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Assured Income and Employment of beneficiary and non-beneficiary through different activities Implemented under watershed programme in Nagaland

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A B S T R A C T

The present study to access the assured income and employment through different activities implemented under watershed programme with reference to the beneficiaries and non-beneficiaries for the purposely selected two districts from the Nagaland state viz; Dimapur and Kohima as both were selected purposely due to the maximum number of area covered under watershed in the zone and further two blocks from each district were randomly selected, while in the second stage a multi stage random purposive sampling methods viz; 320 respondents (160 beneficiaries and 160 non-beneficiaries) were selected randomly from identified watershed areas. Further study reveals that overall average of beneficiaries income was found to be maximum (22.75 per cent) through forestry and plantation crop, followed by 21.03 per cent through crop production, while it was least through service as 3.45 per cent of the total income. Even overall average the employment trend shows maximum (40.37 per cent), followed by animal husbandry as 21.72 per cent contributed towards the employment generated on the beneficiary watershed programme during the study period.

Introduction

Watershed management activities is the process of guiding and organizing land, soil and other resource use on a watershed to provide needed goods and services and simultaneously conserving soil, water and land natural resources. The interrelationships among soil land used and water, and the linkages between up-stream and downstream area are given an explicit significance in watershed approach. Watershed management focuses on using resources in a productive and sustainable manner. The primary objective of watershed management is to slow down or if possible reversing the manmade degradation

which is mostly manifested in accelerated run-off usually with heavy sedimentations, reduced agricultural productivity and progressive removal of vegetative cover on non-arable land. watershed management project help in internalizing the externalities caused by flooding from a large number of seasonal torrents every year (Sharma *et al.,* 2015).

Since 1970, there have been heavy investments by Central and State Governments in the watershed development projects. Integrated Watershed Management has been identified as a key for planning and management of natural resources in mountain ecosystems. It provides an ecologically sound economic base for the watersheds and its people. In any developmental activity, the watershed approach is more scientific because the inherent potential of soil, water and forest recourses in a particular area is controlled by various factors such as physiography, geological base, soil characteristic, climate, present land use, socio-economic aspects (Anon. 2016).

The state of Nagaland characterized by undulating, highly erodible and degrading tracts, having more than 85.00 per cent of rain feed area watershed approach constitute most suitable approach of development for such hill areas. The approach is holistic, multidisciplinary, and integrated involving close coordination of different activities departments. In the past, planning based on administrative units has failed to take in to account the peculiar problems, resulting from the historical process of over-exploitation of various natural resources, in each locality (Mishra *et al.,* 2014).

The State of Nagaland was formally inaugurated on December 1st, 1963, as the 16th State of the Indian Union. From 2011 census, the total geographical area of Nagaland is 16,529 sq. km and total population of 1,980,602 and having a population density of 120 people per km. The state is mostly comprised of hilly terrain, with plain areas limited to only Dimapur. It can be noted that Kohima, the capital of Nagaland has an elevation of 1444 km. It has eleven districts viz; Kohima, Dimpaur, Kiphire, Longleng, Zunheboto, Phek, Peren, Mokokchung, Mon, Tuensang and Wokha and a collection of 16 tribes residing in this hilly state. Kohima, the capital of Nagaland, is a hilly district sharing its borders with Dimapur in the West, Phek District in the East, Peren in the South and Wokha in the North. It has a humid subtropical climate, with an elevation of 1444 metres and covers an area of 1463 sq. km. Dimapur District is the centre for many commercial activities. It is bounded by Kohima district on the South and East, Karbi Anglong on the West, Golaghat District of Assam, in the North. A large area of the District is in the plains with an average elevation of 260 m above sea level with an area of 927 sq. km (Anon. 2017).

Materials and Methods

For the present study two districts were selected purposively viz; Dimapur and Kohima due to the maximum areas and catchment areas in the first stage, while in the second stage, a multi stage stratified random sampling were used for the selection of beneficiary and non-beneficiary viz; 320 respondents (160 beneficiaries and 160 non-beneficiaries) were selected randomly from identified watershed areas. Further study reveals that two blocks from each district will be selected randomly for the present study as these blocks are well covered the watershed programme successfully. Altogether eight villages were selected randomly from each district, while four villages from each block were selected and listed which would be obtained from the offices of SDO (Civil), R.

D. block headquarter and other related offices. However, it is proposed to select four villages from each block randomly covered the water shed programme / schemes. After selection of the villages, a list of beneficiaries and non-beneficiaries of watershed management will be prepared from each of the selected village. In order to have representative sample from each village a sample of 20 numbers of cases, out of that 10 from beneficiaries and 10 from non-beneficiaries will be drawn following the purposively random sampling method. For the present study primary data were collected with the help of pre-tested structured scheduled and secondary data were collected from different sources etc. This will result in selection of 320 respondents from 8 villages, out of which 160 will be beneficiaries of the schemes and 160 will be non-beneficiaries of the watershed schemes for comparisons, so the simple systematic purposive randomly sampling techniques with the two specific objectives to conduct the present study viz; (i). To examine the total income through different activities adopted under watershed programme, and (ii). To study the average assured employment generated through different activities adopted under watershed programme.

Results and Discussion

Table 1 reveals that overall beneficiaries income was recorded as maximum (22.75 per cent) from forest and plantation crops, followed by crop production with 21.03 per cent, 20.38 per cent through animal husbandry, 17.36 per cent through other sources, fishery sector contributes 5.39 per cent and it was recorded least with 3.45 per cent through business, respectively. Even the chi-square value was found to be significant at 5 per cent level of significance on beneficiaries group for all the sectors of income viz; crop production, forest and plantation crop, animal husbandry, fishery, service, business and other sources of income etc; whereas Similar studies were find out by the Sharma (2002); Sharma and Sharma (2008); Shuya and Sharma (2014); Walling and Sharma (2015); Walling *et al.,* (2017); Shuya and Sharma (2018).

Table 2 reveals that the non-beneficiaries the maximum percentage was recorded (26.55 per cent) from animal husbandry, followed by crop production with 20.96 per cent, 10.95 per cent through forest and plantation crops, 9.13 per cent from other sources, fishery sector contributes 8.12 per cent and it was recorded least with 3.22 per cent through business, respectively. The chi-square value was found significant at 5 per cent level of significance for non-beneficiaries it was found significant on service business and through other source of income, respectively. Similar studies were find out by the Sharma (2004); Sharma (2011); Mishra *et al.,* (2014); Sharma *et al.,* (2016); Walling *et al.,* (2017); Sangtam and Sharma (2015); Pongeneer and Sharma (2018). Table 3 reveals that overall beneficiaries employment was recorded as maximum (40.37 per cent) from crop production, followed by 21.72 per cent through animal husbandry, other sources contributes 20.80 per cent, 11.20 per cent through forest and plantation crops, fishery sector contributes 5.89 per cent and it was recorded as least, respectively. Even the chi-square value was found to be significant at 5 per cent level of significance on beneficiaries group for all the sectors of income viz; crop production, forest and plantation crop, animal husbandry, fishery and other sources of income etc; whereas Similar studies were find out by the Sharma (2002); Sharma (2004); Sharma (2011); Sharma (2012); Mishra *et al.,* (2014); Sharma (2014); Sangtam and Sharma (2015); Walling *et al.,* (2017); Pongeneer and Sharma (2018) Sharma *et al.,* (2018); Shuya and Sharma (2018).

Table.1 Income per annum of different family respondents of beneficiaries

S.No	Groups	Crop production	Animal Husbandry	Fishery	Forest & Plantation	Service	Business	Others	Total
1.	Small	41270.83	25700.74	24798.47	10789.5	46333.33	7275.35	18812.5	**168314.81**
		20.29	14.99	6.55	21.55	22.77	5.04	8.80	**100.00**
2.	Medium	42394.56	47327.3	19328.12	12265.7	46880.7	9157.89	22947.4	**201287.05**
		21.44	17.29	6.48	23.78	18.48	2.99	9.52	**100.00**
3.	Large	52943.3	54993.8	17178.89	27954.1	43088.23	10250	21437.5	**234263.23**
		20.69	17.87	3.89	21.77	21.94	3.70	10.55	**100.00**
4.	Average	**47802.9**	**56938.36**	**20435.16**	**23481.24**	**45434.09**	**8894.41**	**21065.8**	**201288.36**
		21.03	**17.36**	**5.39**	**22.75**	**20.28**	**3.45**	**9.89**	**100.00**
Chi-square value		202.978 p = 0.695*	93.708 p = 0.220*	6.453 p = 0.597*	98.672 p = 0.351*	35.796 p = 0.057*	12.968 p = 0.371*	17.889 p = 0.996*	-

(The figure in the parentheses indicates percentage in total; Asterisk showed non-significant. Data showed significant at p< 0.05)

Table.2 Income per annum of different family respondents of non- beneficiaries

S.No	Groups	Crop production	Animal Husbandry	Fishery	Forest & Plantation	Service	Business	Others	Total
1.	Small	20345.26	33825	0.0	1333.34	36550	4387.5	17916.7	**121231.47**
		(14.38)	(18.15)	(0.00)	(7.62)	(31.30)	(6.47)	(16.21)	**(100.00)**
2.	Medium	34860.16	36538.75	13500	14737.5	43088.2	9157.89	15720.6	**159697.52**
		(18.84)	(25.58)	(10.98)	(6.63)	(24.02)	(2.37)	(11.59)	**(100.00)**
3.	Large	47578.5	31095.59	919.12	16623.52	44437.5	7155.96	18440.37	**183006.03**
		(22.82)	(23.71)	(10.17)	(12.05)	(20.21)	(3.09)	(7.95)	**(100.00)**
4.	Average	**34261.31**	**34021.87**	**7140.62**	**14533.74**	**41358.57**	**6900.45**	**17359.22**	**154645.02**
		(20.96)	**(26.55)**	**(8.12)**	**(10.95)**	**(21.08)**	**(3.22)**	**(9.13)**	**(100.00)**
Chi-square value		245.734 p = 0.000	200.765 p = 0.000	55.468 p = 0.000	60.196 p = 0.000	26.382 p = 0.334*	10.713 p = 0.554*	40.126 p = 0.102*	-

(The figure in the parentheses indicates percentage in total; Asterisk showed non-significant. Data showed significant at p< 0.05)

Table.3 Employment of different family respondents of beneficiaries in man days

S.No	Groups	Crop production			Animal Husbandry			Fishery			Plantation			Others			Total		
		M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
1.	Small	96.42	71.05	167.47	48.42	73.68	122.1	9.47	9.47	18.95	35.79	17.89	53.68	39.47	33.16	72.63	229.58	205.26	434.84
		(22.17)	(16.34)	(38.51)	(11.13)	(16.94)	(28.07)	(2.18)	(2.18)	(4.36)	(8.23)	(4.11)	(12.34)	(9.08)	(7.63)	(16.70)	(52.79)	(47.20)	(100.00)
2.	Medium	125.16	70.31	195.47	47.5	60.93	108.44	18.75	12.19	30.93	41.25	19.37	60.62	63.75	50.62	114.37	296.41	213.44	509.5
		(24.56)	(13.79)	(38.36)	(9.32)	(11.96)	(21.28)	(3.68)	(2.39)	(6.07)	(8.09)	(3.80)	(11.89)	(12.51)	(9.93)	(22.44)	(58.17)	(41.89)	(100.00)
3.	Large	143.67	63.99	207.66	52.48	52.75	105.23	16.24	14.31	30.55	37.43	17.06	54.5	57.52	47.89	105.41	307.34	196.0	503.35
		(28.54)	(12.71)	(41.25)	(10.42)	(10.47)	(20.90)	(3.22)	(2.84)	(6.06)	(7.44)	(3.39)	(10.82)	(11.43)	(9.51)	(20.94)	(61.05)	(38.94)	(100.00)
4.	Average	**134.35**	**66.09**	**200.45**	**51**	**56.87**	**107.87**	**15.93**	**13.31**	**29.25**	**38**	**17.62**	**55.62**	**56.62**	**46.69**	**103.31**	**295.92**	**200.59**	**496.51**
		(27.06)	**(13.31)**	**(40.37)**	**(10.27)**	**(11.45)**	**(21.72)**	**(3.20)**	**(2.68)**	**(5.89)**	**(7.65)**	**(3.54)**	**(11.20)**	**(11.40)**	**(9.40)**	**(20.80)**	**(59.60)**	**(40.39)**	(100.00)
Chi-square value		48.399 p = 0.170*			36.377 p = 0.085*			6.992 p = 0.726*			14.919 p = 0.246*			20.927 p = 0.051*			168.289 p =0.311*		

(The figure in the parentheses indicates percentage in total; Asterisk showed non-significant. Data showed significant at p< 0.05)

Table.4 Employment of different family respondents of non-beneficiaries in man days

S.No	Groups	Crop production			Animal Husbandry			Fishery			Plantation			Others			Total		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
1.	Small	135	46.25	181.25	36.67	37.5	74.17	17.5	10	27.5	11.67	10	21.67	19.17	15	34.17	220	118.75	338.75
		(39.85)	(13.65)	(53.5)	(10.82)	(11.07)	(21.89)	(5.17)	(2.95)	(8.12)	(3.44)	(2.95)	(6.39)	(5.66)	(4.43)	(10.09)	(64.94)	(35.05)	(100)
2.	Medium	124	54.44	178.44	46.62	55.5	102.12	9.88	10.12	20	19.25	13.25	32.5	35.62	30.12	65.75	235.38	163.44	398.81
		(31.09)	(13.65)	(44.74)	(11.69)	(13.92)	(25.6)	(2.48)	(2.54)	(5.02)	(4.83)	(3.32)	(8.15)	(8.93)	(7.55)	(16.49)	(59.02)	(40.98)	(100)
3.	Large	131.17	65.59	196.76	38.97	49.71	88.68	12.06	11.47	23.53	24.7	9.7	34.41	41.03	40.73	81.76	247.94	177.2	425.15
		(30.85)	(15.41)	(46.28)	(9.17)	(11.69)	(20.86)	(2.84)	(2.69)	(5.53)	(5.81)	(2.28)	(8.09)	(9.65)	(9.58)	(19.23)	(58.32)	(41.68)	(100)
4.	Average	**127.87**	**58.56**	**186.44**	**42.62**	**51.69**	**94.31**	**11.37**	**10.68**	**22.06**	**21**	**11.5**	**32.5**	**36.69**	**33.5**	**70.19**	**239.56**	**165.94**	**405.5**
		(31.53)	**(14.44)**	**(45.98)**	**(10.51)**	**(12.75)**	**(23.26)**	**(2.8)**	**(2.63)**	**(5.44)**	**(5.18)**	**(2.84)**	**(8.01)**	**(9.05)**	**(8.26)**	**(17.31)**	**(59.08)**	**(40.92)**	**(100)**
Chi-square value		61.838 p = 0.276*			25.278 p = 0.711*			29.374 p = 0.044			23.094 p = 0.059*			20.927 p = 0.051*			42.243 p =0.006		

(The figure in the parentheses indicates percentage in total; Asterisk showed non-significant. Data showed significant at p< 0.05)

Fig.1 Distribution of respondent family groups according to average income from different sources per annum

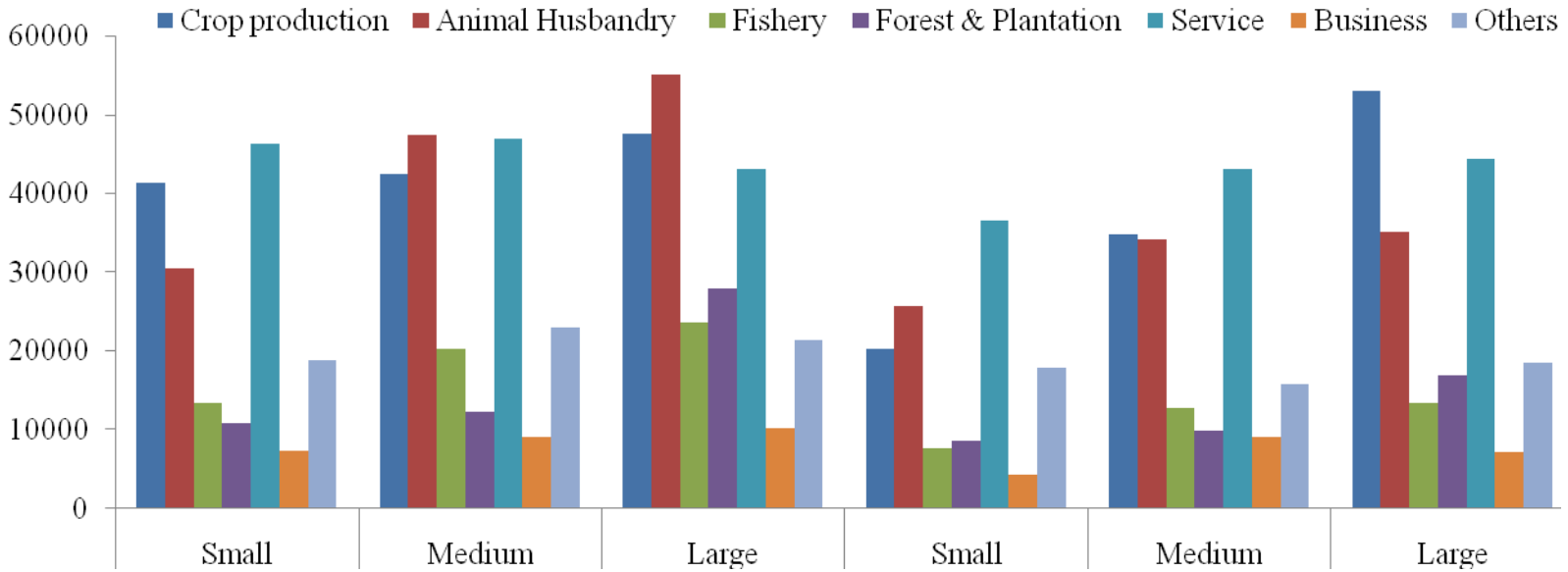

Fig.2 Distribution of respondent family groups according to average Man days generated

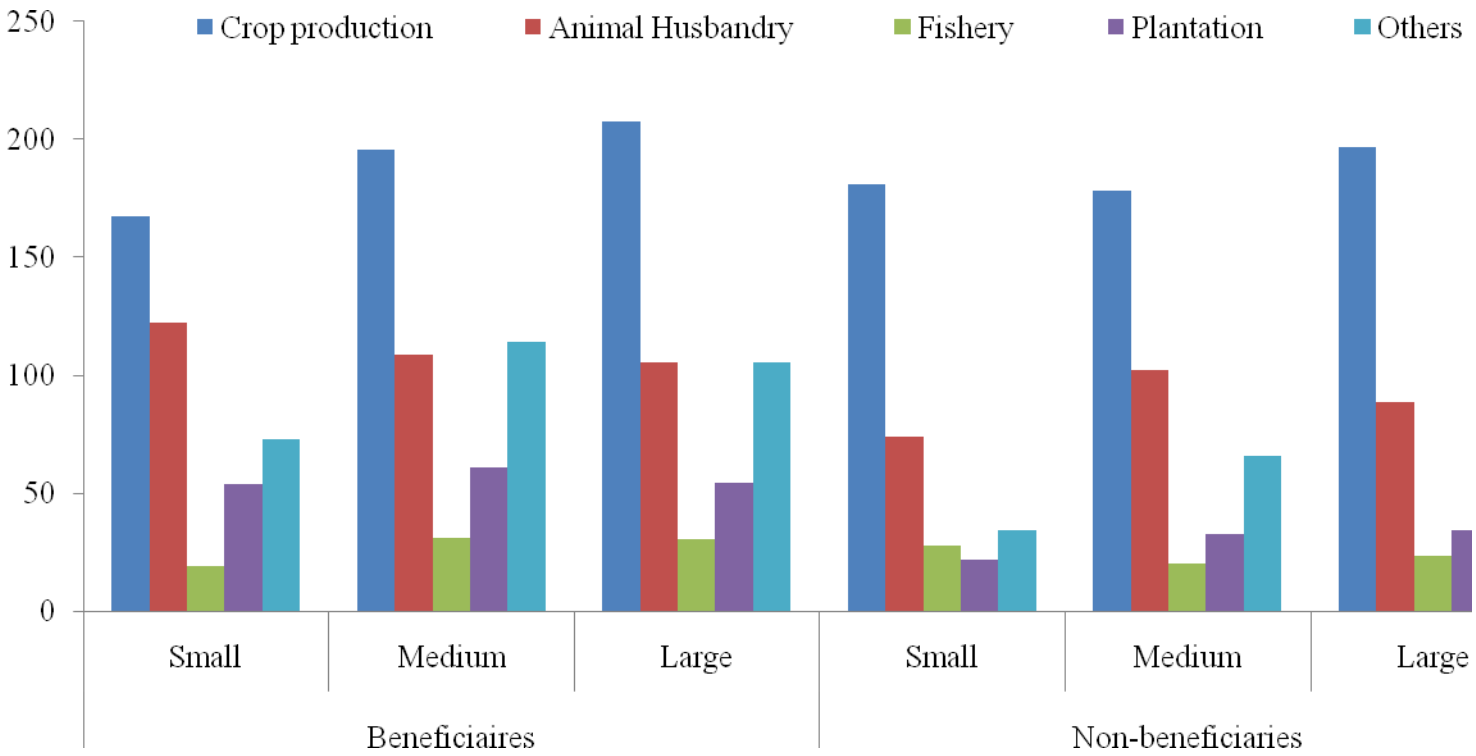

Table 4 reveals that the non-beneficiaries employment was found to be maximum percentage as (45.98 per cent) from cropping pattern (crop production) with 23.26 per cent, 17.31 per cent through other sources of income, forest and plantation crops contributes 8.02 per cent, the fishery sector contributes 5.44 per cent recorded as least source of income, respectively. The chi-square value was found significant at 5 per cent level of significance for non-beneficiaries it was found significant on service business and through other source of income, respectively. Similar studies were find out by the Sharma (2002); Mishra *et al.,* (2014); Sharma *et al.,* (2015); Walling *et al.,* (2017); Shuya and Sharma (2018).

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