 19 per cent tamangs were supported by forest community. Huge difference between social participation in before and after agroforestry plantation. Results show that both groups 100 per cent participated after plantation and nil participation before agroforestry plantation. Till the present time, tamangs are higher users of khoriya land than Chepangs, Income from Kurilo (*Asparagus Racemosus*), is higher than banana and amrigo (*Thysanotena maxima*). Farm gate price is not sufficient to both the community. Majority indicates that traders collect the agroforestry products from the village.

## 6. Recommendations

Following are the recommendations rooted on the survey data, below:

- Local NGOs (MDI) and government organization (District Development committee, District water and sanitation office) must support to both the communities in terms of providing toilet materials in sufficient amount (at least 5 sacks cements, toilet pans and other necessary kits (pipe, gas pipes) for a permanent toilets). At least 25 per cent HH must support by NGOs and rest of the HH must be by government channels.
- Cash shaving found inappreciable for both the groups, Agricultural Development Banks (ADB)/Government banks or private cooperatives, Small farmers cooperatives and development banks should expand their service to the grass root levels, or an extension of service is required by banks to provide the supports to agroforestry users. It would be more better if one service extension is established in nearby manahari market to provide a service for both (loan and shaving accounts) the groups as well as some others nearby community.
- It would be better if a vegetable/agroforestry collection center established in each wards or more and more community of the Bhartapunyadevi, advising Manahari Development Institute, Women skill creating center and other NGOs to establish a center for market management and price factors. According to field visit it was recommending by farmers that waksirang-2, ratuwa-4 and faster-6 are the best location for establishing the collection center. It is also recommending to development actor that they should support the Chiuri (*Aesandra butyracea*), as a higher demands by community, at least for 250 HH (50-60 spices of each) for both chepangs and tamangs must support to each HH than it will be a better chance of more income from this community for next season.

- It would be better if VDC/DDC and MDI through RCIW (Rural community infrastructure Works) do advocacy for the road network to Bharta punyadevi village development committee for better connection in Manahari with markets, its advising to keep the road priority as a higher demands on this sector, at least local rural road project(new construction or old rehabilitation) is required to continue in this sector.
- Its advised to all the development agencies that are working in the ground, they should now increase there target beneficiary, instead of few users some more non agroforestry users must supported through kurilo(Asparagus Racemosus), amriso (Thysanolenana maxima) as a high value products. At least 40 per cent more users is required in this sectors.

### 7. Acknowledgement

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**Annex: Some Photos of Plantation**



*Figure 1: Brooms and banana tree at Bharta punyadevi VDC*



*Figure 2: Banana collected and ready for sale, Growing banana in Bharta punyadvi VDC*