
Progress Report III

1. Services availed from Dangling Community Forest (CF)

67% of the Community Forest Management Group (CFMG) households have availed the services from the CF since after inception in 2013. The most acquired services for domestic use was fuel wood (65% households) and for commercialization, Broom (*Thysanolaena maxima*) was most preferred provisioning services. Stream gauging was done on water draining out from two CFs viz. Dangling and Dungmin CFs. The extrapolated economic value of the CF (52 households) is Nu. 0.237 Million.

2. Community forest assessment for ecosystem services

The highest numerical strength is represented by *Ostodes paniculatus* and *Dubanga grandiflora* with relative density of 10% and 9% respectively. *Terminalia myriocarpa* and *Vitex sp.* have the least relative density (0.05%) showing the weaker competition in the community. The CF has *Shannon-Weiner* diversity index of 3.4 and *Margalf's index* of richness of 23.73. Ruankiaer's frequency distribution showed almost homogenous distribution of species in the community forest as shown by distribution equation; $42 > 7 > 4 \neq 2 > 0$. This indicate that 42 species constantly present in the entire range of CF and few species are rare.

3. Stream discharge quantities

The field work was carried out in the month of June during the onset of monsoon and volume of water discharge may be overestimated. The stream gauging was done using the technique of flow rate per minute. 61.7 ft³/sec is drained out from two CFs.

4. Priority ranking of NTFP

Although CFMG collects NTFPs such as Firewood, *Thysanolaena maxima*, *Piper nigrum* and fruits of *Terminalia chebula* however the quantity collected on *Piper nigrum* and fruits of *Terminalia chebula* is very minimal. 92% (60/65 households) of CFMG were interviewed for the ranking of NTFP using five parameters; *marketing demand, household benefit, availability, regeneration potential and time consumed* for harvesting. The ranking was obtained based on consolidated scoring of priority legend; High, Medium and Low. Both the NTFPs are valued by the CFMG having approximately equal scoring of 2.96 and 2.98 out of 6 for Fuel wood and broom (*Thysanolaena maxima*) respectively.

Table.1. Vegetation analysis of Fodder and Timber species. S- Shrubs. T- Tree (Shannon-Weiner diversity and Margalef's index represents the index of whole species in the community).

	RF (%)	RD (%)	Abundance	Shannon H'	Margalef's Dmg	Raunkiaer's frequency distribution
Fodder (Both shrub and Tree)						
<i>Ficus auriculata</i> (S)	1.56	2.17	3	-0.08		
<i>Brassaiopsis hispida</i> (S)	0.78	1.45	4	-0.08		
<i>Streaspernum suaveolens</i> (T)	6.23	4	1.79	-0.14		
<i>Meliosoma simplicifolia</i>	0.98	1	2	-0.04	26.71 (T)	
<i>Ficus sp.</i> (T)	3.6	3	2.09	-0.10	6.97 (S)	
<i>Populus gamblei</i> (T)	0.33	1	5	-0.03		
<i>Oreocnide rubescens</i> (T)	2.34	2.17	2	-0.08		
<i>Dalbergia pinnata</i> (S)	5	1.09	0.05	-0.05		
<i>Miliusa macroprpa</i> (S)	3.13	2.17	1.50	-0.08		
Timber						
<i>Terminalia myriocarpa</i>	0.66	0.26	1	-0.02		
<i>Schima wallichii</i>	8.29	7.14	2.24	-0.14		
<i>Tetrameles nudiflora</i>	2.62	2.04	2	-0.08		
<i>Beilschmiedia sp.</i>	0.66	0.26	1	-0.02		
<i>Rhus griffithii</i>	3.28	3.95	3.10	-0.13		42>7>4#2>0
<i>Mallotus philippensis</i>	0.66	0.77	3	-0.04	26.71	A>B>C#D>0
<i>Syzygium cumini</i>	2.31	0.77	1.5	-0.04		
<i>Michelia champaca</i>	0.98	1.02	2.67	-0.05		
<i>Dubanga grandiflora</i>	5.57	9.18	4	-0.22		
<i>Callicarpa arborea</i>	1.31	0.77	1.5	-0.04		
<i>Pterospermum acerifolium</i>	2.29	2.17	2.43	-0.08		
<i>Ostodes paniculatus</i>	8.58	9.69	2.92	-0.23		
<i>Ailinathus grandis</i>	0.66	1.02	4	-0.05		

Table.3. Stream discharge quantities

Quantity of stream discharge for irrigation						
Length of stream	Width (mean)	Depth (mean)	Area	Time taken (mean)	Velocity (mean)	Water Discharge
164 ft.	6.83ft.	3.55 ft.	24.2 ft. ²	54.6 sec.	2.55ft./sec.	61.7 ft ³ /sec.

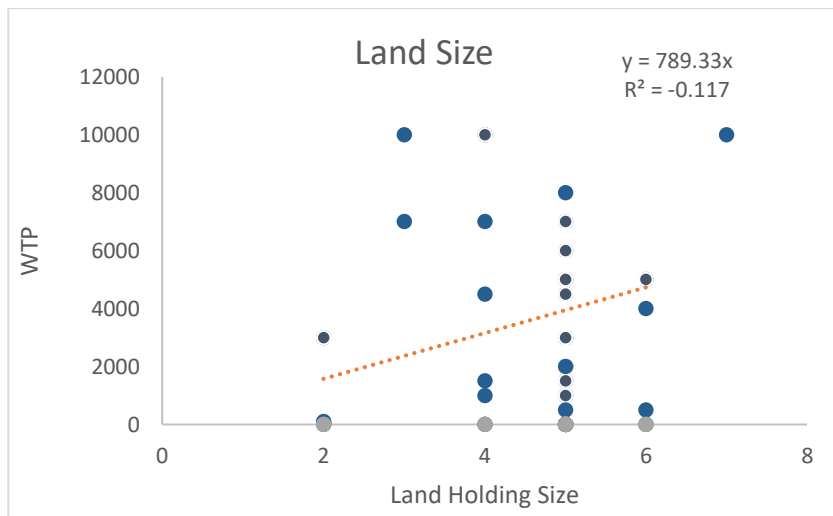
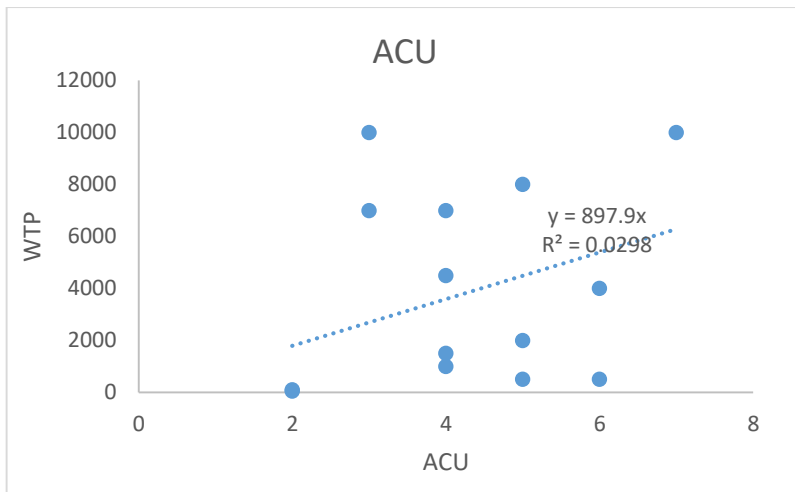
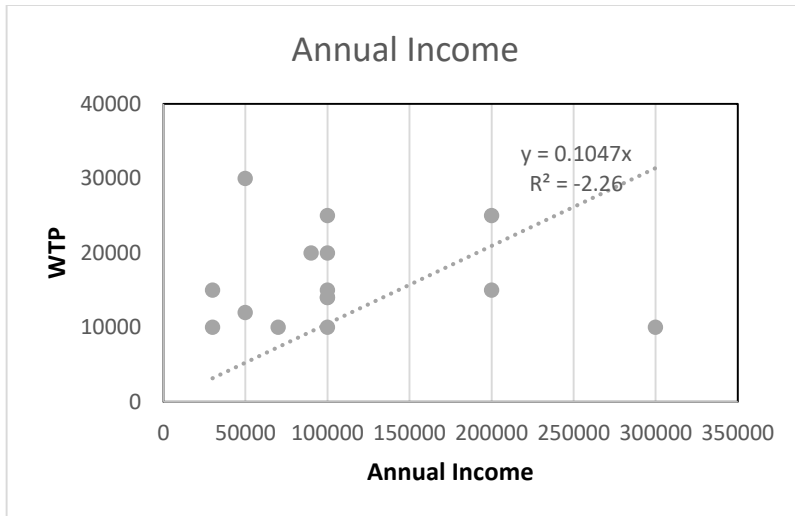
Table.4. Priority ranking of NTFP

NTFP	Fuel wood		<i>Thysanolaena maxima</i>	
Legend	1	2	1	2
Count	36	39	38	37
%	52	48	50.7	49.3
Score	1.92	1.04	1.97	1.01
Total score	2.96		2.98	
Grand total score : 6 (2.96 + 2.98)				

Table.5. Economic valuation of Non-Consumptive Use Values

Economic valuation of non-consumptive use values (sampled value)							
Total households	Total ACU	Total Land holding size	Total Annual Income	Education status	Env. Awareness	Total WTP (Nu.)	Total WTA
15	60	75 acres	2,06,000	NFE, Illiterate and primary	High	686050	–
ACU: Adult Cattle Unit, WTP: Willingness to Pay, WTA: Willingness to Accept.							

*NFE: Non Formal Education. Monetary unit in Ngultrum (Nu.)



ANNEXURE

Dangling community forest is largest community forest with presence of wildlife. The CF is home to several mammals and their presence is indicated by the presence of fecal in the CF.



Figure.1. Fecal of *Elephas maxima*



Figure.2. Fecal of *Bos gaurus*

ANNEXURE



Figure.3. fecal of *Muntiacus sp.*



Figure.4. Interviewing the local people