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A Study on Performance of North Eastern Region Community Resource Management Project for Upland Areas in Assam

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AGRICULTURAL ECONOMICS

By

SANJOY DAS

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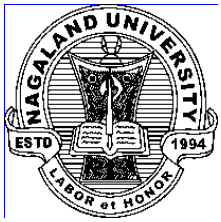

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D E C L A R A T I O N

I, Sanjoy Das, hereby declare that the subject matter of this Thesis is the record of work done by me, that the contents of this Thesis did not form the basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis had not been submitted by me for any research degree in any other Universities/Institute.

This is being submitted to SASRD, Nagaland University for the Degree of Doctor of Philosophy (Agriculture) in Agricultural Economics.

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CERTIFICATE – I

This is to certify that the thesis entitled "**A Study on Performance of North Eastern Region Community Resource Management Project for Upland Areas in Assam**" submitted to Nagaland University in partial fulfilment of the requirements for the award of degree of Doctor of Philosophy (Agriculture) in Agricultural Economics is the record of research work carried out by Mr. Sanjoy Das Registration No. 604/14 under my personal supervision and guidance.

The result of the investigation reported in the thesis have not been submitted for any other degree or diploma. The assistance of all kinds received by the student has been duly acknowledged.

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CERTIFICATE – II

VIVA VOCE ON THESIS OF DOCTOR OF PHILOSOPHY IN AGRICULTURAL ECONOMICS

This is to certify that the thesis entitled "**A Study on Performance of North Eastern Region Community Resource Management Project for Upland Areas in Assam**" submitted by Mr. Sanjoy Das, Admission No. Ph-147/13 Registration No. 604/2014 to the NAGALAND UNIVERSITY in partial fulfillment of the requirements for the award of degree of Doctor of Philosophy (Agriculture) in Agricultural Economics has been examined by the Advisory Board and External examiner on …….....

The performance of the student has been found **Satisfactory/Unsatisfactory.**

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(SANJOY DAS)

LIST OF ABBREVIATION AND SYMBOLS

ATMA	Agricultural Technology Management Agency
BPL	Below Poverty Line
CO	Community Organisation
CPRs	Common Property Resources
DAC	District Autonomous Council
DHD	Dima Hasao District
Dist.	District
DoNER	Ministry of Development of North Eastern Region
DST	Development Support Team
ESI	Environment Sustainability Index
FAO	Food and Agriculture Organisation
FO	Farmer Organisation
GB	Gramin bank
Govt.	Government
Ha	Hectare
HS	Higher Secondary
ICIMOD	International Centre for Integrated Mountain Development
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IGA	Income Generating Activities
IRDP	Integrated Rural Development Programme
ISEW	Index of Sustainable Economic Welfare
JFMG	Joint Forest Management Group

KA	Karbi Anglong
KAAC	Karbi Anglong Autonomous Council
KAWAD	Karnataka Watershed Development Project
LDRB	Langpi Dehangi Rural Bank
MFP	Major Forest Product
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NABARD	National Bank for Agriculture and Rural Development
NaRMG	Natural Resource Management Group
NATP	National Agriculturral Technology Project
NC Hills	North Cachar Hills
NER	North Eastern Region
NERCORMP	North Eastern Region Community Resource Management Project for Upland Areas
NERCORMS	North Eastern Region Community Resource Management Society
NGOs	Non Government Organisations
No.	Number
NRM	Natural Resource Management
NTFP	Non Timber Forest Product
OSI	Overall Sustainability Index
PSU	Programme Support Unit
RD Block	Rural Development Block
SAPAP	South Asia Poverty Alleviation Programme
SBI	State Bank of India
SEM	Standard Error Mean
SGSY	Swarnajayanti Gram Swarojgar Yojana

SHG	Self Help Group
Sl. No.	Serial Number
SLSI	Sustainability Livelihood Security Index
SSI	Social Sustainability Index
TSI	Technical Sustainability index
%	Percentage

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Chapter I

INTRODUCTION

INTRODUCTION

North Eastern Region Community Resource Management Project for upland Areas (NERCORMP), a livelihood and rural development project funded jointly by International Fund for Agricultural Development (IFAD) and North Eastern Council, Ministry of Development of North Eastern Region (DoNER), Government of India has appeared as a big intervention for improvement of livelihood in North Eastern Region of India in the last part of 20th century. The project has been operational in six districts of three North Eastern States since its' inception in 1999 viz. Karbi Anglong and Dima Hasao districts (old NC Hill) in Assam; West Khasi Hills and West Garo Hills districts in Meghalaya and Senapati and Ukhrul districts in Manipur and this project is implemented by North Eastern Region Community Resource Management Society (NERCORMS) located at Shillong, Meghalaya as Regional Office and district level society in respective districts. At present, the project is in its third phase and extension of the programme has already been initiated in Arunachal Pradesh including three districts viz. Tirap, Changlang, Longding and Manipur including two more districts *viz.* Churachandpur and Chandel from 2014. The third phase work is also in operational in all the 5 selected districts and recruitment of manpower as well as some preliminary level works has already been completed in all the 5 new districts.

The project adopts a holistic development approach with two broad areas - social mobilization and capacity building – with objective to tap the potential of the communities by employing time-tested traditional value systems. The major thrust on creation of income generating activities. Major activities under NERCORMP include capacity building of communities, repairing and building village roads, rural electrification, community-based bio-diversity conservation, natural resource management and communication, convergence with ongoing government schemes and marketing support. The 1st phase (NERCORMP I) was completed in the year 2008 in all the old six districts covering a total of 860 villages, 39161 households, 1012 Natural Resource Management Groups (NaRMGs), 3168 SHGs, 103 NaRMG Associations and 103 SHG Federations (Anonymous 2015). Phase II (NERCORMP II) started its operations during July 2010, and till date it has covered 460 villages

with 20826 households and established 1600 SHGs and 494 NaRMGs in the adjoining villages of the NERCORMP I areas of North Eastern Region and it is expected to complete by 2016-17 (Anonymous 2015).

The overall objective of NERCORMP is to improve the livelihood of vulnerable groups in a sustainable manner through improved management of their resource base in a way that contributes to preservation and restoration of the environment. Project has sought to improve the livelihood of vulnerable groups in a sustainable manner through improve management of their natural resources that would restore and protect the environment. IFAD is a specialist agency of the United Nation having expertise in addressing issues on livelihood, food security and rural poverty. International Centre for Integrated Mountain Development (ICIMOD) is one of the agencies which provide technical support for implementation of this project.

In the Phase I project spent a total fund of Rs. 166.25 crore in all the six districts (1999 – 2008). Project is now operational as NERCORMP II (as Phase II) covering the same districts as that of Phase I with total fund outlay of Rs. 200 crore to be completed by 2016-17. Phase II aims to cover 400 new villages in the same six districts adjoining to previous villages. Although a Govt. project, efforts are made to make the operations independent of the public administration. The project implementation and monitoring is done by registered societies established at regional and district levels, and Programme Support Unit (PSU) established at regional level provides the necessary guidelines to the Development Support Teams (DST) established at every districts. These bodies mobilise community based institutions to induce participatory approach for implementation of the project. The project also involves various Govt. line departments, NGOs for strengthening technical, legal, economic and social collaboration. The actual field level intervention begins with the establishment of Natural Resource Management Groups (NaRMGs) and Self Help Groups (SHGs). To catalyse creation of community institution, supplementary capacity building activities, and monitoring at village level, the project establishes partnership with local NGOs having strong community presence. In order to give a collective voice to the wider community and to serve as a pressure group for availing development funds from different line departments, NaRMGs come together to form

an association. Similarly, 10 – 15 SHGs also formed SHG federations in order to assist the individual SHGs in capacity building, providing need based credit, taking up matters of common interest including education, business and setting up of enterprises (Anonymous 2011).

Funding pattern of NERCORMP

Funds for NERCORMP are raised from various stake holders. The major part of fund is given by Government of India and IFAD and the rest is collected from banks and from SHG/NaRMG members.

The aims of NERCORMP are:

1. More responsiveness to communities needs and priorities
2. Involve the communities more in decision making and planning
3. Make communities more responsible for management of their development programmes in order to generate a greater sense of ownership of development interventions.

Activities of NERCORMP

- Capacity building of communities and participating agencies : Strengthening of community institutions and strengthening the capacity of participating agencies *viz.* NGOs, line departments etc.
- Economic and Livelihood Activities : Promote viable income generating activities for poor households through production of filed crops, horticulture, forestry, livestock, fishery and non – farm activities using sustainable and environment friendly practices.
- Extension and Technology Transfer : Reorient the extension services towards a client oriented and demand driven extension system, which is based on participatory extension methods. Promote the establishment of a network of village volunteers at the village or cluster level through training which in turn will extend services at the community level.

- Credit : Providing revolving fund for credit support to the communities through SHGs, NaRMGs or district level Micro Credit Institutes developed in the project areas.
- Social Sector Activities : Improving access of communities to safe drinking water, better health care and sanitation; providing awareness to the communities about different social sector schemes of the Government and its importance.
- Village Roads and Rural Electrification : Assist communities to upgrade and construct village roads for better access to their villages and facilitate movement of produces to markets and also provide electricity to a number of households through project support for connection with the existing grids or by piloting renewable energy plants wherever feasible.
- Community Based Bio-diversity conservation/ Natural Resource management and Communication : Assisting communities to conserve their unique and natural resources and biological diversity, strengthen indigenous institutions and institutionalising new conservation practices; strengthen the information sharing system and documentation of good practices of the project.
- Convergence with ongoing Government Schemes/Programmes : The project gives emphasis on convergence with government and non-government agencies and also facilitate to meet the shortfall of financial and technical support available in the project vis-a-vis community demands.
- Marketing support : The project facilitates in selection of activities and constitutes marketing committees with NaRMGs. The project has also created marketing infrastructures like marketing and collection sheds, IVRs etc. in order to facilitate sell of both farm and non-farm products. The project also facilitates value addition of the marketable surplus by establishing value chain to narrow the gap between demand and supply. The project follows the principle of community based bottom – up planning in all the project villages.

North Eastern Region of India – An introduction

The North Eastern Region of India is a small part in terms of geographical area and it is located in north eastern corner of India. It includes eight states *viz.*

Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. North Eastern Region of India (NER) is characterised by rich and abundant natural resources (*i.e.* thick and bio-diverse forests, vast land, rich mineral reserves), but marked with high level of poverty (Sexana 2002). Most of the people in the region depend primarily on exploitation of natural resources for their livelihood. This region is also called as a hotspot of biological diversity. Yet a large section of its population are living in rural areas with the challenges of both environmental and food insecurity. One of the contributing reasons for this twin insecurity is the continuous practice of unproductive farming *viz.* Shifting cultivation specially in the hills zone. As a result of continuous practice of unproductive/unscientific methods of farming practices there is a severe problem on land management that creates environmental insecurity in the region. On the other hand, shifting cultivation is the lifeline of the hills people; complete avoidance is not at all possible without an alternative sustainable farming practice. Along with food and environmental insecurity, NER is always devoid of many developmental issues in comparison to other parts of the country. There is absence of role model for development of upland areas in this region, absence of effective Govt. and existence of social unrest and insurgency for a quiet long period retards the development process significantly.

Among North Eastern States, Assam is the biggest State in terms of population, and nearly 70 per cent of total population of this region stays in Assam only. On the basis of rainfall and soil characteristics, the State of Assam has been broadly classified in to six agro-climatic zones viz. i) Lower Brahmaputra Valley Zone ii) Upper Brahmaputra Valley Zone iii) Central Brahmaputra Valley Zone iv) North Bank Plains Zone v) Barak Valley Zone and vi) Hills Zone. Assam has now 32 districts (including the 5 new districts) distributed among the different agro-climatic Zones. Hills zone, a part of central and southern Assam is comprised of 2 hill districts (supposed to be 3 as per new creation of districts) *viz.* Karbi Anglong and Dima Hasao (previously N C Hill). Due to variations in topography, Hills zone experiences different climates in different parts. The winter commences from October and continues till February. During summer, the atmosphere becomes very comfortable.

Table 1.1 : A brief outlook of NERCORM project in NE India

Project State/district	No. of villages covered	No. of households covered
NERCORMP I (1999 – 2008)		
ASSAM		
Dima Hasao	131	5297
Karbi Anglong	166	6823
Manipur		
Senapati	106	7033
Ukhrul	103	6038
Meghalaya		
West Khasi Hills	162	7033
West Garo Hills	192	6038
TOTAL	860	39161
NERCORMP II (2010 upto 2016)		
ASSAM		
Dima Hasao	87	3333
Karbi Anglong	75	3333
Manipur		
Senapati	78	3376
Ukhrul	69	3833
Meghalaya		
West Khasi Hills	75	3332
West Garo Hills	76	3619
TOTAL	460	20826
NERCORMP III		
Arunachal Pradesh		
Tirap, Changlang, Longding	Works already been started since 2014	
Manipur		
Churachandpur and Chandel	Works already been started since 2014	

Source : Regional office, NERCORMS, Shillong, Meghalaya

Both the districts of the Hill Zone of Assam are the least developed districts in Assam in terms of socio-economic status, communication etc. and remains tense for ethnic and insurgency related issues.

Districts profile

Karbi Anglong

The Karbi Anglong District is situated in the central part of Assam. It is sorrounded by Golaghat district in the east, Meghalaya and Morigaon districts in the west, Nagaon and Golaghat district in the north and Dima Hasao district and Nagaland in the south. The district with dense tropical forest cover with hills and flat plains is situated between $25^0$33'N to $26^0$35'N Latitude and $92^0$10' to $93^0$50' E Longitude. It is the largest district of Assam with a total geographical area of 10, 434 Sq. Km. and total population of 9,56,313 numbers as per 2011 Census. There are 3 sub-divisions *viz.* Diphu, Hamren and Bokajan. Altogether there are 11 development blocks distributed in three sub-divisions. Due to variation in the topography, this district experiences different climates in different parts. The winter commences from October and continues till February. During summer, the atmosphere becomes sultry. The temperature ranges from 6 degree to 12 degree in winter and 23 degree to 32 degree Celsius in summer. The average rainfall is about 2416 mm. The population of the district is predominantly tribal. The major tribal ethnic groups of this district are Karbis, Bodos, Kukis, Dimasas, Hmars, Garos, Rengma Nagas, Tiwas, Man (Tai Speaking's). Besides, a large number of non-tribal also live together in this district. The Karbi Anglong district is one of the Autonomous hill district of Assam constituted under the provision of Sixth Schedule to the Constitution of India. As such the pattern of administration is somewhat different from that of the plains district of Assam. There is an Autonomous Council in the district constituted under the provision of the said schedule namely Karbi Anglong Autonomous Council (KAAC) and almost all the development departments are under the administrative control of the KAAC.

Dima Hasao District

It is the second largest district in Assam with an area of 4890 Sq. Km. Physically a part of Meghalaya plateau, the Dima Hasao district is situated at southern part of Assam and is sorrounded by Manipur and part of Nagaland State in the east, Cachar district in the south, Meghalaya State and part of Karbi Anglong district in the west and another part of Karbi Anglong and Nagaon district in the north. The altitude of the district ranges from 600 meters to 1800 meters. It is a hill district with two sub-divisions viz. Haflong and Maibang. There are 5 development blocks *viz.* Haranagajao, Jatinga, Diyung Valley, Diyungbra and New Sangbar. There are 552 revenue villages and 4 towns in the district. It is the most hilly and undulated district of Assam, and people of the district are practicing Jhum or shifting cultivation in traditional way. The district is under the 6^{th} schedule area of Indian Constitution, and development administration has been conducted by the Autonomous Council. Total population of the district as per 2011 Census is 2, 13, 529, the least populous district of Assam.

NERCORMP is one of the flagship projects for rural livelihood and natural resource management, presently operational in few districts of North Eastern States, involves even participation of few international organisations. One Regional society at Shillong (as headquarter) and 11 district level societies (including 5 newly created districts of Arunachal Pradesh and Manipur) at eleven different places with a good number of dedicated manpower at different capacities are constantly working for proper implementing of the programme. In Assam these two hill districts are quite different from rest of the districts. Not only that, most of the time these two districts are seen insurgency affected as well as politically unstable districts. Under such condition, dedicated manpower is working constantly with many limitations to achieve the desired goals of NERCORMP. Hence, present study is designed to make an empirical study on performance of NERCORMP project activities undertaken during project period and its impact on overall livelihood condition and social structure of the tribal farming communities. The issue of sustainability was also considered appropriately in connection whether the improvements in quality of life or

standard of living of project beneficiaries will continue beyond the project completion or not.

The specific objectives were :

1. To identify the community resources in the study areas,
2. To assess the present status of the different activities undertaken under various components of the project,
3. To examine the changes in forest based livelihood of tribal communities,
4. To study the impact of the project on overall socio-economic and livelihood status of the farming communities,
5. To assess the performance and sustainability of the project in the study area,
6. To identify the problems in project implementation, and suggest policy measures, if any.

Justification of Study

The present study was designed to examine systematically the various vital issues of NERCORMP in Assam. The issues like sustainability, livelihood management and more specifically the issue of natural resource management because of NERCORMP intervention in two economically and socially backward districts of Assam were highlighted. The results of the present study paved the way for policy makers and planners to frame suitable policies in implementing such type of flagship programme in other districts of North Eastern States. Moreover, research studies pertaining to these two hill districts of Assam were very limited specially on NERCORMP activities. Naturally, it will emerge as an effective guideline for implementing authority in discharging their valuable inputs in more appropriate manner. Not only that, it might appear as an valid documents for recommending such type of flagship programme in other North Eastern States *viz.* Nagaland, Mizoram, Tripura etc. based on experiences.

Chapter II

REVIEW OF LITERATURE

REVIEW OF LITERATURE

To have a better perspective on different issues relating to present study, it is important to review the works done earlier. This helps in proper understanding of the problems, methodological and analytical tools that were used in present study. However, due to limitation of works on this particular Project, appropriate reviews could not be collected more and reviews in connection with some other projects that are thought to be relevant are highlighted with the following headings :

2.1. Socio economic profile of the respondents

2.2. Community resources and its' implications on livelihood management

2.3. Performance, sustainability indicators and its' measurement in a project

2.4. Impact of NERCORMP on livelihood management

2.5. Constraints and suggestions for effective implementation of a project

2.1. Socio economic profile of the respondents

Chaudhari *et al.* (1996) conducted a study on Integrated Rural Development Programme, poverty alleviation and development: A comparative study of West Bengal, reported that majority of IRDP beneficiaries (80.46%) were landless, 18.49 per cent were marginal farmers, while 1.06 per cent were small farmers.

Prasad and Prakash (1997) reported that the group meetings were arranged once in a month, where the purpose of the loans were discussed and petty loans were distributed to the members to meet the consumption purpose. The group members, not only bothered of economic development, but also they felt the necessity of social development.

Prasad (1998) in the study conducted at Salem district of Tamil Nadu found that the majority of women (60.00%) were in the age group of 25-45 years, of whom

40.00 per cent were in the age group of 30-40 years and about 40.00 per cent were between 26-30.

Rao and Padmaja (1998) reported that there was cent percent attendance for SHG meetings in Andhra Pradesh.

Kalakannavar (1999) conducted a study on role performance and training need identification of panchayat women members and found that the majority of the respondents belonged to the family consisting of 5-7 members. The members in family below 5 members were 29.00 per cent and more than 7 members were 27.00 per cent.

Murthy (2000) in his study on Janmabhoomi programme in Chittur district of Andhra Pradesh confirmed that majority (55.83%) of the beneficiaries of Janmabhoomi programme were in middle age group.

Murugan and Dharmalingam (2000) in the study conducted at Tamil Nadu reported that the age group of members lies between 21 to 60 years. They also documented that weekly meeting were held for savings and repayment while discussions regarding social and community issues were held on fortnightly basis.

All the good and average performing groups were maintaining records in a systematic manner. The number of records maintained ranged from 12 to 14. The records were maintained either by a literate member of the group or by an animator (Puhazhendi, 2000).

Samuel (2000) conducted a study on impact of IRDP programmes in Medak district of Andhra Pradesh and revealed that 58 per cent of the IRDP beneficiaries were belonged to middle age group followed by young (32.67%) and old age farmers (9.33%).

Sultana (2001) made a study on impact of selected non-governmental organizations on rural women in Dharwad, Karnataka and revealed that majority of (68.66%) of beneficiaries were of young age group as compared to a very less percentage (2.00%) under old age group. The remaining 29.34 per cent belonged to middle age group.

Banerjee (2002) in his study conducted in Tamil Nadu reported that members in the age group above 40 years participated actively in the group activities. Groups, which were more than 3 years old, had 42 per cent of the members of age above 40 years. On the other hand increased participation of members below 40 years was observed among newly formed groups.

Geetha (2002) in her study on diversified farming in Chittoor district of Andhra Pradesh revealed that majority (52.00%) of paddy, and dairy farmers were in middle age group followed by young age group (26.00%) and old age category (24.00%) respectively.

Rangi *et al.* (2002) in their study conducted at Fatehgarh sahib district of Punjab reported that 70 per cent SHG members were educated and the rest 30 per cent were illiterate. Among the educated category of the respondents, majority (about 57%) had education upto 5th to middle standard and about 29 per cent were educated upto 9th and 10^{th} standard. Therefore, even the educated groups of the respondents were not highly qualified. They also revealed that 56 per cent of the respondents were having upto five family members, whereas 44 per cent had six to ten family members. The latter categories of the respondents were living in the joint families. About two-third of the respondents did not own any land whereas about one third had their own land. The latter comprised only of small and marginal farmers. Women were participated in planning, implementation and monitoring activities of village level bodies such as Panchayats, Zilla Parishads, Village Committees and Samities.

Satyanarayana *et al.* (2002) in a study on SGSY beneficiaries revealed that vast majority of beneficiaries were landless (62.86%) followed by medium farmers (17.14%) and small farmers comprised only 11.43 per cent of beneficiaries.

Sharma (2003) in his study conducted in Mysore district reported that financing has been highly successful, adding that recovery has been over 98 per cent, over 1.19 lakh people are covered under the SHG's financed by the bank. The Cauvery Grameen Bank covers 1,653 villages in three districts of Karnataka – Mysore, Chamarajnagar and Hassan.

Vasudevarao (2003) in his study conducted in Andhra Pradesh reported that in maintenance of records, group leaders are playing a major role because the other members have faith in the group leader or avoid taking responsibility. He also revealed that illiterates formed only 11 per cent, while 60 per cent had formal schooling.

Kamala (2004) conducted a study on critical analysis of pro-poor initiatives for empowerment of rural women through South Asia Poverty Alleviation Programme (SAPAP) and revealed that, majority (40.00%) of the SAPAP beneficiaries belonged to middle age category, followed by young age (37.80%) and old age (22.20%) categories.

Bevenahalli (2005) conducted a study on critical analysis of swa-shakti programme in Karnataka and reported that majority of the respondents (70.33 %) were in middle age group, followed by 28.33% were in young age group and remaining (1.33 %) were in old age group.

Bharathi (2005) in a study conducted in Gadag district of Karnataka on assessment of entrepreneurial activities promoted under NATP on empowerment of women in agriculture reported that the majority of the SHG members (51.70 %) were in young age group and followed by 48.30 per cent in middle age group. She also reported that 44.2 per cent of the respondents were illiterates followed by 23.3 per

cent had high school level education, 13.3 per cent had primary level and middle school level education and the remaining 5.8 per cent had completed their education upto college level. She further revealed that majority of respondents (57.5%) belonged to nuclear families and 42.5 per cent belong to joint families.

Devalatha (2005) reported in her study on profile study of women SHGs in Gadag district of northern Karnataka that, 30.83 per cent of the SHG members were landless, 28.33 per cent belong to marginal farmers (<2.5 acres) 20.83 per cent belonged to small farmers (2.5-5 acres) and 20.0 per cent belonged to big farmers (>5 acres).

Ningareddy (2005) conducted a study on knowledge, extent of participation and benefits derived by participant farmers of the watershed development programme in Raichur district of Karnataka state. Reported that the majority of the respondents had medium family size (60.00%), followed by large (34.77%) and small family size (5.33%), respectively in Raichur district of Karnataka state with respect to Watershed Development Programme.

Joseph and Easwaran (2006) in a study conducted in Aizawl district of Mizoram revealed that majority of the respondents were in age group between 40 to 60 years, followed by 30.77 per cent below 40 years and 15.38 per cent above 60 years. The mean age of the members was found as 48 years. They also reported that 61.54 per cent respondents belonged to the medium size (4-6 members) family and 28.21per cent belonged to the large size of family. The mean family size was computed as 5.87 members.

Sahu *et al.* (2012) conducted a study on analysis of socio-economic profile of the ATMA beneficiaries of Chhattisgarh State and concluded that the majority of the beneficiary and non-beneficiary respondents were of middle age groups (36 to 50 years) having middle school and primary school level education, residing in nuclear family system with small size of family (up to 5 members). Majority of beneficiaries had high level of social participation as compared to non-beneficiaries. Majority of

the respondents were performing agricultural activities, however they were also engaged in 2 to 3 occupation. Majority of the respondents were having marginal land holding (up to 2.50 acre). Majority of the beneficiaries belonged to high category (Rs. 30,001 to Rs. 50,000) annual income group as compare to non-beneficiaries earned Rs. 20,001 to Rs. 30,000 (Medium category). Majority of the respondents were availing short term credit facility extended by government organization.

2.2. Community resources and its' implications on livelihood management

Jodha (1986) highlighted the importance of CPRs and CPR products to the rural economy. He illustrated that the rural poor derived between Rs. 445 and Rs. 830 annually while the rich derived only Rs. 300. He also highlighted that, between 84 and 100 per cent of rural poor households gathered items such as fuel, fodder, food and fibre items from CPRs whereas only 10 to 28 per cent of rich households did the same. His study was based on the data pertaining to 1982–1985 period and to the states of Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu. The importance of CPRs to the rural poor has been corroborated by subsequent research and across different agro-climatic zones (Pasha 1992; Singh *et al.* 1996; Beck and Ghosh 2000).

Chopra *et al.* (1990) used a nine-fold land use classification data to estimate the total area of CPRs. They suggested that 'other than current fallow', 'cultivable waste', 'pastures', and 'protected and unclassed forests' can be broadly categorised as CPRs. Based on this classification, they concluded that 21.55 per cent of all land in India (1980–81 figures) were CPRs.

Jodha (1995) described community resources as community's natural resources where every member has access and usage facility with specified obligation without anybody having exclusive property rights over them.

Menon and Vadivelu (2006) reported that the rural poor depend significantly more on CPRs than the rural non-poor in India. Although this was more so the case in

hilly tracts, the case of the Upper Gangetic Plains suggests that in economies that are much more commercially driven, the landless households remain significantly dependent on CPRs—albeit from private lands perhaps. This has significant implications in terms of access to private lands and serves as a warning that the arable and the non-arable lands must both be central to discussions around the commons. In other words, while CPRs are important they assume importance primarily in the context of agriculture and not as stand-alone resources. Access to CPRs, must be seen very much alongside access to agricultural lands.

Bhushal (2009) reported the existence of third dimension of property as common property resources (CPRs), which have been traditionally recognized by the society in Nepal in addition to public and individual property. He revealed the crucial role played by CPRs in people's survival and community development particularly in rural Nepal. The common property resources can be recognized in two types viz. Natural property and Men made property. The nature and types of these properties varied from place to place and from one community to another. Each community had its own tradition and practices in utilization and management of CPRs based on their indigenous knowledge.

Mahanta and Das (2012) made a study on degradation of common property resources and its' affect on migration in Assam. They reported the importance of common property resources in Assam and they said that deterioration of common property resources increased the incidence of poverty level because poor people depend on forest resources. Earnings of rural people were mostly the combination of income from private property and common property resources. Reduction of common property resources reduced the earnings of rural people leading them to migrate to nearby urban areas in search of livelihood. Thus, there was a link between common property resource degradation, poverty and migration.

Banerjee and Chowdhury (2013) in a study on forest degradation and livelihood of local communities in India viewed the dependent of people on the forest for a variety of forest products for food, fodder, agriculture, housing, and an array of

marketable minor forest produces which can potentially degrade forest if harvested unsustainably. They also reported the collection of edible fruits, flowers, tubers, roots and leaves for food and medicines; firewood for cooking (some also sale in the market); materials for agricultural implements, house construction and fencing; fodder (grass and leaf) for livestock and grazing of livestock in forest; and collection of a range of marketable non-timber forest products.

Shivprasad and Chandrashekar (2014) viewed that there is strong evidence that forest products play a significant role in the livelihood of the rural poor. Forest products were the main source of income for tribal population of many countries. They also reported the availability of Forest Right Act (FRA) 2006 that addressed the question of community ownership of minor forest products.

2.3. Performance, sustainability indicators and its' measurement in a project

Dally and Cobb (1989) proposed the Index of Sustainable Economic Welfare (ISEW) by taking into account not only average consumption but also its distribution across social groups and more importantly the long term deterioration in environmental assets like soil, water, air and ozone. However, the ISEW has the limitation of demanding intensive data, particularly, time series information on a number of social, economic and environmental magnitude.

Keenay (1989) stated that the practice of sustainable agriculture is concerned with achieving consistent increase in productivity in harmony with the principles of resource conservation.

Swaminathan (1991) proposed sustainable living security (livelihood options which are ecological secure, economically efficient and socially equitable) index deemed to be the legitimate indicator of sustainable development in agriculture.

Dunlop *et al.* (1992) viewed nine dimensions viz. i) protect and enhance soil fertility, ii) ensure supply of safe and whole food, iii) improve site specific knowledge of farmers , iv) enhance environment and wild life habitat, v) increase diversity, vi) improved farm economy, vii) reduced agri-chemical use, viii) reduced energy use and

ix) reduced purchase of inputs have been considered as most important in explaining the concept of sustainable agriculture.

Reijntjes *et al.* (1992) remarked that agriculture is sustainable, if it is ecologically sound, economically viable, socially just humane and adaptable. Further, they opined that objectives of any household are productivity (output per unit of land and input used), security (minimising risk of production), continuity (maintaining soil and water health) and identity (self respect, social justness and humanness). Feeling of identity is maintained by technologies that permit to be self –reliant and to control decision making about use of local resources and products.

Sahay (2002) stated that the sustainable agriculture is the successful management of resources for agriculture to satisfy changing human needs while maintaining or improving the quality of environment and conserving natural resources. Sustainable production system appears to be the way out of emerging problems from present production technology. Thus, a truly sustainable farming system is one in which the beneficial effects of various conservation practices are equal to or exceed the adverse effects of degrading processes.

Chowdhury *et al*. (2004) conducted a study on rural women and reported that Women-led self-help groups (SHGs) are influential in improving the plight of rural women by providing them access to credit facilities.

Dolli (2006) in his study on sustainability of natural resource management and its impact on the livelihood of participating families in Watershed development project in Bijapur district of Karnataka state had reported development of sustainability of natural resource management. Big and small farmers category reported a higher knowledge level (about 70 %) while landless and women members had relatively low knowledge level (60 to 70 %) about natural resource management. Social, technical and environment sustainability index was around 50 per cent and there was no significant difference in the sustainability index between different categories of farmers. They had also reported that family education, land holding, training participation and local institution participation had positive and highly significant association with overall sustainability.

Hatai and Sen (2008) reported the use of Sustainability Livelihood Security Index (SLSI) in their study on an economic analysis of agricultural sustainability in Orissa. Ecological Security Index (ESI), Economic Efficiency Index (EEI) and Social Equity Index (SEI) has revealed that the agricultural systems of all districts display wide variations in their ecological and social equity aspects relative to their economic aspects. The districts with better SLSI were given as advanced districts and vice versa.

Thomas *et al.* (2009) conducted a study on Watershed development programmes in Thrissur district of Kerala. Results revealed that the increase in crop productivity as a result of various factors like increased human labour-use, rise in manure application and increased moisture availability have been translated into higher farm income in nominal as well as in real terms. Watershed-based development programme has resulted in increased crop production, productivity, employment generation and farm income and groundwater status, leading to overall rural prosperity in the area.

Datta *et al.* (2014) conducted a study in Gomati district of Tripura state in North-East India to understand the livelihood status of tribal people practicing Jhum. Data were collected using structured interview scheduled for 140 tribal farmers. The results revealed that the highest proportion (39.3%) of tribal farmers have low livelihood status followed by medium (36.4%) and high (24.3 %) livelihood status. Education, family size, number of family members involved in Jhum, area under Jhum, annual income, fallow period, livestock possession, material possession, and extension participation had positive significant relationships with the livelihood status of the study sample and thus, could be manipulated to improve the livelihood status of tribal people.

Ngullie *et al.* (2014) reported that after ATMA intervention the income level of the respondents was improved, although the degree of improvement was varied among the respondents. They confidently concluded that ATMA intervention has brought a change in one of the most important socio-economic parameters i.e. income

in Nagaland. At the same time, ATMA intervention also enhanced savings, women empowerment and livelihood as a whole, in Nagaland. It also indicated that out of ten selected criteria, performance in connection to amount of seed money distributed to SHGs reported to be poor, otherwise performance was good.

2.4. Impact of NERCORMP on livelihood management

Devi (1994) studied the IRDP potentiality in Kerala state and found that majority of beneficiaries (76.66 per cent) experienced an increase in the income by 10.15 per cent, while income of 28.33 per cent beneficiaries increased by 50 to 100 per cent.

Joshi and Bantilan (1998) conducted a study on methodological complexities in assessing the impact of crop and resource management technology, and estimated the impact and spread of various components of the 'Groundnut Production Technology', an integrated production technology put together at **ICRISAT**. Results revealed that the technology generates 71% more income and reduces unit cost by 16%.

Puhazhendi and Jayaraman (1999) found that the total saving per member exceeded Rs. 6000 with annual rate of saving of Rs. 1068. In case of stabilised groups the total saving was higher at Rs. 14,695 while the annual saving touched about Rs. 2000. The total loan per member was Rs. 9560 with 67 per cent loan used for consumption purposes while in stabilised groups, it was production loans which took the major hand at 57 per cent.

Sherin (1999) found that 82.69 per cent of the functional SHG respondents had expressed empowerment in terms of authority in planning, decision making, implementation and evaluation of the SHG's programmes while 55.17 per cent of the respondent of the non functional SHG's claimed that had been similarly empowered.

Puhazhendi (2000) opined that constant efforts made by NGO during the pre linkage period provided better cohesion among the members. Group sustainability

was strengthened by regular meetings and monthly savings. The NGOs also enhanced the cohesiveness of groups through contribution of grant support and common investments.

Puhazhendi and Jayaraman (2000) reported the positive impact of employment generation on 45 per cent of the group members who had undertaken income generating activities. The additional employment generated through SHG lending worked out to 172 mandays per member by undertaking supplementary activities such as animal husbandry, poultry *etc.* and nonfarm activities like petty shop, kirani shop and flower vending business *etc.*

Reddy (2001) found that improvements in the household income and employment are statistically significant in all the sample villages with the total livelihoods assets (financial capital); while fuel wood and water availability was not found significant in all the villages except Mallapuram (natural capital); human capital indicators have improved significantly where as social capital has not changed significantly due to watershed intervention.

Puhazhendi and Badatya (2002) conducted an impact assessment on "SHG-Bank Linkage programme for rural poor" implemented by NABARD in Eastern areas of India (Orissa, Jharkhand and Chhattisgarh). Results revealed that the programme had made significant contribution to social and economic improvement of the member household of SHGs.

Sharma (2004) explained that development of social infrastructure i.e. the components of Human capital like education, skill and training is crucial so as to enable rural people to be gainfully employed, besides paying special attention to encourage self employment on a large scale through provisions of micro – credit.

Chauhan and Kundu (2005) in a study conducted in Haryana state where Intensive Cattle Development Projects were functioning. Results of the study revealed that the average per household daily labour utilization in all the dairy operations taken together was 5.62 man hours in case of beneficiary households was significantly higher as compared to 4.90 man hours for the non-beneficiary

households. Female contribution of 47.16% in case of beneficiary households was also higher as compared to 43.06% in case of non-beneficiary households. It was also concluded that the average net income of the beneficiary households was 3.77 times higher than the non-beneficiary households.

Sharda *et al*. (2005) in their study on participatory watershed management following new guidelines of the Government of India reported the increase of average annual income per family by 49% through employment and income generating activities in the watersheds.

Hari and Kumawat (2006) conducted a study on impact of Swarnajayanti Gram Swarojgar Yojana (SGSY) in Jhunjhunu (Rajasthan). The study revealed that small farmers who obtained assistance under SGSY for buffalo rearing could be able to increase their annual income by Rs. 15,310 over and above Rs. 14,170 earned by the non-swarojgai families. In percent terms it was about 108% higher than that of non-swarojgari families. The study also revealed that the buffalo rearing activity helped to increase employment by 92 man days (52.79%) for small farmers and 72 man days (46.15%) for marginal farmers.

Jayachandra and Gurappa Naidu (2006) conducted a study on impact of dairy cooperatives on income, employment and creation of assets by marginal and small farmers. The study revealed that the increase in income from dairying was Rs.850 (25.5%) in case of marginal farmers and Rs.1480 (22.98%) in the case of small farmers per annum. More idle women in the families of both the categories of farmers have taken up dairying as a part time and full time employment. The value of asset increased by 15% in case of marginal farmers and 12.5% in case of small farmers.

Mavi *et al*. (2006) conducted a study on impact of self employment programme on dairy farming in Fatehgarh Sahib District of Punjab. The study revealed that there is significant increase in total income (Rs. 1,09,751 to Rs. 1,88,011), dairy income (Rs. 23,434 to Rs. 1,03,948), herd size (4.4 to 15.5) of the farmers after participation in the programme.

Rais *et al*. (2007) studied the impact of dairy farming on livelihood of participating women under Grameen Bank in a selected area of Rangpur District in Bangladesh. The study revealed that increase in income from dairy sector was the highest. In general the average per family total income increased by 87.51 per cent. It was indicated that the households gained remarkable increase in rented-in land (113.33 per cent) after being a member of GB with a dairy cow.

Singh *et al*. (2009) conducted a study to assess the impact of NATP in Bihar's perspectives. Data were generated from 540 farmers over a period of three years (2005-2007), and reported that ATMA was successful enough to generate some financial resources and develop infrastructure to facilitate the training. Results also revealed the considerable improvement in adoption of new technologies and farm practices by all categories of farmers.

Roy and Singh (2010) conducted a study in two districts, Burdwan and Dakshin Dinajpur of West Bengal with 200 beneficiaries as respondents to assess the impact of MNREGA on the empowerment of the beneficiaries. Significant positive changes were found in the level of aspiration, self confidence and self reliance of the respondents after commencement of the scheme. Hundred per cent respondents were found to be in low empowerment category before MNREGA and 75.5 per cent of the respondents were found under low empowerment category and 24.5 per cent were found under medium empowerment category after working under MNREGA. So a positive impact of the programme was observed on the empowerment of its beneficiaries in the study area.

Singh *et al.* (2010) in their study on impact and effectiveness of Watershed Development Programmes in India had noticed changes in ground water level, surface water, irrigation facility, land use pattern, cropping pattern, livestock production , employment generation, income generation and debt reduction etc. However, women empowerment was not adequate in all most all states under study

excepting Nagaland. There was slight improvement of standard of living among the households across all states.

Biradar *et al.* (2011) conducted a study in Bellary and Bijapur districts of Karnataka state with 120 beneficiaries of KAWAD project as the sample to analyze the impact of income generating activities on rural livelihoods of Karnataka Watershed Development (KAWAD) project beneficiaries. The study revealed the change in overall capital acquisition index from 51.27% to 78.89% after undertaking income generating activities and t-value calculated was 6.13, which was significant at 1% level. The relationship between independent variables and overall asset improvements among the beneficiaries was found non-significant.

Arora *et al.* (2013) made a study to analyze the relevance of MNREGS on women empowerment in the Rohtak district of Haryana State. Data were collected from 250 responders through a field survey in 2012 using the stratified random sampling technique. Significant benefit reported by the study includes success in raising the level of employment and income of the rural household women, thereby enhancing their purchasing power, satisfaction, confidence etc.

Nalini *et al.* (2013) in a study on impact of self help groups on rural economy in north east Karnataka reported that women SHGs are functioning well by influencing rural people in the income, employment, savings, investment etc. as compared to men. They also revealed that among women SHGs cent per cent have borrowed loan from bank and majority of them have gone for second loan also, whereas among men SHGs 27.78 per cent have taken loan from bank. It also stated that SHGs have more impact on women members than men members with respect to loan borrowing, loan utilisation, investment, consumption pattern, income and employment generation.

Sahu *et al*. (2013) studied the impact of ATMA on socioeconomic status of the respondents in the Surguja district of Chhattisgarh state and reveal that the mechanical power, annual income, number of livestock, pucca house, home related

items and possession of other assets were found slightly bit higher among beneficiaries as compared to non-beneficiaries.

Swain (2015) in a study on impact of poverty alleviation programmes on socio economic development of rural poor of Odisha and revealed an improvement of social awareness and living condition of the beneficiaries. It also revealed that 43.86% of the beneficiary households benefited as they increased their annual net income assets and savings etc. that led to improvement of social empowerment of women.

Reddy *et al.* (2016) undertook a study to assess the impact of the MGNREGA on change in the income, savings pattern and extent of employment after the implementation of the scheme in Kalaburagi district of Karnataka state. Study revealed that farmers of fully implemented MGNREGA villages were earning significantly higher income (74.48%) than that of partially implemented MGNREGA village farmers. The average amount of savings made in SHGs was Rs. 2,380/- in fully implemented MGNREGA villages, whereas in partially implemented MGNREGA villages it was Rs. 1,543/-. The savings was made in banks Rs. 12, 000 by the participants in fully implemented MGNREGA villages. Whereas, in case of partially implemented MGNREGA villages the savings was made by participants Rs. 8,120/-.

2.5. Constraints and suggestions for effective implementation of a project

Patel (1983) emphasised the role of active interaction between the suppliers of technology, the users of technology and the facilitators of technology were essential if new technology had to be successfully implemented. This required strengthening of input supply mechanism, training of farmers in the optimum use of the inputs and continuous extension services with feedback information.

Okaly (1991) opined that the involvement of local people is most crucial and of paramount importance for successful implementation of any development programme.

Kulkarni and Sangle (1993) examined the constraints in execution of the Phuldhaba watershed project activities, Akola, Maharashtra. The major economic constraints as expressed by farmers were untimely credit supply, insufficient credit, high rate of interest and rigidity of loan norms. They also reported some of the technical problems.

Khalache *et al.* (1994) reported major constraints related to technical difficulties. They were expressed by the watershed beneficiaries viz. lack of knowledge and skill pertaining to plant protection measures, management of dairy cattle and application of chemical fertiliser according to types and stages of crops.. The suggestions made by watershed beneficiaries were tree plantation and terracing activities on cultivator's field may be taken up on priority basis. Organisation of training programme on the aspects of agriculture and allied enterprises was also suggested by 75.98 per cent of the beneficiaries of the programme.

Padmavathi *et al.* (1998) conducted a study on the problems faced by the Mitra Kisan in discharging their roles in the National Watershed Development Project for Rainfed Areas (NWDPRA). Results indicated that lack of a remunerative market price for produce, lack of infrastructure for organizing training programmes and lack of knowledge are the most common problems faced by Mitra Kisan.

Maulick (2009) in a case study of NREGA conducted in Barabank district of Uttar Pradesh identified some major problems of NREGA *viz.* lack of professionals, under-staffing, administrative delays, lack of people's planning, poor quality of work undertaken and poor social audit process.

Thomas *et al.* (2009) conducted a study on Watershed development programmes in Thrissur district of Kerala. The non-availability of irrigation water, untimely availability of inputs and subsidy on time, inadequacy of sanctioned amount, lack of awareness about the beneficial programme, lack of supervision and follow-up, and lack of technical guidance have been identified as the major constraints.

Chapter III

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

The present study aimed at studying some of the vital issues of North East Region Community Resource Management Project for Upland Areas (NERCORMP) in Assam. As research is a systematic and pre-designed strategy and plan of action, an appropriate methodology is a pre-requisite for transforming ideas into appropriate direction.

The detail methodology is explained into following heads:

3.1 Locale of the research

Present study was conducted in the State of Assam covering both the implementing districts *viz.* Karbi Anglong and Dima Hasao Districts, as this area has also experienced of NERCORMP II since 2010 after completion of NERCORMP I in 2008. Out of six agro-climatic zones in Assam, NERCORMP is operational only in Hills zone covering both the districts since inception of NERCORMP during 1999. Out of 11 project districts (Karbi Anglong and Dima Hasao from Assam, West Khasi Hills and West Garo Hills from Meghalaya, Senapati, Ukhrul, Churachandpur and Chandel from Manipur and Tirap, Changlang and Longding from Arunachal Pradesh) in North Eastern Region, Karbi Anglong and Dima Hasao from Assam were selected purposively for present study owing to have certain logistic and other advantages.

3.2 Selection of Blocks

The State of Assam was selected purposively out of the four project States in North East Region of India where NERCORMP is operational owing to have some due advantages for the researcher. A multi-stage sampling procedure has been followed data collection. Descriptive type of research design was framed out to achieve the purpose of the study.

There are 11 and 5 Development Blocks in Karbi Anglong and Dima Hasao districts respectively, but all the blocks were not under the purview of NERCORMP. In Karbi Anglong out of 11 development blocks, NERCORMP was operational only

in 4 blocks *viz.* Amri Development Block, Chingthong Development Block, Rongkhang Development Block and Socheng Development Block and both the Phases (NERCORMP I and NERCORMP II) were operational in these blocks. Similarly, in Dima Hasao district, out of 5 Development Blocks, both NERCORMP I and NERCORMP II were operational in 4 Development Blocks *viz.* Harangajao ITDP Block, Jatinga Valley Development Block, Diyangna ITDP Block and New Sangbar Development Block. Keeping in view the concentration of activities, number of villages covered and number of households touched under the project, 4 development blocks (i.e. implementing blocks) i.e. 2 blocks in each district from Karbi Anglong and Dima Hasao were selected for the investigation. The blocks selected for study were Chinthong and Amri from Karbi Anglong district and New Sangbar and Jatinga Valley Development Blocks from Dima Hasao district.

3.3 Selection of Villages

Altogether 16 villages i.e. 4 villages from each of the selected block were selected for the study. As there were two blocks selected in one district and again within the blocks there were NERCORMP I and NERCORMP II, so out of 4 villages selected from each block, 2 were taken from NERCORM I and another 2 were from NERCORMP II).

3.4 Selection of SHGs/NaRMGs

As SHGs/NaRMGs were the basic grass root level organisations under NERCORMP for community mobilisation as well as for delivery of various activities, a true representation from both was a must. From total 16 villages selected for the study, again 32 SHGs were selected @ 2 SHGs from one village. SHGs that completed at least 2 years of existence were considered finally for present study. Again, 16 NaRMGs were selected from all 16 villages.

3.5 Selection of beneficiary respondents

Total 144 numbers of respondents as beneficiary of NERCORMP were selected for final data collection from 32 SHGs and 16 NaRMGs, 3 members from each of SHG/NaRMG (Table 3.1). Sampling details are presented in Fig. 3.1.

Table 3.1 : Brief profile of SHG/NaRMGs and beneficiary respondents selected

Name of the district	Name of RD Block	Name of the villages	No. of SHGs selected	No. of NaRMGs selected	NERCORMP I/ NERCORMP II	No. of respondents @ 3 members/SHG and NaRMG
Karbi Anglong	Chinthong	Mokindur	2	1	I	9
		Rongkangtui	2	1	I	9
		Rongkangtui I	2	1	II	9
		Pdengtlit	2	1	II	9
	Amri	Umswai Model	2	1	I	9
		Putsari	2	1	I	9
		Romphom	2	1	II	9
		Hailangso	2	1	II	9
Total			16	8		72
Dima Hasao	New Sangbar	Baghdima	2	1	I	9
		Christian Bengphiri	2	1	I	9
		Bengphiri	2	1	II	9
		New Sangbar	2	1	II	9
	Jatinga Valley	Taizol	2	1	I	9
		Kholjang	2	1	I	9
		Dawdung	2	1	II	9
		Asonghaju	2	1	II	9
Total			16	8		72
Grand total			32	16		144

3.6 Selection of non-beneficiary respondents

Multi-stage sampling procedure was followed for selection of non-beneficiary respondents also. A total of 60 non-beneficiary respondents were taken from the adjoining non-project villages of the selected district/blocks. Details are enclosed in Table 3.2.

Table 3.2: Sample size for non-beneficiary respondents

Name of the district	Name of RD Block	Name of village	No. of respondents
Karbi Anglong	Chinthong	Umtili	8
		Habegaon	7
	Amri	Bagajamin	7
		Churavakhrai	8
	Total		30
Dima Hasao	New Sangbar	Durbinsip	7
		Tuisuanthum	8
	Jatinga Valley	Ngauykail	7
		Gadainragi	8
	Total		30
Grand total			60

3.7 Method of data collection

The study was based on both primary and secondary data. Secondary data were collected from various secondary sources *viz.* NERCORMP office (Regional and district level), various other secondary publications etc. Primary data were collected from beneficiary as well as from non–beneficiary respondents of two districts. Keeping in view the objectives as well as the research design of study, structured schedule was developed for collecting the detail information. Primary data were collected pertaining to period 1999 – 2014. Data collection was done during the period 2014-15.

3.8 Research design

The present investigation was undertaken in two implementing districts where both NERCORMP I and NERCORMP II were in operational. Although NERCORMP I was completed in 2008, certain activities were still going on cluster basis along with

NERCORMP II. Research design showed an outline of concepts and theories that were applicable pertaining to present investigation.

3.8.1 Impact analysis

The overall impact of the project on the livelihood of the participating households was measured based on the availability of assets of the participating beneficiary farmers as compared to the position before project starts in the study area. An attempt had also been made here to analyse the asset position of beneficiary farmers as compared to non beneficiary farmers from the same area. Appropriate scoring technique was used to measure the asset position before and after the project. The assets creation was measured with 6 dimensions. This was prepared based on index developed by Dolli, 2006 and Biradar *et al.* 2008. The six dimensions are discussed below:

a) Human assets:

Creation of human assets by sample respondents was studied by considering the following aspects

i) Education : It refers the increment of capacity by the sample respondents to educate their children and other family members in the school/colleges within and outside the village.
ii) Employment generation : This was measured based on the increase in man-days of employment by sample respondents and their family members.

b) Physical assets :

This was measured by possession of physical asset like dwelling house, household articles, farm equipments etc.

c) Natural assets :

This was measured based on the improvement in natural assets like crops, land, vegetation, livestock etc.

d) Social assets :

Social asset was calculated based on the changes of the social status by the respondent households both at inside and outside their house.

e) Financial assets :

This was measured based on the improvement in saving and debt status by the respondents family.

f) Food security :

This was measured based on availability of the food grains, vegetables and milk during the crop season and also off-season.

All the above dimensions of asset creation were studied by calculating index before and after the project starts. The formula used for calculation of index was the ratio of actual score obtained by the respondent to the maximum attainable score.

3.8.2 Measurement of dimensions and indicators of sustainability index

NERCORMP started in North Eastern States during 1999 and since then a number of activities and programmes were carried out for betterment of targeted beneficiaries. There are reports that NERCORMP was successful many ways in enhancing livelihood status among the poor tribal people. In Assam also it was not an exception. Sustainability is a big question here to address. World Commission on Environment and Development headed by Burndt Lands (1987) defined sustainability as the development that meets the needs of the present without compromising the ability of future generation to meet their own needs. Sustainable agriculture may be regarded as the successful management of resources for agriculture to satisfy the changing human needs while maintaining or enhancing the quality of environment and conserving natural resources (FAO, 1991). Various studies on sustainable natural resource management in past indicated different dimensions and conceptions of sustainability (Keenay, 1989; Reijntjes *et al.* 1992; Sahay, 2002). Among them the five most important and relevant to present study (Dolli 2006) were:

1. Social sustainability
2. Technical sustainability
3. Environment sustainability
4. Institutional sustainability
5. Financial sustainability

Out of five dimensions mentioned above, the first three dimensions *viz.* social, technical and environmental sustainability are measured based on farmers view i.e. data relating to various statements were collected from beneficiary respondents. Whereas for institutional and financial sustainability, information were collected from the institution like SHGs and NaRMGs. During interview and discussions, respondents were asked to share their views about sustainability. Different aspects pertaining to each of the above dimension were asked to respond from the respondents. Relevant statements were prepared and finally statements were considered based on the judges rating. Appropriate scoring technique was used to calculate sustainability index. This was in conformity with the concept developed by Dally and Cobb (1989), Swaminathan (1991), Dunlop *et al.* (1992), Dolli (2006) and Hatai and Sen (2008).

3.8.2.1 Judges rating

The various statements prepared under five dimensions of sustainability issue in NERCORMP were subjected to scrutiny by a panel of judges selected to determine the relevancy of each and every statements. Accordingly, statements were mailed to 50 number of experts in the field of Agricultural Economics, Agricultural Extension, Agronomy, Soil Science and experts related to such type study. The panel of experts were asked to indicate the appropriateness or relevancy of the each and every items considered by giving their response as most relevant (2), relevant (1) and non relevant (0). Altogether 20 judges responded positively in time and their responses were considered to work out the relevancy weight (U_i) of each i^{th} statement by using the following formula :

Relevancy weight (U_i) =

$$\frac{\text{Most relevant x 2+relevant x 1+not relevant x 0}}{\text{Maximum possible score (20 x 2=40)}} \text{ x } 100;\ i = 1,2,3,4,5$$

The relevancy weight calculated were considered for screening the statements for their weight and the statements with relevancy weight 0.70 and above ($U_i \geq 0.70$) were finally considered for sustainability study.

3.8.2.2 Reliability and accuracy of sustainability index

An index has to be reliable and accurate and it should be valid in the present context in terms of thoughtful, long term aspects, representing sustainability and practical situations. This could be done when concept of composite index is introduced by combining several components. In this study to make the index more reliable and authentic, sets of data on three dimensions were converted into standard Z scores by using the following formula:

$Z_{ij} = (X_{ij}-\bar{X}_i)/O_i \,.\, 0.33$

Where, Z_{ij} = Standard score of the first respondent of first component

X_{ij} = Raw score of the first respondent on first component

$\bar{X}_i$ = Mean of the X_i component

O_i = Standard deviation of X_i component

Where i = 1,2,3 components and j=1,2, ..., 144 respondents

All the components Z score were combined to obtain composite Z score which is Standard Normal Variate.

$$Z = Z1 + Z2 + Z3$$

This was done to overcome the dissimilarities existed among the data and finally it improved the level of measurement and accuracy that is applicable in parametric tests. Again correlation was done between the component Z_i scores and

composite Z scores to know the internal consistency. Correlation coefficients were given below:

Table 3.3 : Correlation Matrix of Sustainability components

	Z1	Z2	Z3	Composite z
Z1	1			
Z2	0.037^{NS}	1		
Z3	0.026^{NS}	0.123^{NS}	1	
Composite z	0.579**	0.632**	0.626**	1

It was further verified by calculating partial correlation. Partial correlation was done to identify the true relationship between any component of the sustainability with composite z score and it helped to put better inside into the relationship between any pair of component eliminating the effect of the rest components. The partial correlation was calculated as per following:

$$r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{1 - r_{13}^2}\sqrt{1 - r_{23}^2}}$$

The partial correlation values are :

$r_{12.3} = 0.034^{NS}$

$r_{13.2} = 0.212^{NS}$

$r_{23.1} = 0.123^{NS}$

Where,

$r_{12.3}$ is correlation between Z1 and Z2 keeping the effect of Z3 fixed

$r_{13.2}$ is correlation between Z1 and Z3 keeping the effect of Z2 fixed

$r_{23.1}$ is correlation between Z2 and Z3 keeping the effect of Z1 fixed

3.8.2.3 Social sustainability

It refers to the intensity of people participation in project activities, democratic functioning by the community in project management etc. People participation was studied based on beneficiaries' participation on planning, implementation and monitoring and evaluation of various project activities. Extent of participation was assessed by three point Likert Scale (Likert 1932) *viz.* always by '2', sometime by '1' and not at all by '0'. There were altogether 9 areas or places considered for above issues. Thus the maximum score in connection to social participation became 18. Again in democratic functioning, there were 6 items/works that were considered in the study. Again in each work there were 5 levels of involvements, each level indicates 1 point. Thus total maximum score became 30 corresponds to democratic functioning of the project. Finally total score became 48 corresponds to social sustainability that includes 18 from social participation and 30 for democratic functioning.

The total score under social sustainability was as follows:

a. People participation = 18
b. Democratic functioning = 30

Total maximum score = 48

$$\text{Social Sustainability Index (SSI)} = \frac{\text{Actual score}}{\text{Maximum achievable score}} \text{ x } 100$$

3.8.2.4 Technical sustainability

It is measured based on indicators *viz.* suitability, integration and performance of the project. Suitability refers to the extent to which the activities carried out in the project are suitable to the land type and situation. The suitability of the activities selected by the project was studied by using three point Likert Scale. There were 7 activities considered for this purpose and respondents were asked to response each of the activity by most suitable (2), somewhat suitable (1) and not suitable (0). Thus total score became 14 in suitability study. So far performance, adoptability and

outcome of the various treatments and their contribution to project area, there were 10 activities considered for collecting views from respondents. Impact was studied by three levels *viz.* 'most of the cases' by (2), 'some cases' by (1) and 'not observed' by (0). Thus it became 20. Thus total score became 34 in technical sustainability index.

a. Suitability study = 14
b. Impact of project = 20

Total maximum score = 34

$$\text{Technical Sustainability index (TSI)} = \frac{\text{Actual score}}{\text{Maximum achievable score}} \text{ x } 100$$

3.8.2.5 Environmental sustainability

It refers the positive and negative effects on the surrounding environment including livestock and human population. Increase of vegetative cover because of increase area under crops indicates positive impact on environment. Accordingly 6 different types of crops were considered to collect the views from respondents. Respondents' views were collected in terms of either 'increase' with score 1 and 'decrease' with score 0. Hence total score became 12. Again respondents were asked specifically about positive and negative effect on 5 different activities because of project. Positive affect with score (2), no affect with score (1) and negative affect with score (0). Total score became 10 correspond to environmental affect. This made the total score of 22 in environmental sustainability.

a. Increased vegetation = 12
b. Environmental affect = 10

Total maximum score = 22

$$\text{Environmental Sustainability Index (ESI)} = \frac{\text{Actual score}}{\text{Maximum achievable score}} \text{ x } 100$$

3.8.2.6 Overall Sustainability Index (OSI)

Overall Sustainability Index (OSI) was studied based on scores obtained in social, technical and environmental sustainability. It was calculated by the following formula :

Overall Sustainability Index (OSI) =

$$\frac{\text{Actual score in social sustainability + technical sustainability + environmental sustainability}}{\text{Maximum achievable score (104)}} \text{ x } 100$$

3.8.2.7 Institutional sustainability

SHGs and NaRMGs were considered for assessing the institutional sustainability of NERCORMP. It was assessed based on the representation from different families in SHG and NaRMGs, meeting frequency of the SHG/NaRMGs during last one year and linkage with other departments.

It includes durability of the institutions created by the project, such as SHGs, NaRMGs as well as the continuing of the services and resources provided. This refers to the ability of the local institutions created or involved in project area, in planning, implementation, monitoring by the project.

3.8.2.8 Financial sustainability

It is the degree to which the local institutions are managing the funds and generating income for operation and maintenance of project activities. It was calculated based on resource generation, revenue collected and operation and maintenance of expenditure. Financial sustainability was studied based on the information collected from SHGs and NaRMGs as a whole. The issues that were considered for assessing the financial sustainability of SHGs and NaRMGs are status of fund management by SHG/NaRMGs, savings and benefit, status of maintaining records and accounts, social auditing etc.

3.9 Analysis of data

The collected data were tabulated and processed to suit the various objectives of the study. Appropriate statistical tools were used to get valid results and conclusions. In addition to simple percentage, frequency and tabular analysis for most of the cases, the following statistical tools were used in various aspects in order to get valid results and interpretation.

3.9.1 Paired t-test

The paired t-test (one tail test) was used to analyse the impact of NERCORMP programme on asset creation by sample respondents. The null hypothesis was set as

H_0: There is no impact of NERCORMP programme on asset creation of sample respondents.

H_1: There is positive impact of NERCORMP programme on asset creation of sample respondents.

It was calculated as

$$t = \frac{\overline{X_d}\sqrt{n}}{SD}$$

Where, $X_d = (X_{1i} - X_{2i})$ = difference between asset before NERCORMP and after NERCORMP at i^{th} respondent and $\overline{X_d}$ = Mean of the difference.

SD = Standard deviation of difference set (D).

The significance was tested with the critical‘t’ value at (n-1) d.f.

The Calculated t was tested at 5% and 1% level of significance.

3.9.2 Two sample independent t-test

To compare the respondents at districts/NERCORMP I/NERCORMP II etc. level as well as at the level of beneficiary and non-beneficiary in relation to various issues, the two sample independent t-test was carried out to test the null hypothesis.

H_0: There is no difference of income/expenditure/saving/sustainability index among the respondents of the two districts and at the level of NERCORMP I/NERCORMP II i.e. $\mu_1 = \mu_2$

H_1: There is a significance difference of income/expenditure/saving/sustainability index among the respondents of the two districts and at the level of NERCORMP I/NERCORMP II i.e. $\mu_1 \neq \mu_2$.

$$t = \frac{|\overline{x_1} - \overline{x_2}|}{\sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right) S_e^2}}$$

Where, $S_e = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{(n_1 + n_2 - 2)}}$

3.9.3 Pearson's correlation coefficient

Correlation analysis was used to measure the extent of relationship prevailing between the variables. In the present study, the degree of relationship between extent of asset/capital creation and sustainability of NERCORMP with each of independent variable were determined by using Pearson's correlation coefficient, which was calculated as

$$r\,(X, Y) = \frac{Cov\,(X,Y)}{\sigma x\, \sigma y}$$

where, r = correlation co-efficient

X = first variable

Y = second variable

Cov (X,Y) = covariance between X and Y

σx = standard deviation of X

σy = standard deviation of Y

To test the significance of the correlation co-efficient, 't' test was used. Here null hypothesis was set as:

$H_o: \rho = 0$, there is no relationship or association between independent variables towards asset creation and sustainability of the project

$H_1: \rho \neq 0$, there is significant relationship or association among the independent variables towards asset creation and sustainability of the project.

The analysis was done using test statistic:

$$t_{(n-2);5\%\ los} = \frac{|r|\sqrt{(n-2)}}{\sqrt{(1-r^2)}}$$

$$t_{(n-2);1\%\ los} = \frac{|r|\sqrt{(n-2)}}{\sqrt{(1-r^2)}}$$

where, n= pairs of observation

r = sample correlation coefficient

ρ = population correlation coefficient

Chapter IV

RESULTS AND DISCUSSION

RESULTS AND DISCUSSIONS

This chapter deals with the results of the research study that have been derived after subjecting the data to statistical analysis. Discussions follow along with the results of the study. The results of the study are presented according to the following heads:

4.1. Brief profile of the SHGs and NaRMGs
4.2. General information of the household/respondents
4.3. Brief profile of the community resources
4.4. Present status of NERCORMP activities
4.5. Forest based livelihood changes of the community
4.6. Impact of the project on overall livelihood status
4.7. Performance and sustainability of the project
4.8. Constraints recorded in implementing the project and suggestions

4.1 Brief profile of the SHGs and NaRMGs

4.1.1 Brief profile of SHGs

SHG and NaRMGs are the two most important grass root level organisation under NERCORMP through which most of the developmental and income generating activities were carried out in NERCORMP project areas. Table 4.1.1(a) shows the distribution SHGs selected for study based on some important socio-economic characters. In Karbi Anglong district, out of 16 SHGs selected 56.3% SHGs were in the member strength of upto 10 members, followed by 25% within the 10-15 members and 18.7% within the member strength 15-19 numbers. Saving rate per month per member recorded highest (68.7%) in the category of Rs. 30/- to Rs.50/- and the rest SHGs (31.3%) had saving rate less than Rs. 30/- per month. Most of the SHGs (87.5%) had linkage with Rural Bank *i.e.* Langpi Dehangi Rural Bank and the rest *i.e.* 12.5% with SBI. So far establishment of SHGs are concerned, 50% SHGs established during 2005-06 (NERCORMP I period) and the rest 50% established during 2010-11 (NERCORMP II period). Most of the SHGs (75%) had the habit of

having fortnightly group meeting followed by monthly group meeting (25%). All the SHGs received seed money from NERCORMP office.

In case of Dima Hasao district, maximum number of SHGs (56.3%) had member strength in between 10-15 members, followed by 37.5% with upto 10 members and the rest 6.2% had member strength in between 10-19 members. Majority of SHGs (62.5%) in the district were in the group of having saving rate Rs. 30/- to Rs. 50/- per month, followed by 31.2% with less than Rs. 30/-. The number of SHGs with SBI as linked bank recorded higher here in Dima Hasao district (i.e. 75%) against 25% with linked bank as Rural Bank. So far establishment of SHGs are concerned, 50% SHGs established during 2001-03 (NERCORMP I period) and the rest 50% established during 2010-11 (NERCORMP II period). So far the periodicity of meeting held by the SHGs, most of SHGs (62.5%) recorded that they had their group meeting on monthly basis followed by fortnightly meeting (37.5%). Here also all the SHGs responded that they had received seed money from NERCORMP office.

Out of total 32 SHGs selected from both the project districts in the State, 46.9% had member strength upto 10 followed by 40.6% with 10-15 members. Maximum number of SHGs (65.6%) had the habit of depositing Rs. 30/- to Rs. 50/- per month per member. The SHGs with Rural Bank was more (56.3%) against 43.7% with SBI as a whole in both the project districts. Most of the SHGs conducted meeting on fortnightly basis (56.3%) against 43.7% conducted monthly basis. Not a single SHG was found in conducting meeting on weekly basis. All the SHGs were in receipts of seed money and majority of them *i.e.* 75% received seed money in between 1-3.99 lakhs.

Table 4.1.1(b) shows the classification of SHGs selected based on group activities performed by the SHGs. It indicates that in Karbi Anglong district all the SHGs involved in performing “Jhuming” as one of the most important activities. Some other group activities along with the percentage of SHGs involved in performing the activities were social service (87.5%), horticulture activities (68.8%), agriculture (50.0%), ginger production (43.7%), weaving (37.5%), piggery (25%). In regards to Dima Hasao district, maximum 93.8% SHGs involved in “Jhuming”as

their group activities followed by horticulture (87.5%), others (87.5%), social service (81.3%), agriculture (68.8%), piggery (43.8%) and ginger production (31.3%).

Through NERCORMP, SHG members were given various type training for their up-gradation in various fields. The Table 4.1.1(c) highlights the training status of SHG members selected for study. Altogether 178 members in Karbi Anglong district undergone for various training such as any others (28.1%), book keeping (27.0%), forestry/NRM (22.5%), livestock production (15.7%), and horticulture plantation (6.7%). Similarly in Dima Hasao district altogether 227 members were given training in various fields. Here also 'any other category' recorded the highest proportion of trainees (27.9%) followed by book keeping (23.3%), horticulture plantation (21.6%), forestry/NRM (13.7%), livestock production (12.8%) and poultry (0.9%).

4.1.2 Brief profile of NaRMGs

NaRMGs are grass root level planning board under NERCORMP. It is constituted by taking all the households in a project village as members. In Karbi Anglong district, Out of 8 NaRMGs from 8 villages selected for the study, 75% (6 NaRMGs) had member strength above 100 and 1 each (*i.e.* 12.5%) in category of 'upto 50' and '51-100' members respectively Table 4.1.2(a). Rural banks were seen more popular among the NaRMGs also and 87.5% NaRMGs had linkage with Rural Bank only against 12.5% with SBI. Fifty percent of NaRMGs were established during 2005-06 (NERCORMP I period) and the rest 50% during 2010-11 (NERCORMP II period).

Whereas, in Dima Hasao district, 100% NaRMGs were in the group of 51-100 members. So far NaRMG with bank linkage is concerned, 87.5% NaRMGs had linkage with SBI against 12.5% with Rural Development bank. Out of total NaRMGs, 50% were established during 2001-03 and the rest 50% were during 2010-11. In case of periodicity of meeting held, 50% conducted their meeting on monthly basis, 37.5% conducted on fortnightly basis and the rest 12.5% conducted on weekly basis. Average annual budget recorded at Rs. 6,42,500/- for each of selected NaRMG for study.

As a whole in the State, 56.2% of NaRMGs had member strength in between 51-100, 37.5% had in the category 'above 100' and the rest 6.3% had member strength upto 50. Fifty per cent of NaRMGs had linkage with SBI and the rest 50% had linkage with Rural Banks. Out of 16 NaRMGs, 50% established during 2010-11, 25% during 2005-06 and the rest 25% during the year 2001-03. Maximum number of NaRMGs (56.2%) conducted meeting on monthly basis, followed by fortnightly basis (37.5%) and 6.3% on weekly basis. Average annual budget for each of the NaRMG for both the districts together recorded at Rs. 9,72,245.6/-.

Similar to group activities performed by SHGs as a whole, NaRMGs also involve some group activities in their respective villages. Table 4.1.2(b) shows the group activities performed by the selected NaRMGs in NERCORMP project areas of Assam. In Karbi Anglong district, all the NaRMGs involved in 'Jhuming' and 'social service' activities collectively (100%), followed by 87.5% in horticulture, 75% in others activities, 50% in piggery, 25% each in ginger production and agriculture activities and 12.5% in weaving. In case of Dima Hasao district, all the NaRMGs (100%) involved in social service activities against 62.5% in 'Jhuming'. As a whole in the State, all the NaRMGs (100%) involved in social service activities followed by 87.5% for each of horticulture and others activities, 81.3% in 'Jhuming', 50% in agriculture, 43.7% in piggery, 31.3% in ginger production and 6.3% in weaving related works.

So far training status of NaRMG members is concerned, Table 4.1.2(c) shows that 282 number of members from Karbi Anglong district were trained through NERCORMP for different areas and out of that maximum were trained in book keeping (23.76%) followed by 23.05% (forestry/NRM), livestock (16.31%), 15.96% in horticulture plantation. Similarly in Dima Hasao district, out of 268 number of trained members, maximum were found in horticulture plantation (22.76%), followed by 22.39% for each of forestry/NRM and book keeping and 16.42% in any other activities. In the State as whole, out of total 550 trained human resources under NaRMGs, maximum 23.09% were in book keeping followed by forestry/NRM (22.73%), horticulture plantation (19.27%) etc.

Table 4.1.1(a) : Distribution of SHGs based on some socio-economic characters

Name of district	Name of RD Block	No. of SHGs	Member strength			Saving rate per month per member			SHGs s with linked bank		SHGs with year of establishment			Periodicity of meeting held			Seed money	Amount of seed money		
			Upto 10	10-15	15-19	<Rs. 30/	Rs. 30/- to Rs. 50/-	> Rs. 50/-	SBI	LDRB	During 2001-03	During 2005-06	During 2010-11	Weekly	Fortnightly	Monthly		< 1lakh	1-3.99 lakh	4 lakh and aabove
Karbi Anglong	Chinthong	8	5	0	3	3	5	0	2	6	-	4	4	0	8	0	8	4	4	0
	Amri	8	4	4	0	2	6	0	0	8	-	4	4	0	4	4	8	2	6	0
Sub total		16	9	4	3	5	11	0	2	14	-	8	8	0	12	4	16	6	10	0
% in the dist.		100	56.3	25.0	18.7	31.3	68.7	0	12.5	87.5	-	50	50	0	75	25	100	37.5	62.5	0
Dima Hasao	New Sangbar	8	3	5	0	3	5	0	6	2	4	-	4	0	5	3	8	0	8	0
	Jatinga Valley	8	3	4	1	2	5	1	6	2	4	-	4	0	1	7	8	2	6	0
Sub total		16	6	9	1	5	10	1	12	4	8	-	8	0	6	10	16	2	14	0
% in the dist.		100	37.5	56.3	6.2	31.2	62.5	6.3	75	25	50	-	50	0	37.5	62.5	100	12.5	87.5	0
Grand total		32	15	13	4	10	21	1	14	18	8	8	16	0	18	14	32	8	24	0
% in the State		100	46.9	40.6	12.5	31.3	65.6	3.1	43.7	56.3	25	25	50	0	56.3	43.7	100	25	75	0

Table 4.1.1(b) : Classification of SHGs based on group activities

Name of the activities	Number of SHGs involved					
	Karbi Anglong District			Dima Hasao District		
	Chinthong Block	Amri Block	Total	New Sangbar Block	Jatinga Valley Block	Total
Ginger Production	4	3	7 (43.7)	2	3	5 (31.3)
Piggery	1	3	4 (25.0)	4	3	7 (43.8)
Jhuming	8	8	16 (100.0)	7	8	15 (93.8)
Social Service	6	8	14 (87.5)	7	6	13 (81.3)
Weaving	6	0	6 (37.5)	1	4	5 (31.3)
Agriculture	5	3	8 (50.0)	5	6	11 (68.8)
Horticulture	6	5	11 (68.8)	8	6	14 (87.5)
Others	8	8	16 (100.0)	7	7	14 (87.5)

(Figures in parentheses indicate the percentage to total)

Table 4.1.1(c) : Training Status of the SHG members

Training Area	Number of members participated in the training					
	Karbi Anglong District			Dima Hasao District		
	Chinthong Block	Amri Block	Total	New Sangbar Block	Jatinga Valley Block	Total
Livestock production	5	23	28 (15.7)	19	10	29 (12.8)
Poultry	0	0	0 (00.0)	0	2	2 (0.9)
Forestry/ NRM	13	27	40 (22.5)	21	10	31 (13.7)
Book keeping	14	34	48 (27.0)	32	21	53 (23.3)
Horti. Plantation	9	3	12 (6.7)	29	20	49 (21.6)
Any others	27	23	50 (28.1)	40	23	63 (27.9)
Total	68	110	178 (100.0)	141	86	227 (100.0)

(Figures in parentheses indicate percentage to total)

Table 4.1.2(a) : Distribution of NaRMGs based on some socio-economic characters

Name of district	Name of RD Block	No. of NaRMG	Member strength			NaRMGs with linked bank		NaRMGs with year of establishment			Periodicity of meeting held			Av. Annual budget /NaRMG (Rs.)
			Upto 50	51-100	Above 100	SBI	LDRB	During 2001-03	During 2005-06	During 2010-11	Weekly	Fortnightly	Monthly	
Karbi Anglong	Chinthong	4	1	1	2	1	3	0	2	2	0	1	3	8,03,692.8
	Amri	4	0	0	4	0	4	0	2	2	0	2	2	18,00,290
Sub total		8 (100)	1 (12.5)	1 (12.5)	6 (75.0)	1 (12.5)	7 (87.5)	0 (0.00)	4 (50.0)	4 (50.0)	0 (0.00)	3 (37.5)	5 (62.5)	13,01,991
Dima Hasao	New Sangbar	4	0	4	0	4	0	2	0	2	0	2	2	7,22,500
	Jatinga Valley	4	0	4	0	3	1	2	0	2	1	1	2	5,62,500
Sub total		8 (100)	0 (0.00)	8 (100.0)	0 (0.0)	7 (87.5)	1 (12.5)	4 (50.0)	0 (0.0)	4 (50.0)	1 (12.5)	3 (37.5)	4 (50.0)	6,42,500
Grand total		16 (100)	1 (6.3)	9 (56.2)	6 (37.5)	8 (50.0)	8 (50.0)	4 (25.0)	4 (25.0)	8 (50.0)	1 (6.3)	6 (37.5)	9 (56.2)	9,72,245.6

(Figures in parentheses indicate percentage to total)

Table 4.1.2(b) : Classification of NaRMGs based on group activities

Name of the activities	Number of NaRMGs involved						
	Karbi Anglong district			Dima Hasao district			State total
	Chinthong Block	Amri Block	Total	New Sangbar Block	Jatinga Valley Block	Total	
Ginger Production	0	2	2 (25.0)	3	0	3 (37.5)	5 (31.3)
Piggery	2	2	4 (50.0)	1	2	3 (37.5)	7 (43.7)
Jhuming	4	4	8 (100.0)	4	1	5 (62.5)	13 (81.3)
Social Service	4	4	8 (100.0)	4	4	8 (100.0)	16 (100.0)
Weaving	1	0	1 (12.5)	0	0	0 (00.0)	1 (6.3)
Agriculture	0	2	2 (25.0)	3	3	6 (75.0)	8 (50.0)
Horticulture	4	3	7 (87.5)	3	4	7 (87.5)	14 (87.5)
Others	2	4	6 (75.0)	4	4	8 (100.0)	14 (87.5)

(Figures in parentheses indicate percentage to total)

Table 4.1.2(c) : Training Status of the NaRMG members

Training Area	Number of members participated in the training						
	Karbi Anglong district			Dima Hasao district			State total
	Chinthong Block	Amri Block	Total	New Sangbar Block	Jatinga Valley Block	Total	
Livestock	26	20	46 (16.31)	12	23	35 (13.06)	81 (14.73)
Poultry	18	5	23 (8.16)	8	0	8 (2.99)	31 (5.64)
Forestry/ NRM	37	28	65 (23.05)	39	21	60 (22.39)	125 (22.73)
Book keeping	36	31	67 (23.76)	32	28	60 (22.39)	127 (23.09)
Horti. Plantation	19	26	45 (15.96)	31	30	61 (22.76)	106 (19.27)
Any others	20	16	36 (12.77)	19	25	44 (16.42)	80 (14.55)
Total	156	126	282 (100.0)	141	127	268 (100.0)	550 (100.0)

(Figures in parentheses indicate percentage to total)

4.2 General information of the household/respondents

4.2.1 Details of respondents

The following Table 4.2.1(a) highlights the details of beneficiary respondents selected for the study. Out of total beneficiary, 66.7% were taken from SHGs and the rest 33.3% from NaRMGs. In Karbi Anglong district, out of total 72 beneficiary respondents, 69.4% were general member either from SHGs or from NaRMGs and the rest 30.6% represented as office bearers in the capacity of either general secretary or president or treasurer. Maximum (50%) respondents belonged to middle age group (36 – 50 years), followed by young (35 years and below) age group (37.5%) and old (above 50 years) age group (12.5%) (Fig. 4.1) of which 98.6% were married, 1.4% were widow. All the respondents in the district happened to be tribal of which 83.3% belonged to nuclear family and 16.7% belonged to join family. Again 54.2% of the family in the district had BPL cards. Sahu *et al.* (2012) also found on the same line in Chhattisgarh State in case of ATMA beneficiaries.

Again in Dima Hasao district, 45.8% respondents recorded as office bearers against 54.2% as general member. In this district also, middle age group outnumbered the other two groups so far age of the respondent is concerned. Here, 6.9% respondent recorded in single category against 93.1% as married. All were tribal respondents and nearly 64% belonged nuclear family against 36% as join family out of which 64% had BPL cards. As a whole in the State, 61.8% respondents recorded as general members against 38.2% as office bearers. Middle age grouped respondents recorded the highest number (48.6%) followed by young (36.8%) and old (14.6%). Out of total 95.8% responded as married against 3.5% as single and 0.7% as widow. All the respondents were tribal out of which 73.6% belonged to nuclear family against 26.4% as joint family. Sahu *et al.* (2012) also found more of nuclear family in Chhattisgarh State. As a whole 59% respondent referred that they had BPL card.

A total of 60 non-beneficiary respondents from both the districts were also selected randomly to compare some of the issues with beneficiary respondents. The detail of non-beneficiary respondents from both the project districts is highlighted in Table 4.2.1(b). It indicates that 76.6% of respondents in this category belonged to middle age category followed by 16.7% in old age category and 6.7% in young age category in Karbi Anglong district (Fig. 4.1). Out of 30 respondents in the district, 83.3% recorded as married against 16.7% as single. All respondents were found tribal and 56.7% responded as nuclear family against 43.3% as joint family of which 60% referred as BPL family. In Dima Hasao district also almost similar trend was visible. Medium age respondents were more (70%) and 96.7% respondents referred as married of which nuclear family outnumbered the joint family. BPL card holders recorded as 60%. As a whole in the State, out of 60 non-beneficiary respondents, 73.3% respondent belonged to medium age group followed by 21.7% in old age group. Ninety per cent viewed as married respondents against 10% as single, all were tribal and 55% of that belonged to nuclear family against 45% belonged to joint family. BPL card holders remained as 60% of total non-beneficiary respondents.

As young and medium age group people are thought to be comparatively active, vibrant in any type of organisation, so participation of this group was more in SHG/NaRMGs also. More participation of middle aged group people in different development programmes was also reported by Samuel (2000), Murthy (2000), Geetha (2002), Kamala (2004), Bevenahalli (2005), Joseph and Easwaran (2006), Prasad (1998) and Murugan and Dharmalingam (2000). Contrary to that, Sultana (2001) reported that majority of beneficiaries selected from woman NGOs of Dharwad, Karnataka from young age group. Bharathi (2005) was also had the same opinion.

4.2.2 Details of family of the respondents

Family details of the respondents (both beneficiary and non-beneficiary) from both the districts under study are highlighted in Table 4.2.2. It shows that out of total 72 beneficiary respondents in Karbi Anglong district, maximum respondents (87.5%)

belonged to medium size of family (4 – 8 number) and the rest (12.5%) belonged to small size family (< 4 number) (Fig. 4.2). The average family size in the district found as 5.08. The male and female proportion of the population found as 53% and 47%, respectively in the district. Sex ratio recorded low at 886 (*i.e.* 886 females per 1000 males). School going children found as 40.4% in the district against school drop-out of 12.6% of total population in the 72 families. Similar is the case of Dima Hasao district, where 93.1% respondents belonged to medium size family, average family size 5.63, male and female proportion in the 72 respondents' households of the district were recorded as 54.1% and 45.9% respectively. Sex ratio was as low as 849 against 886 in Karbi Anglong. Here also a good percentage of total population (31.1%) recorded as school going children against 14.1% as school drop-out. If both the districts are considered together, the picture was similar. Above 90% of total respondents viewed as medium size family (4 – 8 numbers) followed by nearly 10% as small size family. Average family size recorded as 5.35. Male and female proportion was recorded as 53.6% and 46.4%, respectively as a whole and sex ratio was 856. More than 35% of total population in all the 144 respondents was school going children against the school drop-out percentage of 13.6.

So far non-beneficiary respondents are concerned (60 numbers), 90% belonged to medium size family followed by 10% from big family and there was no one from small size family (Fig. 4.2). Average family size found as 6.67. Male and female proportion recorded as 55.5% and 44.5%, respectively. Sex ratio found as low as 786. In the family of 60 respondents, 15.9% viewed as school going children and school drop-out cases was 19.9%. In this connection Rangi *et al.* in their study at Fatehgarh Sahib district of Punjab reported that 56% of the respondents had family size upto 5 members and the rest had family size 6-10 members. Kalakannavar (1999), Ningareddy (2005), Joseph and Easwaran (2006) were also in the opinion of more number of medium size family among the respondents of various social and development projects. Contrary to that Sahu *et al.* (2012) reported more of small size family in Chhattisgarh State.

Table 4.2.1(a) : Distribution of beneficiary respondents based on some socio-economic character (N = 144)

Name of the District	Name of the Block	Number of respondent from			Category of Respondent		Age of respondent			Marrital Status			Social Categories		Family Type		BPL
		SHG	NaRMG	Total	0ffice bearers	Members	Young	Middle	Old	Single	Married	Widow	Tribal	Non Tribal	Nuclear	Joint	
Karbi Anglong	Amri	24	12	36	10	26	10	22	4	0	35	1	36	0	30	6	22
	Chinthong	24	12	36	12	24	17	14	5	0	36	0	36	0	30	6	17
Total		48 (66.7)	24 (33.3)	72 (100.0)	22 (30.6)	50 (69.4)	27 (37.5)	36 (50.0)	9 (12.5)	0 (00.0)	71 (98.6)	1 (1.4)	72 (100.0)	0 (00.0)	60 (83.3)	12 (16.7)	39 (54.2)
Dima Hasao	New Sangbar	24	12	36	18	18	9	19	8	1	35	0	36	0	27	9	21
	Jatinga Valley	24	12	36	15	21	17	15	4	4	32	0	36	0	19	17	25
Total		48 (66.7)	24 (33.3)	72 (100.0)	33 (45.8)	39 (54.2)	26 (36.1)	34 (47.2)	12 (16.7)	5 (6.9)	67 (93.1)	0 (00.0)	72 (100.0)	0 (00.0)	46 (63.9)	26 (36.1)	46 (63.9)
Grand Total		96 (66.7)	48 (33.3)	144 (100.0)	55 (38.2)	89 (61.8)	53 (36.8)	70 (48.6)	21 (14.6)	5 (3.5)	138 (95.8)	1 (0.7)	144 (100.0)	0 (00.0)	106 (73.6)	38 (26.4)	85 (59.0)

(Figures in parentheses indicate percent to total)

Table 4.2.1(b) : Distribution of non-beneficiary respondents based on some socio-economic character (N = 60)

Name of districts	Name of the block	Number of respondent	Age of respondent			Marrital status			Social categories		Family type		BPL
			Young	Medium	Old	Single	Married	Other	Tribal	Non tribal	Nuclear	Joint	
Karbi Anglong	Chinthong	15	0	13	2	3	12	0	15	0	9	6	9
	Amri	15	2	10	3	2	13	0	15	0	8	7	9
Total		30	2 (6.7)	23 (76.6)	5 (16.7)	5 (16.7)	25 (83.3)	0 (00.0)	30 (100.0)	0 (00.0)	17 (56.7)	13 (43.3)	18 (60.0)
Dima Hasao	New Sangbar	15	0	11	4	0	15	0	15	0	8	7	11
	Jatinga Valley	15	1	10	4	1	14	0	15	0	8	7	7
Total		30	1 (3.3)	21 (70.0)	8 (26.7)	1 (3.3)	29 (96.7)	0 (00.0)	30 (100.0)	0 (00.0)	16 (53.3)	14 (46.7)	18 (60.0)
Grand Total		60	3 (5.0)	44 (73.3)	13 (21.7)	6 (10.0)	54 (90.0)	0 (00.0)	60 (100.0)	0 (00.0)	33 (55.0)	27 (45.0)	36 (60.0)

(Figures in parentheses indicate percent to total)

Table 4.2.2 : Family details of the respondents

Name of the District/Block	Size of the Family			Average Family size	Population		Sex ratio	School going children	School dropout
	Small (<4)	Medium (4-8)	Big (>8)		Male	Female			
Beneficiary									
Karbi Anglong									
Chinthong	7	29	0	4.88	95	81	853	64	24
Amri	2	34	0	5.27	99	91	919	84	22
Dist. total	9 (12.5)	63 (87.5)	0 (00.0)	5.08	194 (53.0)	172 (47.0)	886	148 (40.4)	46 (12.6)
Dima Hasao									
New Sangbar	4	32	0	5.75	112	95	848	70	32
Jatinga Valley	1	35	0	5.5	107	91	850	56	25
Dist. Total	5 (6.9)	67 (93.1)	0 (00.0)	5.63	219 (54.1)	186 (45.9)	849	126 (31.1)	57 (14.1)
Grand total	14 (9.7)	130 (90.3)	0 (00.0)	5.35	413 (53.6)	358 (46.4)	856	274 (35.5)	103 (13.6)
Non-beneficiary									
Karbi Anglong									
Chinthong	0	13	2	6.6	54	45	833	21	20
Amri	0	14	1	6.73	56	45	804	17	25
Dist. Total	0 (00.0)	27 (90.0)	3 (10.0)	6.67	110 (55.0)	90 (45.0)	818	38 (19.0)	45 (22.5)
Dima Hasao									
New Sangbar	0	13	2	6.93	59	45	763	14	24
Jatinga Valley	0	14	1	6.4	53	43	811	15	15
Dist. Total	0 (00.0)	27 (90.0)	3 (10.0)	6.67	112 (56.0)	88 (44.0)	786	29 (14.5)	39 (19.5)
Grand total	0 (00.0)	54 (90.0)	6 (10.0)	6.67	222 (55.5)	178 (44.5)	802	67 (15.9)	84 (19.9)

(Figures in parentheses indicate percent to total)

4.2.3 Details of qualification of respondents' population

Table 4.2.3 shows the details of qualification of respondents' population. It gives a general idea about the entire population from the selected respondents in both the project districts. In Karbi Anglong district among the beneficiary respondents, 16.8% population reported as illiterate against 83.2% as literate (Fig. 4.3). Out of literate population, 36.9% population reported as literate with primary school followed by 26.5% literate with matric/HS, 19.9% with middle school, 10.1% with just literate and 6.6% with graduate. In case Dima Hasao district, 12.2% reported as illiterate against 87.8% as literate. Out of total literate, literate with matric/HS reported as the highest (37%) followed by 32.5% as middle school, 24% with primary school, 4.4% with just literate and 2.1% with graduate. As a whole among the beneficiary respondents, 14.4% reported as illiterate against the literate population of 85.6%. Again among the literates, literates with matric/HS viewed as the highest percentage (32.2%) followed by 29.9% with primary school, 26.7% with middle school, 7% with just literate and 4.2% with graduate.

In case of non-beneficiary respondents also, literacy rate recorded as high as above 78% in both the districts. Comparatively, illiteracy rate in case of non-beneficiary respondents was little high as compared to beneficiary respondents in both the districts. Again among the literates population, literates with primary school recorded high in both districts followed by literates with just literates (in between 28-30%), literates with middle school (in between 23-27%) (Fig. 4.3). Comparatively literates with Matric/HS and graduates recorded low in case of non-beneficiary respondents.

It can be concluded that among the respondent's population, literacy rate remained much higher (> 85%). This was similar to the opinion made by Vasudevarao (2003), Bharathi (2005) etc. Study also revealed that among the literates, literates with matric/HS reported the highest followed by primary school and middle school. In this connection study made by Bharathi (2005) on NATP project, Rangi *et al.* (2002) and Sahu *et al.* (2012) could be referred.

Table 4.2.3 : Educational qualification of the respondents' population

Name of the District	Name of the Block	Illiterate (%)	Literate (%)	Literate with				
				Just literate	Primary school	Middle school	Matric/ HS	Graduate
Beneficiary								
Karbi Anglong	Chinthong	31	133	17	64	21	29	2
	Amri	27	154	12	42	36	47	17
	Sub total	58	287	29	106	57	76	19
	%	16.81	83.19	10.10	36.93	19.86	26.48	6.62
Dima Hasao	New Sangbar	25	170	8	45	52	60	5
	Jatinga Valley	22	168	7	36	58	65	2
	Subtotal	47	338	15	81	110	125	7
	%	12.21	87.79	4.44	23.96	32.54	36.98	2.07
Grand Total		105	625	44	187	167	201	26
Percentage		14.4	85.6	7.04	29.92	26.72	32.16	4.16
Non-beneficiary								
Karbi Anglong	Chinthong	24	76	21	30	17	7	0
	Amri	17	76	22	28	18	9	0
	Sub total	41	152	43	58	35	16	0
	%	21.24	78.76	28.29	38.16	23.03	10.53	0.00
Dima Hasao	New Sangbar	22	86	27	32	22	5	0
	Jatinga Valley	20	80	23	24	23	9	1
	Subtotal	42	166	50	56	45	14	1
	%	20.19	79.81	30.12	33.73	27.11	8.43	0.60
Grand Total		83	318	93	114	80	30	1
Percentage		21.50	79.30	29.25	35.85	25.16	9.43	0.31

4.2.4 Classification of respondents based on occupation, land holding and type of house

Table 4.2.4(a) presents the classification of respondents based on occupation. It indicates that out of 72 beneficiary respondents in Karbi Anglong district, 55.6% respondents derived their livelihood from agricultural activities, followed by 16.7% as daily wage earner, 15.3% as non-farm business and 12.5% were service holder. Similarly, in Dima Hasao district also, majority of respondents were found to derive their livelihood based on agriculture (48.6%), followed by non-farm business (26.4%), daily wage earner and service sector each for 12.5%. In totality, nearly 53% respondents derived their livelihood based on agriculture in the project area followed by 20.14% on non-farm business, 14.58% as daily wage earner and service sector (12.5%) (Fig.4.4). Sahu *et al.* (2012) also found on the similar line in case of ATMA beneficiaries at Chhattisgarh State.

So far non-beneficiary respondents are concerned, percentage of respondents dependent on agriculture for livelihood was a bit more (61.67%) followed by non-farm business (18.33%), daily wage earner and service sector both for (10.0%).(Fig.4.5)

Table 4.2.4(b) shows the classification of respondents based on land holding and house type. It shows that majority of respondents (69.4%) among beneficiary in Karbi Anglong district recorded as marginal category (*i.e.* land holding less than 1 ha) followed by 30.6% as small farmers (i.e. land holding in between 1-2 ha). There was no respondent in the category of semi medium, medium and large farmers in the district (Fig.4.6).

On the other hand, in Dima Hasao district majority of respondents (83.4%) belonged to the category of small farmers, followed by 8.3% belonged to each for marginal and semi medium category. Again so far the picture of type of house is concerned, 47.2% had Katcha house, followed by 43.1% Semi Pucca house and 9.7% as Pucca house. As a whole, number of respondent was more in small category (56.9%) followed by marginal (38.9%) and semi medium (4.2%) in the State. Again Katcha house

was more prevalent among the respondents (56.3%) then Semi Pucca house (31.2%) and Pucca house with 12.5%.

So far non-beneficiary respondents are concerned, in Karbi Anglong district 56.7% belonged to small category followed by 43.3% as marginal category (Fig. 4.7). Again 70% respondents had Katcha house against 30.0% had Semi Pucca house. In Dima Hasao, of course marginal was more (63.4%) followed by small (33.3%) and semi medium (3.3%). On the other hand, 60% respondents had Katcha house followed by 36.7% had Semi Pucca house and 3.3% had Pucca house. As a whole among the non-beneficiary respondents selected for the study from project area, 53.3% belonged to marginal category, followed by 45% as small category and 1.7% as semi medium category and out of total maximum number (65%) had Katcha house followed by 33.3% had Semi Pucca and only 1.7% had Pucca house against 12.5% Pucca house among the beneficiary respondents (Fig. 4.8).

It is revealed that most of the respondent farmers belonged to small farmer category in the study area followed by marginal farmers. Again proportion of household having Katcha house was more in comparison to semi pucca and pucca house. In contrary to this Chaudhari *et al.* (1996) and Satyanarayan *et al*. (2002) reported more proportion of landless farmers among IRDP and SGSY beneficiaries, respectively. Devalatha (2005) was also in the opinion of same line. However, Sahu *et al.* (2012) reported more of marginal land holders in case of ATMA beneficiaries in Chhattisgarh State. Rangi *et al*. (2002) in the study conducted at Fetehgarh Sahib district of Punjab reported that about two-third of the respondents did not have any land whereas about one third had their own land. Those who had land comprised only of small and marginal farmers. Maximum number of respondents (65.3%) had Kutcha house followed by 19.4% had Semi Pucca and 15.3% had Pucca house in the district.

Table 4.2.4(a) : Classification of respondents based on occupation

Name of the District	Name of the Block	Daily wage earner	Non-farm business	Service	Agri. Activities
Beneficiary					
Karbi Anglong	Chinthong	9	7	1	19
	Amri	3	4	8	21
	Sub total	12 (16.7)	11 (15.3)	9 (12.5)	40 (55.6)
Dima Hasao	New Sangbar	2	12	5	17
	Jatinga Valley	7	7	4	18
	Sub total	9 (12.5)	19 (26.4)	9 (12.5)	35 (48.6)
Grand Total		21	29	18	76
Percentage		14.58	20.14	12.5	52.78
Non-beneficiary					
Karbi Anglong	Chinthong	3	2	1	9
	Amri	0	3	1	11
	Sub total	3 (10.0)	5 (16.7)	2 (6.7)	20 (66.6)
Dima Hasao	New Sangbar	2	2	3	8
	Jatinga Valley	1	4	1	9
	Sub total	3 (10.0)	6 (20.0)	4 (13.3)	17 (56.7)
Total		6	11	6	37
Percentage		10.0	18.33	10	61.67

Table 4.2.4(b) : Classification of respondents based on land holding and house type

Name of the District	Name of the Block	Land holding					House type		
		Marginal	Small	Semi medium	Medium	Large	Katcha	Semi pucca	Pucca
Beneficiary									
Karbi Anglong	Chinthong	26	10	0	0	0	28	4	4
	Amri	24	12	0	0	0	19	10	7
	Sub total	50 (69.4)	22 (30.6)	0	0	0	47 (65.3)	14 (19.4)	11 (15.3)
Dima Hasao	New Sangbar	3	28	5	0	0	18	16	2
	Jatinga Valley	3	32	1	0	0	16	15	5
	Sub total	6 (8.3)	60 (83.4)	6 (8.3)	0	0	34 (47.2)	31 (43.1)	7 (9.7)
Grand total		56 (38.9)	82 (56.9)	6 (4.2)	0	0	81 (56.3)	45 (31.2)	18 (12.5)
Non-beneficiary									
Karbi Anglong	Chinthong	7	8	0	0	0	10	5	0
	Amri	6	9	0	0	0	11	4	0
	Sub total	13 (43.3)	17 (56.7)	0	0	0	21 (70.0)	9 (30.0)	0
Dima Hasao	New Sangbar	10	4	1	0	0	8	6	1
	Jatinga Valley	9	6	0	0	0	10	5	0
	Sub total	19 (63.4)	10 (33.3)	1 (3.3)	0	0	18 (60.0)	11 (36.7)	1 (3.3)
Grand Total		32 (53.3)	27 (45.0)	1 (1.7)	0	0	39 (65.0)	20 (33.3)	1 (1.7)

(Figures in parentheses indicate percent to total)

4.2.5 Status of loan taken by the respondents

In Karbi Anglong district, among the beneficiary respondents, almost 47% beneficiary respondents had taken loan with the average loan amount worked out to be of Rs. 27,770/- per respondent, most of them (58.8%) had taken for productive purposes followed by 26.5% for "production and consumption", 8.8% for "production and education" and 5.9% for education purpose (Table 4.2.5). The repayment/recovery percentage recorded as high as 91.2%. In case of Dima Hasao district, 37.5% respondents had taken loan with average loan amount worked out to be Rs. 28296/-, of them maximum (51.9%) had taken loan for "any other use" followed by 48.1% for production purpose. In totality, 42.4% respondents among the beneficiary respondents took loan from bank, of which maximum number (54.1%) used for production purpose followed by 22.9% for "any other use", 14.8% for "production and consumption" together, 4.9% for "production and education" together and 3.3% for education only. Contrary to that Puhazhendi and Jayaraman (1999) reported that 67% loan used for consumption purpose only. The average loan amount per respondent worked out as Rs. 28,003/- in case of the state as a whole with recovery percentage of 77%. Sharma (2003) reported the highly successful SHG financing with recovery of over 98 per cent in three districts of Karnataka –Mysore, Chamarajnagar and Hassan.

Among the non-beneficiary respondents, percentage of respondents who had taken loan from bank was a bit low for both the districts (6.7% and 16.7% respectively for Karbi Anglong and Dima Hasao) with average percentage of 11.7. Average amount of loan taken by one particular respondent calculated as Rs.19,143/- in case of non-beneficiary respondent. The loan taken by non –beneficiary respondents was used mostly for consumption purpose (71.4%) followed by 28.6% for "any other use". Recovery percentage was as low as 14.3%.

4.2.6 Training status of the respondents through NERCORMP

The following Table 4.2.6 shows the training status of the respondents under NERCORMP. Among beneficiary respondents in Karbi Anglong district, 76.4% respondents had the exposure of attending training programme and all of them had

referred that through training they were benefited. Maximum of them had the experience of attending training in multiple area/fields, those were compiled and presented in Table 4.14. The different training area with percentage of respondents attended training were NRM (90.9%), followed by marketing management and any other (each by 76.4%), credit management (63.6%), terrace management (60.0%), plantation crop management (47.3%) and livestock management (45.5%). In case of Dima Hasao district, 80.6% respondents attended training in different areas, out of which 100% referred that they got benefit from training. Here also, NRM was the first priority area, where highest percentage of respondents got exposure (89.7%) followed by credit and plantation crops management (70.8%), livestock management (66.7%), marketing management (62.5%), any other (54.2%) and terrace management (44.4%). As a whole out of 144 beneficiary respondents, 78.5% got training in different fields, out of which 100% referred that they were benefited through the training. Most of the respondents got trained on NRM (90.3%) followed by marketing management (77.0%). A good percentage of respondents were seen exposed in other areas also and probably it helped the respondents to develop their skills. Singh *et al*. (2009) reported the spending of financial resources to facilitate the training under ATMA, Bihar for the beneficiaries that helped in considerable improvement in adoption of new technologies and farm practices.

Whereas among non-beneficiary respondents, 30% of them only got exposed to training in Karbi Anglong district of which majority referred that they got benefit from training. Out of total number of respondents attended training, 55.5% got training on each of NRM, any other and marketing management, followed by 33.3% on livestock management and 22.2% on plantation crop management. In Dima Hasao district, 40% non-beneficiary respondents attended training, out of which 66.7% referred that they got benefit from training. The field of training with percentage of respondents were 41.7% on NRM, 33.3% on livestock management, 25% on any other, and 8.3% on marketing management. Out of total non-beneficiary respondents (60), only 35% attended training in the State, out of which 76.2% referred that they got benefit. Maximum number of respondents attended training on NRM (47.6%) followed by any other (38.1%), livestock management (33.3%), marketing management (28.6%).

Table 4.2.5 : Status of loan taken by the respondents

Name of the District	Name of the Block	No. of respondent taken bank loan	Total amount under loan (Rs.)	Use of loan							
				Production	Consumption	Education	Production & Consumption	Production & Education	Consumption & Education	Any other	Repayment
Beneficiary respondents											
Karbi Anglong	Chinthong	18	7,95,500	15	0	0	2	1	0	0	16
	Amri	16	1,48,688	5	0	2	7	2	0	0	15
	Sub total	34 (47.2)	9,44,188	20 (58.8)	0	2 (5.9)	9 (26.5)	3 (8.8)	0	0	31 (91.2)
Dima Hasao	New Sangbar	10	3,44,000	2	0	0	0	0	0	8	4
	Jatinga Valley	17	4,20,000	11	0	0	0	0	0	6	12
	Sub total	27 (37.5)	7,64,000	13 (48.1)	0	0	0	0	0	14 (51.9)	16 (59.3)
Grand Total		61 (42.4)	17,08,188	33 (54.1)	0	2 (3.3)	9 (14.8)	3 (4.9)	0	14 (22.9)	47 (77.0)
Non-beneficiary respondents											
Karbi Anglong	Chinthong	0	0	0	0	0	0	0	0	0	0
	Amri	2	40,000	0	2	0	0	0	0	0	0
	Sub total	2 (6.7)	40,000	0	2 (100.0)	0	0	0	0	0	0 (0.0)
Dima Hasao	New Sangbar	2	42,000	0	1	0	0	0	0	1	1
	Jatinga Valley	3	52,000	0	2	0	0	0	0	1	0
	Sub total	5 (16.7)	94,000	0	3 (60.0)	0	0	0	0	2 (40.0)	1 (20.0)
Grand Total		7 (11.7)	1,34,000	0	5 (71.4)	0	0	0	0	2 (28.6)	1 (14.3)

(Figures in parentheses indicate percent to total)

Table 4.2.6 : Individual training status of the respondents

Name of the District	Name of the Block	Training attended	Benefited	Training area						
				NRM	LM	CM	MM	TM	Plantation crops	Any other
Beneficiary respondents										
Karbi Anglong	Chinthong	26	26	24	12	15	20	16	12	20
	Amri	29	29	26	13	20	22	17	14	22
	Sub total	55 (76.4)	55 (100.0)	50 (90.9)	25 (45.5)	35 (63.6)	42 (76.4)	33 (60.0)	26 (47.3)	42 (76.4)
Dima Hasao	New Sangbar	27	27	24	21	23	27	15	26	22
	Jatinga Valley	31	31	28	27	28	18	17	25	17
	Sub total	58 (80.6)	58 (100.0)	52 (89.7)	48 (66.7)	51 (70.8)	45 (62.5)	32 (44.4)	51 (70.8)	39 (54.2)
Total		113 (78.5)	113 (100.0)	102 (90.3)	73 (64.6)	86 (70.1)	87 (77.0)	65 (57.5)	77 (68.1)	81 (71.7)
Non-beneficiary respondents										
Karbi Anglong	Chinthong	5	4	3	1	0	1	0	1	3
	Amri	4	4	2	2	0	4	0	1	2
	Sub total	9 (30.0)	8 (88.9)	5 (55.5)	3 (33.3)	0	5 (55.5)	0	2 (22.2)	5 (55.5)
Dima Hasao	New Sangbar	4	4	3	1	0	1	0	0	3
	Jatinga Valley	8	4	2	3	0	0	0	0	0
	Sub total	12 (40.0)	8 (66.7)	5 (41.7)	4 (33.3)	0	1 (8.3)	0	0	3 (25.0)
Total		21 (35.0)	16 (76.2)	10 (47.6)	7 (33.3)	0	6 (28.6)	0	2 (9.5)	8 (38.1)

NRM-Natural Resource Management, LM-Livestock Management, CM-Credit Management, MM-Marketing Management, TM-Terrace Management

4.2.7 Status of participation in local body/organisation by the respondents

Karbi Anglong and Dima Hasao districts of Assam represent some peculiarity so far the topography, geographical location, community attachment etc. are concerned. The following Table 4.2.7(a) highlights district wise status of participation of respondents in local body/organisations. It indicates that out of total beneficiary respondents in Karbi Anglong district, 34.7% respondents viewed that they were the members of Farmer Organisation (FO). On the other hand, all the respondents stated that they were the members of Community Organisation (CO). Some of them (15.3%) even viewed that they were members of some other organisation in addition to members of FO and CO. In case of Dima Hasao district, number of respondents who were the member of farmer organisation was more i.e. 70.8% and number represented community organisation was 97.2%. A good percentage of respondents (47.2%) in the district also reported that they are the members of some other organisations in addition to member of FO and CO. In the State as whole, 98.6% respondent reported that they were the member of Community Organisation. In addition to that 52.8% reported that they were the members of FO and 31.3% were members of 'Others' category of organisation.

It can be concluded that community organisation/local body was very strong in the project areas and as a result respondents participated in various organisations. Similar to those Rangi *et al.* (2002) also viewed the participation by women SHG members in Fatehgarh Sahib district of Punjab in planning, implementation and monitoring activities of the village level bodies such as Panchayat, Zilla Parishad, Village Committee etc.

Again among non-beneficiary respondents, participation level in local bodies/organisations was a bit low for both the districts. It was as low as 6.7% in case of Farmer Organisation in Karbi Anglong district against 10.0% in Dima Hasao district. Percentage of respondents participating in community organisation were 63.3% and 66.7% respectively for Karbi Anglong and Dima Hasao districts. In totality among the non-beneficiary respondents, 8.3% viewed as member of farmer organisation, 65% reported as member of community organisation and 5% reported as member of other organisation.

Table 4.2.7(a) : Status of participation in local body/organisation by the respondents

Name of the District	Name of the Block	Farmers organisation (FO)	Community Organisation (CO)	OTHERS
Beneficiary respondents				
Karbi Anglong	Chinthong	15	36	1
	Amri	10	36	10
	Sub total	25 (34.7)	72 (100.0)	11 (15.3)
Dima Hasao	New Sangbar	24	36	19
	Jatinga Valley	27	34	15
	Sub total	51 (70.8)	70 (97.2)	34 (47.2)
Grand Total		76 (52.8)	142 (98.6)	45 (31.3)
Non-beneficiary respondents				
Karbi Anglong	Chinthong	2	11	2
	Amri	0	8	0
	Sub total	2 (6.7)	19 (63.3)	2 (6.7)
Dima Hasao	New Sangbar	1	9	1
	Jatinga Valley	2	11	0
	Sub total	3 (10.0)	20 (66.7)	1 (3.3)
Grand Total		5 (8.3)	39 (65.0)	3 (5.0)

Figures in parentheses indicate percent to total

Crop production, land development, natural resource management, livestock management etc. are some of the very pertinent developmental issues for a community specially in an area where community attachment is more prominent and the place where natural resources play a pivotal role in their livelihood management. So decisions in relation to these issues can make significant changes in their livelihood management. An attempt had been made here to know how the respondents are engaged in taking rightful decisions. The Table 4.2.7(b) highlights the decisions making pattern followed by the respondents. It is viewed that in Karbi Anglong district among the respondent beneficiary, out of three options available, the most preferred option was visible as "both parents" in taking decisions in relation to all the above developmental issues. It indicates that for taking any decisions on crop production, land development, natural resources management, livestock management etc. both the parents took the active role. The so called "Head" based decisions making pattern was very less in relation to all the issues (not even 4% of total respondents have chosen this practice to take any decision). Of course, some of the respondents reported that they took these types of decisions by consulting both the parents and any other adult member in the family. This may be treated as the best practice, but percentage of respondents who viewed this option was very less viz. crop production (6.9%), land development (16.7%), NRM (11.1%), livestock management (5.5%). In Dima Hasao district also, 'both parents' took the lead role in taking vital decisions, although its' percentage contribution was comparatively low than the Karbi Anglong in all issues. Here, 'parents and adult' category shows little better picture as compare to Karbi Anglong district such as 9.7% for crop production, 23.6% for land development, 22.3% for NRM, 27.7% for livestock management and 30.5% for 'any other'. It can be concluded that although 'both parents' took the lead role in taking major decisions on the above issues, still a good percentage of respondents viewed that they take decisions by consulting parents and other adult members in the family. In this connection study made by Sherin (1999) could be referred.

So far non-beneficiary respondents are concerned, 'Head' of the family was seen to take the lead role on taking decisions pertaining to crop production, land

development, livestock management and ‘any other’ issues in both the districts. However, in connection to NRM, it was observed that most of the respondents viewed ‘both parents’ as the lead role in decision making. On the other hand, a very less percentage of respondents among non-beneficiary reported that ‘parents and other adult member’ took part in decision making.

Table 4.2.7(b) : Decision making pattern of the respondent on some vital development issues

Name of the District	Name of the Block	Crop production			Land development			NRM			Livestock management			Any other		
		Head	Both parents	Parent and adult	Head	Both parents	Parent and adult	Head	Both parents	Parent and adult	Head	Both parents	Parent and adult	Head	Both parents	Parent and adult
Beneficiary respondents																
Karbi Anglong	Chinthong	1	34	1	1	32	3	2	32	2	1	35	0	1	34	1
	Amri	0	32	4	0	27	9	0	30	6	0	32	4	1	30	5
	Sub total	1 (1.4)	66 (92.7)	5 (6.9)	1 (1.4)	59 (81.9)	12 (16.7)	2 (2.8)	62 (86.1)	8 (11.1)	1 (1.4)	67 (93.1)	4 (5.5)	2 (2.8)	64 (88.9)	6 (8.3)
Dima Hasao	New Sangbar	3	29	4	5	24	7	3	27	6	2	26	8	3	24	9
	Jatinga Valley	4	29	3	2	24	10	2	24	10	1	23	12	1	22	13
	Sub total	7 (9.7)	58 (80.6)	7 (9.7)	7 (9.7)	48 (66.7)	17 (23.6)	5 (6.9)	51 (70.8)	16 (22.3)	3 (4.2)	49 (68.1)	20 (27.7)	4 (5.6)	46 (63.9)	22 (30.5)
Grand Total		8 (5.6)	124 (86.1)	12 (8.3)	8 (5.6)	107 (74.3)	29 (20.1)	7 (4.9)	113 (78.5)	24 (16.7)	4 (2.8)	116 (80.6)	24 (16.7)	6 (4.2)	110 (76.4)	28 (19.4)
Non-beneficiary respondents																
Karbi Anglong	Chinthong	13	2	0	11	3	1	3	11	1	12	3	0	15	0	0
	Amri	13	1	1	12	2	1	2	12	1	12	1	2	15	0	0
	Sub total	26 (86.7)	3 (10.0)	1 (3.3)	23 (76.7)	5 (16.7)	2 (6.6)	5 (16.7)	23 (76.7)	2 (6.7)	24 (80.0)	4 (13.4)	2 (6.6)	30 (100.0)	0	0
Dima Hasao	New Sangbar	11	1	3	10	3	2	2	12	1	11	3	1	15	0	0
	Jatinga Valley	12	3	0	12	2	1	1	13	1	12	2	1	15	0	0
	Sub total	23 (76.7)	4 (13.3)	3 (10.0)	22 (73.3)	5 (16.7)	3 (10.0)	3 (10.0)	25 (83.3)	2 (6.7)	23 (76.7)	5 (16.7)	2 (6.6)	30 (100.0)	0	0
Grand Total		49 (81.7)	7 (11.7)	4 (6.7)	45 (75.0)	10 (16.7)	5 (8.3)	8 (13.3)	48 (80.0)	4 (6.7)	47 78.3)	9 (15.0)	4 (6.7)	60 (100.0)	0	0

(Figures in parentheses indicate percent to total)

4.3 Brief profile of the community resources

A community resource is anything that helps or that has potential to increase the livelihood status of a community as a whole. It includes all such resources which are meant for common use by the villagers. It is also called as Common Property Resources (CPR). Shyhendra (2002) defined CPRs as community assets that provide both tangible and intangible livelihood to their dependants. Some define the CPRs on the basis of their ownership and others according to their use (Menon and Vadivelu 2006). It can be simply described as community's natural resources where every member has access and usage facility with specified obligation without anybody having exclusive property rights over them (Jodha 1995). In general it includes community pastures, community forests and wasteland, watershed drainage, village ponds, rivers, infrastructure, institutions etc.

As most of the NE States are hilly terrain states occupied by tribal, community resources play a pivotal role in improving the people's livelihood in the region as compared to the rest of India. The two hill districts of Assam *viz.* Karbi Anglong and Dima Hasao are somewhat peculiar in comparison to any other district of the State, where Sixth Schedule of Indian Constitution is in operational. This peculiarity arises because of its geographical location, topography, culture, nature of economic development, political and administrative peculiarity etc. Majority of the population belong to tribal in these two districts and as a result attachment is more and they live together as community mostly on the basis of community resources available. In general, community resources are used in common and which have the physical characteristics of being difficult to demarcate. In both the districts under study, the dependant villagers were seen to get benefits from community resources such as staple food from *jhum* (shifting) or other forms of cultivation, NTFP like edible fruits, leaves and vegetables, small timber and medicinal herbs. Mahanta and Das (2012) viewed the importance of CPRs in Assam and its role.

Moreover, the term CPRs has a different meaning in North East India from that in Mainland India. Land classification is a complex phenomenon in this region and each State and each community has its own classification. J. B. Ganguly (1978) mentioned three categories: i. Land owned by the village collectively, ii. land owned

by the chief who distributes it among individual families and iii. land owned by the individual families. The first two categories are called as CPRs and the third is called as private land. Because of the great diversity, it was difficult to have a common definition in NE Region of India. Four states namely Arunachal Pradesh, Meghalaya, Mizoram and Nagaland are tribal majority States and the remaining are non-tribal States. In each State CPRs are defined in a different way. The non-scheduled areas of Assam have three types of land – *patta* (individual ownership), *Aksonia* (temporary) patta and non-patta or *khas land* or CPRs. *Patta* land is owned in perpetuity on payment of a tax. *Aksonia* patta is usually for one year. *Khas* land is considered State property (CPRs) and its inhabitants are treated as encroachers. This definition does not hold true in the Sixth Schedule areas where the village headman plays a role under the District Autonomous Council (DAC) and there CPRs are defined according to the customary law. However, land is under the direct control of the DAC. In the customary laws of most other tribes the CPRs are land set apart by a tribe for the use of its members without the right of private ownership. All other states of North East India have some variation in defining the CPRs.

Thus, according to all the tribal customary laws community land is collective property and the residents of the village are users of the land. Among most of them the CPRs include: (i) village land and forests, (ii) streams, rivulets, and rivers (often shared with the 6 neighbouring village), (iii) the village settlement area and (iv) village ponds, roads, footpaths, and burial ground, and (v) public open ground. Though the management of the CPRs changes from tribe to tribe there are some similarities also. For example, the customary law determines the utilisation of their village land and forests. The common land resources within the territory of the village are accessible to the whole community. No individual has exclusive property rights over the community properties. The territory of each tribe is well demarcated and each village maintains a permanent boundary

Community resources are important sources of livelihood to rural households in general and to rural poor in particular. Jodha (1986, 1990) had done some pioneering work on the CPRs and illustrated their importance not only as regular sources of income and employment but also as safety nets in periods of drought. Their use includes grazing within the commons in addition to collection of firewood,

fodder and NTFP. The National Sample Survey data classified CPR as fuel wood, fodder and others which include manure, fruits, roots and tubers, vegetables, gums and resins, honey and wax, medicinal plants, fish, and leaves and weeds. Studies showed that in India approximately 58 per cent of the produce collected from the CPRs are fuel wood, followed by fodder 25 per cent and 17 per cent classified as 'others' (Menon and Vadivelu 2006). Even existence and importance of community resources in Nepal was reported by Bhusal (2009).

Jodha (1990) highlighted that, between 84 and 100 per cent of rural poor households gathered items such as fuel, fodder, food and fibre from the CPRs worth of Rs. 445 to Rs. 830 annually. The data pertained to the 1982–1985 periods and only to the states of Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu. The importance of CPRs to the rural poor has been corroborated by subsequent research and across different agro-climatic zones (Pasha 1992, Beck and Ghosh 2000). The average annual household value of CPR collections at the all-India level was Rs 693 (Menon and Vadivelu 2006).

Community resources play an important role in people's livelihood in the North East India too. In Assam the average value for collection from CPRs was Rs 519 and it was 4.89 per cent of the households consumption expenditure (Menon and Vadivelu 2006). Hill areas again have a higher dependence on CPRs. The same is true in case of other hill areas of the North East India. The CPRs are treated as the base for livestock rearing. In a rural set up for fodder the livestock depend mainly on the grazing land. Once the grazing land is lost people have to buy fodder and that involves money. In a study on cost-benefit analysis of the Nagaon Paper Mill, Assam showed that the number of cattle head as well as income generated from them had declined enormously after they lost the CPRs because of the project. A total of 30 families incurred a cost of Rs. 1.86 lakh a year for buying fodder because of decrease of CPRs (Bharali 2008). As a result, the number of livestock owned by the families declined enormously**.**

It is not an easy job to identify the CPRs in the total land in the country because the land classification followed in India does not specify which categories fall under the CPRs. Chopra *et al.* (1990) used a nine-fold land use classification to

estimate the total area under the CPRs, and suggested that land 'other than current fallow', 'cultivable waste', 'pastures', and 'protected and un-classed forests' can be broadly categorised as CPRs. Based on this classification, they concluded that 21.55 per cent of all land in India were CPRs in1980–81.

It is equally difficult to get any estimate of CPRs in the North East India also. Ao (1991) showed that in Nagaland in 1991, out of the total geographical area of 16,57,900 hectares, 6.28 percent came under government control, 85.75 percent under private control and 8 percent came under dual control. The first and the third categories came under CPRs. Likewise, in 1986, out of the total geographical area of 10,47,700 hectares in Tripura, 5,72,000 hectares were covered with forests. Marshy land covered 2,26,700 hectares. That could be classified as CPRs (Debbarma 1991).

From the above it can be concluded that CPRs play a significant role in the NERCORMP areas of Assam. Forest resources in terms of CPRs provide a good variety of products for livelihood sustenance in the districts.

4.4 Present status of NERCORMP activities

4.4.1 Financial achievement under NERCORMP I (1999-2008) in NE States

NERCORMP started its operation since 1999 and completed its first phase in September 2008. After successful completion of NERCORMP I (1999-2008), it started its' second phase i.e. NERCORMP II during 2010 and it was expected to complete by 2016-17. Since its inception, it carried out number of activities for various components and a big amount of fund was utilised for that. The following Table 4.4.1 shows the financial achievement under NERCORMP I for all the 6 districts of 3 States of NE India including Karbi Anglong and Dima Hasao districts. Total financial allocation was Rs. 166.25 crore for the entire period, out of which Rs. 134.68 crore was financed by IFAD and co-financing institutions, Rs. 15.12 crore was spent from beneficiary contribution and Rs. 16.45 crore was financed by other financial institutions. Further, it illustrated the component – wise allotment and accordingly the highest amount was spent on 'economic and livelihood activity' *i.e.* Rs. 83.98 crore followed by 'project management' *i.e.* 26.36 crore.

Table 4.4.1 : Financial achievements under NERCORMP I in NE States (1999-2008)

(Rs. in crore)

Component	Source of Fund			
	IFAD & Co financing	**Beneficiary contribution**	**Financial institution**	**Total**
Capacity building	14.35	-	-	14.35
Economic Livelihood activity	61.63	11.82	10.53	83.98
Social sector	9.53	1.05	1.81	12.39
Village Road & Rural Electrification	18.16	2.13	4.06	24.35
Conserving Bio-diversity/NRM	4.66	0.12	0.05	4.83
Project Management	26.36	-	-	26.36
Total	134.68	15.12	16.45	166.25

Source : NERCORMS office, Shillong, Meghalaya

4.4.2 Summary of achievement of NERCORMP in NE States

Table 4.4.2(a) gives an idea about the summary of NERCRMP in NE States pertaining to NERCORMP I period. Total number of villages covered under the project was 860 from all the six districts. Out of that, 19.3% and 15.2%, respectively were taken from Karbi Anglong and Dima Hasao districts (166 and 131 numbers respectively) of Assam. The highest number of villages was taken from West Garo hill district of Meghalaya i.e. 22.3%. Altogether 39,161 households were brought under the project during NERCORMP I period, out of which maximum were taken from West Garo hill district of Meghalaya. It covered the least number of households from Dima Hasao district. The number of beneficiary covered under Karbi Anglong and Dima Hasao districts were 17.2% and 13.6%, respectively out of total number of beneficiaries (234226 nos.). So far the number of SHGs formed, Karbi Anglong and Dima Hasao districts represented 13.2% and 10.9% respectively out of total (3168 nos.) against the highest 26.9% from West Garo hill district of Meghalaya. The number of NaRMGs contributed by these two districts were 16.4% and 12.9% respectively against 25.4% by West Garo hill district out of total 1012 NaRMGs. The number of SHGs federation as well as NaRMGs federation formed under NERCORMP I in these two districts was also less as compared to West Garo hill district.

In case NERCORMP II, number villages covered were 75 and 87 respectively in Karbi Anglong and Dima Hasao districts Table 4.4.2(b). The highest number of villages was taken from Dima Hasao district in NERCORMP II out of 6 districts under the project. The number of households covered was almost similar for all the districts with little variation and the highest number of households was from Ukhrul district of Manipur (18.4%) out of total 20826 households. Number of SHGs formed was highest in Karbi Anglong district (296 nos.) followed by West Garo Hills and West Khasi Hills districts (281 nos.). Comparatively number of villages and number of households covered during NERCORMP II period was much lesser than NERCORMP I period.

Table 4.4.2(a) : A brief summary of NERCORMP in NE States during 1999-2008 (NERCORMP I)

Sl No.	Name of district	Total no. of villages in the dist.	Total no. of villages covered	No. of households covered	No. of beneficiaries	No. of SHG formed	No. of NaRMGs formed	No. of SHGs Federation formed	No. of NaRMGs Association formed
1	West Garo Hills	1502	192 (22.3)	7070 (18.1)	42420 (18.1)	852 (26.9)	257 (25.4)	25 (24.3)	29 (28.2)
2	West Khasi Hills	1061	162 (18.8)	6900 (17.6)	41400 (17.7)	454 (14.3)	162 (16.0)	18 (17.5)	16 (15.5)
3	Karbi Anglong	2633	166 (19.3)	6823 (17.4)	40398 (17.2)	417 (13.2)	166 (16.4)	16 (15.5)	16 (15.5)
4	Dima Hasao	557	131 (15.2)	5297 (13.5)	31782 (13.6)	347 (10.9)	131 (12.9)	15 (14.6)	11 (10.7)
5	Senapati	788	106 (12.3)	7033 (18.0)	42198 (18.0)	417 (13.2)	150 (14.8)	24 (23.3)	21 (20.4)
6	Ukhrul	235	103 (12.0)	6038 (15.4)	36228 (15.5)	681 (21.5)	146 (14.4)	5 (4.9)	10 (9.7)
Total		6776	860 (100.0)	39161 (100.0)	234226 (100.0)	3168 (100.0)	1012 (100.0)	103 (100.0)	103 (100.0)

Source : NERCORMS office, Shillong, Meghalaya
(Figures in parentheses indicate percent to total)

Table 4.4.2(b) : A brief summary of NERCORMP in NE States during 2010-16 (NERCORMP II)

Sl No.	Name of district	Total no. of villages in the dist.	Total no. of villages covered	No. of households covered	No. of SHG formed	No. of NaRMGs formed	No. of SHGs Federation formed	No. of NaRMGs Association formed
1	West Garo Hills	1481	75 (16.3)	3332 (16.0)	281 (17.6)	96 (19.4)	14 (24.6)	16 (28.1)
2	West Khasi Hills	916	76 (16.5)	3619 (17.4)	281 (17.6)	78 (15.8)	8 (14.0)	8 (14.0)
3	Karbi Anglong	2633	75 (16.3)	3333 (16.0)	296 (18.5)	75 (15.2)	8 (14.0)	8 (14.0)
4	Dima Hasao	552	87 (18.9)	3333 (16.0)	250 (15.6)	87 (17.6)	8 (14.0)	8 (14.0)
5	Senapati	676	78 (16.9)	3376 (16.2)	229 (14.3)	89 (18.0)	12 (21.1)	12 (21.1)
6	Ukhrul	235	69 (15.0)	3833 (18.4)	263 (16.4)	69 (14.0)	7 (12.3)	5 (8.8)
Total		6493	460 (100.0)	20826 (100.0)	1600 (100.0)	494 (100.0)	57 (100.0)	57 (100.0)

Source : NERCORMS office, Shillong, Meghalaya
(Figures in parentheses indicate percent to total)

4.4.3 Target and achievement under NERCORMP II

After successful completion of NERCORMP I in all the six districts, NERCORMP II has come into operational in all the old six districts since the year 2010. NERCORMP II activities are still going on in all the project areas in anticipation of getting completed by 2016-17. The following Table 4.4.3(a) highlights the details of trend of target and achievement over the years during NERCORMP II period in Karbi Anglong district. It was observed that more than 85% of total physical targets determined for the project were achieved during the entire project period and financial achievement was 80.7%. Out of total financial target of Rs. 33.74 crores (during 2010-11 to 2015-16), a total of Rs. 24.80 crores was spent for various project activities. More than 2.88 lakhs people were trained under the project in the district out of which majority were women.

In Dima Hasao district, as a whole during the entire period of NERCORMP II, the percentage of physical and financial achievements were calculated out as 96.9% and 95.7% respectively. Table 4.4.3(b) also shows that out of total financial target of Rs. 30.5 crores, altogether 29.21 crores had been spent for the project, and individual yearly allotment was maximum during the period 2013-14 (Rs. 6.77 crores). Number of persons trained under the project was more than 1.42 lakhs so far and out of that majority were female participants.

Table 4.4.3(a) : Trend of target and achievement in NERCORMP II over the years in Karbi Anglong district

Year	Target		Achievement		% of physical achievement	% of financial achievement	No. of Persons trained		
	Physical	Financial (In Rs)	Physical	Financial			Male	Female	Total
				Project contribution (In Rs.)					
2010-11	2,050	4,43,27,539	1,896	4,18,07,293	92.49	94.31	5,903	58,093	63,996
2011-12	1,407	5,50,68,581	1,358	5,49,30,041	96.52	99.75	2,861	19,842	22,703
2012-13	1,485	5,65,46,400	1,506	5,67,93,900	101.41	100.44	2,549	29,223	31,772
1013-14	1336.852	6,77,65,000	287.79	1,92,50,858	21.53	28.41	1932	54212	56,144
2014-15	1,795	5,22,45,000	1,795	5,20,69,115	100.00	99.66	3,530	62,862	66,392
2015-16	447	3,14,92,000	449	2,31,69,457	100.45	73.57	1755	45336	47,091
Grand total	8,520	30,74,44,520	7,292	24,80,20,664	85.59	80.67	18,530	2,69,568	2,88,098

Source : NERCORMS office, Shillong, Meghalaya

Table 4.4.3(b) : Trend of target and achievement in NERCORMP II over the years in Dima Hasao district

Year	TARGET		ACHIEVEMENT		% of physical achievement	% of financial achievement	No. of Persons trained		
	Physical	Financial (In Rs)	Physical	Financial			Male	Female	Total
				Project contribution (In Rs)					
2010-11	1644.46	4,28,26,267	1644.46	4,18,89,781	100.00	97.81	7379	31698	39077
2011-12	3165.62	5,52,83,023	2768.16	5,43,24,304	87.44	98.27	3544	16437	19981
2012-13	1224.54	5,65,46,400	1269.11	5,61,06,316	103.64	99.22	6133	25396	31529
1013-14	1592.06	6,77,89,000	1595.67	6,77,89,000	100.23	100.00	2276	18511	20787
2014-15	2051	5,23,17,000	2075	5,10,59,218	101.17	97.60	4042	16135	20177
2015-16	706.2	3,05,96,620	709.62	2,09,75,506	100.48	68.55	1227	9552	10779
Grand total	10383.9	30,53,58,310	10062.02	29,21,44,125	96.90	95.7	24601	117729	142330

Source : NERCORMS office, Shillong, Meghalaya

4.4.4 Component wise financial involvement during NERCORMP II

Table 4.4.4(a) shows component wise financial involvement over the years in Karbi Anglong district during NERCORMP II period. Out of 10 major components of NERCORMP, the highest fund was utilised for the component of "Livelihood Enhancement" *i.e.* Rs.820.3 crores (32.5% of total fund utilised) followed by "Rural Road and Rural Electrification" *i.e.* 19.7%, 13.8% for Project Management, 9.8% for capacity building programmes. The lowest allotment was made on "Community Based Bio-diversity Conservation and Communication" *i.e.* only 1.8% of total. So far the trend of utilisation of fund over the years is concerned, the highest expenditure was made during 2012-13 (*i.e.* 22.5% of total) followed by 2014-15 (22.4%), 2011-12 (21.7%) and the lowest was during 2013-14 (7.6% of total allotment).

Table 4.4.4(b) highlights the component wise financial involvement in NERCORMP II for various project years pertaining to Dima Hasao district. Similar to Karbi Anglong district, in Dima Hasao district also fund allotment was highest for livelihood enhancement *i.e.* 39.2% of total fund allocation, followed by "Rural Road and Rural Electrification" i.e. 14.3% and Project management *i.e.* 12.2%. The least allotment of fund was in 'Community based Biodiversity Conservation and Communication" *i.e.* only 2.3% of total. As a whole yearly allotment was highest during 2013-14 (23.2% of total) followed by 2012-13 (19.2%) and the lowest allotment was during 2015-16 (7.2%).

Being a livelihood enhancement programme, NERCORMP certainly should focus more on livelihood enhancement activities and accordingly both the districts were seen to spend more in this component.

Table 4.4.4(a) : Component wise financial involvement over the years in Karbi Anglong district during NERCORMP II (Rs.in lakhs)

Component	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total	Percentage contribution
1.Building the Capacity of participating agencies	22.19	38.00	35.48	6.45	93.50	52.50	248.12	9.83
2. Livelihood enhancement	167.50	236.47	242.94	24.00	127.50	21.89	820.30	32.50
3. Social sector development	8.33	26.00	25.33	0.00	43.97	5.26	108.89	4.31
4. Rural road and rural electrification	25.00	60.87	81.74	118.33	169.62	41.71	497.26	19.70
5. Community based biodiversity conservation and communication	6.67	8.33	14.97	1.80	10.80	2.68	45.25	1.79
6. Project management	57.03	62.33	67.48	17.75	69.40	73.79	347.76	13.78
7. Capacity Building of Federations & Associations & its share of overhead	49.93	32.07	33.33	6.12	16.60	12.00	150.05	5.94
8. Value adition for non farm products & its share of overheads involved	16.66	25.00	16.67	4.23	8.34	5.00	75.90	3.01
9. Value adition for Agriculture & Horticulture produces & its share of overheads involved	50.00	33.33	33.33	12.10	16.60	11.87	157.23	6.23
10. Marketing & Promotion of Product & its share of overheads involved	14.76	26.90	16.67	1.74	8.33	5.00	73.40	2.91
Total	418.07 (16.6)	549.30 (21.7)	567.94 (22.5)	192.51 (7.6)	564.66 (22.4)	231.69 (9.2)	2524.17 (100.0)	100.00
Percentage increase/decrease		31.4	3.4	-66.1	193.3	-58.97		

Source : NERCORMS office, Shillong, Meghalaya
(Figures in parentheses indicate percent to total)

Table 4.4.4(b) : Component wise financial involvement over the years in Dima Hasao district during NERCORMP II (Rs. in lakhs)

Component	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total	Percentage contribution
1.Building the Capacity of participating agencies	29.54	36.01	35.46	26.98	92.48	52.50	272.97	9.3
2. Livelihood enhancement	167.49	236.47	242.94	348.34	127.50	21.89	1144.63	39.2
3. Social sector development	8.33	26.00	25.33	26.67	60.00	21.00	167.33	5.7
4. Rural road and rural electrification	25.00	60.87	77.38	118.33	109.62	25.98	417.17	14.3
4 Community based biodiversity conservation and communication	6.67	8.33	14.97	23.50	10.80	2.68	66.95	2.3
6. Project management	52.41	59.66	64.99	67.40	60.58	51.84	356.88	12.2
7. Capacity Building of Federations & Associations & its share of overhead	49.95	30.25	33.33	25.00	16.59	12.00	167.12	5.7
8. Value adition for non farm products & its share of overheads involved	15.56	24.61	16.67	8.34	8.09	5.00	78.27	2.7
9. Value adition for Agriculture & Horticulture produces & its share of overheads involved	50.00	33.33	33.33	25.00	16.60	11.87	170.13	5.8
10. Marketing & Promotion of Product & its share of overheads involved	13.95	27.72	16.67	8.33	8.33	5.00	80.00	2.7
Total	418.89 (14.3)	543.24 (18.6)	561.06 (19.2)	677.89 (23.2)	510.59 (17.5)	209.76 (7.2)	2921.44 (100.0)	100
Percentage increase/decrease		29.68	3.28	20.82	-24.68	-58.92		

Source : NERCORMS office, Shillong, Meghalaya
(Figures in parentheses indicate percent to total)

4.5 Forest based livelihood changes of the community

4.5.1 Uses of Community Forests for livelihood management

Forest plays significant role for livelihood management of the community in both the districts. Collection of various forest products in terms of minor and major forest products from various community forest areas as well as from some reserved forest area indicates the importance of forest based livelihood in the districts. Forest resources are utilised in various ways for their livelihood management in the study areas. The following Table 4.5.1 presents the picture of uses of community forests by the respondent households. The community forests available were utilised for various purposes by the respondent households. Among the beneficiary respondents in Karbi Anglong district, 97.2% reported that they used forests for fodder collection, 94.4% viewed that they used forests for grazing purpose, 100% respondents used forests for both NTFP and fuel wood collection and another 55.6% reported that they used it for any other purpose. In Dima Hasao district, 87.5% reported that they used it for fodder, 61.1% for grazing, 100.0% for both NTFP and fuel wood collection and 75% for any other purpose. In totality out of total respondents, 92.4% expressed their views that they used forests for fodder purpose, 77.8% for grazing purpose, 100% for collection of NTFP and fuel wood and 65.3% for any other use.

Again among the non-beneficiary respondents, in Karbi Anglong district only 23.3% respondents viewed that they used forests for fodder purpose, 16.7% used as grazing purpose, 36.7% for each of NTFP and fuel wood collection and 73.3% used it for any other purpose. Similar was the case of Dima Hasao district also, where maximum number of respondents reported that they used reserve forest for any other purpose. Among the non beneficiary as a whole, 18.3% viewed that they used it for fodder, 20% for grazing, 38.3% for NTFP collection, 36.7% for fuel wood collection and 76.7% for any other purpose. Phanbuh *et al.* (2008) in Meghalaya State reported the positive improvements in livelihood through NERCORMP intervention on management and cultivation of forest products, value addition of existing forest products etc.

It can be concluded that because of increase level of awareness after the project, respondents were seen to involve more in different activities through community resources for their direct and indirect benefits.

Table 4.5.1 : Uses of Community Forest by the respondents

Name of the District	Name of the Block	Fodder	Grazing	NTFP	Fuel wood	Any other
Beneficiary respondents						
Karbi Anglong	Chinthong	34	34	36	36	22
	Amri	36	34	36	36	18
	Sub total	70 (97.2)	68 (94.4)	72 (100.0)	72 (100.0)	40 (55.6)
Dima Hasao	New Sangbar	31	21	36	36	27
	Jatinga Valley	32	23	36	36	27
	Sub total	63 (87.5)	44 (61.1)	72 (100.0)	72 (100.0)	54 (75.0)
Grand Total		133	112	144	144	94
Percentage		92.4	77.8	100.00	100.00	65.3
Non-beneficiary respondents						
Karbi Anglong	Chinthong	7	4	6	4	7
	Amri	0	1	5	7	15
	Sub total	7 (23.3)	5 (16.7)	11 (36.7)	11 (36.7)	22 (73.3)
Dima Hasao	New Sangbar	1	2	8	8	12
	Jatinga Valley	3	5	4	3	12
	Sub total	4 (13.3)	7 (23.3)	12 (40.0)	11 (36.7)	24 (80.0)
Grand Total		11	12	23	22	46
Percentage		18.3	20.00	38.3	36.7	76.7

(Figures in parentheses indicate per cent to total)

4.5.2 Status of forest products collected by the respondents from Community forests

The most important major forest products collected from the forest area for livelihood management are fuel wood, timber, wild edible food, medicinal plants etc. Every household in those project areas tries to collect some of the above products almost every day for their livelihood sustenance. The following Table 4.5.2(a) depicts the status of major forest products collected from community forests area for livelihood management by the respondent households. As community forest area plays an important role in management of livelihood status in both the hills districts, an attempt had been made here to know the status of different major forest products collected by the respondents for their livelihood strategies. In Karbi Anglong district, the average annual value or income per household came from major forest products altogether stands at Rs. 9125.7/-. The highest individual average annual return came from fuel wood (Rs. 3357.6/-), followed by Rs. 2394.4/- in wild edible food, Rs. 2180.6/- in any other, Rs. 701.4/- in medicinal plants and Rs. 491.7/- from timber. In the district, among the beneficiary respondents out of total value in terms of rupee collected from major forest products, major share was contributed by fuel wood (36.8%), followed by wild edible food (26.2%), any other (23.9%), medicinal plants (7.7%) and timber (5.4%). Dima Hasao district recorded a total collection of Rs. 15,83,600/- from major forest products against Rs. 6,57,050/- of Karbi Anglong district. The average annual collection in Dima Hasao district from major forest products recorded much higher than Karbi Anglong district *i.e.* Rs. 21,994.4/-. The highest percentage share was contributed by wild edible food (25.7%), followed by any other (23.9%), timber (20.2%), fuel wood (17.3%) and medicinal plants (12.9%). As whole in the State, total average annual collection recorded at Rs. 15,560.4/- from major forest products by the respondents and the highest contribution came from wild edible food.

So far the non-beneficiary respondents are concerned, although it showed a bit low average annual collection per household in both the districts as compared to beneficiary respondents, yet it is visible that all of them were involved in collection of major forest products from community forest areas. In Karbi Anglong district, the average annual collection recorded at Rs. 2803.3/- against Rs. 2346.7/- from Dima

Hasao district. In both the districts major contribution came from fuel wood (*i.e.* 46.9% and 53.3% respectively for Karbi Anglong and Dima Hasao Districts) followed by wild edible food (36.3% and 25.7%), timber (10.5% and 13.6%), medicinal plants (3.9% and 5.7%) and any other (2.4% and 1.7%). As a whole in the State also it showed the same trend for non – beneficiary respondents.

Non Timber Forest Product (NTFP) plays an important role in management and sustenance of livelihood in project areas. Respondent households used to collect a variety of NTFPs from forest jungle every day and the following Table 4.5.2(b) gives the details of NTFP collected in terms of their approximate value during a particular year. Among the beneficiary respondents in Karbi Anglong district, a total of Rs. 10,23,750/- was collected from NTFPs with average annual value of collection of Rs. 14,218.75/- per household, whereas in Dima Hasao district total annual collection recorded at Rs. 8,84,570/- with average annual collection of Rs. 12,285.69/- per household. Bamboo contributed the highest percentage share in total value of NTFPs in both the districts (*i.e.* 40.1% and 25.7% respectively for Karbi Anglong and Dima Hasao districts). In totality out of total value under NTFPs, bamboo contributed the highest percentage (33.4%) followed by broom (15.4%), stone (14.6%), wild edible (14.1%), thatch (13.1%), honey (8.9%), any other (0.42%) and cane (0.03%).

Again among the non-beneficiary respondents, the average annual value of NTFP collected recorded as Rs. 1,025.0/- per household in Karbi Anglong district against Rs. 1175/- for Dima Hasao district. Among the non-beneficiary also in the stat, bamboo contributed the maximum share (54.6%) even higher than the contribution in case of beneficiary respondents. Among the non beneficiary respondents, after bamboo, honey played significant role (16.1%) towards total NTFP collection followed by wild edible (10.6%), broom (9.1%), thatch (7.6%) and any other (2.1%).

It can be concluded that NTFPs contributed significantly towards livelihood improvement among both the beneficiary and non-beneficiary respondents. However, among beneficiaries it contributed more average return than non-beneficiaries, as after intervention of NERCOEMP respondent households became more active and more of them were seen involved in collection of NTFPs. Of course, trend of proportion of collection of different NTFPs was different by beneficiary and non-

beneficiary level. Shivprasad and Chandrashekar (2014) also reported the importance of minor forest products for livelihood of tribal population in many countries. They even reported the availability of Forest Right Act (FRA) 2006 that addressed the question of community ownership of minor forest products.

In addition to various major as well as minor forest products (NTFP), some other cultivated forest products also significantly contributed towards livelihood management in project areas. Cultivated forest products include a variety of crops (agriculture, horticulture, plantation and forest trees) that are cultivated by the households in their owned/community land. Following Table 4.5.2(c) shows that in Karbi Anglong district, among the beneficiary respondents a total value of production from cultivated forest products recorded as Rs. 19,96,500/- in an area of 27.36 ha, that gave an average value of production per household as Rs. 27,729/- with average area per household being 0.38 ha. In Dima Hasao district, value of production from cultivated forest products recorded much higher of Rs. 55,41,600/- with an area of 61.7 ha that gave average value of production per household of Rs. 76,967/- with average area per household being 0.86 ha. As a whole average value of production per household from cultivated forest products recorded as Rs. 52,348/- with average area per household being 0.62 ha. Among non-beneficiary respondents in Karbi Anglong district, total value of production from cultivated forest products recorded as low as Rs. 1,28,700/- with average value of production per household being Rs. 4290/- only with average area per household being 0.11 ha. In Dima Hasao district, average value of production per household remained much lower than Karbi Anglong district *i.e.* Rs. 2577/-. As a whole among the non-beneficiary respondents average value of production per household from cultivated forest products remained as Rs. 3433/-. It may be stated here that beneficiary respondents after experiencing with NERCORMP had gone for more of plantation crops with more areas under cultivation that led to significant increase of average return among the beneficiaries. In this connection, study made by Singh *et al.* (2009) could be referred where they emphasised considerable improvement in adoption of new technologies and farm practices by the farmers under NATP.

A significant section of respondent households were seen to practise value addition for some forest products and that way they earned a sizable portion of income for their livelihood management. Table 4.5.2(d) depicts the types of value added forest products with approximate value and the number of households practising that. Among the beneficiary respondents in Karbi Anglong district, more than 66% respondents worked for value addition with bamboo, followed by handicraft products (55.6%). A total of Rs. 3,34,000/- with an average annual value of Rs. 4638.9/- per household was collected through value added forest products in Karbi Anglong district against a much higher value of total value added forest products of Rs. 5,98,500/- for Dima Hasao district. The average annual value recorded as Rs. 8312.5/- per household in Dima Hasao district from value added forest products. In totality, a sum of Rs. 6475.7/- per household per year came from value added forest products. Again among the different value added products, bamboo contributed more either in terms of proportion of respondents they practise (79.2%) or in terms of percentage share of total return under value added products (53.8%) followed by handicraft products. So far non-beneficiary respondents are concerned, no one was found to be involved in practising the value added forest products.

4.5.3 Conservation and Management of Forest and Other Natural Resources

Forest resources are utilised in various ways for livelihood management in the study area. It is obvious that there may be over exploitation or under exploitation of these resources, as most of these resources are belonged to community as a whole. As a result conservation and management of these resources has got importance keeping in view the future generation.

The following Table 4.5.3 represents the ways and means for conservation and management of forests and other natural resources by the community in the study areas. In Karbi Anglong district, among the beneficiary respondents maximum number of respondents (76.4%) reported that conservation and management of forest and other natural resources in the district was done by a group formed by the village head followed by village head alone (16.7 %). On the other hand, 6.9% reported that

there was no such system for conservation and management of natural resources in the villages. Joint Forest Management Groups were also not visible as per the response of the respondents. Similarly, in Dima Hasao District also, maximum number of respondents (63.9%) reported that it was managed by a group formed by village head followed by 26.4% by village head alone. Whereas, 9.7% respondents viewed that there was no such system for conservation and management of forest resources. As a whole, 70.2% respondents among beneficiary respondents viewed that forest and other natural resources were managed by a group formed by village head, followed by 21.5% as village head. Joint Forest management Group was not visible at all, against 8.3% viewed that there was no such system for conservation and management of forest resources.

Whereas among the non-beneficiary respondents, 76.6% and 83.3% of the respondents respectively for Karbi Anglong and Dima Hasao districts reported that there was no system for conservation and management of natural resources in their villages. Among the non beneficiary respondents, 16.7% and 10.0% respectively for Karbi Anglong and Dima Hasao districts reported that the management of forest and other natural resources was done by village head against 6.7% as a group formed by village head for both the districts. As a whole, 80% reported no system for management and conservation of forest and other natural resources against 13.3% (by village head) and 6.7% (by a group formed by village head) among the non beneficiary respondents.

It can be concluded that although JFMG system was not visible as such in project areas, a group formed by the village head under direct supervision of NaRMGs was seen working constantly for conservation and management of forest.

Table 4.5.2(a) : Status of major forest products collected by the respondent households from community forests (Values in Rs.)

Name of the District	Name of the Block	Fuel wood	Timber	Wild edible food	Medicinal plants	Any other	Total value
Beneficiary respondents							
Karbi Anglong	Chinthong	135750	20200	129900	33000	152000	470850
	Amri	106000	15200	42500	17500	5000	186200
	Sub total	241750 (36.8)	35400 (5.4)	172400 (26.2)	50500 (7.7)	157000 (23.9)	657050 (100.0)
	Average	3357.6	491.7	2394.4	701.4	2180.6	9125.7
Dima Hasao	New Sangbar	129000	152000	198900	118500	242100	840500
	Jatinga Valley	144500	167500	208200	86000	136900	743100
	Sub total	273500 (17.3)	319500 (20.2)	407100 (25.7)	204500 (12.9)	379000 (23.9)	1583600 (100.0)
	Average	3798.6	4437.5	5654.2	2840.3	5263.9	21994.4
Grand Total		515300 (23.0)	354900 (15.8)	579500 (25.8)	255000 (11.4)	536000 (23.9)	2240700 (100.0)
Average		3578.47	2464.6	4024.31	1770.83	3722.2	15560.42
Non-beneficiary respondents							
Karbi Anglong	Chinthong	20000	5600	12700	2800	1200	42300
	Amri	19500	3200	17800	500	800	41800
	Sub total	39500 (46.9)	8800 (10.5)	30500 (36.3)	3300 (3.9)	2000 (2.4)	84100 (100.0)
	Average	1316.7	293.3	1016.7	110.0	66.7	2803.3
Dima Hasao	New Sangbar	17000	7200	9000	2000	1200	36400
	Jatinga Valley	20500	2400	9100	2000	0.00	34000
	Sub total	37500 (53.3)	9600 (13.6)	18100 (25.7)	4000 (5.7)	1200 (1.7)	70400 (100.0)
	Average	1250.0	320.0	603.3	133.3	40.0	2346.7
Grand Total		77000 (49.8)	18400 (11.9)	48600 (31.5)	7300 (4.7)	3200 (2.1)	154500 (100.0)
Average		1283.33	306.67	810.00	121.67	53.33	2575.00

(Figures in parentheses indicate per cent to total)

Table 4.5.2(b) : Status of NTFP collection by the respondent households from community forests (Values in Rs.)

Name of the District	Name of the Block	Broom	Cane	Honey	Bamboo	Stone	Thatch	Wild edible	Any other	Total value	Average
Beneficiary respondents											
Karbi Anglong	Chinthong	126700	0	16000	309200	109000	151500	59700	0	772100	21447.22
	Amri	37950	0	60600	101600	12000	28000	11500	0	251650	6990.278
	Sub total	164650 (16.1)	0 (0.0)	76600 (7.5)	410800 (40.1)	121000 (11.8)	179500 (17.6)	71200 (6.9)	0 (0.0)	1023750 (100.0)	14218.75
Dima Hasao	New Sangbar	13700	600	48800	104100	60000	11000	95000	4000	337200	9366.667
	Jatinga Valley	116070	0	44800	123100	97500	59900	102000	4000	547370	15204.72
	Sub total	129770 (14.7)	600 (0.07)	93600 (10.6)	227200 (25.7)	157500 (17.8)	70900 (8.0)	197000 (22.3)	8000 (0.90)	884570 (100.0)	12285.69
Grand Total		294420 (15.4)	600 (0.03)	170200 (8.9)	638000 (33.4)	278500 (14.6)	250400 (13.1)	268200 (14.1)	8000 (0.42)	1908320 (100.0)	13252.22
Non-beneficiary respondents											
Karbi Anglong	Chinthong	2050		3600	9200		1500	2700	500	19550	1303.33
	Amri	1300		1600	4400		2000	1500	400	11200	746.67
	Sub total	3350 (10.9)	0 (0.0)	5200 (16.9)	13600 (44.2)	0 (0.0)	3500 (11.4)	4200 (13.7)	900 (2.9)	30750 (100.0)	1025.00
Dima Hasao	New Sangbar	1450		2400	11400		500	1800		17550	1170.00
	Jatinga Valley	1200		3000	11000		1000	1000	500	17700	1180.00
	Sub total	2650 (7.5)	0 (0.0)	5400 (15.3)	22400 (63.5)	0 (0.0)	1500 (4.3)	2800 (4.9)	500 (1.4)	35250 (100.0)	1175.00
Grand Total		6000 (9.1)	0 (0.0)	10600 (16.1)	36000 (54.6)	0 (0.0)	5000 (7.6)	7000 (10.6)	1400 (2.1)	66000 (100.0)	1100.00

(Figures in parentheses indicate per cent to total)

Table 4.5.2(c) : Status of cultivated forest product by the respondents

Name of the district	Name of the Block	Area under cultivated forest products (ha)	Value of production (in Rs.)	Average area (ha)/household	Average value of production/household (Rs.)
Beneficiary respondents					
Karbi Anglong	Chinthong	14.6	994500	0.41	27625
	Amri	12.76	1002000	0.35	27833
	Sub total	27.36	1996500	0.38	27729
Dima Hasao	New Sangbar	34.2	2858300	0.95	79397
	Jatinga Valley	27.5	2683300	0.76	74536
	Sub total	61.7	5541600	0.86	76967
Grand total		89.06	7538100	0.62	52348
Non-beneficiary respondents					
Karbi Anglong	Chinthong	1.53	78700	0.10	5247
	Amri	1.63	50000	0.11	3333
	Sub total	3.17	128700	0.11	4290
Dima Hasao	New Sangbar	1.37	41500	0.09	2767
	Jatinga Valley	1.17	35800	0.08	2387
	Sub total	2.53	77300	0.08	2577
Grand total		5.70	206000	0.10	3433

Table 4.5.2(d) : Status of value added forest product by the respondents

Name of the District	Name of the Block	Number of respondents working with bamboo products	Value in (Rs.)	Number of respondents working with cane products	Value in (Rs.)	Number of respondents working with preparation of basket	Value in(Rs.)	Number of respondents working with handicraft products	Value in (Rs.)	Total value (Rs.)	Average value (Rs.)/ household
Beneficiary respondent											
Karbi Anglong	Chinthong	23	77000	0	0	1	2000	15	59000	138000	3833.33
	Amri	25	100000	0	0	0	0	25	96000	196000	5444.44
	Sub total	48 (66.7)	177000 (53.0)	0 (0.0)	0 (0.0)	1 (1.4)	2000 (0.6)	40 (55.6)	155000 (46.4)	334000 (100.0)	4638.9
Dima Hasao	New Sangbar	34	172000	3	5000	5	15000	21	109000	301000	8361.11
	Jatinga Valley	32	153000	0	0	4	13000	28	131500	297500	8263.89
	Sub total	66 (91.7)	325000 (54.3)	3 (4.2)	5000 (0.84)	9 (12.5)	28000 (4.7)	49 (68.1)	240500 (40.2)	598500 (100.0)	8312.5
Total		114 (79.2)	502000 (53.8)	3 (2.1)	5000 (0.54)	9 (6.3)	28000 (3.0)	89 (61.8)	395500 (42.4)	932500 (100.0)	6475.7
Non-beneficiary respondent		0	0	0	0	0	0	0	0	0	0

(Figures in parentheses indicate per cent to total)

Table 4.5.3 : Conservation and management of forest and other natural resources by the respondents

Name of the District	Name of the Block	By village head	By a group formed by village head	By JFMG	No system
Beneficiary respondents					
Karbi Anglong	Chinthong	5	29	0	2
	Amri	7	26	0	3
	Sub total	12 (16.7)	55 (76.4)	0 (0.0)	5 (6.9)
Dima Hasao	New Sangbar	11	21	0	4
	Jatinga Valley	8	25	0	3
	Sub total	19 (26.4)	46 (63.9)	0 (0.0)	7 (9.7)
Grand total		31 (21.5)	101 (70.2)	0 (0.0)	12 (8.3)
Non-beneficiary respondents					
Karbi Anglong	Chinthong	2	1	0	12
	Amri	3	1	0	11
	Sub total	5 (16.7)	2 (6.7)	0 (0.0)	23 (76.6)
Dima Hasao	New Sangbar	1	2	0	12
	Jatinga Valley	2	0	0	13
	Sub total	3 (10.0)	2 (6.7)	0 (0.0)	25 (83.3)
Grand Total		8 (13.3)	4 (6.7)	0 (0.0)	48 (80.0)

(Figures in parentheses indicate per cent to total)

4.6 Impact of the project on overall livelihood status

Impact of NERCORMP on livelihood improvement was studied considering both beneficiary and non-beneficiary respondents. Various issues were considered to see the impact of NERCORMP comparing beneficiary respondents with non beneficiary respondents. In some cases, the status existed before project starts and the status after the project were compared to see the benefit of the project.

4.6.1 Types of household assets with their values available among the respondent households

Availability of asset indicates an idea of socio-economic status of the households. The following Table 4.6.1(a) shows in details the various types of assets available with the respondents, number of availability of particular assets per households and percentage of households under different category of assets. Out of different types of assets, house is such a type of assets that every household possessed in both the districts, the average number of houses per household being the 2.2 for both the districts. After house, the next most important household asset among the beneficiary respondents was mobile phone (93.1% and 94.4% respondent respectively for Karbi Anglong and Dima Hasao district in possession of mobile phone) with average unit/household being 1.4 and 1.7 respectively. The next most important household asset visible in both the districts was TV/VCD (59.7% and 43.1% households) with average number per household was 0.6 and 0.5 respectively for Karbi Anglong and Dima Hasao district. In case of Karbi Anglong district, bicycle played an important role (29.2% of respondent in possession of bicycle) against 2.8% only for Dima Hasao district. Some other prominent household assets available with beneficiary respondent were pig (59.7% and 37.5% respectively for Karbi Anglong and Dima Hasao district), Bike/Schooter (22.2% and 20.8%), any other (40.3% and 26.4%), sewing machine (11.1 and 36.1%). As a whole in the State, after house most available household asset among the beneficiary respondents was mobile phone (93.8% of respondents with 1.6 number/household), followed by TV/VCD (51.4% respondents with 0.5 unit/household), pig (48.6% with 1.9 unit/household, any other (33.3% with 0.4 unit/household, sprayer (33.3% with 0.3 unit/household, cow/buffalo (25.0% with 0.9/household) etc. (Fig. 4.9 and Fig. 4.10)

Among the non-beneficiary respondents in Karbi Anglong district, after house the most commonly available asset was mobile phone (90.0% respondents in possession of mobile with average number 1.1/household, followed by pig (20.0% respondent with 0.6 number/household), cow/buffalo (16.7% with average 0.4 number/household), bicycle (10.0% with 0.1 number/household) etc. Similar trend was visible in case of Dima Hasao district also. As a whole among the non-beneficiary respondents, the most available asset was house (100% with average availability of 1.9 numbers per household, followed by mobile phone (90.0% with average number of 1 per household, pig (21.7% with average number of 0.7/household), cows/buffalo (15.0% with average number of 0.4 number per household etc. (Fig. 4.9 and 4.10)

Table 4.6.1(b) shows the details of assets with their approximate values pertaining to beneficiary and non beneficiary respondents. In Karbi Anglong district, the total approximate value from all types of asset came as Rs. 109.88 lakhs with average approximate asset value per household being Rs. 1.53 lakhs. In case of Dima Hasao district, total asset value recorded as Rs. 182.93 lakhs with average approximate asset value per household being Rs. 2.54 lakhs. On an average as a whole approximate asset value per household among the beneficiary respondent recorded as Rs. 2.03 lakhs. The asset position in case of non beneficiary respondents was not at par with beneficiary respondents, and average asset value per household recorded as Rs. 0.44 lakhs and Rs. 0.45 lakhs respectively for Karbi Anglong and Dima Hasao districts. Jayachandra and Gurappa (2006) also reported the increase in value of the asset by 15% in case of small and marginal farmers after working with dairy cooperatives. As among the beneficiary respondents there were some respondents from either Govt. or private sector that led to more improvement of asset position.

For almost all the assets, respondents' possession percentage was higher in case of beneficiary respondent in comparison to non-beneficiary respondents and in some cases percentage was much higher than non-beneficiary respondents. This was in conformity with results made by Sahu *et al.* (2012) in Surguja district of Chhattisgarh State. Similarly, average number of asset per household for all types of asset was found much higher in case of beneficiary respondents than non- beneficiary respondents.

Table 4.6.1(a): Types of household assets available with respondent households

District	Category of respondents	House	Mobile phone	Radio	Tape	TV/VCD	Refrigerator	Bicycle	Sewing machine	Bike/scooter	Water pump	Four wheel	Power tiller	Tractor	Sprayer	Cow/bullocks	Buffalo	Pig	Any other
Beneficiary respondents																			
Karbi Anglong	Units /household	2.2	1.4	0.3	0.1	0.6	0.0	0.3	0.1	0.2	0.0	0.1	0.0	0.0	0.6	0.5	0.0	2.4	0.5
	% of respondents possessed	100.0	93.1	25.0	5.6	59.7	4.2	29.2	11.1	22.2	4.2	5.6	1.4	0.0	58.3	18.1	0.0	59.7	40.3
Dima Hasao	Units/household	2.2	1.7	0.0	0.0	0.5	0.0	0.0	0.4	0.2	0.0	0.1	0.0	0.0	0.1	1.3	1.0	1.3	0.3
	% of respondents possessed	100.0	94.4	4.2	1.4	43.1	2.8	2.8	36.1	20.8	0.0	8.3	0.0	0.0	8.3	31.9	6.9	37.5	26.4
Grand Total	Units /household	2.2	1.6	0.2	0.0	0.5	0.0	0.2	0.2	0.2	0.0	0.1	0.0	0.0	0.3	0.9	0.5	1.9	0.4
	% of respondents possessed	100.0	93.8	14.6	3.5	51.4	3.5	15.9	23.6	21.5	2.1	6.9	0.7	0.0	33.3	25.0	3.5	48.6	33.3
Non-beneficiary respondents																			
Karbi Anglong	Units /household	1.9	1.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.6	0.0
	% of respondents possessed	100.0	90.0	10.0	6.7	6.7	3.3	10.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	16.7	0.0	20.0	0.0
Dima Hasao	Units/household	1.9	1.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.8	0.0
	% of respondents possessed	100.0	90.0	6.7	3.3	13.3	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	13.3	0.0	23.3	0.0
Grand Total	Units /household	1.9	1.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7	0.0
	% of respondents possessed	100.0	90.0	8.3	5.0	10.0	1.7	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	21.7	0.0

Table 4.6.1(b) : Types of assets and their values among the respondent (Rs. in lakhs)

Name of District	Houses	Mobile phone	Radio	Tape	TV/VCD	Refrigerator	Bicycle	Sewing machine	Bike/Scooter	Water pump	Four wheeler	Power tiller	Sprayer	Cow/Bullocks	Buffalo	Pig	Any other	Total value	Average value
Beneficiary respondents																			
Karbi Anglong	70.67	3.37	0.11	0.12	4.62	0.54	0.54	0.36	5.74	0.25	10.38	1.74	0.07	1.88	0.00	3.07	6.42	109.88	1.53
Dima Hasao	81.17	4.55	0.03	0.05	3.66	0.30	0.04	1.54	7.57	0.00	41.30	0.00	0.35	12.59	20.00	3.46	6.32	182.93	2.54
Total	151.84	7.92	0.14	0.17	8.28	0.84	0.58	1.90	13.31	0.25	51.68	1.74	0.41	14.47	20.00	6.53	12.74	292.81	2.03
Non-beneficiary respondents																			
Karbi Anglong	9.48	0.54	0.02	0.04	0.20	0.08	0.08	0.00	0.35	0.00	0.00	0.00	0.00	2.23	0.00	0.27	0.00	13.28	0.44
Dima Hasao	10.20	0.47	0.02	0.02	0.29	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	1.34	0.00	0.31	0.00	13.45	0.45
Total	19.68	1.01	0.04	0.06	0.49	0.08	0.08	0.00	1.15	0.00	0.00	0.00	0.00	3.57	0.00	0.58	0.00	26.73	0.45

4.6.2 Status of income distribution among the respondents

Respondents are involved in variety of income generating activities for their livelihood management. Even a particular respondent's household seemed to involve for a variety of income generating activities. In Karbi Anglong district among the beneficiary respondent, all the household were seen to collect income from agriculture, followed by major forest products (97.22%), NTFP (90.28%), business (72.22%), piggery (63.89%), wage labour (61.1%), any other (41.67%) etc. Similarly in Dima Hasao district also all the household (100%) involved for generation of income from agriculture activities as well as from MFP, followed by NTFP (94.4%), piggery (69.44%), any other (50%), business (38.89%), wage labour (23.6%) (Table 4.6.2(a)).

As whole in the state, among the beneficiary respondents all were seemed to involve in agricultural activities for income generation (100%), followed by MFP (98.61%), NTFP (92.36%), Piggery (66.67%), business (55.56%), any other (45.83%), wage labour (42.36%) etc.

Among the non-beneficiary respondents also, almost similar type of picture was reported i.e. 100% respondent involved in agricultural activities for income generation, followed by 76.67% in NTFP, 70% in MFP, 48.33% in wage labour, 38.33% in business, 21.67% in piggery etc.

Table 4.6.2(b) shows the details of income from various sources by the respondent based on 12 months period. In Karbi Anglong district, among the beneficiary respondents, total income generated per year recorded as Rs. 95.30 lakhs with average household income being Rs. 1.32 lakhs. Out of the various sources maximum percentage contributed by any other source (i.e. 28.3%) followed by agriculture (24.89%), business (13.55%), NTFP (10.26%), wage labour (9.8%), MFP (7.73%), Piggery (3.36%), artisan (1.73%) etc. Although above 90% respondents involved in MFP and NTFP collection, income came from these sources was comparatively less. Similarly in Dima Hasao district also, maximum income came from any other source followed by agriculture (28.16%), MFP (11.77%), NTFP (7.92%) etc.

Total income in Dima Hasao district based on 12 months period recorded as 134.5 lakhs with average income per household being 1.87 lakhs. In the state as a whole among the beneficiary respondent, average income per household recorded as Rs. 1.60 lakhs. Any other category played the most significant role in increasing the income among the beneficiary respondent as it included some salaried persons either in government or private.

Again among the non-beneficiary respondents in Karbi Anglong district, total income came at Rs. 11.44 lakhs, with an average income per household being Rs. 0.38 lakhs only. Out of the total income more than 59% came from agricultural activities, followed by business (13.2%), wage labour (12.32%), MFP (8.83%), NTFP (2.81%), piggery (2.01%), etc. Similarly in Dima Hasao district, total income recorded from all the selected respondents as Rs. 9.25 lakhs, average household income being Rs. 0.31 lakhs only. More than 55% of the total income came from agricultural activities, followed by business (18.61%, wage labour (10.81%), MFP (6.65%), piggery (3.13%), NTFP (2.62%) etc. As a whole in the state, more than 57% came from agricultural activities, 15.4% from business, 11.65% from wage labourer, 7.85% from MFP etc.

It can be concluded that average income per household among the non-beneficiaries recorded much lower than beneficiary respondent. Result was in conformity with the results of Hari and Kumawat (2006) in Rajasthan for Swarnajayanti Gram Swarojgar Yojana. Moreover for them income from agricultural activities (Jhuming) was proportionally much higher than any other sources. Again among the beneficiary respondent, as there were some members from service holder either in government or private sector, any other category outnumbered all other sources. On the other hand it was visible that income in the case of beneficiary respondent was distributed to more number of sources than non-beneficiary respondents.

Table 4.6.2(c) shows in brief the comparison of income by different heads among the beneficiary and non-beneficiary respondents at district level. In Karbi Anglong district, average income per year per household remained higher for all

different sources in case of beneficiary respondents than non beneficiary respondents. Not only that income in case beneficiary respondents remained significantly different (significant t-value at 1% level) than non beneficiary respondents for all the sources. Similar the case in Dima Hasao district also excepting non significant income difference between beneficiary and non-beneficiary respondents in case of wage labourer. Devi (1994) in Kerala reported that majority of IRDP beneficiaries experienced an increase in income by 10.15% and a good section of beneficiaries experienced an increase in income by 50 to 100%. Sharda *et al.* (2005) were also in the opinion of increase in average annual income per family by 49% through income generating activities in watershed. Similarly, Mavi *et al*. (2006) reported a significant increase of total income, dairy income, herd size after participating in a self employment programme on dairy farming. Similar opinion was also made by Joshi and Bantilan (1998), Reddy (2001), Puhazhendi and Badatya (2002), Sharda *et al.* (2005), Rais *et al.* (2007), Singh *et al.* (2009), Ngullie *et al*. (2014) etc.

Table 4.6.2(a) : Sources of income distribution among the respondents

Name of block/dist.	Sources of income										
	Agriculture	NTFP	Major forest product	Wage labourer	Piggery	Sericulture	Sale of egg	Business	Artisan	Sale of meat	Any other
Beneficiary respondents											
Chinthong	36	33	36	25	25	1	2	28	5	2	11
Amri	36	32	34	19	21	3	0	24	2	1	19
Karbi Anglong	72	65	70	44	46	4	2	52	7	3	30
Percentage	100.00	90.28	97.22	61.11	63.89	5.56	2.78	72.22	9.72	4.17	41.67
N. Sangbar	36	36	36	7	28	5	0	15	0	2	17
Jatinga Valley	36	32	36	10	22	4	2	13	0	1	19
Dima Hasao	72	68	72	17	50	9	2	28	0	3	36
Percentage	100.00	94.44	100.00	23.61	69.44	12.50	2.78	38.89	0.00	4.17	50.00
State total	144	133	142	61	96	13	4	80	7	6	66
Percentage	100.00	92.36	98.61	42.36	66.67	9.03	2.78	55.56	4.86	4.17	45.83
Non-beneficiary respondents											
Chinthong	15	13	11	8	5	3	0	6	0	1	0
Amri	15	11	12	6	1	0	0	5	0	0	0
Karbi Anglong	30	24	23	14	6	3	0	11	0	1	0
Percentage	100.00	80.00	76.67	46.67	20.00	10.00	0.00	36.67	0.00	3.33	0.00
New Sangbar	15	11	9	7	5	4	0	6	0	2	0
Jatinga Valley	15	11	10	8	2	0	0	6	0	1	0
Dima Hasao	30	22	19	15	7	4	0	12	0	3	0
Percentage	100.00	73.33	63.33	50.00	23.33	13.33	0.00	40.00	0.00	10.00	0.00
State total	60	46	42	29	13	7	0	23	0	4	0
Percentage	100.00	76.67	70.00	48.33	21.67	11.67	0.00	38.33	0.00	6.67	0.00

Table 4.6.2(b) : Distribution of income from different sources among the respondents (Rs. in lakhs)

Name of the block/dist.	Agri	NTFP	Major forest products	Wage labour	Piggery	Sericulture	Sale of egg	Business	Artisan	Sale of meet	Any other	Total	Average
Beneficiary respondent													
Karbi Anglong dist total	23.72	9.78	7.37	9.34	3.2	0.16	0.04	12.91	1.65	0.14	27.0	95.3	1.32
Av. Income/household	0.33	0.14	0.10	0.13	0.04	0.00	0.00	0.18	0.02	0.00	0.38	1.32	
Percentage	24.89	10.26	7.73	9.8	3.36	0.17	0.04	13.55	1.73	0.15	28.33	100	
Dima Hasao dist total	37.88	8.47	15.84	3.05	7.54	1.19	0.15	10.65	0	0.13	49.61	134.5	1.87
Av. Income/household	0.53	0.12	0.22	0.04	0.10	0.02	0.00	0.15	0.00	0.00	0.69	1.87	
Percentage	28.16	6.29	11.77	2.27	5.6	0.88	0.11	7.92	0	0.1	36.89	100	
State total	61.6	18.24	23.21	12.39	10.74	1.35	0.19	23.56	1.65	0.27	76.61	229.79	1.6
Av. Income/household	0.43	0.13	0.16	0.09	0.07	0.01	0.00	0.16	0.01	0.00	0.53	1.60	
Percentage	26.8	7.94	10.1	5.39	4.67	0.59	0.08	10.25	0.72	0.12	33.34	100	
Non-beneficiary													
Karbi Anglong dist total	6.76	0.32	1.01	1.41	0.23	0.15	0	1.51	0	0.05	0	11.44	0.38
Av. Income/household	0.23	0.01	0.03	0.05	0.01	0.01	0.00	0.05	0.00	0.00	0.00	0.38	
Percentage	59.08	2.81	8.83	12.32	2.01	1.31	0	13.2	0	0.44	0	100	
Dima Hasao dist total	5.18	0.24	0.62	1	0.29	0.1	0	1.68	0	0.15	0	9.25	0.31
Av. Income/household	0.17	0.01	0.02	0.03	0.01	0.00	0.00	0.06	0.00	0.01	0.00	0.31	
Percentage	55.98	2.62	6.65	10.81	3.13	1.03	0	18.16		1.62	0	100	
State total	11.94	0.56	1.63	2.41	0.52	0.25	0	3.19	0	0.2	0	20.69	0.34
Av. Income/household	0.20	0.01	0.03	0.04	0.01	0.00	0.00	0.05	0.00	0.00	0.00	0.34	
Percentage	57.7	2.73	7.85	11.65	2.51	1.18	0	15.41	0	0.97	0	100	

Table 4.6.2(c) : A comparison of income by different heads among the beneficiary and non beneficiary respondents

(Rs. per year per household)

Particulars	Karbi Anglong		t value	Dima Hasao		t value
	Beneficiary (N=72)	Non beneficiary (N=30)		Beneficiary (N=72)	Non beneficiary (N=30)	
Agriculture	32729	22533	3.89**	52611	17266	8.82**
NTFP	7616	1073	6.46**	11758	808	10.4**
Major forest products	7888	3366	4.25**	21994	2050	10.59**
Wage labourer	12833	4700	3.16**	4236	3333	0.63 NS
Piggery	4458	766	6.65**	10465	967	6.54**
Business	17791	5033	4.29**	14791	5600	2.35*
Total of all	122475	38140	8.53**	186801	30841	8.97**

** - significant at 1% level, * - significant at 5% level, NS – Not significant

4.6.3 Status of expenditure among respondents

Expenditure is also an important indicator to justify one's socio economic status. Hence trial had been made here, to know the status of expenditure pattern in respect to both beneficiary and non beneficiary respondents. Table 4.6.3(a) indicates different heads of expenditure with the percent of respondent spending on that. In Karbi Anglong district, among beneficiary respondent, 100% respondent spend on food items, fuel and electricity, cloths etc. followed by 98.61% on health and religious items, 90.28% respondent spent on child education, 58.3% on recreational, 44.4% on repairing and pan and tobacco, 37.5% on milk and 9.72% on any other. In Dima Hasao district, 100 % respondent spent on food items, health, cloths, religious matter, followed by 98.61% on fuel and electricity, 90.28% each on child education and consumable items, 47.22% on any other, 38.89% on milk, 37.5% on pan and tobacco, 30.56% on transportation, 11.11% on recreation (much lower than Karbi Anglong district), 8.33% on repairing (much lower than Karbi Anglong district). In totality almost similar type of picture was visible. The most significant observation was more than 88% respondent household could spend some money on child education, more than 99% could spend on health, fuel and electricity. Similarly more than 99% respondents could spend money on religious activities as well as more than 41% spend on pan and tobacco also got the similar importance on other side. Comparatively, percentage of respondents who could make expenditure on milk, recreation, repairing etc. was significantly low against a large proportion on religious activities (> 99%) in the state. A quite significant portion of respondents (41%) made expenditure on pan and tobacco also.

Among the non-beneficiaries respondent, in both Karbi Anglong and Dima Hasao district percentage of the respondent who could spent money on milk, child education, health, transportation, religious spending etc. remained low as compared beneficiary respondents. Otherwise, in both the district, figures remained similar to that of the beneficiary respondents in most of the items. Among the non beneficiary respondent out the total respondent 33.3% spent on milk (against 38.2% for beneficiary), 43.3% spent on child education (against 88.9% for beneficiary), 55.5% on health (against 99.3% for beneficiary), 51.7% on transportation (60.4% for

beneficiary), 85% on consumable (against 93.8% for beneficiary), 76.7% on religious matter (against 99.3% for beneficiary), 0% in recreational activities (against 34.7% for beneficiary), 88.3% on pan and tobacco (against 41.0% for beneficiary).

Table 4.6.3(b) shows the details of expenditure made by different respondents' household on different heads. In Karbi Anglong district, among the beneficiary respondents, total amount spent on yearly basis came at Rs. 56.27 lakhs with average spending of 0.78 lakhs per household. Out of total expenditure, maximum percentage was spent on food items (37.2%), followed by child education (19.7%), cloths (7.8%), health (7.7%), religion (6.3%), transportation and consumable (4.2% for each), fuel and electricity (3.1%),recreation, pan and tobacco (2.4% for each), milk (1.4%), any other (0.6%). In case of Dima Hasao district, total expenditure recorded at Rs. 80.72 lakhs (higher than Karbi Anglong district) with average expenditure per household being Rs. 1.12 lakhs. Out of the total expenditure maximum was spent on food items (33.7%) followed by child education (27.9%), cloth (9.0%), religious (7.9%), health (6.9%), pan and tobacco (4.9 %) etc. In the state, just after food items (35.1%) maximum amount spent on child education (24.5%), followed by cloths (8.6%), health (7.3%), religion (7.2%) etc. As a whole average expenditure per household recorded at Rs.0.95 lakhs in one year.

So far non-beneficiary are concerned, in Karbi Anglong district average expenditure per year per household stood at Rs. 0.36 lakhs only, much lower as compared to beneficiary respondent. Out of total expenditure, 53.6% spend on only food items, followed by 11.7 % on child education, 8.94% on health etc. In Dima Hasao district, average expenditure per household per year stood at Rs. 0.29 lakhs. Out of total expenditure in the district, maximum percentage (53.1%) was spent on food items only, followed by cloths (9.88%), health (9.53%), child education (9.29%) etc. So far State total is concerned, average expenditure per household per year recorded at Rs. 0.32 lakhs. Maximum amount spent on food items (53.4%), followed by 10.6% on child education, 9.2% on health, 8.84% on cloths etc. Although the proportion of respondents who consume pan and tobacco was more among the non-beneficiary respondents in compared to beneficiary respondents, percentage amount

spent on that by non-beneficiary was less (3.62% of total amount spent against 3.8% in case of beneficiary).

Table 4.6.3(c) shows head wise summary of comparison of average expenditure per year per household among beneficiary and non-beneficiary respondents at district level. It remained higher for all the heads in case of beneficiary respondents than non-beneficiary respondents. Further t – statistics indicated the significant difference (1% level) of average expenditure between beneficiary and non-beneficiary respondents for all the heads excepting expenditure made on milk (non-significant difference) in Karbi Anglong district. Reddy *et al.* (2016) reported more consumption expenditure in case of MGNREGA beneficiaries for food items, cloths, education, health, agril equipments etc. Similarly, Arora (2013) also reported the increase level of income from MGNREGS that helped the beneficiaries to increase the expenditure on education of their children and medical expenses. In case of Dima Hasao, average expenditure made per year per household by beneficiary respondents for all the different heads remained significantly different from non-beneficiary respondents (1% level). Moreover, between the districts, Dima Hasao district comparatively recorded more expenditure in almost all the heads among the beneficiaries excepting fuel and electricity and transportation.

Table 4.6.3(a) : Expenditure pattern of the respondents

Name of the block/dist.	Number of respondent spending on												
	Food item	Milk	Child education	Fuel & electricity	Health	Cloths	Transportation	Consumable	Repairing	Religious	Recreation	Pan, tobacco	Any other
Beneficiary respondents													
Chinthong	36	18	30	36	36	36	33	36	17	35	26	17	3
Amri	36	11	33	36	35	36	32	34	15	36	16	15	7
Karbi Anglong dist total	72	29	63	72	71	72	65	70	32	71	42	32	10
Percentage	100.00	37.50	87.50	100.00	98.61	100.00	90.28	97.22	44.44	98.61	58.33	44.4	9.72
N. Sangbar	36	13	33	36	36	36	15	31	2	36	2	13	14
Jatinga Valley	36	15	32	35	36	36	7	34	4	36	6	14	20
Dima Hasao dist. total	72	28	65	71	72	72	22	65	6	72	8	27	34
Percentage	100.00	38.89	90.28	98.61	100.00	100.00	30.56	90.28	8.33	100.00	11.11	37.5	47.22
State total	144	55	128	143	143	144	87	135	38	143	50	59	44
Percentage	100.00	38.19	88.89	99.31	99.31	100.00	60.42	93.75	26.39	99.31	34.72	41.0	30.6
Non-beneficiary respondents													
Chinthong	15	6	7	15	10	15	12	14	0	11	0	15	0
Amri	15	5	8	15	7	15	9	13	0	10	0	12	0
Karbi Anglong dist total	30	11	15	30	17	30	21	27	0	21	0	27	0
Percentage	100.00	36.7	50.0	100.00	56.7	100.00	70.00	90.0	0.00	70.00	0.00	90.0	0.00
N. Sangbar	15	5	6	14	9	13	4	11	0	12	0	13	0
Jatinga Valley	15	4	5	15	7	14	6	13	0	13	0	13	0
Dima Hasao dist total	30	9	11	29	16	27	10	24	0	25	0	26	0
	100.00	30.0	36.7	96.67	53.3	90.00	33.33	80.00	0.00	83.33	0.00	86.67	0.00
State total	60	20	26	59	33	57	31	51	0	46	0	53	0
Percentage	100.00	33.3	43.3	98.33	55.5	95.00	51.67	85.0	0.00	76.67	0.00	88.3	0.00

Table 4.6.3(b) : Distribution of expenditure by different categories (Rs. in Lakhs)

Name of the block/district	Food item	Milk	Child education	Fuel & electricity	Health	Cloths	Transportation	Consumable	Repairing	Religious	Recreation	Pan, tobacco	Any other	Total	Average
Beneficiary respondents															
Karbi Anglong dist. Total	20.93	0.77	11.09	1.73	4.38	4.49	2.35	2.35	1.69	3.52	1.35	1.35	0.31	56.27	0.78
Av. Exp/household	0.29	0.01	0.15	0.02	0.06	0.06	0.03	0.03	0.02	0.05	0.02	0.02	0.00	0.78	
Percentage	37.2	1.4	19.7	3.1	7.7	7.8	4.2	4.2	3	6.3	2.4	2.4	0.6	100	
Dima Hasao Dist total	27.15	1.18	22.57	1.39	5.58	7.29	0.61	1.84	0.23	6.39	0.4	4	2.11	80.72	1.12
Av. Exp/household	0.38	0.02	0.31	0.02	0.08	0.10	0.01	0.03	0.00	0.09	0.01	0.06	0.03	1.12	
Percentage	33.7	1.5	27.9	1.7	6.9	9.0	0.8	2.3	0.3	7.9	0.5	4.9	2.6	100	
State total	48.08	1.95	33.66	3.12	9.95	11.77	2.95	4.19	1.91	9.91	1.75	5.35	2.42	136.99	0.95
Av. Exp/household	0.33	0.01	0.23	0.02	0.07	0.08	0.02	0.03	0.01	0.07	0.01	0.04	0.02	0.95	
Percentage	35.1	1.4	24.5	2.3	7.3	8.6	2.2	3.1	1.4	7.2	1.3	3.8	1.8	100	
Non-beneficiary respondents															
Karbi Anglong Dist total	5.73	0.37	1.25	0.34	0.96	0.86	0.28	0.32	0	0.29	0	0.3	0	10.68	0.36
Av. Exp/household	0.19	0.01	0.04	0.01	0.03	0.03	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.36	
Percentage	53.6	3.45	11.7	3.15	8.94	8	2.63	3	0	2.72	0	2.8	0	100	
Dima Hasao Dist total	4.54	0.2	0.8	0.23	0.82	0.85	0.12	0.21	0	0.4	0	0.4	0	8.56	0.29
Av. Exp/household	0.15	0.01	0.03	0.01	0.03	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.29	
Percentage	53.07	2.34	9.29	2.69	9.53	9.88	1.41	2.42	0	4.72	0	4.65	0	100	
State total	10.27	0.57	2.05	0.57	1.77	1.7	0.4	0.53	0	0.7	0	0.7	0	19.24	0.32
Av. Exp/household	0.17	0.01	0.03	0.01	0.03	0.03	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.32	0.01
Percentage	53.36	2.96	10.63	2.94	9.2	8.84	2.09	2.74	0	3.61	0	3.62	0	100	

Table 4.6.3(c) : A comparison of expenditure by different heads among the beneficiary and non – beneficiary respondents

(Rs. per year per household)

Particulars	Karbi Anglong district		t value	Dima Hasao district		t -value
	Beneficiary (N=72)	Non beneficiary (N=30)		Beneficiary (N=72)	Non beneficiary (N=30)	
Food	30854	19083	7.64**	37708	15133	11.54**
Milk	1430	1230	0.59 NS	1635	667	2.76**
Education	15909	4100	6.12**	31347	2483	8.00**
Fuel, electricity	2633	1120	9.09**	1934	733	7.53**
Health	7604	3183	7.54**	8792	2717	8.94**
Cloths	7548	2850	8.06**	11660	2817	9.86**
Transportation	3444	937	7.20**	843	403	2.04*
Religion	5479	970	10.0**	9292	1347	12.66**
Pan, tobacco etc.	1942	997	4.55**	5653	1327	7.64**

** - significant at 1% level, * - significant at 5% level, NS – Not significant

4.6.4 Comparison between income and expenditure among the respondents

In order to know the income and expenditure pattern more specifically, respondents were classified as marginal, small, semi medium, medium, and large based on the land holding status. Table 4.6.4(a) shows a comparison between income and expenditure among beneficiary and non-beneficiary respondents based on category of respondents. In Karbi Anglong district among the beneficiary respondents, 69.4% were marginal category (< 1 ha) against 30.6% as small farmer category. There was no farmer in the category of semi medium, medium and large category. Average yearly income in the district recorded as Rs. 1,42,550/- by the marginal groups and Rs. 1,09,184/- by the small group of beneficiaries. It also indicated that marginal group of beneficiaries contributed the maximum portion of net income (84.0%) against 16.0% only by the small group of beneficiaries. Return per rupee of expenditure realised was 1.85 in case of marginal groups against 1.35 for small group of beneficiaries. As a whole in the district, average yearly income recorded as Rs. 1,32,355/- with return per rupee of expenditure at 1.69. So far expenditure is concerned, beneficiaries under small land holding groups contributed 31.6% of total gross expenditure against their contribution as gross income of 25.2%. In Dima Hasao district, average yearly income recorded the lowest (Rs. 99,220/-) by the marginal groups and it increased by the increase of size of land holding and the highest average yearly income recorded as Rs. 2,60,250/- by the medium group of beneficiaries. As number of respondent was more in small land holding groups, their contribution to gross income/net income as well as gross expenditure was also more. Chauhan and Kundu (2005) in Intensive Cattle Development Projects of Haryana State reported that the average net income of the beneficiary households was 3.77 times higher than the non-beneficiary households. Return over expenditure recorded above 1.0 for all the categories of respondents and it increased by the increase of land holding size. Average yearly income was comparatively higher (Rs. 1,86,802/-) in Dima Hasao district than Karbi Anglong (Rs. 1,32,355/-) district but return over expenditure was higher in Karbi Anglong district (1.69) against 1.67 for Dima Hasao district. Jayachandra and Naidu (2006) in a study on dairy cooperatives also reported

an increase of income; however rate of increase in case of marginal farmers was more in comparison to small farmers.

In case of non-beneficiary respondents, average yearly income recorded a bit low Rs. 38,140/- and Rs. 33,167/- respectively for Karbi Anglong and Dima Haso district. However, return over expenditure indicated more than 1.0 for both the districts.

Table 4.6.4(b) shows a summary of comparison in regards to income, expenditure and saving among the beneficiary respondents at district level as well as at the level of NERCORMP I and NERCORMP II. It indicated that for all the above 3 issues, Dima Hasao district recorded better than Karbi Anglong. Again independently in both the districts, NERCORMP II performed better than NERCORMP I in all the 3 issues. It further indicated that among the districts (Karbi Anglong and Dima Hasao) income, expenditure and saving differed significantly that showed the acceptance of alternative hypothesis. Again in Karbi Anglong district, income and expenditure differed significantly by NERCORMP I and NERCORMP II showing non-significant differences for saving. On the other hand, in Dima Hasao district income and saving differed significantly by NERCORMP I and NERCORMP II showing non-significant differences for expenditure.

4.6.5 Status of changes of cropping pattern after the NERCORMP

After popularisation of NERCORMP in the districts and after exposure with various components of its, people in the project area were seen to change their cropping pattern in order to increase their income. Table 4.6.5 depicts the changes of cropping pattern among the beneficiary respondents after initiation of project activities. Shifting cultivation or 'Jhuming' is one of the major livelihood management activities among the people of both the hills districts of Assam and 'Jhuming' is still practising like earlier time. In Karbi Anglong district, after initiation of NERCORMP project number of households practising 'Jhuming' as a livelihood management activity slightly declined to 98.6% from 100% before project starts. Of course area under 'Jhum' declined to 24.6 ha from 34.93 ha recorded just before the project starts activities. Whereas, number of households practising panikheti,

plantation crops, banana, orange, areca nut etc. increased significantly after the project activities. Accordingly area under crops also increased for all these types of crops in the district. On an average in the district, area under different crops increased to 71.48 ha from 44.97 ha available just before the project starts. This increment of area was 58.94%. Similarly in Dima Hasao district, number of households practising 'Jhuming' as viable livelihood management strategy declined to 94.4% from 100% recorded just before project starts. However, area under 'Jhuming' in the district declined to 38.67 ha from 71.2 ha. Similarly, for all other products also percentage of households practising increased after project. Overall in the district, area under crop increased to 145.6 ha after the project from 87.97 ha recorded before the project starts its activity and this increment percentage was 65.52%, higher than the Karbi Anglong district. Singh *et al.* (2010) also reported changes on land use pattern and cropping pattern because of intervention of watershed development programme in India.

Table 4.6.4(a) : Comparison of income and expenditure among the beneficiary and non-beneficiary respondents based on category of respondents

Category of respondent	Karbi Anglong district						Category of respondent	Dima Hasao district					
	No. of respondent	Gross income (Rs.)	Gross expenditure (Rs.)	Net income (Rs.)	Average income (Rs.)	Return over exp.		No. of respondent	Gross income (Rs.)	Gross expenditure (Rs.)	Net income (Rs.)	Average income (Rs.)	Return over exp.
Beneficiary respondents													
Marginal	50 (69.4)	7127500 (74.8)	3849340 (68.4)	3278160 (84.0)	142550	1.85	Marginal	6 (8.3)	595320 (4.4)	403840 (5.0)	191480 (3.6)	99220	1.47
Small	22 (30.6)	2402050 (25.2)	1778140 (31.6)	623910 (16.0)	109184	1.35	Small	60 (83.4)	11296720 (84.0)	6811620 (84.4)	4485100 (83.4)	188278	1.65
Semi medium	0	0	-	-	-	-	Semi medium	5 (6.9)	1297430 (9.6)	758300 (9.4)	539130 (10.0)	259486	1.71
Medium	0	0	-	-	-	-	Medium	1 (1.4)	260250 (2.0)	97900 (1.2)	162350 (3.0)	260250	2.65
Large	0	0	-	-	-	-	Large	0	0	-	-	-	-
Total	72 (100.0)	9529550 (100.0)	5627480 (100.0)	3902070 (100.0)	132355	1.69	Total	72	13449720 (100.0)	8071660 (100.0)	5378060 (100.0)	186802	1.67
Non-beneficiary respondents													
Marginal	13 (43.3)	469900 (41.1)	439700 (41.2)	30200 (39.7)	36146	1.07	Marginal	19 (63.4)	525400 (56.8)	497400 (58.1)	28000 (40.1)	276653	1.05
Small	17 (56.7)	674300 (58.9)	628400 (58.8)	45900 (60.3)	39664	1.07	Small	10 (33.3)	358850 (38.8)	323100 (37.8)	35750 (51.3)	35885	1.11
Semi medium	0	0	-	-	-	-	Semi medium	1 (3.3)	41000 (4.4)	35000 (4.1)	6000 (8.6)	41000	1.17
Medium	0	0	-	-	-	-	Medium	0					
Large	0	0	-	-	-	-	Large	0					
Total	30 (100.0)	1144200 (100.0)	1068100 (100.0)	76100 (100.0)	38140	1.07	Total	30	925250 (100.0)	855500 (100.0)	69750 (100.0)	33167	1.08

(Figures in parentheses indicate per cent to total)

Table 4.6.4(b) : A summary of comparison of income, expenditure and saving among the beneficiary respondents at district/NERCORMP I/NERCORMP II level

(Rs. per year per household)

Particular	Karbi Anglong dist.	Dima Hasao dist.	t-value	Karbi Anglong dist.		t-value	Dima Hasao dist.		t-value
				NERCORMP I	NERCORMP II		NERCORMP I	NERCORMP II	
Income	122475	186801	3.25**	101367	143585	2.25*	143442	230161	2.61*
Expenditure	85266	112106	3.21**	71961	98572	3.07**	105874	118339	0.89^{NS}
Saving	37209	74695	2.73**	29405	45012	1.19^{NS}	37568	111822	3.29**

** - Significant at 1% level, * - significant at 5% level, NS – Non-significant

Table 4.6.5 : Status of change of cropping pattern among the beneficiary respondents

Name of the crop	Karbi Anglong district				Dima Hasao district			
	No. of household practiced		Area under crops (ha)		No. of household practiced		Area under crops (ha)	
	Before	after	Before	After	Before	after	Before	After
Jhum (Rice)	72 (100.0)	71 (98.6)	34.93	24.6	72 (100.0)	68 (94.4)	71.2	38.67
Pani kheti	15 (20.8)	55 (76.4)	2.27	11.07	17 (23.6)	49 (68.1)	2.4	25.47
plantation	31 (43.1)	67 (93.1)	3.03	14.47	25 (34.7)	54 (75.0)	2.87	15.8
banana	0 (0.00)	29 (40.1)	0	1.67	24 (33.3)	41 (56.9)	2.07	7.5
orange	7 (9.7)	35 (48.6)	0.43	2.68	6 (8.3)	32 (44.4)	0.53	5
Litchi	4 (5.6)	15 (20.8)	0.23	1.1	7 (9.7)	15 (20.8)	0.6	2.53
Vegetable	55 (76.4)	65 (90.3)	2.61	4.83	42 (58.3)	62 (86.1)	3.57	7.8
A. Nut	8 (11.1)	29 (40.3)	0.53	2.1	21 (29.2)	40 (55.6)	2	6.7
Zongta	14 (19.4)	41 (56.9)	0.63	2.63	21 (29.2)	46 (63.9)	1.2	5.77
Mulberry	0 (0.0)	3 (4.2)	0	0.43	2 (2.8)	3 (4.2)	0.27	0.93
Ginger	8 (11.1)	49 (68.1)	0.3	3.17	16 (22.2)	42 (58.3)	1.27	3.4
Gameri	0 (0.0)	24 (33.3)	0	1.8	0 (0.0)	35 (48.6)	0	10.57
Pine	0	5 (6.9)	0	0.93	0 (0.0)	12 (16.7)	0	15.47
Total			44.97	71.48			87.97	145.6
Percentage increase of area after the project				58.94				65.52

(Figures in parentheses indicate per cent to total)

4.6.6 Impact of NERCORMP on asset/capital creation

Impact of NERCORMP was studied more specifically by considering 6 different types assets/capital that are acquired by the respondents. The six different types of assets that were considered in the present study are human asset, physical asset, social asset, natural asset, financial asset, food security asset and on the basis of this finally overall asset creation was studied. Table 4.6.6 depicts the status of asset creation by the respondents before and after project intervention based on the indexes developed for that. In case of Karbi Anglong district, human asset before project starts stood at 53.5% that increased to 72.9% after the project intervention with t-value of 50.6 that was significant at 1% level. Similarly, physical asset, natural asset, social asset, food security asset and over all asset also increased after the project. However, financial asset creation was found negative after the project (65.9% before project starts to 59.9% after project intervention). As financial asset includes two different components *viz.* saving and debt of the respondents together, financial asset creation became negative. In one way saving increased in case of most of the respondents after intervention of project and in the other way debt decreased (positive in nature), that resulted a negative impact on financial asset. In case of Dima Hasao district, creation of human asset, physical asset, social asset, food security asset and overall asset reflects more after intervention of NERCORMP activities as compared to the availability of asset before project starts during 1998, all of these increments were significant at 1% level. So far natural asset is concerned, before project starts it was 52.9% that increased to 53.8% but it was not significant. And in case of financial asset creation, it showed the same trend as that of Karbi Anglong district.

It can be concluded that after intervention of NERCORMP, status of creation of asset *viz.* human asset, physical asset, social asset and food security asset increased significantly that finally led to significant increase of overall asset position for respondent beneficiaries. The null hypothesis frame out here was outrightly rejected as NERCORMP intervention had affected significantly towards creation of different types of assets. So alternative hypothesis was accepted in a sense that NERCORMP had positive significant impact on creation of different types of assets. In the similar

line Biradar *et al.* (2011) also reported the increase in overall capital acquisition index in Bellary and Bijapur districts of Karnataka in Karnataka Watershed Development project beneficiaries that was significant at 1% level. Dolli (2006) in Karnataka reported that the overall impact of the watershed development project on various aspects of livelihood was positive and highly significant in all the categories of the respondents belonged to both SHG and Non SHG. The overall score values were higher in SHG group than the non SHG members. The data clearly brought out the fact that the natural resource management had positive and significant impact on the various assets status such as human, physical, natural, social, financial and food security leading in to sustainable livelihood of the rural families irrespective of the size of the villages. Swain (2015) was also in the opinion on the same line. Rebecca *et al.* (2011) were also in the opinion of positive impact of MGNREGA on creation of some important assets. On the other hand, Reddy (2001) revealed that human capital indicators improved significantly against non-significant increase in case of social capital because of watershed intervention. Sharma (2004) also explained the development of components of human capital through provision of micro finance.

4.6.7 Association of independent variables with asset creation

A correlation analysis was done to see the association ship between independent variables *viz.* age, family type, occupation, land holding, educational qualification of the respondents, house type, income, expenditure, training attended and status of respondent with dependent variable asset creation. Table 4.6.7(a) indicates the correlation coefficient values (r) to show the relationship of the above independent variables with asset creation in Karbi Anglong district. In Karbi Anglong district, it indicated that most of the independent variables considered here had maintained non-significant relationship with almost all the six types of assets and in some cases it was even negative. This was in similar to the results made by Biradar *et al.* (2011) and Dolli (2006) in Karnataka. In this study, age had positive relationship with creation of all types of assets, which finally led to significant increase of overall asset. Similarly, respondent's income, training attended, status of respondent had also shown some positive as well as significant relationship with creation of some of the assets, that helped in significant increase of overall asset. Otherwise other variables

had shown some positive but non-significant as well as negative relationship with creation of assets.

In Dima Hasao district the picture was found comparatively better than Karbi Anglong district. Table 4.6.7(b) shows that almost all the independent variables had maintained positive and significant relationship with creation of any one or more types of assets. Age had positive and significant relationship with creation of human, physical and natural asset, which led to significant increase of overall asset position. Similarly, family type had significant positive relation with social asset creation, respondent education had significant positive relation with physical asset creation, house type had positive significant relation with physical and overall asset creation, income had positive significant relation with physical, natural and overall asset creation, expenditure had positive and significant relation with natural and overall asset creation and category of respondent had positive and significant relation with natural, financial and overall asset creation. Dutta *et al.* (2014) also studied the relationship between livelihood status and some independent variables in Tripura State of NE India.

Table 4.6.6 : Impact of NERCORMP on creation of different types of assets

Name of district		Different types of asset (index %)																				
		Human asset			Physical asset			Natural asset			Social asset			Financial asset			Food security asset			Overall asset		
		Before	After	t-value	Before	After	t-value	Before	After	t-value	Before	After	t-value	Before	After	t-value	Before	After	t-value	Before	After	t-value
Karbi Anglong	Mean	53.5	72.9	50.6**	51.6	56.8	3.9**	52.6	53.6	0.88^{ns}	53.2	73.3	27.2**	65.9	59.9	-6.9**	52.0	60.1	10.3**	54.9	64.5	26.8**
	SEM	0.23	0.41		0.33	1.2		0.34	0.92		0.37	0.59		0.98	0.46		0.39	0.65		0.31	0.24	
Dima Hasao	Mean	52.8	71.8	33.8**	51.9	56.6	3.4**	52.9	53.8	0.375^{ns}	52.8	72.2	31.4**	64.6	59.5	-6.67**	52.5	58.4	6.89**	54.6	63.9	30.9**
	SEM	0.23	0.64		0.39	1.36		0.39	0.96		0.29	0.53		0.85	0.48		0.39	0.74		0.33	0.19	

** - significant at 1% level, ns – non significant

Table 4.6.7(a): Association of independent variables with asset creation in Karbi Anglong district

Independent variables	Coefficient of correlation (r) with types of asset						
	Human asset	Physical asset	Natural asset	Social asset	Financial asset	Food security asset	Overall asset
Age	0.228^{NS}	0.197^{NS}	0.050^{NS}	0.092^{NS}	0.016^{NS}	0.133^{NS}	0.280*
Family type	0.015^{NS}	-0.057^{NS}	-0.075^{NS}	0.092^{NS}	-0.116^{NS}	0.027^{NS}	-0.058^{NS}
Occupation	-0.079^{NS}	0.004^{NS}	-0.139^{NS}	-0.044^{NS}	-0.003^{NS}	0.181^{NS}	-0.033^{NS}
Land holding	-0.137^{NS}	0.040^{NS}	0.003^{NS}	-0.090^{NS}	0.103^{NS}	0.031^{NS}	0.000^{NS}
Respondent's education	0.094^{NS}	0.092^{NS}	0.150^{NS}	0.059^{NS}	0.077^{NS}	0.081^{NS}	0.212^{NS}
House type	0.079^{NS}	0.052^{NS}	0.225^{NS}	0.053^{NS}	0.060^{NS}	0.059^{NS}	0.205^{NS}
Income	0.112^{NS}	0.159^{NS}	0.269*	-0.007^{NS}	0.070^{NS}	0.017^{NS}	0.272*
Expenditure	0.042^{NS}	0.101^{NS}	0.153^{NS}	-0.016^{NS}	0.108^{NS}	-0.008^{NS}	0.162^{NS}
Training attended	0.173^{NS}	0.148^{NS}	0.070^{NS}	0.097^{NS}	0.162^{NS}	0.205^{NS}	0.304**
Status of respondent	-0.081^{NS}	-0.111^{NS}	0.243*	0.200^{NS}	0.224^{NS}	0.205^{NS}	0.196^{NS}

** - significant at 1% level, * - significant at 5% level, NS – Not significant

Table 4.6.7(b) : Association of independent variables with asset creation in Dima Hasao district

Independent variables	Coefficient of correlation (r) with types of asset						
	Human asset	Physical asset	Natural asset	Social asset	Financial asset	Food security asset	Overall asset
Age	0.348**	0.241*	0.287*	0.032^{NS}	0.031^{NS}	0.058^{NS}	0.428**
Family type	0.001^{NS}	-0.219^{NS}	0.098^{NS}	0.258*	-0.069^{NS}	0.122^{NS}	-0.004^{NS}
Occupation	-0.208^{NS}	0.107^{NS}	-0.143^{NS}	-0.266*	0.049^{NS}	0.142^{NS}	-0.066^{NS}
Land holding	0.027^{NS}	-0.137^{NS}	0.148^{NS}	-0.071^{NS}	0.125^{NS}	0.154^{NS}	0.052^{NS}
Respondent's education	-0.206^{NS}	0.242*	-0.187^{NS}	0.097^{NS}	0.049^{NS}	-0.017^{NS}	0.038^{NS}
House type	0.035^{NS}	0.349**	0.116^{NS}	-0.043^{NS}	-0.031^{NS}	-0.046^{NS}	0.255*
Income	0.167^{NS}	0.246*	0.449**	-0.023^{NS}	0.048^{NS}	0.053^{NS}	0.439**
Expenditure	0.054^{NS}	0.152^{NS}	0.253*	-0.038^{NS}	0.093^{NS}	0.009^{NS}	0.245*
Training attended	0.118^{NS}	0.085^{NS}	-0.056^{NS}	-0.101^{NS}	-0.016^{NS}	0.038^{NS}	0.049^{NS}
Status of respondent	-0.047^{NS}	-0.032^{NS}	0.375**	0.126^{NS}	0.298*	0.187^{NS}	0.301*

** - significant at 1% level, * - significant at 5% level, NS – Not significant

4.7 Performance and sustainability of the project

4.7.1 Performance of NERCORMP : An Analysis at respondent level

The performance of any project largely depends on conception and perception by the beneficiaries about the project in different project activities. Hence, altogether 11 number of criteria were identified that are very much relevant to different project activities of NERCORMP to take the respondent's views *viz.* selection of beneficiary/household, selection of village, selection of works/activities, selection of NaRMG members, execution of works, supervision of works, quality of works executed, quality of NERCORMP personnel, support from Govt. agency, support from local organisation/NGOs and benefit to the villagers. These questions were asked to the respondents to give their ranking in 5 different ways *viz.* 'very good', 'good', 'satisfactory', 'poor' and 'very poor'. Based on the respondent's views on the above, the following Table 4.7.1(a) was prepared and it is presented below. It shows the details of performance of NERCORMP by rating at block, district and state level in the perspective of respondents. In Karbi Anglong district, 36.1% respondents ranked 'very good' for selection of beneficiary/household as against 38.9% as 'good', 25.0% as 'satisfactory'. For selection of beneficiary/household no one ranked as either 'poor' or 'very poor'. Out of 5 ratings, the most preferred rating was 'good' for 10 nos. of criteria excepting the criteria 'support from Govt. agency'. The second most preferred rating was 'satisfactory' for all the 11 nos. of criteria. On the other hand in the district, for criteria no. 9 (support from Govt. agency), the most preferred rating was 'poor' (52.8%) followed by 'satisfactory' (47.2%). Otherwise, no beneficiary has given any preference to 'poor' and 'very poor' for any of the above criteria. The record 36.1% respondent ranked 'very good' for criteria no.1 'selection of beneficiary/household' followed by 22.2% for criteria no. 2 'selection of village'. Of course, there were some other criteria also, where beneficiary preferred/ranked 'very good', but as a very small percentage.

So far Dima Hasao district is concerned, the most preferred rating was 'good' again for 9 nos. of criteria, excepting the criteria no. 9 (support from Govt. agency) and criteria no. 1 (selection of beneficiary/household), where most preferred rating

was ‘very good’ and ‘poor’ respectively. In this district also, record 44.4% respondent (higher than Karbi Anglong) preferred ‘very good’ for criteria no. 1 (selection beneficiary/household) followed by ‘selection of village’ by 20.8%, selection of work/activities by 11.1%. Some respondents in the district even ranked ‘very good’ in some other criteria also, but there percentage was very less like Karbi Anglong district. For criteria no. 9 (support from Govt. agency) a record of 70.8% respondent in the district (higher than Karbi Anglong) ranked ‘poor’ followed by 26.4% as ‘satisfactory’ and 2.8% as ‘good’. The most significant in the district is there was some respondents who even ranked ‘very poor’ for criteria no. 1.

As a whole in the State, almost similar type of picture was visible. Most preferred rating was ‘good’ for 9 nos. of criteria excepting criteria no. 1 (where most preferred was very good) and for criteria no. 9 (where most preferred was poor). The second most preferred rating was ‘satisfactory’ for all the 9 nos. of criteria.

To know the performance of NERCORMP based on respondent’s conception and perception comparative ratings were prepared based on total score and average score for each and every 11 criteria considered for the study and the result is presented below in Table 4.7.1(b). The scores were given as 5, 4, 3, 2, 1 for very good, good, satisfactory, poor and very poor respectively. Out of 11 criteria in Karbi Anglong district, criteria no. 8 (quality of NERCORMP personnel) topped the list (with total score of 297 and average score of 4.13) followed by selection of beneficiary/household with total score of 296 and average score of 4.11 and then selection of village (with total score of 288 and average score of 4.0). Support from Govt. of agency with total score of 178 and average score of 2.47 ranked the lowest in the list of 11 criteria so far performance indicators are concerned. In case of Dima Hasao district, selection of beneficiary/household topped the list with total score of 302 and average score of 4.19 followed by selection of village (with total score of 288 and average score of 4.0) and execution of work (total score of 280 and average score of 3.89). Like Karbi Anglong district, criteria no. 9 ranked the last in the list of 11 criteria with total score of 167 and average score of 2.32. It can also be viewed that the criteria no. 1 to 5, score remained higher in case of Dima Hasao district as compared to Karbi Anglong district, whereas from criteria no. 6 to 11, scores

remained higher for Karbi Anglong district as compared to Dima Hasao district. As a whole in the state also criteria no. 1 occupied the 1st rank followed by criteria no. 2 and then criteria no. 8. Similarly, criteria no. 9 ranked the last in the list of 11 criteria selected for the study.

Table 4.7.1(c) shows the response of the respondents on some vital socio-economic issues *viz.* number of livestock, income level of the beneficiary, expenditure pattern, liability status, empowerment of women because of NERCORMP. In Karbi Anglong district, so far income, expenditure and empowerment of women are concerned, above 90% respondents responded positively *i.e.* increase level of income, expenditure and empowerment of women after the project. There was no respondent who responded as 'decrease' for these 3 criteria, of course there was some percentage of respondents who responded as 'no change' for these 3 criteria/issues. For saving, almost 85% respondent responded positively against 15% for 'no change'. So far livestock status, only 22.2% reported as 'increase level' against 77.8% as 'no change', of course there was no one who reported as 'decrease' level of livestock after NERCORMP. Again so far liability is concerned, 83.3% reported as 'decrease' in the district against 16.7% as 'no change' and 'NIL' for 'increase level'.

So far Dima Hasao district is concerned, all the respondents (100%) reported 'increase' level of income, savings and empowerment of women after the intervention of NERCORMP. There was no response at all towards 'decrease' level and 'no change' for the above three parameters. In case of livestock level, 25% respondents only viewed as 'increase' as against 1.4% as 'decrease' and 73.6% as 'no change'. In case of expenditure pattern, 86.1% viewed as 'increase' level against 13.9% as 'decrease' level and 'NIL' to 'no change'. Again in case of liability, 98.6% reported as 'decrease' level against 1.4% as 'no change' and 'NIL' to 'increase' level.

As a whole in the state also, almost similar trend was visible. Response of the respondents as 'increase' in case of livestock was comparatively reported as very low (23.6%) as against a high level in case of other issues *viz.* income, expenditure, saving and empowerment) (> 90%) as reported by the respondents. A very high percentage

of respondents (91%) reported 'decrease' level of liability after intervention of project as against 9% for 'no change'. In this regard study made by Roy and Singh (2010) on empowerment of beneficiaries of MGNREGA, Singh *et al.* (2010) on effectiveness of watershed development programme, Arora *et al.* (2013) on MNREGS, Nalini *et al.* (2013) on impact of SHGs on rural economy, Sahu *et al.* (2012) on ATMA, Swain (2015) on poverty alleviation programme, Reddy *et al.* (2016) on MGNREGA etc. could be referred.

From the above it can be concluded that by and large beneficiaries were satisfied for most of the project activities excepting few either at district or at state level. However, for criteria 'support from Govt. agency' as a whole, majority ranked as 'poor', that seems to be thought very seriously by the project authority. On the other hand, out of two districts, ranking on 'very good' on some of the issues was more in Dima Hasao district compared to Karbi Anglong district. As per the views and response collected from the respondents, it can be further stated that selection of villages as well as household/beneficiaries for implementing the NERCORMP in both the districts of the state was upto the mark *i.e.* respondents were mostly satisfied.

Table 4.7.1(a) : Performance of NERCORMP as suggested by the respondents

Name of the criteria	Karbi Anglong district					Dima Hasao district					Total				
	Very good	Good	Satisfactory	Poor	Very poor	Very good	Good	Satisfactory	Poor	Very poor	Very good	Good	Satisfactory	Poor	Very poor
1. Selection of beneficiary/household	26 (36.1)	28 (38.9)	18 (25.0)	0 (0.0)	0 (0.0)	32 (44.4)	24 (33.3)	15 (20.8)	0 (0.0)	1 (1.4)	58 (40.3)	52 (36.1)	33 (22.9)	0 (0.0)	1 (0.7)
2. Selection of village	16 (22.2)	40 (55.6)	16 (22.2)	0 (0.0)	0 (0.0)	15 (20.8)	43 (59.7)	13 (18.1)	1 (1.4)	0 (0.0)	31 (21.5)	83 (57.6)	29 (20.1)	1 (0.7)	0 (0.0)
3. Selection of works/activities	3 (4.2)	47 (65.3)	22 (30.6)	0 (0.0)	0 (0.0)	8 (11.1)	46 (63.9)	18 (25.0)	0 (0.0)	0 (0.0)	11 (7.6)	93 (64.6)	40 (27.8)	0 (0.0)	0 (0.0)
4. Selection of NaRMG members	0 (0.0)	51 (70.8)	21 (29.2)	0 (0.0)	0 (0.0)	3 (4.2)	50 (69.4)	19 (26.4)	0 (0.0)	0 (0.0)	3 (2.1)	101 (70.1)	40 (27.8)	0 (0.0)	0 (0.0)
5. Execution of works	2 (2.8)	57 (79.2)	13 (18.1)	0 (0.0)	0 (0.0)	3 (4.2)	58 (80.6)	11 (15.3)	0 (0.0)	0 (0.0)	5 (3.5)	115 (79.9)	24 (16.7)	0 (0.0)	0 (0.0)
6. Supervision of works	0 (0.0)	45 (62.5)	27 (37.5)	0 (0.0)	0 (0.0)	0 (0.0)	43 (59.7)	29 (40.3)	0 (0.0)	0 (0.0)	0 (0.0)	88 (61.1)	56 (38.9)	0 (0.0)	0 (0.0)
7. Quality of works executed	0 (0.0)	48 (66.7)	24 (33.3)	0 (0.0)	0 (0.0)	1 (1.4)	40 (55.6)	31 (43.1)	0 (0.0)	0 (0.0)	1 (0.7)	88 (61.1)	55 (38.2)	0 (0.0)	0 (0.0)
8. Quality of NERCORMP personnel	0 (0.0)	54 (75.0)	27 (37.5)	0 (0.0)	0 (0.0)	3 (4.2)	41 (56.9)	28 (38.9)	0 (0.0)	0 (0.0)	3 (2.1)	95 (66.0)	55 (38.2)	0 (0.0)	0 (0.0)
9. Support from govt. agency	0 (0.0)	0 (0.0)	34 (47.2)	38 (52.8)	0 (0.0)	0 (0.0)	2 (2.8)	19 (26.4)	51 (70.8)	0 (0.0)	0 (0.0)	2 (1.4)	53 (36.8)	89 (61.8)	0 (0.0)
10. Support from local organisation/NGOs	2 (2.8)	48 (66.7)	22 (30.6)	0 (0.0)	0 (0.0)	3 (4.2)	45 (62.5)	24 (33.3)	0 (0.0)	0 (0.0)	5 (3.5)	93 (64.6)	46 (31.9)	0 (0.0)	0 (0.0)
11. Benefits to the villagers	2 (2.8)	47 (65.3)	23 (31.9)	0 (0.0)	0 (0.0)	2 (2.8)	46 (63.9)	24 (33.3)	0 (0.0)	0 (0.0)	4 (2.8)	93 (64.6)	47 (32.6)	0 (0.0)	0 (0.0)

(Figures in parentheses indicate per cent to total)

Table 4.7.1(b) : Status of ranks given by the respondents

Name of the criteria	Karbi Anglong district			Dima Hasao district			Grand total		
	Total score	Average score	Rank	Total score	Average score	Rank	Total score	Average score	Overall rank
1. Selection of beneficiary/household	296	4.11	2	302	4.19	1	598	4.15	1
2. Selection of village	288	4.00	3	288	4.00	2	576	4.00	2
3. Selection of works/activities	269	3.74	5	278	3.86	4	547	3.80	5
4. Selection of NaRMG members	267	3.71	7	272	3.78	5	539	3.74	6
5. Execution of works	277	3.85	4	280	3.89	3	557	3.87	4
6. Supervision of works	261	3.63	9	259	3.60	9	520	3.61	10
7. Quality of works executed	264	3.67	8	258	3.58	10	522	3.63	9
8. Quality of NERCORMP personnel	297	4.13	1	263	3.65	8	560	3.89	3
9. Support fro govt. agency	178	2.47	10	167	2.32	11	345	2.40	11
10. Support from local organisation/NGOs	268	3.72	6	267	3.71	6	535	3.72	7
11. Benefits to the villagers	267	3.71	7	266	3.69	7	533	3.70	8

Table 4.7.1(c) : Overall response of respondents on some socio-economic parameters because of NERCORMP

Name of criteria	Karbi Anglong			Dima Hasao			Total		
	Increase	**Decrease**	**No change**	**Increase**	**Decrease**	**No change**	**Increase**	**Decrease**	**No change**
1. Livestock	16 (22.2)	0 (0.0)	56 (77.8)	18 (25.0)	1 (1.4)	53 (73.6)	34 (23.6)	1 (0.7)	109 (75.7)
2. Income	65 (90.3)	0 (0.0)	7 (9.7)	72 (100.0)	0 (0.0)	0 (0.0)	137 (95.1)	0 (0.0)	7 (4.9)
3. Expenditure	66 (91.7)	0 (0.0)	6 (8.3)	62 (86.1)	10 (13.9)	0 (0.0)	128 (88.9)	10 (6.9)	6 (4.2)
4. Liability	0 (0.0)	60 (83.3)	12 (16.7)	0 (0.0)	71 (98.6)	1 (1.4)	0 (0.0)	131 (91.0)	13 (9.0)
5. Savings	61 (84.7)	0 (0.0)	11 (15.3)	72 (100.0)	0 (0.0)	0 (0.0)	133 (92.4)	0 (0.0)	11 (7.6)
6. Empowerment of women	65 (90.3)	0 (0.0)	7 (9.7)	72 (100.0)	0 (0.0)	0 (0.0)	137 (95.1)	0 (0.0)	7 (4.9)

(Figures in parentheses indicate per cent to total)

4.7.2 Sustainability of NERCORMP

A trial had been made here to assess the sustainability of NERCORMP as a whole or the different activities in particular under NERCORMP by using appropriate scaling technique. Sustainability was calculated based on five different dimensions *viz.* social sustainability index, technical sustainability index, environmental sustainability index, institutional sustainability index and financial sustainability index. Social sustainability index, technical sustainability index, environmental sustainability index were calculated based on the information collected from respondents and institutional and financial sustainability index were calculated based on information collected from local SHGs, NaRMGs etc. that are promoted by NERCORMP. Finally overall sustainability index was worked out by adding social sustainability index, technical sustainability index and environmental sustainability index. The following Table 4.7.2(a) shows the details of social sustainability index (SSI), technical sustainability index (TSI) and environmental sustainability index (ESI) at block/district/state level (Fig. 4.11). Results revealed that in the State as whole ESI remained the highest (66.25%), followed by TSI (59.44%) and SSI (49.28%). Overall sustainability index (OSI) stood at 61.61% in the State. District wise results revealed the same trend i.e. ESI remained the highest (64.12% and 68.38% respectively for Karbi Anglong and Dima Haso district) for both the district as compared to the other two indices. However, Dima Hasao district showed the higher values for all the three type of indices as compared to Karbi Anglong district. Similarly, OSI also remained higher (63.32%) in Dima Hasao district as compared to Karbi Anglong district (59.5%). Results also revealed that there were significant differences between the districts (Karbi Anglong and Dima Hasao) for all the three types of sustainability indexes including OSI. It indicates that level of sustainability was significantly different between the districts as per the views collected from the respondents.

In regards to block level sustainability at Karbi Anglong district, ESI again appeared as the highest (64.17% and 64.07% respectively for Chinthong and Amri RD Block) as compared to other two types of indices, followed by TSI and SSI. However, t-statistics indicates that among the two blocks *viz.* Chinthong and Amri,

there was non-significant differences for all types indices. In case of Dima Hasao district, trend of index remained almost similar *i.e.* ESI remained higher compared to two other types of indices, followed by TSI and SSI. OSI remained higher for New Sangbar block (65.14%) than Jatinga Valley RD Block (61.49%). There was significant difference of sustainability index between the two blocks in respect to SSI, TSI and OSI in the districts. However, for ESI there was non-significant difference between the two blocks.

As present study considered the respondents from both the project areas *i.e.* NERCORMP I area and NERCORMP II area and as time period for both the situations are different, it felt important to study the sustainability level of the project activity differently based on the views of the respective respondents. The following Table 4.7.2(b) depicts the sustainability index at district as well as NERCORMP I/NERCORMP II level. In case of Karbi Anglong district, sustainability index for social sustainability, technical sustainability, environment sustainability and overall sustainability found higher during NERCORMP II period as compared to NERCORMP I and among the types of sustainability index, ESI found higher for both the situation as compared to other sustainability index. Results also revealed that there was a significant difference between NERCORMP I and NERCORMP II for all types of indices. So far Dima Hasao district is concerned, excepting SSI, TSI and ESI found to be higher in NERCORMP II as compared to NERCORMP I. On the other hand, SSI found higher (52.66%) in NERCORMP I as compared to NERCORMP II (49.31%). It also revealed that there was a significant difference between NERCORMP I and NERCORMP II so far SSI, TSI and ESI are concerned. However, OSI found to be non significant between NERCORMP I and NERCORMP II in Dima Hasao district. (Fig. 4.12)

It can be concluded that value of sustainability index for all the three types remained above 50% for most of the cases excepting 1-2 occasions. Not only that, NERCORMP II activities found to be more sustainable as compared to NERCORMP I in most of cases as per the views collected from the respondents, as NERCORMP II activities were in operational in full swing among the respondents. So far NERCORMP I is concerned, it was the first trial in the districts for livelihood

improvement and officially it was wind up during 2008, although monitoring and some assistance were in force during the NERCORMP II period also.

As respondents belonged to different categories based on land holding structure and moreover as they were differed based on their income and expenditure pattern, it felt pertinent to study the sustainability issue separately based on category of respondents like marginal, small, semi medium, medium etc. The following Table 4.7.2(c) shows the sustainability index based on categories of respondents based on land holding at district level. In regards to Karbi Anglong district, among small category respondents SSI found to be higher (50.28%) than marginal category (46.38%) and ESI and OSI also found to be marginally higher among small category respondents than marginal category. On the other hand, TSI calculated as higher (59.24%) in case of marginal category as compared to small category. And in case of Dima Hasao district, SSI found the highest among the medium category respondents (68.75%), followed by marginal category (56.25%), semi medium (52.92%) and small category (50.0%). (Fig. 4.13)

Table 4.7.2(a) : Sustainability index of sample respondents by Block/Districts

Category	Karbi Anglong district		Dima Hasao district		Karbi Anglong dist. Total	Dima Hasao dist. Total	State total
	Chninthong RD Block	Amri RD Block	New Sangbar RD Block	Jatinga Valley RD Block			
Social sustainability (%)	47.63	47.51	53.47	48.5	47.57	50.98	49.28
SEM	1.33	1.53	1.44	1.55	1.09	1.00	
t value		0.06 ns		2.35*		2.29*	
Technical sustainability (%)	57.92	59.07	62.99	57.76	58.5	60.38	59.44
SEM	1.75	1.70	1.08	2.09	1.21	1.21	
t-value		0.47 ns		2.22*		1.09 ns	
Environmental sustainability (%)	64.17	64.07	67.41	69.35	64.12	68.38	66.25
SEM	0.98	1.25	1.27	1.81	1.10	0.78	
t value		0.06 ns		0.88 ns		3.15**	
Overall sustainability (%)	59.74	60.05	65.14	61.49	59.5	63.32	61.61
SEM	1.01	1.11	0.86	1.34	0.81	0.74	
t value		0.21 ns		2.29*		3.09**	

**- significant at 1% level, * - significant at 5% level, ns – not significant

Table 4.7.2(b) : Sustainability index of sample respondents by NERCORMP I/ NERCORMP II

Category	Karbi Anglong district		Dima Hasao district	
	NERCORMP I	**NERCORMP II**	**NERCORMP I**	**NERCORMP II**
Social sustainability (%)	44.62	50.52	52.66	49.31
SEM	1.03	1.6	1.58	1.47
t value		3.1**		1.55 ns
Technical sustainability (%)	53.1	63.89	58.09	62.66
SEM	1.42	1.51	1.87	1.47
t-value		5.20**		1.92 ns
Environmental sustainability (%)	61.57	66.67	67.22	69.54
SEM	1.13	0.93	1.6	1.51
t value		3.48**		1.05 ns
Overall sustainability (%)	55.97	63.83	63.03	63.6
SEM	0.74	0.91	1.38	0.9
t value		6.93**		0.34 ns

**- significant at 1% level, ns – not significant

Table 4.7.2(c) : Sustainability index of sample respondents by category of respondents (%)

Category	Karbi Anglong district				Dima Hasao district			
	SSI	**TSI**	**ESI**	**OSI**	**SSI**	**TSI**	**ESI**	**OSI**
Marginal	46.38	59.24	64.07	59.56	56.25	69.12	62.22	67.17
Small	50.28	56.82	64.24	60.66	50.0	59.75	69.06	62.81
Semi medium	-	-	-	-	52.92	57.06	68	63.01
Medium	-	-	-	-	68.75	61.76	66.67	71.86

4.7.2.1 Association of independent variables with sustainability index

Correlation analysis was carried out to see the association ship between independent variables *viz.* age, family type, occupation, land holding, educational qualification of the respondents, house type, income, expenditure, training attended and status of respondent with sustainability index *viz.* social sustainability index (SSI), technical sustainability index (TSI), environmental sustainability index (ESI) and overall sustainability index (OSI). Table 4.7.2.1(a) indicates the correlation coefficient values (r) to show the relationship of the above independent variables with different types of sustainability indexes. In Karbi Anglong district, it indicated that most of the independent variables considered here had maintained non-significant relationship with almost all the types of indexes and in some cases it was even negative. Almost similar results were visible in case of Dima Hasao district also and this is presented inTable 4.7.2.1(b), however comparatively it indicated little better position than Karbi Anglong district. This result was somehow contrary to the results given by Dolli (2006). It can be concluded that age, family type, occupation and land holding had to some extent positive and significant relationship with value of sustainability index in some cases, otherwise all other variables had maintained either non-significant (but positive) relationship or no relationship.

Table 4.7.2.1(a) : Association of independent variables with sustainability index in Karbi Anglong district

Independent variable	Correlation coefficient (r) with types of sustainability index			
	SSI	TSI	ESI	OSI
Age	-0.022^{NS}	-0.091^{NS}	-0.052^{NS}	-0.080^{NS}
Family type	0.193^{NS}	0.034^{NS}	0.073^{NS}	0.166^{NS}
Occupation	0.244*	0.139^{NS}	0.148^{NS}	0.277*
Land holding	0.208^{NS}	0.053^{NS}	0.155^{NS}	0.209^{NS}
Respondent's education	-0.135^{NS}	-0.361**	-0.265*	-0.362**
House type	-0.156^{NS}	-0.304**	-0.204^{NS}	-0.327**
Income	-0.124^{NS}	-0.243*	-0.224^{NS}	-0.278**
Expenditure	-0.133^{NS}	-0.275*	-0.246*	-0.308**
Training attended	-0.055^{NS}	-0.104^{NS}	-0.161^{NS}	-0.139^{NS}
Status of respondent	-0.379**	0.313**	-0.088^{NS}	-0.098^{NS}

**- significant at 1% level, * - significant at 5% level, ns – not significant

Table 4.7.2.1(b) : Association of independent variables with sustainability index in Dima Hasao district

Independent variable	Correlation co-efficient (r) with types of sustainability index			
	SSI	TSI	ESI	OSI
Age	0.197 ^{NS}	0.244*	0.061 ^{NS}	0.271*
Family type	-0.172 ^{NS}	-0.073 ^{NS}	-0.253*	-0.238*
Occupation	-0.155 ^{NS}	-0.097 ^{NS}	0.107 ^{NS}	-0.109 ^{NS}
Land holding	0.195 ^{NS}	-0.106 ^{NS}	0.017 ^{NS}	0.078 ^{NS}
Respondent's education	0.143 ^{NS}	-0.077 ^{NS}	-0.370**	-0.081 ^{NS}
House type	0.052 ^{NS}	-0.145 ^{NS}	-0.031 ^{NS}	-0.051 ^{NS}
Income	0.167 ^{NS}	0.035 ^{NS}	0.015 ^{NS}	0.130 ^{NS}
Expenditure	0.139 ^{NS}	-0.082 ^{NS}	0.156 ^{NS}	0.104 ^{NS}
Training attended	0.027 ^{NS}	-0.044 ^{NS}	-0.002 ^{NS}	-0.006 ^{NS}
Category of respondent	-0.305**	0.165 ^{NS}	-0.287*	-0.216 ^{NS}

**- significant at 1% level, * - significant at 5% level, ns – not significant

4.7.3 Institutional sustainability

SHGs and NaRMGs were considered for assessing the institutional sustainability of NERCORMP. It was assessed based on the representation from different families in SHG and NaRMGs, meeting frequency of the SHG/NaRMGs during last one year and linkage with other departments. The following section describes the status of institutional sustainability of the institution created by the NERCORMP.

4.7.3.1 Representation from different families in local institution

The following Table 4.7.3.1 depicts the different types of family represented in SHG/NaRMG created by NERCORMP during its' project period. As women SHGs are seen active, vibrant and viable in any part of the country, so based on that principle SHGs sponsored by NERCORMP were also seen 100% women SHGs in both the project districts. Again in Karbi Anglong district, SHG members were mostly belonged to marginal (60%) and small farmer (40%) category and there was no one from large, medium and landless farmers categories. In regards to NaRMG, all the selected NaRMGs represented 50% each from male and female members and out of those maximum members (60%) belonged to small farmer category and 20% each from medium and marginal farmers categories. As NaRMG is a type of planning and development board at village level and it represents all the households under its' jurisdiction, naturally it must represent a variety of members in its' body. In Dima Hasao district, all the SHGs were women SHGs and 45% members each from marginal and small categories and rest 10% belonged to medium category members. In case of NaRMGs, both male and female represented equally (50%) and small farmer members represented the highest (50%) followed by marginal (35%) and medium (15%) farmers.

From the above it can be inferred that SHGs sponsored and supported by NERCORMP represented 100% women SHGs and most of the members in SHGs were from marginal and small farmers categories. Women SHGs are seen more successful and influential in India and most of the members belonged to small – marginal family in SHGs. Hence, in this line NERCORMP was found successful in

sponsoring of SHGs. Chowdhury *et al*. (2004) were also in the opinion that women led SHGs were more influential in improving the plight of rural women by providing them access to credit facilities. Similarly, in all NaRMGs there were members from both male and female equally (50% each) and all households were included from the village. Mostly small farmers category were encouraged more to become member in NaRMGs.

Table 4.7.3.1 : Representation from different families in SHG/NaRMGs

District	Name of organisation	No. of organisation selected	Percentage contribution (%)						
			Man	Woman	Large farmer	Medium farmer	Small farmer	Marginal farmer	Land less farmer
Karbi Anglong	SHG	16	-	100	-	-	40	60	-
	NaRMG	8	50	50	-	20	60	20	-
Dima Hasao district	SHG	16	-	100	-	10	45	45	-
	NaRMG	8	50	50	-	15	50	35	-

4.7.3.2 Meeting frequency of the organisations created under NERCORMP

Sustainability of the institutions largely depends upon their existence in reality and that could be visible through their activeness in work. One such indication is how frequently these institutions meet for their work and attendance of the members in those meeting. The following Table 4.7.3.2 shows the information on that line in relation of SHG/NaRMGs. It reveals that in Karbi Anglong district, SHGs were seen to meet mostly by fortnightly basis (75%) followed by monthly basis (25%). Of course, there was no SHG found to meet on weekly basis. So far attendance is concerned, meeting held on fortnightly basis indicated more attendance (60%) than meeting held on monthly basis. However, in case of NaRMG although most of NaRMGs (50%) practised meeting on monthly basis, there were NaRMGs that held meeting on weekly and fortnightly basis also (25%). On an average attendance percentage was above 60% for all types of meeting, however attendance for female members remained a bit low than male members. In case of Dima Hasao also, maximum number of SHGs held meeting fortnightly basis (62.5%) followed by monthly basis (31.25%). On the other hand, 6.25% SHGs held meeting on weekly basis also. The attendance in case weekly meeting was the highest (75%), followed by fortnightly basis (65%) and monthly basis (60%). So far NaRMGs are concerned, almost same trend was visible as in case of Karbi Anglong district i.e. NaRMGs that held monthly meeting were more in number as compared to NaRMGs that held meeting on weekly and fortnightly basis. On an average attendance was above 60% for all types of meeting and female attendance were a bit low as compared to male attendance.

It can be concluded that most of the SHGs met fortnightly basis followed by monthly basis. SHGs held meeting on fortnightly basis indicated more attendance than meeting held on monthly basis. In case of NaRMG, majority practised to meet on monthly basis and attendance of the members was above 60%. However, in NaRMG meeting attendance of female members found a bit lower than male members. Puhazhendi (2000) also emphasised the issue of ‘regular meeting’ and ‘monthly saving’ for group sustainability under NGOs.

Table 4.7.3.2 : Status of meeting conducted by SHG/NaRMGs

Name of the district	Name of organisation	Meeting frequency	No. of organisation selected	Average percentage of attendance by the members		
				Male	Female	Total
Karbi Anglong	SHG	Weekly	0 (0.0%)	-	-	-
		Fortnightly	12 (75.0%)	-	60	-
		Monthly	4 (25.0%)	-	55	-
	NaRMG	Weekly	2 (25.0%)	70	60	65
		Fortnightly	2 (25.0%)	80	60	70
		Monthly	4 (50%)	70	60	65
Dima Hasao	SHG	Weekly	1 (6.25%)	-	75	-
		Fortnightly	10 (62.5%)	-	65	-
		Monthly	5 (31.25%)	-	60	-
	NaRMG	Weekly	1 (12.5%)	72	58	65
		Fortnightly	3 (37.5%)	70	60	65
		Monthly	4 (50.0%)	68	60	64

(Figures in parentheses indicate per cent to total)

4.7.3.3 Status of linkage of SHG/NaRMGs with other departments

The following Table 4.7.3.3 indicates the status of linkage of SHG/NaRMGs with other department/organisations. Out of 24 SHG/NaRMGs in Karbi Anglong district, 100% had linkage with bank with average contact frequency of 3.9 times per year. A significant 66.7% had linkage with agriculture department with 2.5 times average contact frequency per year, 50% had with horticulture department with 2.05 times contact frequency, 16.7% had with animal husbandry with 0.3 times contact frequency and another 12.5% had linkage with any other department with contact frequency of 0.3 times per year. In Dima Hasao district also almost similar trend was visible, however percentage of SHG/NaRMGs that maintained contact with some departments *viz.* agriculture, horticulture and any other remained higher as compared to Karbi Anglong district and their average contact frequency also remained higher.

It was observed that all 48 SHG/NaRMGs selected here maintained a good contact with banking organisation with average contact frequency of above 3.0. More than 50% SHG/NaRMGs maintained contact with agriculture and horticulture department for their various works.

Table 4.7.3.3 : Status of linkage of SHG/NaRMGs with other departments

District	Name of department	No. of SHG/NaRMGs that had contact	Contact frequency	
			Range	Average
Karbi Anglong	Agriculture	16 (66.7%)	1-4	2.5
	Horticulture	12 (50.0%)	2-5	2.05
	Animal husbandry	4 (16.7%)	1-2	0.3
	Bank	24 (100.0%)	3-5	3.9
	Any other	3 (12.5%)	2-5	0.3
Dima Hasao	Agriculture	18 (75%)	1-5	2.7
	Horticulture	13 (54.2%)	2-6	2.2
	Animal husbandry	3 (12.5%)	1-2	0.2
	Bank	24 (100.0%)	3-6	3.75
	Any other	7 (29.2%)	2-4	0.7

(Figures in parentheses indicate per cent to total)

4.7.3.4 Adequacy status of SHG/NaRMGs

A trial had also been made here to see the adequacy status of different local institutions *viz.* SHGs, NaRMGs made by NERCORMP. The following Table 4.7.3.4 depicts an idea on adequacy status of SHG/NaRMG in project area. So far SHGs are concerned, in Karbi Anglong district number of SHGs per 100 households stood at 7.9 number and member representation per 100 households became 91.8%. In Dima Hasao district, the picture became a bit better than Karbi Anglong. Agianst 100 households, number of SHGs stood at 9.7 numbers and against 100 households member representation was 110.9%. In case NaRMG, picture showed a bit different as constitution of NaRMG is different from that of SHG. Officially all project villages should have 1 NaRMG each and every household in the villages should have two members each, one male and other female member. Because of these restrictions, institution against 100 households became only 1.9 and 2.5 numbers respectively for Karbi Anglong and Dima Hasao district. As every household of the project village should have two compulsory members in the respective NaRMG, the percentage representation of members in 100 households became more than 100 per cent.

Results based on number of SHGs per 100 households and member representation per 100 households indicated a good adequacy status of SHGs in the study area. Both the districts indicated a very high ratio pertaining to above two issues against 100 households in SHGs. As constitution and work nature in case of NaRMGs are different, calculation of above two ratios did not bring that much importance in the sustainability issue.

Table 4.7.3.4 : Adequacy of SHG/NaRMG in project areas

Name of the district	No. of RD Blocks selected	No. of villages selected	Total no. of households in selected villages	Total no. of SHG/NaRMGs in selected villages	Total SHG/NaRMG members present in selected villages	Institution per 100 households	Representation per 100 households
SHG							
Karbi Anglong	2	8	430	34	395	7.9	91.8
Dima Hasao	2	8	320	31	355	9.7	110.9
NaRMG							
Karbi Anglong	2	8	430	8	810	1.9	188.4
Dima Hasao	2	8	320	8	640	2.5	200

4.7.4 Financial sustainability

Financial sustainability was studied based on the information collected from SHGs and NaRMGs as a whole. The issues that were considered for assessing the financial sustainability of SHGs and NaRMGs are status of fund management by SHG/NaRMGs, savings and benefit, status of maintaining records and accounts, social auditing etc. The following Tables depict the details of financial sustainability of SHG/NaRMGs based on information collected on yearly basis.

Table 4.7.4(a) shows some aspects relating to fund availability and its management by SHG/NaRMGS. Supply of seed money to SHGs is one of the great assistance from NERCORMP for implementing some income generating activities. The average amount seed money per year supplied to SHG constituted during NERCORMP I period was Rs. 11,250/- in case of Karbi Anglong district against Rs. 9,625/- for Dima Haso district. Whereas SHGs constituted during NERCORMP II period got a bit higher amount, Rs. 35,625/- in Karbi Anglong district against Rs. 25,000/- for Dima Hasao district. Average annual budget in case of NaRMG constituted during NERCORMP I period stood at Rs. 2,03,750/- in Karbi Anglong district against Rs. 97,500/- for Dima Hasao district. On the other hand NaRMGs constituted during NERCORMP II period got a bigger amount Rs. 17,00,289/- and Rs. 10,50,000/- respectively for Karbi Anglong and Dima Hasao districts. So far average annual saving per SHG, NERCORMP II SHGs performed better as compared to SHGs constituted during NERCORMP I period. It can be concluded that as NERCORMP I was officially wrapped up during 2008, so areas under NERCORMP I operations got less attention due to paucity of fund, whereas as NERCORMP II operations are still going on and as a result institutions under NERCORMP II jurisdictions got full attention from the authority. Hence institutions under NERCORMP II areas found more active, vibrant and viable that lead to better availability of fund and its' management. However, availability of seed money to SHGs and allocation of annual budget to NaRMGs constituted during NERCORMP I period indicated their active existence in their areas.

Records and accounts are integral parts of any successful business. There are reports that because of incomplete records or because of no written records, many flourishing business suffer losses. Moreover, habit of writing records and accounts indicates something more in the business. Table 4.7.4(b) shows the detail status of records and accounts maintained by SHG/NaRMGs created by NERCORMP. It indicated that 18.8% SHGs maintained ledger book and it was found complete, 21.9% SHGs maintained ledger book but it was incomplete in nature and 59.3% they referred that they did not maintain ledger book at all. In case of cash book, 50% SHGs did not maintain cash book and rest 50% although they maintained, only 3.1% maintained cash book in complete manner. The percentage of SHGs that maintained journal and trial balance completely were 15.6% and 3.1%, respectively. On the other hand, SHGs were found to maintain records of any other type by quite a higher percentage (37.5%). It can be concluded that SHGs were not so conversant in maintaining some formal type of records, however these were seen a bit more conversant in maintaining their own type of records. In case of NaRMGs also quite a significant percentage of NaRMGs did not write any formal type of records, although its' picture was comparatively better than SHGs.

Auditing is again another important aspect for maintaining transparency in management of SHG/NaRMGs. Following Table 4.7.4(c) shows that all the SHG/NaRMGs were audited by some internal members every year. The average number of internal audit made for SHGs per year was 3.4 and for NaRMG it was found as 3.3. Again 62.5% SHGs were found audited by some external agency and average no. of external audit came as 0.63. In case of NaRMGs picture was found better (68.8%) in regards to external auditing and average no. of external audit found to be 0.69.

Table 4.7.4(a) : Status of fund management by SHG/NaRMGs

Sources	Name of organisation	Name of district	
		Karbi Anglong	Dima Hasao
Seed money (Average Rs./SHG)	SHG (NERCORMP I)	11,250	9,625
	SHG (NERCORMP II)	35,625	25,000
Average annual budget (Rs./NaRMG)	NaRMG (NERCORMP I)	2,03,750	97,500
	NaRMG (NERCORMP II)	17,00,289	10,50,000
Savings (Average Rs./SHG)	SHG (NERCORMP I)	15,000	17,500
	SHG (NERCORMP II)	27,500	30,250

Table 4.7.4(b) : Status of maintaining records and accounts by SHG/NaRMGs (%)

Type of organisation	Status	Name of records				
		Ledger book	Cash book	Journal	Trial balance	Any other
SHG	Complete	18.80	3.10	15.60	3.10	37.50
	Incomplete	21.90	46.90	62.50	31.30	46.90
	Not written	59.30	50.00	21.90	65.60	15.60
NaRMG	Complete	31.30	18.80	31.30	12.50	43.80
	Incomplete	37.50	31.20	50.00	37.50	25.00
	Not written	31.20	50.00	18.70	50.00	31.20

Table 4.7.4(c) : Status of social auditing conducted by SHG/NaRMGs

Type of organisation	Status of auditing	Percentage involvement by SHG/NaRMG in auditing	Range of auditing	Average no. of audit
SHG	External	62.5	0-1	0.63
	Internal	100	2-4	3.4
NaRMG	External	68.8	0-1	0.69
	Internal	100	2-6	3.3

4.8 Constraints recorded in implementing the project and suggestions

NERCORMP was operational in Assam since 1999 along with two other North Eastern states. There are reports that NERCORMP has been successfully implementing in all the states of NE India since its inception and it is considered as one of the successful project in delivering its objectives and goals. Even though, a trial had been made here to identify the constraints if any in delivering the services towards its target groups and accordingly a trial had been made here to suggest remedial measures if possible in order to increase the effectiveness of the programme. In this respect, all together 17 numbers of questions were framed out to take the views from respondent beneficiaries as well as from some other stakeholders. The following Table 4.8(a) shows the details of constrains/problems identified by the respondents in getting their benefits from NERCORMP at district and state level. In Karbi Anglong district it is observed that political disturbance, frequent Bandh called by different organisations had come out as the biggest problems in implementing the project activities as 100% respondents viewed that. In addition to that problems like communication facilities (98.6%), lack of interest among the beneficiary respondents (70.8%), remoteness (75%), in-sufficient supply of seed money (55.6%) etc. were also visible as some of the important problems in the district. In Dima Hasao district also, same problems were identified by the respondents with slight variation in percentage. In addition to that, in this district 34.7% respondent viewed irregular and insufficient flow of fund from NERCORMP office is also a determining factor. Almost similar picture was noticed when it was considered as a whole in the state. More always similar type of problems were identified by Maulick (2009) in a study on NREGA in Uttar Pradesh, Padmavathi *et al.* (1998) on NWDPRA, Thomas *et al.* (2009) on watershed project in Kerala and Kulkarni and Sangle (1993) in watershed project activities in Maharashtra. Problems identified by Patel (1983) and Okaly (1991) were however not that much relevant in implementing NERCORMP in study areas. Khalache *et al.* (1994) also emphasised more on technical difficulties encountered by watershed beneficiaries.

In addition to the views collected from beneficiary respondents, views or ideas were also collected from various members of other Community Organisations and

stakeholders in connection to NERCORMP in order to identify the constraints in smooth functioning of the programme. Based on the views collected from beneficiary respondents as well as from other stakeholders the following specific problems were identified in both the project districts:

1. Remoteness of the project areas that creates/involves movement of the staff very difficult.
2. Non-availability of proper and cheap public communication system in most part of the project areas.
3. Frequent and sudden Bandh call announced by various organisations time to time create severe inconvenience to carry out various project activities in time.
4. Severe political instability persisting for last so many years in both the districts was seen one of the major problem in developing proper linkage with Govt. departments.
5. Amount of seed money given to SHGs for running various income generating activities was found to be comparatively less as reported by the respondents to diversify the activities in various field.
6. Flow of fund to run various project activities was found to be somewhat irregular as reported by some of the respondents that retards the smoothness of the programme.
7. Moreover, support from Govt. agency was not that much appreciable, as a result convergence with various line departments sometimes emerged as difficult.

In the light of the above problems highlighted by various stakeholders, trial had been made here to ask for suggestions to improve the effectiveness of the programme. The following Table 4.8(b) gives an idea on suggestions made by the respondents as well as stakeholders. In Karbi Anglong district, 100% respondent suggested to increase in supply of fund, more income generating activities and more supervision by NERCORMP staff. Some of the more suggestions put forward by the respondents/stakeholders were more capacity building programme (by 86.1%), enhancement of seed money (by 84.7%), provision of loan (by 83.3%), infrastructure

facilities (by 72.2%), linkage with Govt. department (65.3%), more training (61.1%), and linkage with bank (54.2%) etc.

In Dima Hasao district, out of various suggestions put forward by the respondents, the highest number of respondent (93.1%) put forward to increase in supply of money, followed by more income generating activities (91.7%), enhancement of seed money (68.1%), more supervision (65.3%), more capacity building programme (65.3%), more infrastructure facilities (65.3%), more training (61.1%), provision of loan (55.6%), linkage with Govt. Department (44.4%), linkage with bank (36.1%). In case of state as a whole, highest number of respondents (96.5%) suggested more supply of fund followed by more income generating activities (95.8%), more supervision (82.6%), enhancement of seed money (76.4%), more capacity building programme (75.7%), provision of loan (69.4%), more infrastructure facilities (68.7%), more training (61.1%), linkage with Govt. department (54.9%) and linkage with bank (45.1%). Patel (1983) and Khalache (1994) reported organisation of more training programmes for the beneficiaries as suggestion to improve the effectiveness in addition to some other suggestions.

Table 4.8(a) : Ranking of problems by the respondents

Name of the problems	Karbi Anglong district				Dima Hasao district				Total			
	Yes	Percentage	No	Percentage	Yes	Percentage	No	Percentage	Yes	Percentage	No	Percentage
1. Are you happy with the functionaries ?	68	94.44	4	5.56	71	98.61	1	1.39	139	96.53	5	3.47
2. Are NERCORMP staffs well trained ?	70	97.22	2	2.78	70	97.22	2	2.78	140	97.22	4	2.78
3. Is NERCORMP office has less staff ?	15	20.83	57	79.17	27	37.50	45	62.50	42	29.17	102	70.83
4. Is seed money sufficient ?	32	44.44	40	55.56	26	36.11	46	63.89	58	40.28	86	59.72
5. Are you happy with hierarchy of organisation ?	70	97.22	2	2.78	71	98.61	1	1.39	141	97.92	3	2.08
6. Is the work relevance to local people ?	72	100.00	0	0.00	71	98.61	1	1.39	143	99.31	1	0.69
7. Is the flow of fund regular and sufficient ?	59	81.94	13	18.06	47	65.28	25	34.72	106	73.61	38	26.39
8. Are the staff cooperating with villagers ?	67	93.06	5	6.94	70	97.22	2	2.78	137	95.14	7	4.86
9. Is there any political disturbance ?	72	100.00	0	0.00	68	94.44	4	5.56	140	97.22	4	2.78
10. Are NaRMG members active ?	56	77.78	16	22.22	61	84.72	11	15.28	117	81.25	27	18.75
11. Are NGOs and COs coordinating ?	68	94.44	4	5.56	72	100.00	0	0.00	140	97.22	4	2.78
12. Does frequent bandh has any adverse affect ?	72	100.00	0	0.00	72	100.00	0	0.00	144	100.00	0	0.00
13. Is communication a problem ?	71	98.61	1	1.39	68	94.44	4	5.56	139	96.53	5	3.47
14. Is lack of interest among the households a problem ?	51	70.83	21	29.17	45	62.50	27	37.50	96	66.67	48	33.33
15. Is remoteness a problem	54	75.00	18	25.00	47	65.28	25	34.72	101	70.14	43	29.86
16. Are project staff not sufficiently involved ?	14	19.44	58	80.56	12	16.67	60	83.33	26	18.06	118	81.94
17. Is availability of fund is a problem ?	13	18.06	59	81.94	15	20.83	57	79.17	28	19.44	116	80.56

Table 4.8(b) : Suggestions given by the respondents

Name of suggestions	Karbi Anglong district				Dima Hasao district				Grand total			
	Yes	Percentage	No	Percentage	Yes	Percentage	No	Percentage	Yes	Percentage	No	Percentage
1. Supply of more money	72	100.00	0	0.00	67	93.06	5	6.94	139	96.53	5	3.47
2. More training	44	61.11	28	38.89	44	61.11	28	38.89	88	61.11	56	38.89
3. More IGA	72	100.00	0	0.00	66	91.67	6	8.33	138	95.83	6	4.17
4. Infrastructure facilities	52	72.22	20	27.78	47	65.28	25	34.72	99	68.75	45	31.25
5. Linkage with Govt. department	47	65.28	25	34.72	32	44.44	40	55.56	79	54.86	65	45.14
6. Linkage with bank	39	54.17	33	45.83	26	36.11	46	63.89	65	45.14	79	54.86
7. Provision of loan	60	83.33	12	16.67	40	55.56	32	44.44	100	69.44	44	30.56
8. Enhancement of seed money	61	84.72	11	15.28	49	68.06	23	31.94	110	76.39	34	23.61
9. More Supervision	72	100.00	0	0.00	47	65.28	25	34.72	119	82.64	25	17.36
10. More capacity building programme	62	86.11	10	13.89	47	65.28	25	34.72	109	75.69	35	24.31

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APPENDICES

Appendix I

Interview schedule

A Study on Performance of North Eastern Region Community Resource Management Project for Upland Areas in Assam

SHG /NaRMG Profile

1. Name of the SHG/NaRMG :
2. Year of establishment :
3. Number of members in the SHG
4. Location :
   a) Village : b) Block :
   c) District : d) NERCORMP I/NERCORMP II (Pls. √)
5. Periodicity of meeting held in the SHG/NaRMG (Weekly/fortnightly/monthly) (Pls. √)
6. Membership fee for each member per month Rs.
7. Whether SHG/NaRMG is getting any financial assistance ? If yes, please furnish the details.
8. Whether SHG/NaRMG has received seed money/revolving fund/assistance etc. from NERCORMP ? (Yes/No)
9. If yes, the amount Rs.....
10. Whether SHG/NaRMG has bank account ? (Yes/No), if yes, in which bank.....
11. Please mention the activities carried out by the SHG/NaRMG during last five years:
    i) ii)
    iii) iv)
    v) vi)
12. Training exposure of SHG under NERCORMP (during last five years)

Sl No.	Name of the training institute	Training area	Duration	No. of participants

13. Bank loan taken if any during last 2 years? (Yes/No)
    If yes, the amount of loan ..... and the name of the bank .....

PART 1 (for SHG/NaRMG member)

A. Personal and socio-economic profile of individual SHG/NaRMG member

1. Name of respondent :
2. Respondent category : President/Secretary/Treasurer/General member (Pls. √)
3. Age :..... 4. Sex : Male/Female 5. Marital status : Single/Married/Widow
6. Social category : Tribal/Non tribal 7. Type of family : Nuclear/Joint
8. Family details :

Name of the member	Age	Education	Participation in project (Yes/No)	If yes, name of the activity

9. Occupation : Daily wage earner/Non farm business/service(Govt./Private)/Agril activities
10. Land holding status : Land owned/leased in land/leased out land
11. Education : i) Illiterate ii) Just literate iii) Primary school

iv) Middle school v) Metric/H.S vi) Graduate and above

12. Type of house : a) Katcha b) Semi pucca c) Pucca
13. How are you aware of NERCORMP ?
    a) Village extension worker b) Agril officer c) Mass media d) Any other dept.
14. From which year are you associated with NERCORMP ?
15. Are you attending group meeting regularly ? (Yes/No)
16. Are you contributing regularly the monthly fee? (Yes/No)
17. Did you get any bank loan through SHG/NaRMG? (Yes/No)
18. If yes, when you have taken the loan and how much amount ?.....; .....
19. Where have you utilised your loan ? (production/consumption/education/any other)
20. Did you repay the loan in time ? (Yes/No)
21. Have you attended any training programme under NERCORMP ? (Yes/No)
22. If yes, are you benefited from those training ? (Yes/No)
23. Training area imparted to you under NERCORMP : (Please tick)
    a) Natural resource management b) Livestock management c) Credit management
    d) Marketing management e) Terrace management f) Plantation crops g) Any other issue
24. Indicate your participation in different local organisations

Name of the organisation	Member/office bearer	Participation		
		Regularly	Occasionally	Never
GP				
FO				
Community organisation				
Other				

25. Decision making pattern :

Particulars	Decision taken by		
	Head of the family	Both parents	Parents and adult members
Decision related to crop production			
Decision related to land development activities			
Decision related to natural resource management activities			
Decision related to livestock management			
Any other activity			

26. Is your household listed in the government BPL register ?
27. If yes, do you have access to any government facilities allotted for BPL family? (Yes/No)

B. Forest based livelihood of the respondent SHG/NaRMG member (household)

1. Natural resources available in the study area are : (Pls tick √)
    a) Soil b) Water c) Forest d) Livestock e) Human being
    f) All above
2. How is your community conserve and manage forest and other natural resources? (Pls tick √)
    a) Managed by village head man b) Managed by a group formed by village head
    c) Managed by external agency/JFMG d) No system of management
3. Does the village maintain any rules and regulations towards community biodiversity reserve? (Yes/No)
4. Categories of reserve forest available : (Pls tick √)
    a) Thatch reserve b) Broom reserve c) Water catchment reserve
    d) Riverine protection (fish) e) Forest and wildlife reserve f) No such reserve forest

5. How do you use the common reserve forest in the village ?

Sl No.	Purpose	Yes/No
1	To collect fodder for livestock	
2	Used for livestock grazing	

3	Used for collecting NTFP	
4	Used for collecting fuel wood	
5	Any other uses	

6. Details of major forest products collected from forest:

Name of major forest products	Amount collected annually (aprox)	Aprox. Value of the products (Rs.)	Used		
			Consumption	Selling	For domestication
Fuel wood					
Timber					
Wild edible food					
Medicinal plants					

7. Details of NTFP/minor forest products collected from forest :

Name of Minor forest products	Amount collected annually (aprox)	Aprox. value of products (Rs.)	Used		
			Consumption	Selling	For domestication
Broom					
Cane					
Honey					
Bamboo					
Stone					
Bamboo					
Thatch grass					
Wild edible plants					

8. Details of cultivated forest product:

Name of forest crops cultivated	Area under crop (ha)	Annual production	Value of products (Rs.)	Used		
				Consumption	Selling	For domestication
Broom grass						
Orange						
Banana						
Tezpatta						
Areca nut						
Mulberry						
Ilachi						
Cashew						
Coffee						
Tea						

9. Details of value added forest products :

Name of forest product	Total production annually	Annual income	Use		
			Consumption	Selling	Domestication
Bamboo					
Cane					
Agarbatti stick					
Basket					
Other handicraft					

products					

10. Details of agro-forestry development :

Sl. No	Forest tree species	Agril. crops	Horticulture crops	Total no. of crops grown (per ha)

11. Details of agriculture activities practiced by your family

Sub system	If practiced (Yes/No)	Area (ha)	Ownership (Private/community/leased in)	No. of years cultivated
Jhum				
Terrace (Pani kheti)				
Orcharad/Plantation				
Homestead garden				
Agro forestry				
Forestry				

C. Impact of NERCORMP on socio-economic and livelihood status

a) On farming

1. Have you changed the crops or cropping pattern as a result of intervention of this project? (Yes/No)
2. Indicate the crops that are grown :

Before				After			Changes observed (increase/decrease)
Sl. No.	Name of the crop	Area (ha)		Sl. No.	Name of the crop	Area (ha)	

3. Indicate the cropping patterns followed :

Before				After		
Kharif	Rabi	Summer		Kharif	Rabi	Summer

4. Crop yield recorded now:

Before				After			Increase/ decrease
Sl. No.	Crop	Yield (kg/ha)		Sl. No.	Crop	Yield (kg/ha)	

b) On household assets

5. Please tick the asset available in your family, and also mention the number and approx. value.

Sl no.	Name of asset	Numbers available	Approx value		Sl no.	Name of asset	Numbers available	Approx value
1	House				10	Water pump		
2	Phone				11	Four wheeler		
3	Radio				12	Power tiller		
4	Tape recorder				13	Tractor		
5	TV/DVD/VCD				14	Sprayer		
6	Refrigerator				15	Any other		
7	Bicycle							
8	Sewing machine							
9	Bike/Scooter							

c) On income and consumption pattern of household :

1. Annual household income (Based on last 12 months)

Enterprise/activities	Amount (Rs.)		Enterprise/activities	Amount (Rs.)
i) Agriculture			viii) Sale of eggs	
ii) NTFP collection			ix) Sale of goat/hen/pig/bullock	
iii) Major forest product collection			x) Business	
iv) Wage labourer			xi) Artisan work	
v) Fishery			xii) Sale of meat	
vi) Piggery			xiii) Any other	
vii) Sericulture				

2. Annual household expenditure (Based on last 12 months)

Activities	Amount (Rs.)		Activities	Amount (Rs.)
i) Food items			viii) Consumable goods (Soap, surf etc.)	
ii) Milk			ix) Purchase and repair of fixed assets	
iii) Education for children			x) Social and religious expenditure	
iv) Fuel and electricity			xi) Recreation	
v) Health care			xii) Pan, tobacco, wine etc.	
vi) Cloths			xiii) Any others	
vii) Transportation				

d) Response on livelihood improvement :

Indicate your response on the following issues/aspects by **high/medium/low/no change**

Issues/aspects	Response as high/medium/low/no change	
	Before the project	After the project
1. Human assets		
1.1 Education of family member		
1.1.1 Ability to educate the children as per the desired		
1.1.2 Ability to send children to dist. Hqt. Or state Hqt. for studies		
1.1.3 Encouragement of women members for education		
1.1.4 School drop out cases		
1.2 Employment generation		
1.2.1 Mandays of employment/annum a) Head of the family b) Self c) Other members of the family		
1.2.2 Development of skill on work a) Head of the family b) Self c) Others members of the family		
1.2.3 Understanding about improved technology a) Improved farming b) Income generating activities		
2. Physical assets		
2.1 Dwelling house		
2.1.1 Renovation of the house		
2.1.2 Construction of the house		
2.2 Farm equipment/household articles		
2.2.1 No. of bullock/cows		
2.2.2 Availability of tractor/other farm equipments		
2.2.3 Availability of other household assets like TV/radio/Bike etc.		
3. Natural assets		
3.1 Improvement of agril crops		
3.2 Improvement of plantation crops (Hort./forest/grass etc.)		
3.3 Land improvement activity 3.3.1 Levelling 3.3.2 Manuring 3.3.3 Bunding		
3.4 Milch animals 3.4.1 Cows/buffaloes 3.4.2 Goats/sheep 3.4.3 Poultry		
4. Social assets		
4.1 Organisation participation		
4.1.1 Membership a) SHG b) GP c) CO d) FO		
4.1.2. Office bearer a) SHG b) GP c) CO		

d) FO		
4.2 Social status		
4.2.1. At home		
4.2.2. Outside home		
4.3.Extent of trust		
4.3.1 In self		
4.3.2 In peer group		
4.3.3 In society		
4.3.4 In local leader		
5. Financial asset		
5.1 Savings		
5.1.1 In cash		
5.1.2 In banks		
5.1.3 In SHG		
5.1.4 In the form of durable asset		
5.2 Debt		
5.2.1 Local SHG		
5.2.2 In Bank/Cooperative society		
5.2.3 Money lender		
5.2.4 Others		
6. Food security		
6.1 Availability of food grains		
6.1.1 During the production season		
6.1.2 During offseason		
6.2 Availability of feed		
6.2.1 During the production season		
6.2.2 During offseason		
6.3 Availability of vegetables/milk etc.		
6.3.1 During the production season		
6.3.2 During offseason		

Indicate if any other changes you have observed because of project :

D. Information on sustainability issues :

1. Institutional sustainability: (Information to be collected from local institutions such as SHG/NaRMG/NGO/CO etc.

a) Whether local institution have been formed under the guidance of the project: (yes/no)
If yes, indicate type of institution, objectives and functions

Sl. No.	Type of institution	Objectives	Functions
1	SHG		
2	NaRMG		
3	NGOs		
4	Others		

b. Indicate the representation from different families :

Sl No.	Type of institution	Gender (nos.)		Families from which represented (nos.)			
		Men	Women	LF	SF	MF	LL
1	SHG						
2	NaRMG						
3	NGOs						

4	Others						
	Total number of families						

LF-Large farmer, SF-Small farmer, MF-Medium farmer, LL-Land less farmer

c. Performance of the organisations

Sl No.	Name of organisation	Expected role	Actual role	
			Project period	After project period
1	SHG			
2	NaRMG			
3	NGOs			
4	CO			
5	Any others			

d. Meeting frequency of the organisations (during last 1 year)

Sl. No	Name of organisation	Date of meeting	Members present		Purpose of meeting
			Men	Women	

e. Linkage with other departments:

Sl No.	Name of the dept.	Whether linkage developed (Yes/no)	No. of times contacted during the year	Purpose
	Agriculture			
	Horticulture			
	Animal husbandry			
	Bank			
	Others			

2. Financial sustainability

2.1 Fund management (Applicable only for SHG/NaRMG/NGO etc.)

Indicate the details of budget received and spent

Year	Amount received by the project (Rs.)	Expenditure made (Rs.)	Savings made (Rs.)	Remarks
2010-11				
2011-12				
2012-13				
2013-14				

2.2 Income/revenue generation :

a) Have you received revolving fund/budget allocation form the project? If yes, give details (applicable to SHG/NaRMG only)

Year	Total amount received (Rs.)	Purpose	Utilisation (Rs.)
2010-11			
2011-12			
2012-13			
2013-14			

b) Indicate the recovery status of revolving fund (SHG only)

Year	Principal amount (Rs.)	Interest (Rs.)	Total (Rs.)

c) Revenue generation : (Applicable only to SHG)

Source/activities	Revenue generated (Rs.)	Monthly (Rs.)	Yearly (Rs.)
Forestry			
Fishery			
Piggery			
Jhum			
Interest from revolving fund			
Any others			

d) Savings and benefits

Sources	Amount		
	Yearly	No. of years	Total
Savings			
Revolving fund			
Interest			
Any other			

e) Are you maintaining the records of accounts properly ? (Yes/No)

f) Status of record and accounts ;

Name of the book	Status			Name of the book	Status		
	Complete	Incomplete	Not written		Complete	Incomplete	Not written
Ledger book							
Cash book							
Journal							
Trial balance							

g) Have you carried out social auditing ? (Yes/no)

If yes, what is the status ?

Type	Frequency per year	From whom auditors are taken
External		
Internal		

3. Social sustainability

3.1 People participation

Have you participated in project management ? (Yes/No)

If yes indicate the following

Stage/area	Extent of participation		
	Always	Sometime	Not at all
1. Planning			
Have you participated in providing basic information			
Have you participated in framing the project activities			
Have you participated in Gram Sabha			
Have you participated in mobilisation of farmers			
2. Implementation			
Supervision of activities in your area			
Supervision of management of community resources			
Supervision on development of community works			
3. Monitoring and evaluation			
Have you monitored activities that are implemented by the project			
Have you participated on evaluation activities of the project			

3.2 Equity

a) Does the project made any initiative to ensure participation of the following vulnerable group ? If yes, tick the following

i) Landless people ii) Women iii) SC/ST iv) Others

b) Does the project has taken any activity to involve vulnerable group of people (Yes/No)

If yes tick the following

i) Landless people ii) Women iii) SC/ST iv) Others

3.3 Democratic functioning

Indicate your views on the following for functioning of the project activities

Types of work	Involvement				
	Concerned beneficiary	Executive committee	General Body	Village leader	Project staff
Selection of beneficiary					
Selection of site					
Management of revolving fund					
Works relating to community resource management					
Works on social sector, infrastructure development etc.					
Organisation of training					

4. Technical sustainability

4.1 Indicate the extent to which the activities selected by the project is suitable to local situation

Sl No.	Activities taken up	Suitability		
		Most suitable	Some what suitable	Not suitable
1	Capacity building activities of local communities			
2	Economic and livelihood activities			
3	Extension and technology transfer activities			
4	Credit services in terms of revolving fund			
5	Social sector activities			
6	Bio diversity conservation and management			
7	Marketing support to local communities			

4.2 Did the project followed integration of activities during implementation of project activities (Yes/No)

If yes, indicate your response on combination of activities.

Sl No.	Nature of activities	Extent followed		
		Most of the cases	Some cases	Not followed
1	Agro forestry and crop production			
2	Crop production and livestock production			
3	Shifting cultivation as well as plantation crops			
4	Erosion checking as well as forest plantation			
5	Agri horticulture and agri silviculture practices			
6	Crops and sequence of crops adjustment			

4.3 Did you observe any impact because of the project activities ? (Yes/No)

If yes, indicate the extent

Sl No.	Activities	Impact		
		Most of the cases	Some cases	Not observed
1	Increase in crop yield			
2	Increase in livestock production			
3	Increase vegetable/crop production			
4	Increase in yield of forest products			
5	Increase in fodder production			
6	Increase in NTFP			
7	Reduction in soil erosion/deforestation			
8	Improvement in soil fertility			
9	Increase income per unit area			
10	Reduce cost of production			

5. Environmental sustainability

5.1 Increased vegetation

Have you observed any increase of vegetation cover ? (Yes/No), If yes, indicate

Sl No.	Type	Increase area (ha)
1	Forest cover	
2	Agricultural crop cover	
	Kharif	
	Rabi	
	Summer	
3	Horticultural crop cover	
4	Fodder/grass cover	

5.2 Indigenous technology

Have the project consider and implement the indigenous technology available in project area? (Yes/No)

If yes, indicate

Sl No.	In the field of	Taken up/not taken up	Extent		
			Most of the cases	Some cases	Not at all
1	Afforestation				
2	Erosion checking				
3	Water harvesting				
4	Crop production techniques				
5	Local variety				
6	Local livestock breed				
7	Techniques of community resource				

	management				

5.3 Environmental effect

Have you observed any affect on the surrounding because of the project ? (Yes/No)

If yes, indicate your response

Sl No.	Activities	Positive affect	Negative affect
1	Soil		
2	Air		
3	Plants		
4	Animal		
5	Human being		

E. CONSTRAINTS AND SUGGESTIONS

a) Performance of NERCORMP

Given below are the some important criteria relating to NERCORMP. Give your ranking on a five point scale

Sl No.	Name of criteria	Very good	Good	Satisfactory	Poor	Very poor
1	Selection of beneficiaries/households					
2	Selection of villages					
3	Selection of works/activities in the village					
4	Selection of NaRMG members					
5	Execution of works					
6	Supervision of works					
7	Quality of works executed					
8	Quality of NERCORMP personnel					
9	Support from govt. agency					
10	Support from local organisation/NGOs etc.					
11	Benefits to the villagers					

b) According to you what is the overall impact of NERCORMP on the following :

Sl No.	Criteria	Increase	Decrease	No change
1	Livestock			
2	Income			
3	Expenditure			
4	Liability			
5	Savings			
6	Empowerment of women			

c) Are you happy with the functioning of NERCORMP functionaries ? (Yes/No)

d) Do you feel that NERCORMP functionaries/staff are well trained or well versed about the programme ? (Yes/No)

e) Do you feel that NERCORMP office is less staff ? (Yes/No)

f) Do you think that the amount of seed money given to SHG is sufficient ? (Yes/No)

g) Are you happy with the hierarchy of the organisation ? (Yes/No)

h) Whether the work under taken under NERCORMP has relevance to the need of the local community ? (Yes/No)

i) Do you think that flow of fund for various project activities is regular and sufficient ? (Yes/No)

j) Are the NERCORMP staff cooperating nicely with the villagers ? (Yes/No)

k) Political disturbance prevailed in the area has a hindrance on the functioning of NERCORMP ? (Yes/No)

l) Do you think that NaRMG members are active in pursuing their duties ? (Yes/No)

m) Whether local NGOs and other Community Organisations are coordinating properly ? (Yes/No)

n) Any other problems :

i)

ii)

iii)

Suggestions if any :

i)

ii)

iii)

iv)

Date : (Signature of the respondent)

Appendix II

Pearson's correlation coefficient to assess the relationship between different types of assets with each of selected independent variable in Karbi Anglong district

	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
Age	1.000									
Family type	-0.203	1.000								
Occupation	0.098	-0.063	1.000							
Land holding	0.072	-0.159	0.262	1.000						
Respondent's education	0.217	-0.485	-0.065	0.251	1.000					
House type	0.173	-0.399	-0.099	0.242	0.754	1.000				
Income	0.258	-0.312	-0.078	0.201	0.750	0.824	1.000			
Expenditure	0.200	-0.313	-0.098	0.294	0.758	0.793	0.857	1.000		
Training attended	0.048	0.018	-0.126	-0.192	0.215	0.224	0.321	0.277	1.000	
Category	0.037	0.140	-0.077	0.014	-0.155	-0.100	-0.030	-0.032	-0.037	1.000
Human asset	0.228	0.015	-0.079	-0.134	0.082	0.063	0.101	0.029	0.134	-0.110
Physical asset	0.197	-0.057	0.004	0.038	0.161	0.044	0.148	0.110	0.074	-0.130
Natural asset	0.050	-0.075	-0.139	0.003	0.154	0.217	0.271	0.153	0.083	0.226
Social asset	0.092	0.092	-0.044	-0.086	0.008	0.042	0.002	-0.031	-0.060	0.258
Financial asset	0.016	-0.116	-0.003	0.106	0.032	0.046	0.077	0.099	0.077	0.249
Food security asset	0.133	0.027	0.181	0.035	0.016	0.046	0.020	-0.036	0.055	0.205
Overall asset	0.280	-0.058	-0.033	0.002	0.208	0.181	0.268	0.148	0.140	0.190

Pearson's correlation coefficient to assess the relationship between different types of assets with each of selected independent variable in Dima Hasao district

	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
Age	1.000									
Family type	-0.228	1.000								
Occupation	0.214	-0.344	1.000							
Land holding	0.029	-0.063	0.204	1.000						
Respondent's education	-0.197	0.061	-0.291	-0.069	1.000					
House type	0.069	0.210	-0.090	0.126	0.279	1.000				
Income	0.384	-0.022	-0.117	0.109	0.120	0.475	1.000			
Expenditure	0.263	0.089	-0.119	0.131	0.112	0.600	0.836	1.000		
Training attended	0.064	-0.004	0.106	0.072	-0.215	0.067	-0.059	-0.005	1.000	
Status of respondent	0.160	0.235	-0.063	-0.015	0.258	-0.015	0.119	0.107	-0.146	1.000
Human asset	0.348	0.001	-0.208	0.027	-0.206	0.035	0.167	0.054	0.118	-0.047
Physical asset	0.241	-0.219	0.107	-0.137	0.242	0.349	0.246	0.152	0.085	-0.032
Natural asset	0.287	0.098	-0.143	0.148	-0.187	0.116	0.449	0.253	-0.056	0.375
Social asset	0.032	0.258	-0.266	-0.071	0.097	-0.043	-0.023	-0.038	-0.101	0.126
Financial asset	0.031	-0.069	0.049	0.125	0.049	-0.031	0.048	0.093	-0.016	0.298
Food security asset	0.058	0.122	0.142	0.154	-0.017	-0.046	0.053	0.009	0.038	0.187
Overall asset	0.428	-0.004	-0.066	0.052	0.038	0.255	0.439	0.245	0.049	0.301

Pearson's correlation coefficient to assess the relationship between different types of sustainability indexes with each of selected independent variable in Karbi Anglong district

	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
Age	1.000									
Family type	0.315	1.000								
Occupation	-0.001	0.037	1.000							
Land holding	0.158	0.000	0.219	1.000						
Respondent's education	0.010	-0.277	-0.128	0.041	1.000					
House type	0.193	0.100	-0.088	-0.239	0.260	1.000				
Income	0.075	-0.023	-0.065	-0.145	0.354	0.613	1.000			
Expenditure	0.126	0.134	-0.138	0.038	0.323	0.457	0.806	1.000		
Training attended	0.034	-0.161	-0.117	0.034	0.146	-0.022	-0.082	-0.036	1.000	
Status of respondent	0.053	0.106	-0.123	-0.025	-0.264	-0.239	-0.243	-0.217	-0.134	1.000
SSI	-0.022	-0.055	0.244	0.214	0.041	-0.128	-0.122	-0.152	0.031	-0.409
TSI	-0.091	0.025	0.139	0.048	-0.223	-0.242	-0.208	-0.242	-0.246	0.348
ESI	-0.052	-0.053	0.148	0.114	-0.174	-0.332	-0.230	-0.254	-0.115	-0.118
OSI	-0.080	-0.037	0.277	0.198	-0.146	-0.311	-0.260	-0.305	-0.149	-0.106

Pearson's correlation coefficient to assess the relationship between different types of sustainability indexes with each of selected independent variable in Dima Hasao district

	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
Age	1.000									
Family type	-0.228	1.000								
Occupation	0.214	-0.344	1.000							
Land holding	0.029	-0.063	0.204	1.000						
Respondent's education	-0.197	0.061	-0.291	-0.069	1.000					
House type	0.069	0.210	-0.090	0.126	0.279	1.000				
Income	0.384	-0.022	-0.117	0.109	0.120	0.475	1.000			
Expenditure	0.263	0.089	-0.119	0.131	0.112	0.600	0.836	1.000		
Training attended	0.064	-0.004	0.106	0.072	-0.215	0.067	-0.059	-0.005	1.000	
Status of respondent	0.160	0.235	-0.063	-0.015	0.258	-0.015	0.119	0.107	-0.146	1.000
SSI	0.197	-0.172	-0.155	0.195	0.143	0.052	0.167	0.139	0.027	-0.305
TSI	0.244	-0.073	-0.097	-0.106	-0.077	-0.145	0.035	-0.082	-0.044	0.165
ESI	0.061	-0.253	0.107	0.017	-0.370	-0.031	0.015	0.156	-0.002	-0.287
OSI	0.271	-0.238	-0.109	0.078	-0.081	-0.051	0.130	0.104	-0.006	-0.216

Appendix II

Pearson's correlation coefficient to assess the relationship between different types of assets with each of selected independent variable in Karbi Anglong district

	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
Age	1.000									
Family type	-0.203	1.000								
Occupation	0.098	-0.063	1.000							
Land holding	0.072	-0.159	0.262	1.000						
Respondent's education	0.217	-0.485	-0.065	0.251	1.000					
House type	0.173	-0.399	-0.099	0.242	0.754	1.000				
Income	0.258	-0.312	-0.078	0.201	0.750	0.824	1.000			
Expenditure	0.200	-0.313	-0.098	0.294	0.758	0.793	0.857	1.000		
Training attended	0.048	0.018	-0.126	-0.192	0.215	0.224	0.321	0.277	1.000	
Category	0.037	0.140	-0.077	0.014	-0.155	-0.100	-0.030	-0.032	-0.037	1.000
Human asset	0.228	0.015	-0.079	-0.134	0.082	0.063	0.101	0.029	0.134	-0.110
Physical asset	0.197	-0.057	0.004	0.038	0.161	0.044	0.148	0.110	0.074	-0.130
Natural asset	0.050	-0.075	-0.139	0.003	0.154	0.217	0.271	0.153	0.083	0.226
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Overall asset	0.280	-0.058	-0.033	0.002	0.208	0.181	0.268	0.148	0.140	0.190

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	Age	Family type	Occupation	Land holding	Respondent's education	House type	Income	Expenditure	Training attended	Status of respondent
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Occupation	0.214	-0.344	1.000							
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Respondent's education	-0.197	0.061	-0.291	-0.069	1.000					
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Status of respondent	0.160	0.235	-0.063	-0.015	0.258	-0.015	0.119	0.107	-0.146	1.000
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House type	0.193	0.100	-0.088	-0.239	0.260	1.000				
Income	0.075	-0.023	-0.065	-0.145	0.354	0.613	1.000			
Expenditure	0.126	0.134	-0.138	0.038	0.323	0.457	0.806	1.000		
Training attended	0.034	-0.161	-0.117	0.034	0.146	-0.022	-0.082	-0.036	1.000	
Status of respondent	0.053	0.106	-0.123	-0.025	-0.264	-0.239	-0.243	-0.217	-0.134	1.000
SSI	-0.022	-0.055	0.244	0.214	0.041	-0.128	-0.122	-0.152	0.031	-0.409
TSI	-0.091	0.025	0.139	0.048	-0.223	-0.242	-0.208	-0.242	-0.246	0.348
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Pearson's correlation coefficient to assess the relationship between different types of sustainability indexes with each of selected independent variable in Dima Hasao district

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Status of respondent	0.160	0.235	-0.063	-0.015	0.258	-0.015	0.119	0.107	-0.146	1.000
SSI	0.197	-0.172	-0.155	0.195	0.143	0.052	0.167	0.139	0.027	-0.305
TSI	0.244	-0.073	-0.097	-0.106	-0.077	-0.145	0.035	-0.082	-0.044	0.165
ESI	0.061	-0.253	0.107	0.017	-0.370	-0.031	0.015	0.156	-0.002	-0.287
OSI	0.271	-0.238	-0.109	0.078	-0.081	-0.051	0.130	0.104	-0.006	-0.216

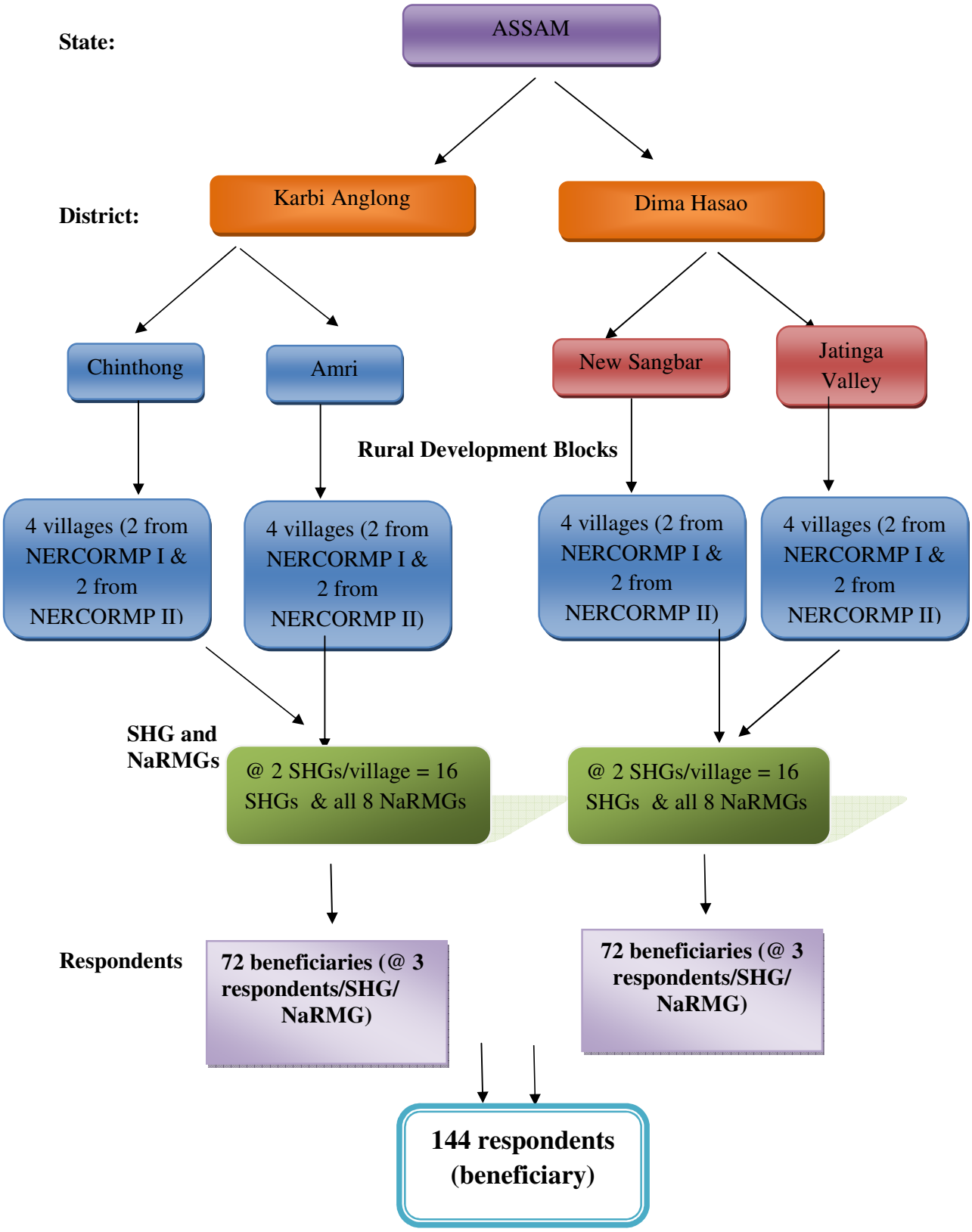


Fig. 3.1 : Sampling details of the present study (Beneficiary)

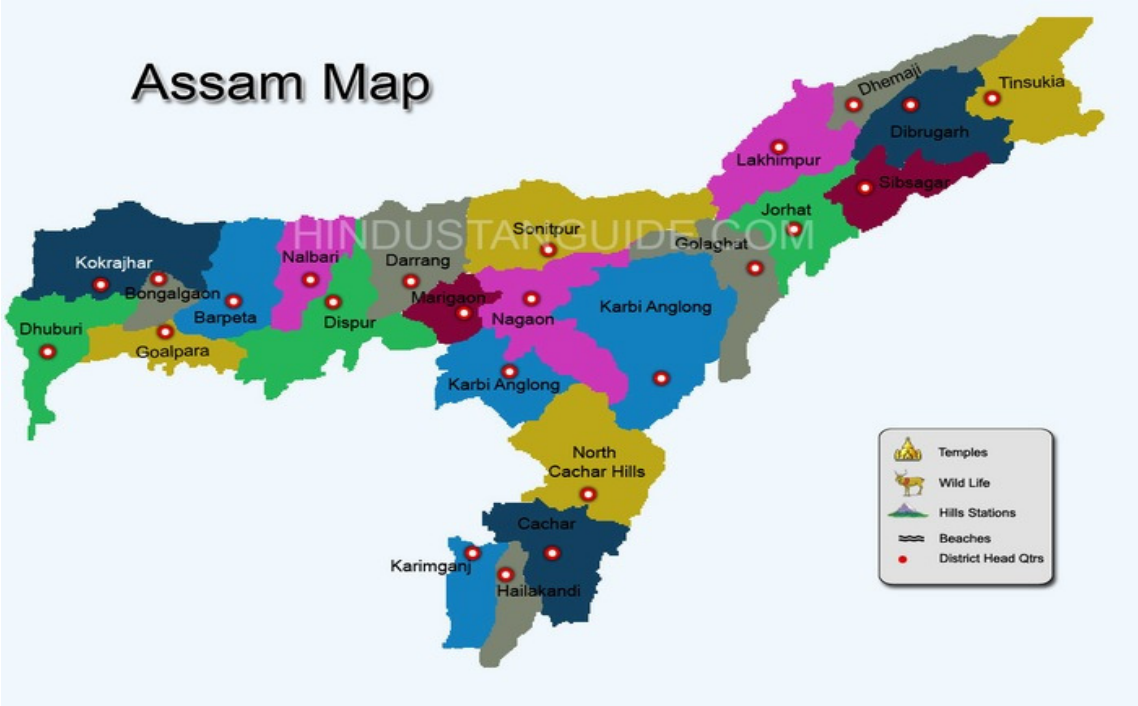
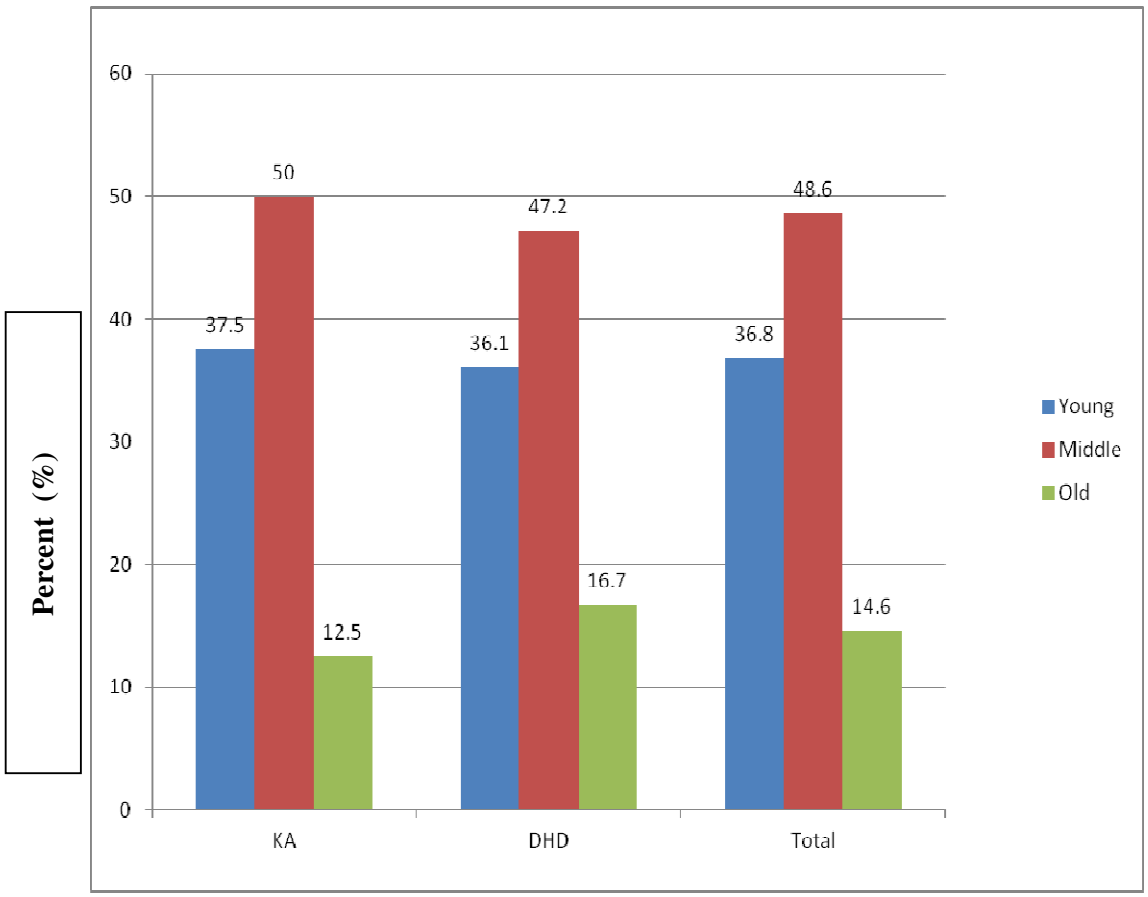
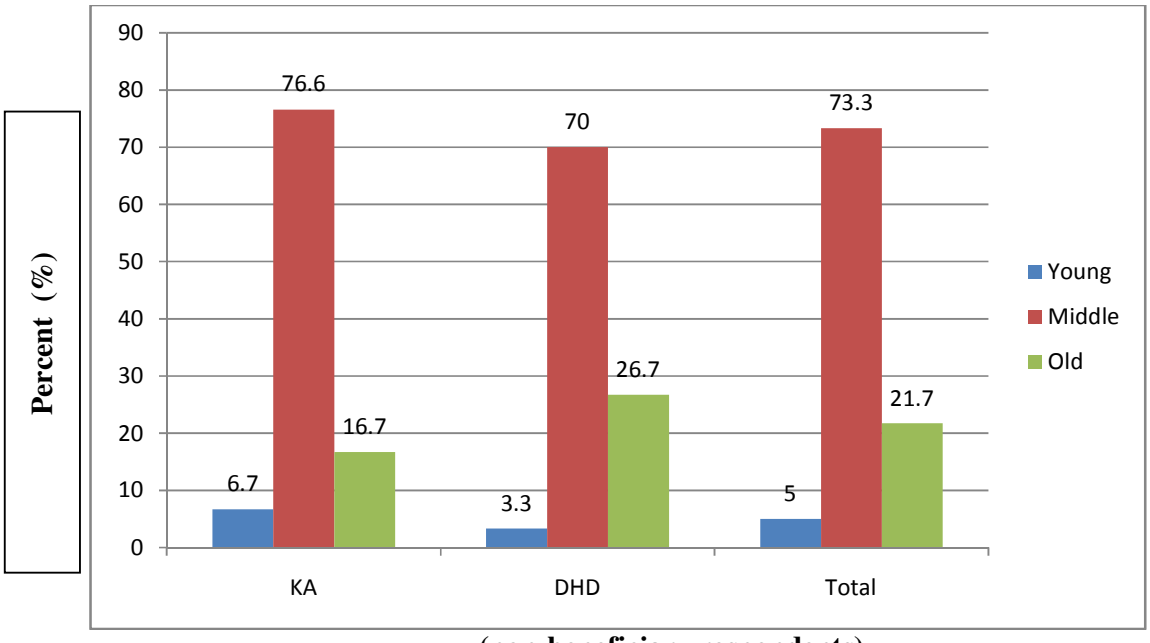


Fig. 3.2 : Map of Assam showing study areas

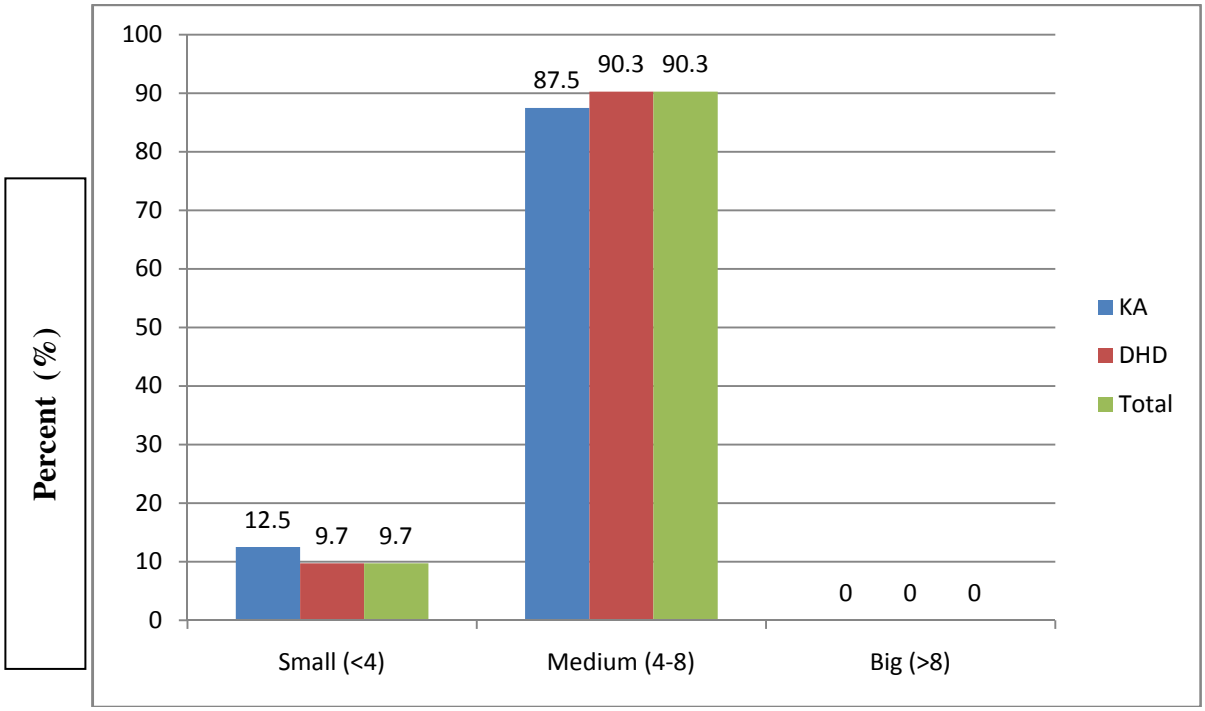


(beneficiary respondents)

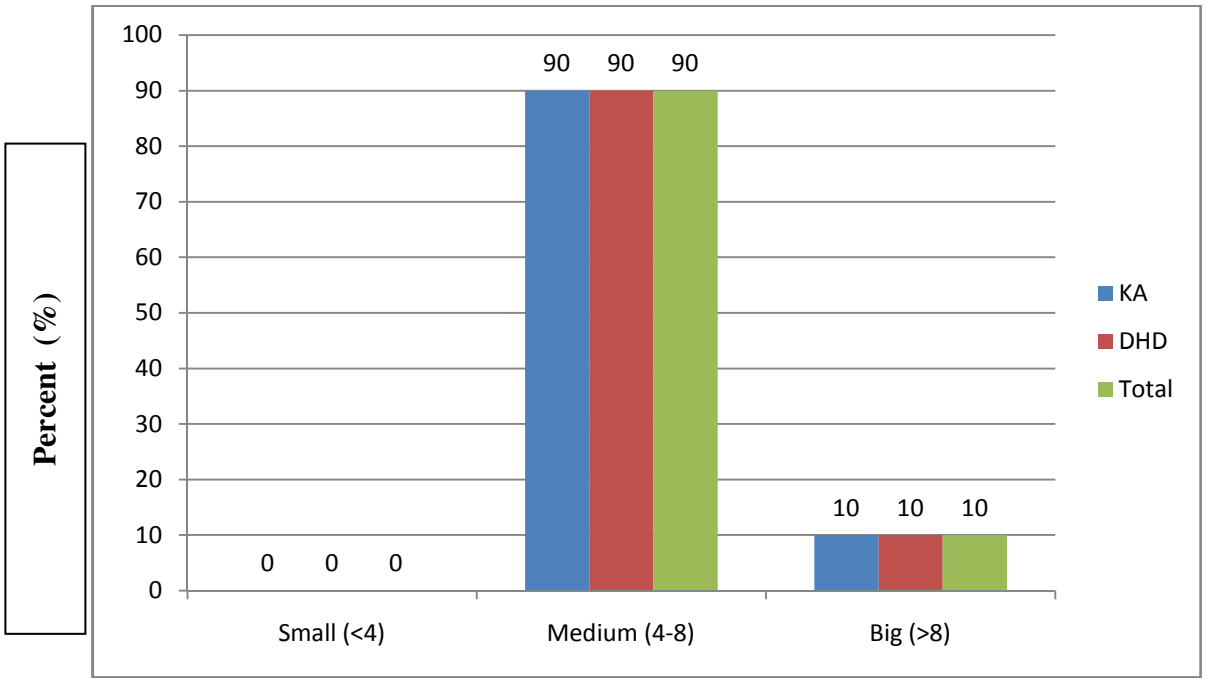


(non-beneficiary respondents)

Fig. 4.1 : Distribution of respondents based on their age

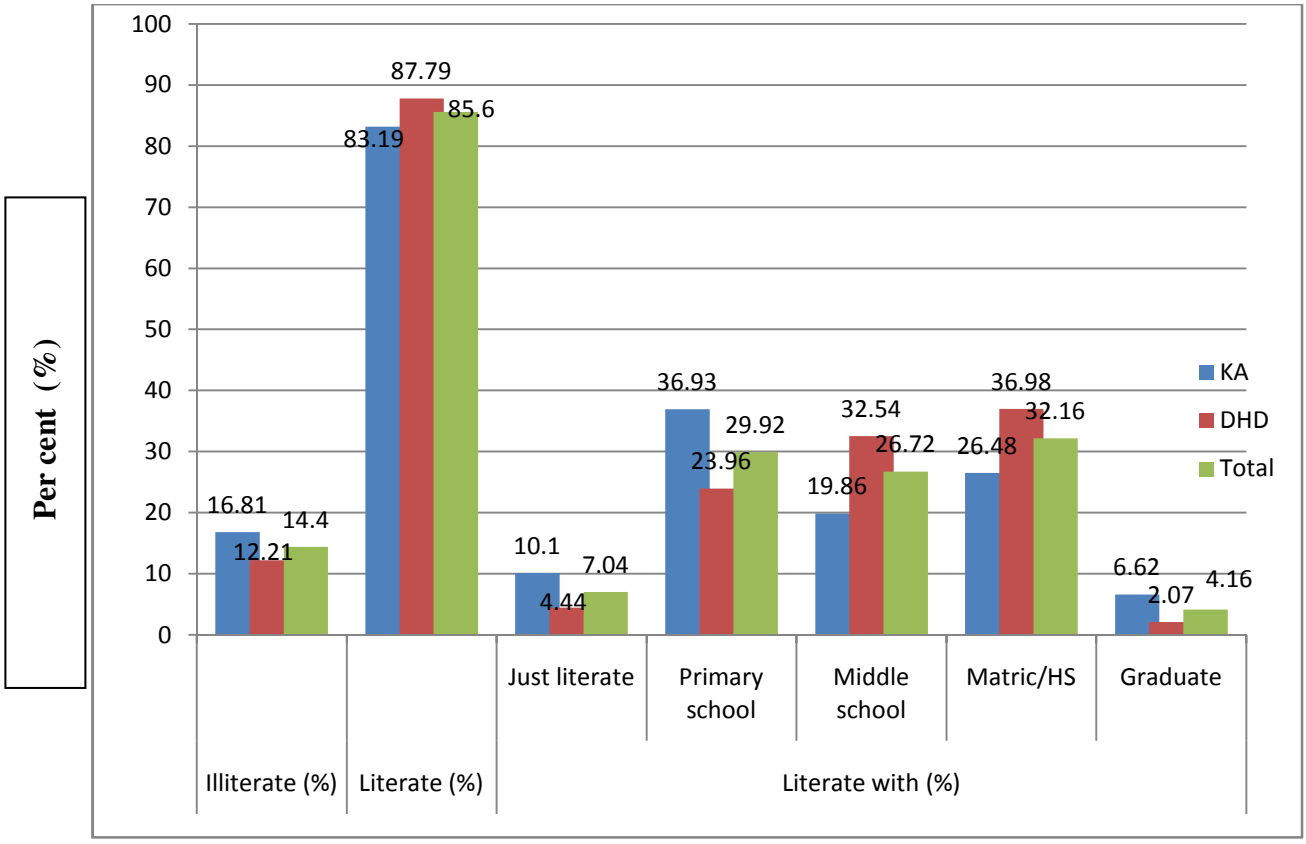


(beneficiary respondents)

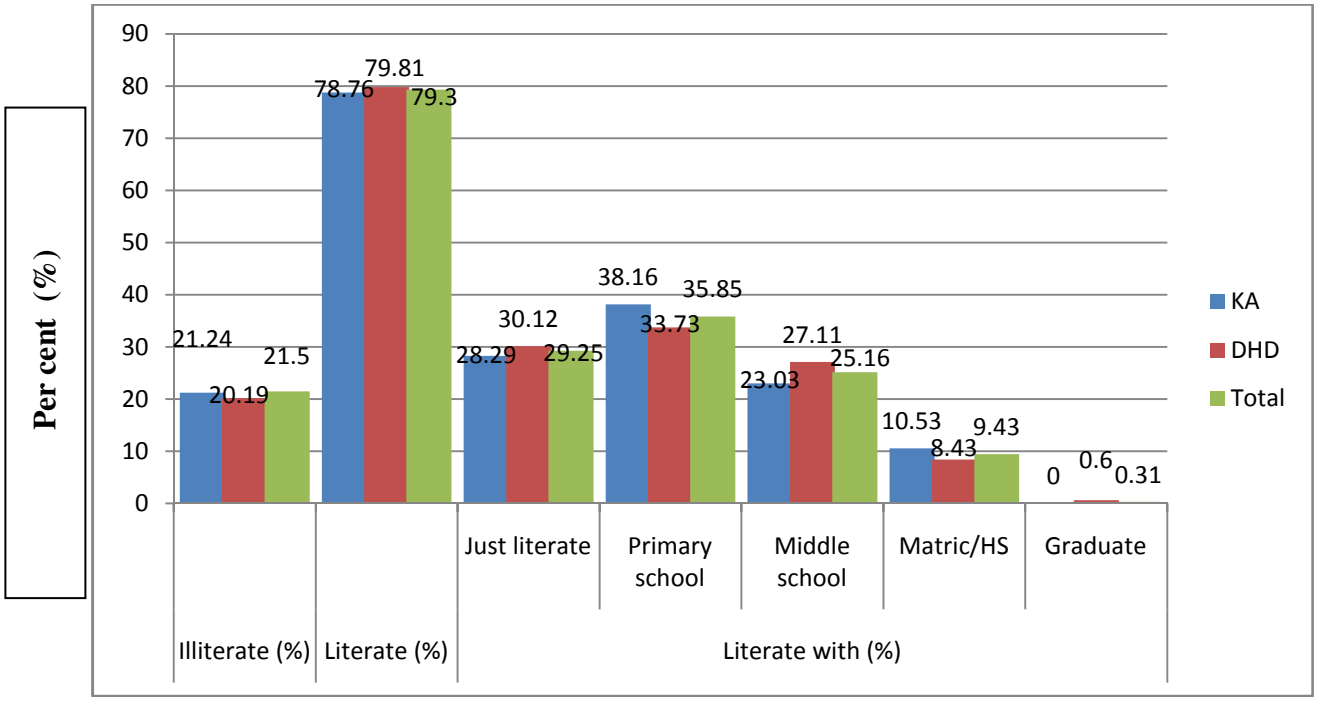


(non-beneficiary respondents)

Fig. 4.2 : Size of family among the respondents



(beneficiary respondents)



(non-beneficiary respondents)

Fig. 4.3 : Literacy status among the respondents' population

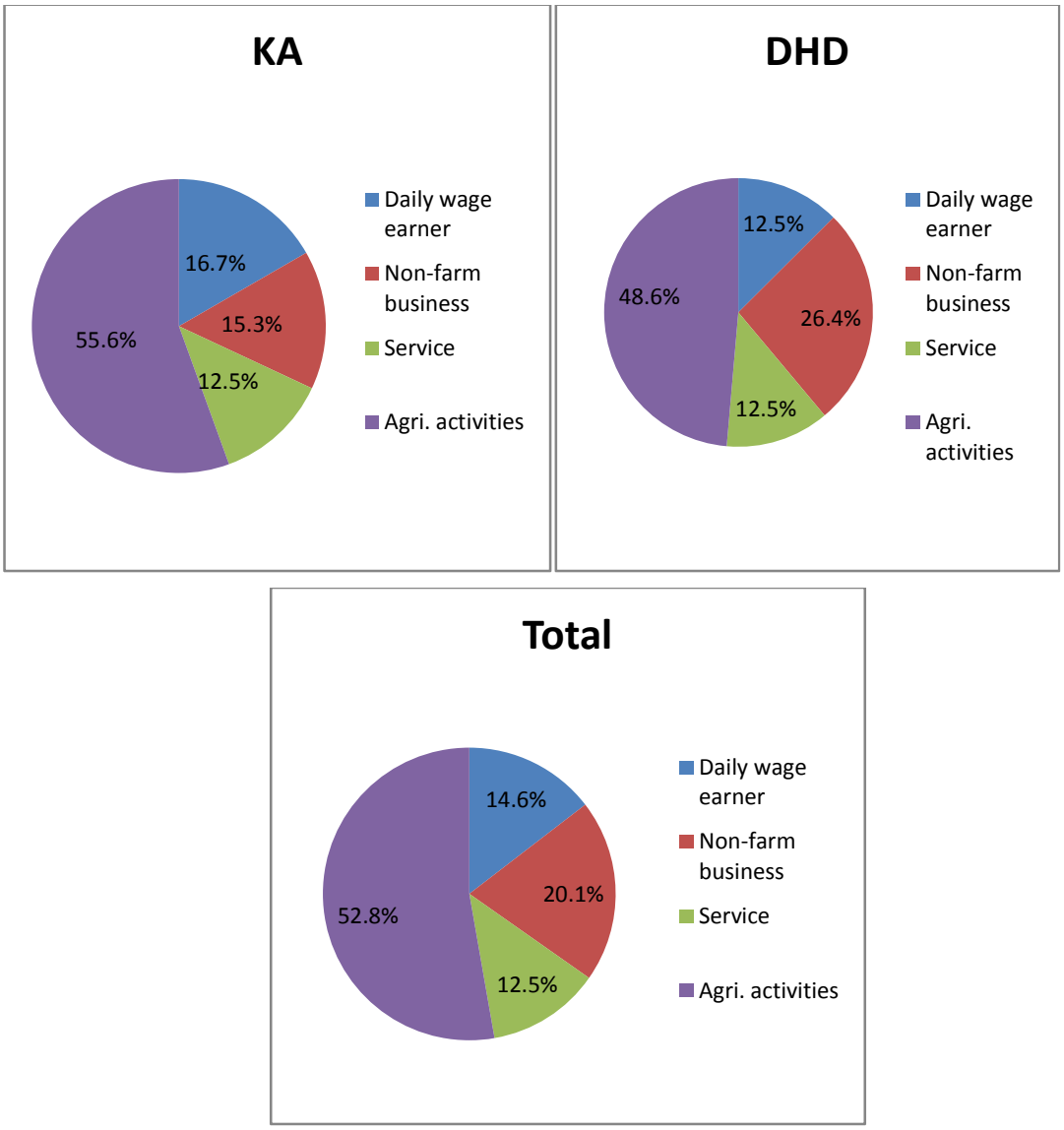


Fig. 4.4 : Classification of respondents based on occupation among the beneficiary

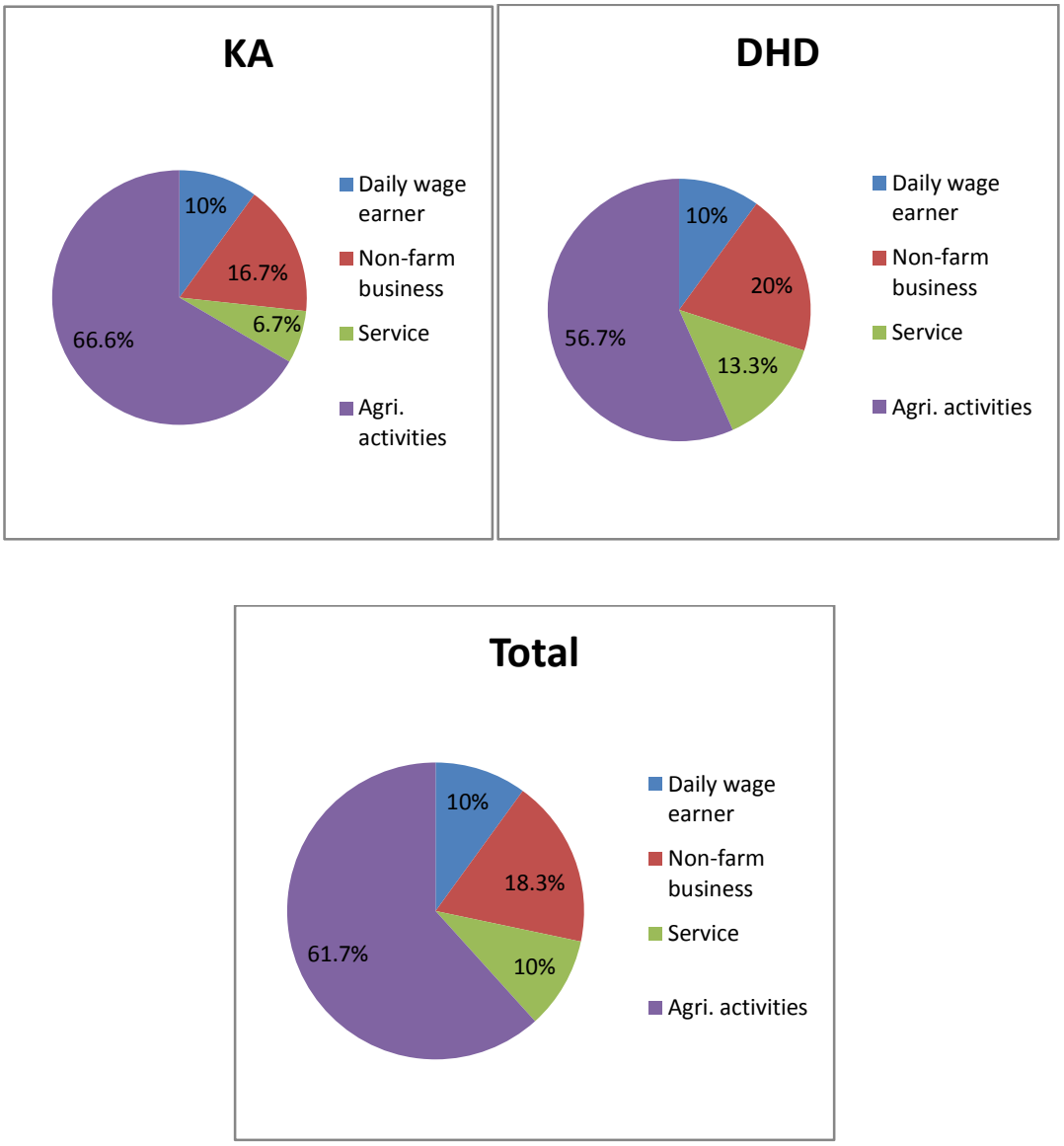


Fig. 4.5 : Classification of respondent based on occupation among the non-beneficiary

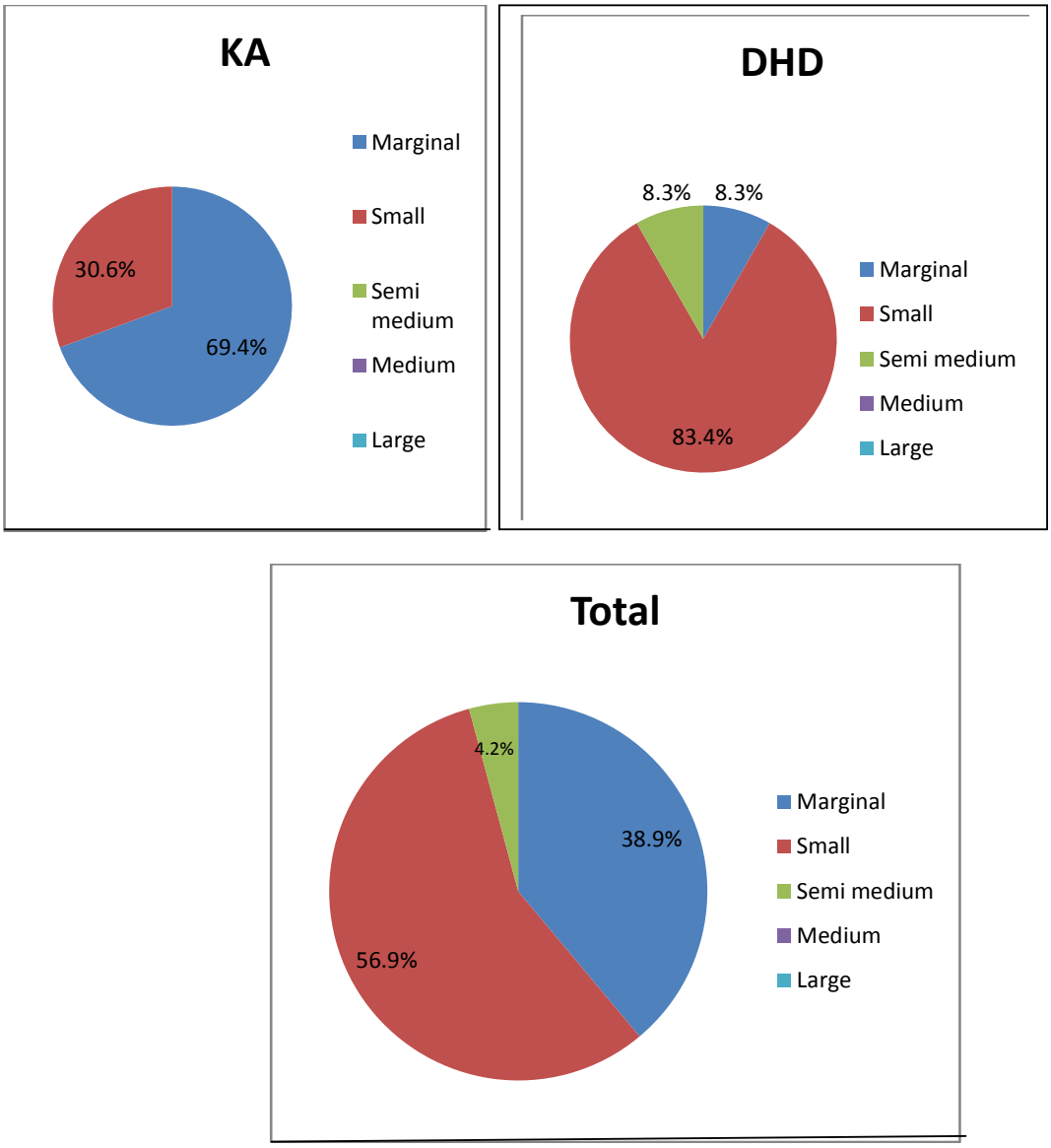


Fig. 4.6 : Classification of respondent based on land holding among the beneficiary respondents

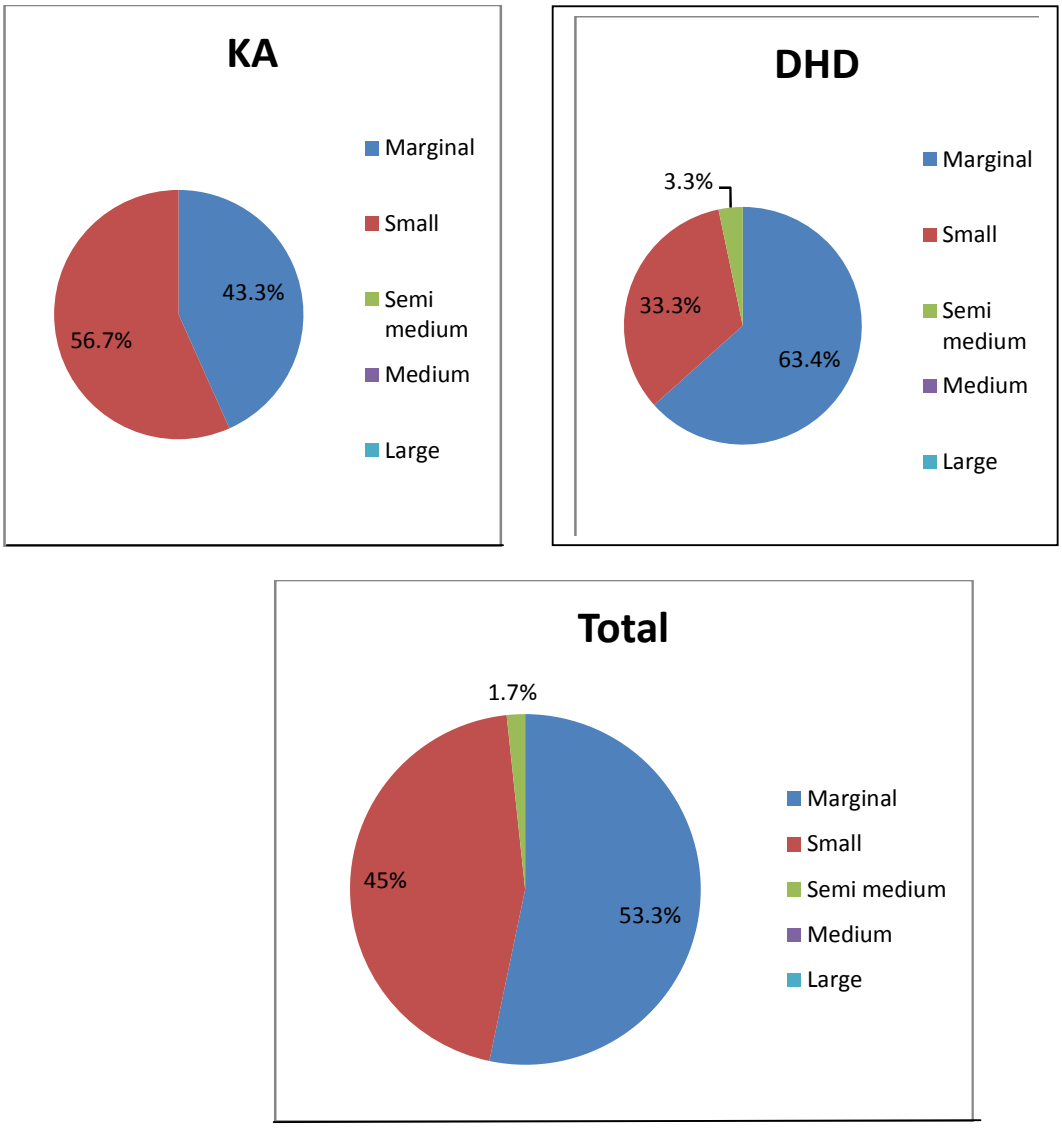


Fig. 4.7 : Classification of respondent based on land holding among the non-beneficiary respondents

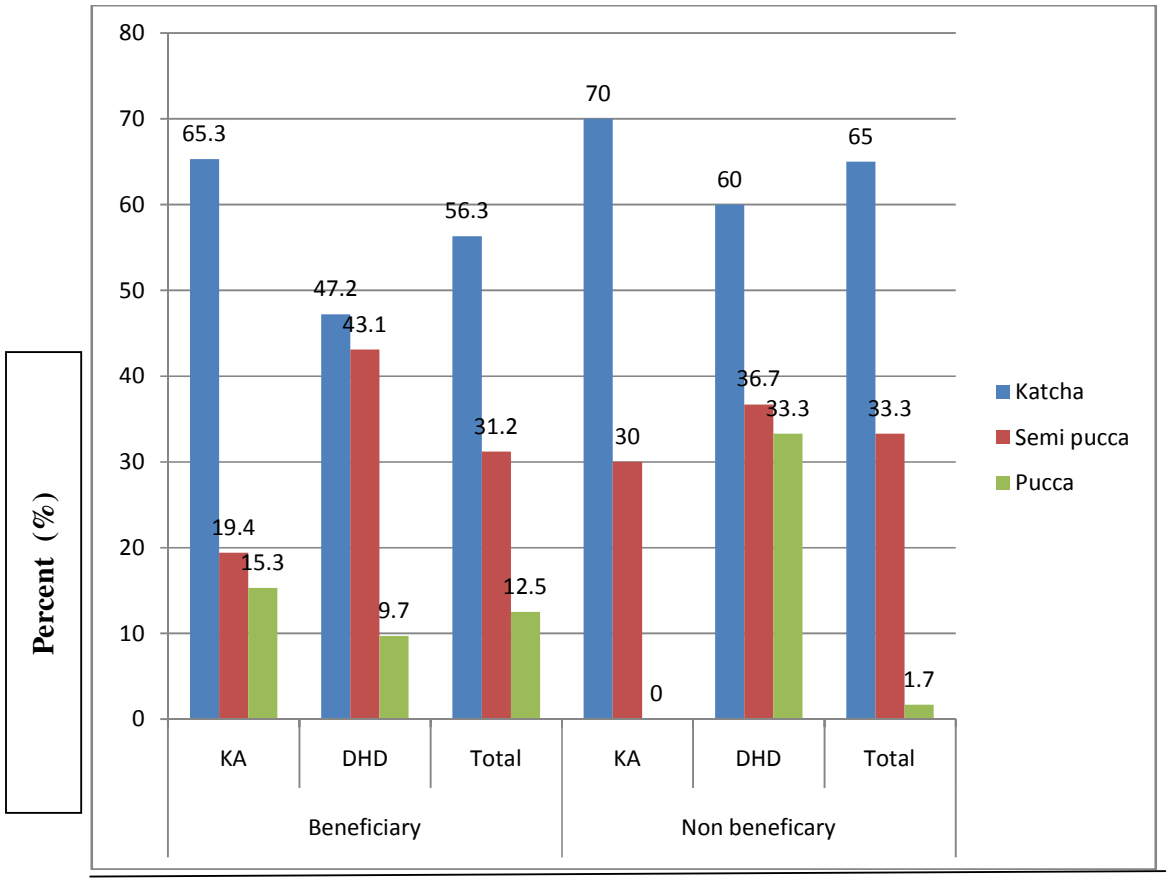
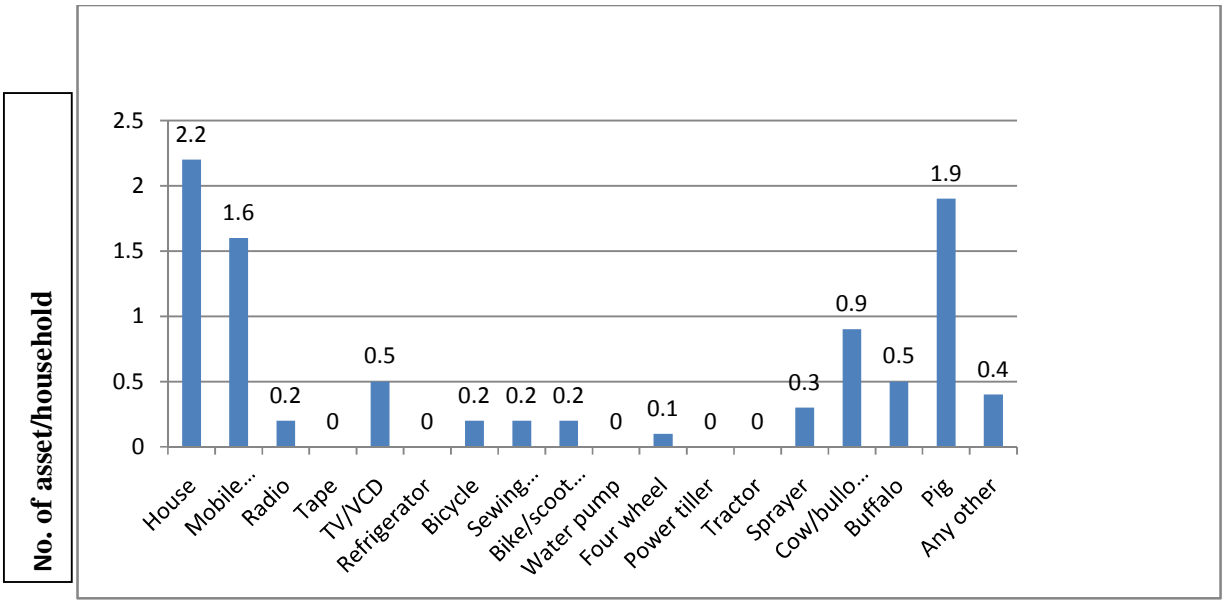
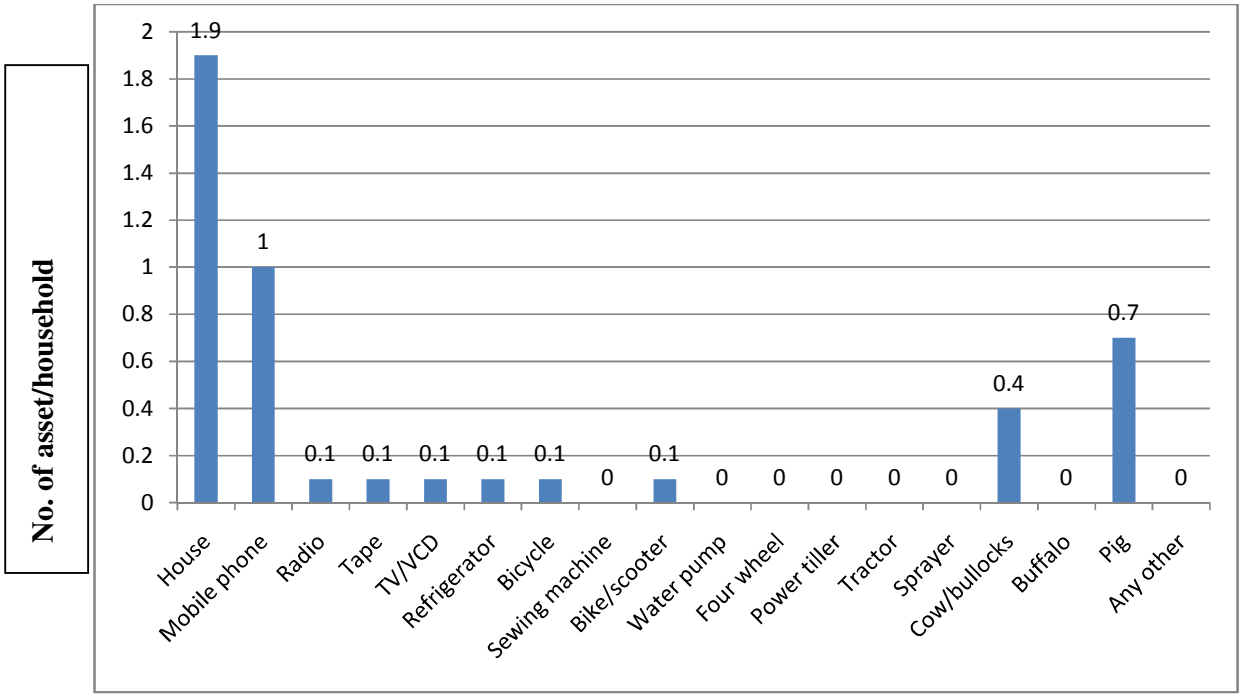


Fig. 4.8 : Classification of respondent based on type of house among the respondents

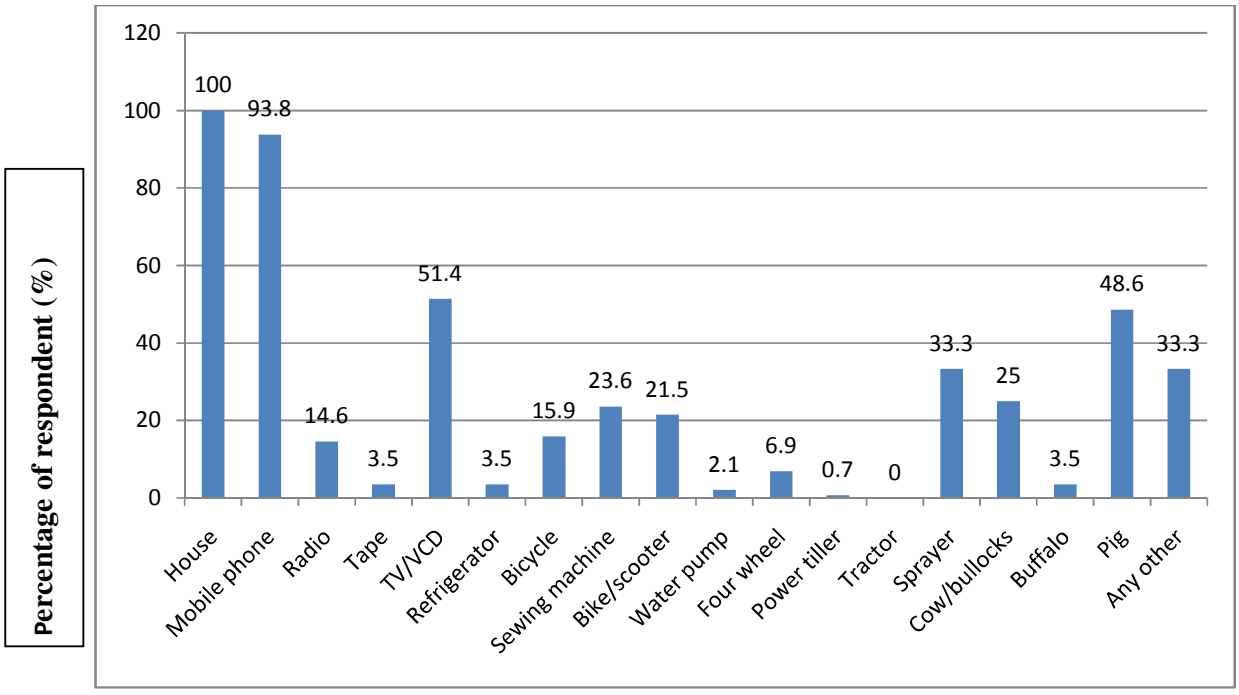


(beneficiary respondents)

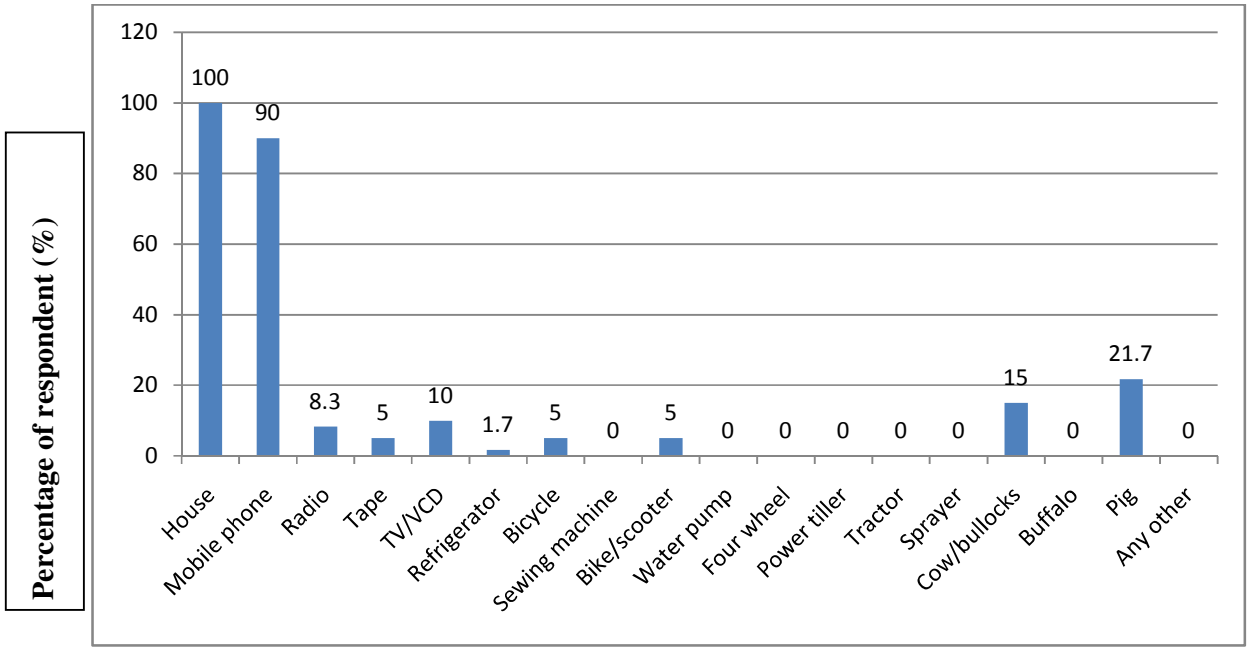


(non-beneficiary respondents)

Fig. 4.9 : Types of household assets among the respondents



(beneficiary respondents)



(non-beneficiary respondents)

Fig. 4.10 : Types of household assets with percentage of respondents

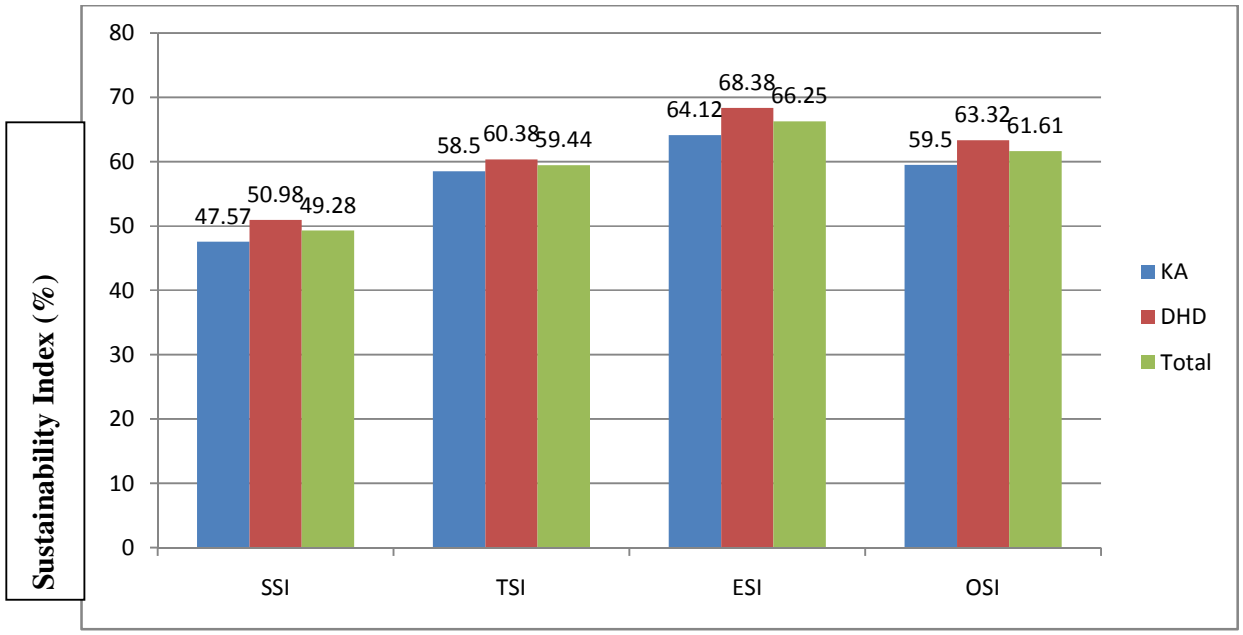


Fig. 4.11 : Sustainability index of NERCORMP activities at district level

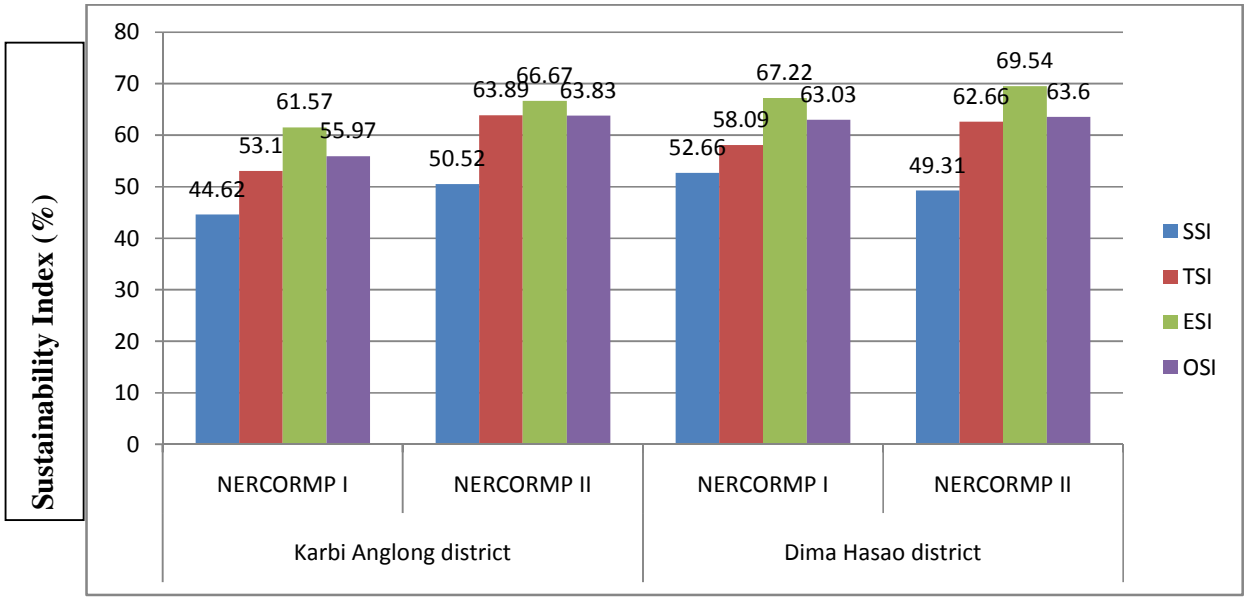


Fig. 4.12 : Sustainability index of NERCORMP activities by NERCORMPI/NERCORMPII

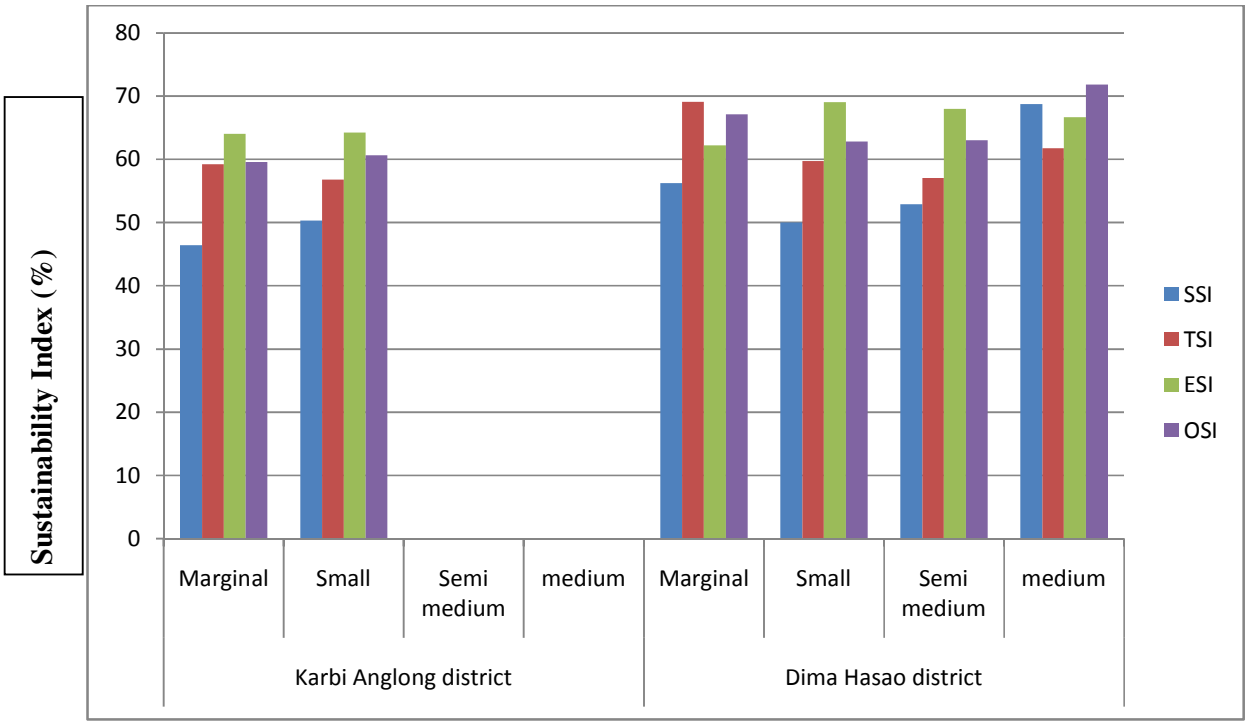


Fig. 4.13 : Sustainability index of NERCORMP activities by category of respondents