

**AN ASSESSMENT OF THE LEVEL OF RURAL DEVELOPMENT IN JALPAIGURI
DISTRICT, WEST BENGAL**

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Declaration

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Preface

The present work entitled An Assessment of the Level of Rural Development in Jalpaiguri District, West Bengal, is very much effective in order to find out the different aspects of rural development in Jalpaiguri district which is predominantly a rural region. In India, development of the socio-economic conditions of the weaker sections in rural areas has been receiving considerable attentions of the planners, policy makers, researchers and different development agencies. Rural development is a comprehensive and has multiple dimensions. Development should be seen as an activity or a process of both qualitative and quantitative changes in the existing systems in order to improve the living conditions of the people. In other words rural development is viewed as a programme intended for all round development of the entire rural population through development of all sectors of the rural society. The basic objective of rural development is to organize, develop and utilize the available resources in such a manner that the rural population who are dependent upon these resources get the equitable opportunity to meet their minimum basic needs.

Over the years a number of rural development programmes have been implemented in the rural areas of the country for achievements of various aspects like full employment, eradication of poverty, provision of basic necessities, increase in the productivity of rural economic sectors and infrastructural development. Despite the augmentation of the social and economic provisions available to the people yet majority of the rural population still lies below poverty line with agriculture and allied activities as their primary occupation. It is due to the lack of infrastructural facilities and unfavourable socio-economic conditions which creates inequalities and disparities in the levels of socio-economic development. The purpose of the present study is to identify and evaluate the existing infrastructural facilities, potentialities of rural development programmes and to suggest appropriate remedies necessary for the future development of rural Jalpaiguri district.

Jalpaiguri district is situated in the northern part of West Bengal and is bordered by Bhutan in the north, Darjeeling district in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar district in the east. In order to assess the level of rural development various socio-economic and infrastructural parameters of the district have been evaluated. For this, various problems like scarcity of pure drinking water, poor health care facilities, poor communication system, low irrigational facilities, poor nature of transportation, problems of sanitation facilities and households without electrification are among the most serious constraints which have been taken into account.

This study is an empirical field based study. To examine the level of rural development in Jalpaiguri district a suitable sample size has been chosen for the study from the total inhabited villages of the district. It is based on both primary and secondary data collected personally through field survey at a household level and through published and unpublished government records. The study has concentrated on the demographic, social, economic and infrastructural aspects in relation to rural development. Besides these aspects, the study attempts to evaluate the existing income generated rural development programmes in relation to the level of rural development. The quantitative methods prevailing in this field of research have been applied in the analysis and for the preparation of the maps.

The present study has been divided into ten chapters. The first chapter uses to account the introductory part of the research. It introduces the review of literature, objectives, hypothesis, data sources, methodology of the work done and the research design. Chapter II briefly traces the historical and the geographical background of the study area. It presents the physical as well as the cultural set up of the district including topography, geology, drainage, climate, natural vegetation, distribution of population, economy and transport. Chapter III is concerned with the meaning, conceptual framework, scope and importance of rural development. It discusses the history of rural development and a brief description of the five year plans and the rural development policies and programmes.

Chapter IV deals with the demographic aspects of the study area presenting the population distribution, growth, density, sex ratio, age-sex composition, occupational structure, population by religious group, ethnic structure and literacy rate of the study area. Chapter V examines the social structure reflecting the rural development. It highlights the number of educational institutions, level of literacy, health care facilities, housing structure, sanitation facilities and the awareness of women in terms of economic and social development. Chapter VI focuses the economic structure and rural development. The study presents the land utilization pattern, size of land holding, waste land holding, cropping pattern, category of labourers, sources of income, monthly income and expenditure, annual indebtedness and purpose of indebtedness.

Chapter VII presents an outlook of the infrastructural provisions and facilities in Jalpaiguri district. It focuses upon the various facilities like drinking water, electrification, availability of regular and periodic market, banking facilities, rural communication system, rural connectivity and recreational provision. Chapter VIII presents the impact of the rural development programmes and policies upon the rural masses. It highlights the social development and income generated rural development schemes implemented in the study

area. Chapter IX give a brief description of the problems of the study area suggesting some relevant measures necessary for the development of the study area and at last chapter X deals with the conclusion of the entire research.

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Abstract

Rural development is a multifaceted concept which implies the improvement in the quality of lives of the rural people. The objectives of rural development are multi-directional which includes the raise in the per capita income of the rural masses, improvement in agriculture and allied activities, development in the provision of basic amenities and progress in all aspects of human resources. It is a process which enhances the social and economic well-being of the rural people. For the success of sustainable development in the rural areas, Government of India has formulated plans and implemented programmes for the overall development of the rural people especially the rural poor. Fundamentally, the rural development plans and policies have been designed to increase the equity in the production and distribution system along with the enhancement in generating job opportunities for the rural masses both in agricultural and in non-agricultural sectors. However, despite the significant efforts the rural poor continues to live in poverty along with inadequate provisions of basic amenities, infrastructure and poor communication system.

Hence, rural development is essential in an agrarian economic structure in India and Jalpaiguri district is no exception where the rural areas are confronted with the multiple problems in different aspects. Therefore the present research work attempts to find out the level of rural development in the study area highlighting the strategies of development in terms of infrastructural provisions, level of the literacy rate, housing structure, health care facilities, the economic structure and the impact of the rural development policies and programmes implemented in the rural areas of Jalpaiguri district. The present study aims to evaluate the disparities in the level of rural development amongst the blocks in terms of social, economic and infrastructural parameters. The research work has been done more precisely for the purpose of identifying the problems of the study area and accordingly suggests some remedial measures in order to ensure better socio-economic life of the rural masses. Furthermore, the study aims to evaluate the income generated rural development programmes implemented in the study area and assess the level of rural development.

The study pertains to Jalpaiguri district which extends between $26^{\circ}15'47''$ to $26^{\circ}59'34''$ N latitude and $88^{\circ}23'2''$ to $89^{\circ}7'30''$ E longitude comprising an area of 3044 km^2 . According to Census, 2011, the total population of the district is 2,381,596 in 7 C.D. Blocks, 80 Gram Panchayats and 391 inhabited villages. Jalpaiguri district is situated in the northern part of West Bengal and is bordered by Bhutan in the north, Darjeeling district in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar district in the east.

The present research work is based on four major hypothesis- i) Infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration. ii) The higher the level of literacy rate among the females the better is the economic growth in the rural households. iii) There is a significant rise in the level of family income and the per capita income from the pre-assistance period to post-assistance period. iv) Enhancement in generating alternative sources of employment varies in the remote villages and the villages adjoining to municipal areas.

In order to validate the first hypothesis the availability of infrastructural facilities has been observed in proportion to population. The government norms and regulations have been identified in order to validate this hypothesis that the infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration. The second hypothesis has been tested by Chi-square test for independence of attributes taking attribute A as forms of literacy and attribute B as monthly household income. The Chi-squared statistic values along with their degrees of freedom and p-value has been observed to draw the inferences of the hypothesis. For the third hypothesis Paired t- test has been used for each range of income where the difference in average family income has been considered for each block for the pre-assistance and post-assistance period. The corresponding t-statistic values, degree of freedom along with the p-value and 95% confidence interval have been observed for each range of income (in Rs.) in order to infer the hypothesis from the paired t test. For testing the fourth hypothesis Welch Two Sample t- test has been applied. In order to classify the inhabited villages into the villages adjoining municipal areas and the remote villages, the distance from the nearest town has been taken into consideration. The corresponding values of t-statistic, degree of freedom, p-value along with the 95% confidence interval has been observed to arrive at a conclusion of the hypothesis from the Welch Two Sample t- test.

To evaluate the level of development amongst the blocks Z score and composite score technique has been applied taking the 35 indices of demographic, social, economic and infrastructural indicators and accordingly the Community Development Blocks has been categorized into three groups namely high, moderate and low level of development. The result of the present research work reveals that the high level of development is confined in four blocks namely Jalpaiguri, Maynaguri, Dhupguri and Matiali blocks of Jalpaiguri district. These blocks display development in terms of the adequate number of primary schools with respect to total population, middle schools, primary health sub-centres, pucca housing, sanitation facilities, adequate drinking water facilities, postal facilities, banking and credit facilities, transportation facilities and recreational provisions with respect to total population.

Besides, the blocks are developed in terms of literacy rate and sex ratio. The blocks also display development with respect to economy; in terms of the proportion of households with commercial farming activities, crop cultivation and the proportion of earning population.

Rajganj and Mal blocks fall in the moderate category of development. Nagrakata block falls in the lowest category in terms of composite rural development. This block lack in the social and the infrastructural provisions in terms of educational institutions, health care facilities, water supply, housing standards, literacy rate, transportation and communication facilities and the recreational facilities. Hence, the analysis of the level of rural development exhibits great spatial variations. The infrastructural provisions are unevenly distributed in rural areas of Jalpaiguri district as per the recommended guidelines of the government sources. On the basis of the aggregate score it has been observed that the blocks located in the southern and eastern part of Jalpaiguri district are progressed and developed in terms of demographic, social, economic and infrastructural sectors. Thus, for the less developed blocks greater attention is needed in order to reduce the disparities in the level of rural development.

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Abbreviations

AABY- Aam Admi BimaYojana
AAY- Antyodaya Anna Yojana
ANM- Auxiliary Nurse Midwife
APY- Atal Pension Yojana
ARWSP- Accelerated Rural Water Supply Programme
ASGRY- Annapurna Sampurna Grameen Rojgar Yojana
ASSOCHAM- Associated Chamber of Commerce and Industry

BNP- Bharat Nirman Programme
BPL- Below Poverty Line
BRGF- Backward Region Grant Fund

CADP- Command Area Development Programme
CC- Cash Credit
CD- Community Development
CDP- Community Development Programme
CEP- Continuing Education Programme
CWPP- Community Water Purification Plants

DAY- Deendayal Antyodaya Yojana
DAP- Di-Ammonium Phosphate
DDP- Desert Development Programme
DPAP- Drought Prone Area Programme
DPC- District Programme Coordinator
DRDC- District Rural Development Cell
DTW- Deep Tube Well
DWCRA- Development of Women and Children in Rural Areas
DWD&SW- Department of Women Development and Social Welfare

EAS- Employment Assurance Scheme

GCI- Galvanised Corrugated Iron
GDP- Gross Domestic Product
GP- Gram Panchayat
GS- Gram Sabha

HADP- Hill Area Development Programme
HS- Higher Secondary
HYVP- High Yielding Varieties Programme

IAAP- Agricultural Area Programme
IADP- Intensive Agricultural Development Programme

IAY- Indira Awas Yojana
ICDS- Integrated Child Development Service
IGNDPS- Indira Gandhi National Disability Pension Scheme
IGNWPS- Indira Gandhi National Widow Pension Scheme
IIRY- Intensified Jawahar Rozgar Yojana
IMD- Indian Meteorological Department
IRDP- Integrated Rural Development Programme
IREP- Integrated Rural Energy Planning Programme

JGSY- Jawahar Gram Samridhi Yojana
JRY- Jawahar Rojgar Yojana

MART- Marketing And Research Team
MDM- Mid -Day Meal
MFALDA- Marginal Farmers and Agricultural Landless Development Agency
MGNREGS- Mahatma Gandhi National Rural Employment Guarantee Scheme
MNP- Minimum Needs Programme
MNP- Minimum Needs Programme
MSK- Madhyamik Siksha Kendras

NABARD- National Bank for Agriculture and Rural Development
NATMO- National Atlas and Thematic Mapping Organisation
NH- National highway
NHAP- National Handicap Aid Programme
NITI- National Institution for Transforming India
NLM- National Literacy Mission
NLMA- National Literacy Mission Authority
NOAP- National Old Age Pension Scheme
NPK- Nitrogen, Phosphorous, Potassium
NRDWP- National Rural Drinking Water Programme
NREP- National Rural Employment Programme
NRLM- National Rural Livelihood Mission
NSAP- National Social Assistance Programme
NWGS- National Widow Grants Scheme

PDS- Public Distribution System
PHC- Primary Health Centre
PHE- Public Health Engineering Department
PHSC- Primary Health Sub-Centres
PMGSY- Pradhan Mantra Gram Sadak Yojana
PMGY- Pradhan Mantra Gramodaya Yojana
PMJDY- Pradhan Mantri Jan Dhan Yojana
PMJJBY- Pradhan Mantri Jeevan Jyoti BimaYojana
PMSBY- Pradhan Mantri Suraksha BimaYojana

PRI- Panchayati Raj Institution
PRI- Panchayati Raj Institutions
PWD-Public Works Department

RADPFI- Rural Area Development Plan Formulation and Implementation
RGGVY- Rajib Gandhi Grameen Vidyutikaran Yojana
RGSEAG- Rajiv Gandhi Scheme for Empowerment of Adolescent Girls
RIDF- Rural Infrastructure Development Fund
RKSY- Rajya Khadya Suraksha Yojana
RKVY- Rashtriya Krishi Vikas Yojana
RLEP- Rural Landless Employment Programme
RLI- River Lift Irrigation
RMSA- Rashtriya Madhyamik Shiksha Abhiyan
RSBY- Rashtriya Swashtya Bima Yojana
RTE- Right to Education
RWSS- Rural Water Supply Scheme

SBM- Swachh Bharat Mission
SC- Scheduled Castes
SECC- Socio-Economic and Caste Census
SFDA- Small Farmer Development Agency
SGSY- Swarnajayanti Gram Swarajgar Yojana
SH- State Highway
SHG-Self-Help Group
SSA- Sarva Siksha Abhiyan
SSK- Shishu Shiksha Kendras
NSSO- National Sample Survey Organization
SSP- Single Super Phosphate
ST- Scheduled Tribes
STW- Shallow Tube Well

TADP- Tribal Area Development Programme
TRYSEM- Training of Rural Youth for Self-Employment

U-DISE- Unified District Information for School Education
UG- Under Graduate
UNESCO-United Nations Educational, Scientific and Cultural Organizations

WBSEB-West Bengal State Electricity Board

CHAPTER-I

Introduction

1.1 Introduction

The term 'rural development' connotes both the economic betterment and greater social transformation of people living in the rural areas. It is the process leading to sustainable improvement of the quality of life of the rural masses. This reflects the multidimensional nature of rural development comprising of the increase in real per capita income of the rural people, improvement in distribution of income, political and economic freedom, and equitable access to resources, education, health care, employment opportunities and justice (Singh, 1999).

Rural development is necessarily an aspect of planned development launched by the Government of India in terms of various programmes formulated in the Five Year Plans of national development. It helps in reducing rural poverty through special income generated programmes with an objective to help the rural people in improving the standard of living. Thus, assessment in the level of rural development is important as it is viewed as an essential part of national development. The word development has many facets and therefore it carries a wide variety of meanings. Development of rural area not only signifies the entire development of an area, but also it emphasizes upon development of the people living in the rural areas. The objectives of development involve the improvement in the level of income with an expansion of the employment opportunity, equality in distribution of the benefits of economic growth, social advancement and environmental conservation. Thus, sustainable development means an activity or a series of activities or process that leads to an improvement in the material well-being of the rural people, without declining over time.

In the Indian context, rural development assumes greater importance as 68.84% (Census, 2011) of its population live in rural areas. Since independence the plans and policies of India emphasized rural development and will continue to do so in future. Fundamentally, the focus of planning is to improve the economic and social conditions of the weaker sections of the rural areas. Thus, eradication of rural poverty and economic growth became the significant objective of the planning process under rural development. In India, initially the planning strategy began with the development of agriculture and allied activities and subsequently the strategies of rural development expanded to raise the employment opportunities for the rural masses by integrating manpower resources, infrastructure and organizational development measures.

The word rural essentially means an area, which is differentiated from the urban in terms of spatial distribution of population, population density, and occupational structure. Despite the expansion of the social and economic provisions available to the people yet the rural areas are confronted with a number of problems. Though, considerable efforts were made at the past and at present, yet the rural poor continue to live in extreme poverty. Jalpaiguri district being a predominantly rural region is of no exception. The rural area has low range of income, high proportion of Scheduled Castes with 56.64% and Scheduled Tribe population with 21.14% affecting the socio-economic structure of the area, poor communication system, low irrigational facilities and an urban population of 31.61% (Census, 2011).

Thus, rural development is a broader concept and is concerned with the overall development of a rural area as a whole. Therefore, a study on the level of rural development is found to be logical where an attempt has been made to analyse whether the infrastructural provisions are adequate to meet the large scale rural population and an analysis of demographic, social and economic aspects demands greater attention.

1.2 Statement of the Problem

In India, rural area development has been at the focus of development strategies since the initiation of the planning era. To reduce inequalities among the rural poor various developmental programmes were introduced. In spite of many efforts, the problems of low literacy rate, low per capita income and inadequate infrastructure has been the major concern for the developmental planners. But the degree of development varies from one rural area to another. A single rural area neither flourishes in every respect nor lags in all aspects in terms of social, economic and infrastructural sectors. The same holds true for Jalpaiguri district. There are some rural areas within the district which are associated with multifaceted problems and therefore assessment of the level of rural development becomes the main reason for the necessity of this research.

Access to urban areas and poor nature of transportation are among the most serious constraints in the rural areas. Inadequate health care facilities, scarcity of pure drinking water, sometimes even acute shortage of water, lack of provision of adequate electric power, poor communication system are further aggravating the problem. Sanitary conditions are poor and are therefore not favourable to healthy living. Besides, inadequate higher educational institutions, low literacy rate of the females, high rate of indebtedness to private moneylenders, lack of hundred days of employment under NREGS along with non-payment of minimum wages are some of the acute problems of the locality. Further, lack of large scale

industrial development hinders the level of rural development, causing the rural youths to migrate urban areas in search of better employment opportunities. However, besides these problems, the problem of awareness among the rural masses cannot be ignored.

Table 1.1: Total rural population and households of Jalpaiguri district

Subdivision	Total population		Rural population		Total households		Rural households	
	2001	2011	2001	2011	2001	2011	2001	2011
Sadar	1553175	1811885	1176622	1123592	318720	410305	256581	323840
Mal	510423	569711	487205	505199	102229	122768	97227	116835

Source: Census of India, 2001, 2011

Table 1.1 reveals the rural population and households in Jalpaiguri district and it is observed that the rural population of Jalpaiguri Sadar sub-division have slightly decreased from 11,76,622 in 2001 to 1123592 in 2011, whereas in Mal sub-division the data reveals that the rural population have slightly increased from 487205 in 2001 to 509199 in 2011. The number of rural households has increased in the entire district covering both the subdivisions from 2001 to 2011. Rural development is the base on which the future of economic development stands.

An attempt has been made in the thesis to find out the degree of rural development in the study area and to identify whether the infrastructural provisions are adequate to meet the large scale rural population. Further, the study on the level of rural development has been elaborated by highlighting the demographic characteristics, level of literacy rate as an important indicator in terms of social infrastructure, the economic structure of the rural areas, the essence of the implementation of the developmental schemes and its impact assessment, and people's awareness on the level of rural development. This has been done empirically on a household level survey on the selected villages and would be highly worthwhile, as an attempt has been made to portray the glaring issues of rural development in the study area.

1.3 Review of Literature

A review of some relevant literature related to rural development has been used for the present research work. A careful study of concerning literature of the past helps the researcher to understand the research issue more precisely. A number of scholars and researchers have studied the issue of rural development with specific objectives and expresses their findings in the past and at present.

Hemlata Rao (1984) in her book 'Regional Disparities and Development in India' has examined the regional disparities in Karnataka. She identified the differentially developed regions, in order to analyze the homogeneous regions with respect to agriculture, industry and

infrastructural facilities and also identified the backward regions which are crucial for the implementation of various regional plans. She suggested that regional disparities could be reduced with the help of integrated regional development plans.

Archana Gaur (1985) in her book 'Integrated rural area development: a case study of a tehsil' makes the regional analysis of the available resources and framed the rural area development plans on the basis of resources, giving focus on the agricultural, animal, industrial and human resources. The author makes a detailed analysis of the socio-economic infrastructure in the forms of public health, rural housing, educational facilities, rural finance, marketing, electrification and rural transport and communication. She also attempts to identify the growth of service centres and elaborates its strategies in the tehsil using composite indicators in order to assess the level of development.

K. V. Sundaram and S. N. Mishra (1985) in their book 'Rural development capitalist and socialist paths' examines the impact of the policies, programmes, weaknesses, approaches and strategies at various levels in India and gave suggestions to rejuvenate India's vast rural hinterland. The authors have recognized a number of parameters to analyze the levels of India's development such as, population growth, employment, agriculture and the patterns of change, social services, quality of life, improvement in science and technology, development in industry in order to make an overall assessment. Based on such parameters the authors have also made an intensive study of Saraon tehsil in Allahabad district emphasizing the social and economic infrastructure, various facilities, developmental programmes and the structure of the village administration.

R.B.P. Singh (1986) in his book 'Social welfare for rural development: a case study' makes a detailed analysis of the socio-cultural provisions of the study area. The author has highlighted the quality of population, their living conditions identifying the social and cultural needs of the region. He also traced the existing factors essential for economic development and cultural advancement emphasizing the transport and communication facilities, marketing and service centre facilities. Various statistical methods have been used as for example correlation coefficient method and spearman's rank correlation method to find out the relationship between different parameters. Finally the author suggested plans and evaluated the different developmental programmes in the study area.

Barkat-e-khuda (1988) in his book 'Rural development and change: a case study of a Bangladesh village' conducted an in-depth micro-level study of a Bangladesh village, Sreebollobpur. He studies the major three aspects of change such as; the economic aspect including the labour force, division of labour and the agricultural development programmes

which results in the expansion of yield per acre along with employment opportunities of the villagers. Then, in the social aspect he includes the literacy, education, rural institutions, the family and the power structure. Lastly, in the demographic aspect he includes the changes in population, marital status, age at marriage, family planning and fertility, concluding Sreebollobpur to be a developed village.

R.C. Srivastava and Jawad Ali (1992) made an attempt to analyse the transportation structure by measuring the density, accessibility, the degree of connectivity of roads and the spatio-temporal distribution of markets in the patha area of Bundelkhand. After a systematic analysis and observations regarding the problems of transport and marketing in the area, the author suggests some valuable measures to achieve a sustainable rural development of the backward area.

Anjana Desai (1992) opines that the major aspect of development of a region is not only the economic growth but also the socio-cultural aspects which are inter-dependent with the economic sector of a region. She identifies the problem of measuring the non-economic variables of development along with the problems of implementation of developmental programmes in rural areas. She identifies the uniqueness of Dangs district in south Gujarat and observes the area as economically poor with its low socio-cultural conditions. The tribals suffer from acute poverty, unemployment, low productivity of food grains and shortages of utility facilities. After analyzing, the author has given a number of remedial measures to improve their quality of life.

I.S. Chauhan and V.S. Bias (1995) in their book 'Social structure and rural development' have made an attempt to analyze empirically the relationship between social structure and rural development along with the availability of infrastructural facilities in the less developed Rajgarh district of Madhya Pradesh. He evaluated the major rural developmental programmes in the study area and examined the influence of existing administrative structures upon rural development. The author puts emphasis on the major rural problems such as poverty, inequality, indebtedness and highlighted the influence of the social parameters on families below poverty line. Assessing the beneficiary families, he observes the social and economic development of the families below poverty line.

Katar Singh (1999) in his book 'Rural development- principles, policies and management' discusses his own ideas and observations regarding the meaning, objectives, measures and determinants of rural development. The author deals with the various rural developmental policies and its models followed in India. He also includes the various aspects of rural development such as planning, organizing and financing rural development along

with the implementation, monitoring and evaluation of the developmental projects. The author contributed the basic concepts and connotations towards rural development.

J. Krishnamurthy (2000) in his book 'Rural development- challenges and opportunities' conducted a comparative analysis of the villages between a developed and less developed block of Chidambaram district, Tamil Nadu. The author reveals that the agricultural development is a process of social transformation. Further, the author emphasizes the socio-economic variables such as occupation, land-holding, workforce, education, infrastructure, and level of people's awareness, participation and utilization of the developmental programmes for a sustainable rural development.

R. K. Raul (2003) in his book 'Rural development in India- approaches and applications' attempts to study the level of rural development in north eastern states. The author has empirically assessed the impact of poverty eradication programme in Karimganj district of Assam. Raul has intensively examined the sampled households based on the per capita income gap from the poverty line, income level and the infrastructural facilities available in the district. The author emphasized and evaluated the employment programmes implemented in the study area and assessed the level of family income from the pre-assistance to post-assistance period and concludes the progress of the rural developmental programmes in terms of the economic development of the area.

Meeta Krishna (2003) in her book 'Poverty alleviation and rural poor' critically examines and evaluates the poverty alleviation programmes implemented in Sahibganj district, Bihar. The author analyses the relevant problems of the rural people and the measures taken to improve the livelihood condition of the people evaluating the employment generated programme. Further, the author pleads for an integrated rural development programme essential for the balanced growth of the study area and suggested measures for accelerating the implementation of the poverty alleviation programme.

M. L. Dhawan (2005) in his book 'Rural development priorities' studies firstly the goals of rural development through good jobs and diverse markets, quality housing, modern community facilities and affordable utilities. The author viewed that the reduction of poverty in the rural sector is through agricultural and economic growth. Dhawan analyses that, development in the village level can be achieved through institutional subsidies in the key areas, which will develop the micro financial infrastructure. The author finds that rural development can be achieved through peoples participation but poverty, migration, illiteracy and inadequate infrastructural facilities affects negatively in the development of the rural sector.

P. Gopinath Rao (2006) in his book 'Rural Development: sustainable livelihood and security' deals with the approaches of sustainable livelihood in terms of rural development. He identifies the inter-relationship between the agricultural growth, employment and rural poverty. The author highlighted the rural developmental policies in the field of food security, employment, education, electrification and information and communication technology and the participation of women in rural development. However the author thought that the declining effort for agriculture is responsible for the poverty of rural people and can be reduced through external support.

K.B. Nayak (2008) in his book 'Rural development and underdevelopment an interdisciplinary study' empirically studies the Kalahandi-Nawapara district of Orissa in order to understand the multi-dimensional problem of poverty and underdevelopment in the interior parts of the country side. The author assessed Bhaisadani village and analyzed the socio-economic conditions of the rural people along with the contributions of the poverty alleviation programmes estimating the creation of assets. He observes that though changes occurred in the quality of life of the rural people yet poverty is a major problem among the small, marginal and landless labourers. The author provides suggestions and strategies to improve the condition of the village.

Jyoti Prakash Sharma and P.R. Sharma (2009) attempted to analyse the level of rural development as a geographical study in Mohania block, Bihar. They observed a relation between the problems of rural development and the ecological factors caused by the depletion and exploitation of natural resources. Proper statistical analysis have been used to find out the level of development and the regional variation among the villages based on a list of variables emphasizing the demography, agricultural activities, infrastructures and amenities.

Mumtaz Ahmed and Shamshul H. Siddiqui (2009) bring out the dimension of rural environmental condition of the Sant kabir nagar district, UP. The authors find out that the rural environment consists of various components and is governed by the physical, socio-economic, political, and infrastructural aspects of the rural areas which play an important role in the quality of life of the rural areas.

Giyasuddin Siddiqui and Sandip Tah (2009) throw light on the impact of socio-cultural and infrastructural factors on the level of rural development in south east Bardhaman district. The authors observe that there exists a positive correlation between the degree of infrastructural provisions and levels of development of an area.

Rukhsana (2009) analyzes the regional imbalances in the dimensions of rural development in western UP identifying the spatial variation of agricultural, industrial and

infrastructural development. The author reveals the level of rural development and observes that the agricultural development in the central and northern part of the study area is positively correlated with industrial development and the infrastructural development of the western parts of the study area. The author further examined the relationship between variables of rural development on the basis of correlation matrix.

S. B. Golahit (2010) in his book 'Rural development programmes in India- problems and prospects' discusses the various rural development programmes in India covering the objectives, strategies, administration, performance and weaknesses of the programmes and also evaluated the programmes in order to find out the impact upon the beneficiaries.

Biraj Kanti Mondal (2010) identifies the role of NREGS on poverty alleviation of Panrui, Birbhum, W.B. The author highlighted the salient features, improved benefits, involved organizations and the type of works under the scheme. After a systematic analysis the author finds that the scheme is beneficial for the rural poor, where a number of unskilled labourers are provided work and the wages are sufficient for the nutritional attainment enhancing the livelihood security of the rural masses.

Arindam Laha and Pravat Kumar Kuri (2010) laid the importance of agrarian institutions in the field of rural development in Burdwan district. They considered the institution of tenancy and credit for the economic well-being of the rural people. According to them the system of tenancy ensures an equal distribution of operational holding while credit facilities provide livelihood security to the rural people ensuring a positive correlation between the land ownership pattern and accessibility to credit facility. Thus the authors wanted to combine the two agrarian institutions to achieve a sustainable rural development.

S.K. Dikshit and Ashutosh Rai (2011) discuss the dimensions and approaches of rural development in India highlighting the developmental plans. According to them the agricultural growth is the important parameter of rural development which requires the infrastructural facilities, institutional transformation and creation of skilled man power.

Rajendra Suryawanshi and Nandkumar Sawant (2011) makes an attempt to analyse the regional disparity and level of development in the rural areas of Thane district, Maharashtra, using the physical, demographic, social and economic variables. The authors calculated the composite scores and categorized the area from low to very high observing that ruggedness, low population, low demand and industrial backwardness, are responsible for the deprivation of the level of rural development.

Manoj Siwach and Prem Kamboj (2011) attempted to examine the performance of NREGS in the two districts of Haryana on the basis of fund utilization, distribution of

expenditure, provision of employment to the rural people and the nature of work. The authors examined the declining level of total employment generation of the semi-skilled and skilled labourers and partial utilization of the available funds under the scheme and put forward some suggestions regarding the utilization of the fund in order to create the productive assets in the rural areas.

Atunu Sarkar and Sujit Das (2012) present the scenario of the integrated rural development in Bankura district. The researchers reveal that the backwardness of the district is due to some crucial problems of poverty, low growth and productivity and lower per capita income. Therefore major importance should be given to these parameters in order to develop the agriculture through development in irrigation facilities, non-farm employment through small and cottage industries and development in social and infrastructural sectors.

B. M. Dash and Sanjoy Roy (2012) in 'new directions in rural development' reveal the contribution of the scholars in the field of various aspects of rural development. The contributors to this edition highlighted the meaning and scope of rural development along with planning; opportunities, strategies of rural marketing initiatives; an empirical study in west Bengal regarding the static and dynamic gains of micro-finance; the opportunities and challenges of NREGA; the impact of globalization on development of rural economy of India through diversification in agriculture.

Amit Kumar notes the performance of NREGS (2012) from two perspectives firstly the opportunities of the programme and then the challenges imposed by the scheme to achieve the target of empowerment of rural poor. He identifies that the scheme is significant as it provide hundred days of employment to the rural households reducing poverty and raising the rural economic growth. The author also makes an assessment of the scheme where lack of work and non-payment of minimum wages to the rural people are found to be the most serious constraints in the level of progress of the scheme in the field of rural development.

Dr. Y. Ashok Kumar and P. Venugopala Rao (2012) have examined the progress of self-help group movements in the field of rural development. They analysed that the credit given to the poor by the organized financial institution was inadequate and the informal credit sources have further deteriorated the economic well-being of the rural poor whereas the self-help group movement acts as an instrument of social change through credit facilities and economic well-being. It shows improvement in rural sector through betterment in social infrastructure and economic activities.

Mosfudar Rehman and Uma Sankar Malik (2013) studies, that infrastructural development plays a crucial role in the process of a balanced regional development in India. The authors highlighted the programmes for the growth of rural infrastructures during the plan period in various sectors like irrigation, power, transport and communication, education, public health and other social services.

Rajender Singh and Sarfaraz Asgher (2014) have studied the overall development of Jammu district at village level in a spatial perspective on the basis of infrastructure, education, demography and agriculture. The result of analysis obtained through composite index of overall development shows that the amenities in the villages are unevenly distributed and the high levels of development are registered in the villages of administrative headquarters whereas the northern villages located in the rugged topography are lagging behind in the level of development.

Chandrima Sen and Sumana Bandyopadhyay (2014) attempts to examine the empowerment of women through participation in the micro-finance programmes for a better access to credit facility, in Bagnan 1 block of West Bengal. Using the decision index for the analysis of women's involvement in decision making at household level, they allot ranks and further observed that a large proportion of women are benefited from the credit facility leading to a greater levels of economic independence with an increase in the confidence level, and the motivators acts as catalysts in the process of their empowerment.

S. Thanikasalam and Dr. S. Saraswati (2014) highlighted the features of 73rd Amendment Act and its impact on the village governance or the Panchayati Raj system. The basic amenities and the various facilities available in the Ussilampatti block have been analysed and the villagers were interviewed on the basis of satisfactory level about basic amenities initiated by the government.

1.4 Objectives

The present study attempts to find out the level of rural development and therefore the aims and objectives of the study are:

1. To analyse and measure the disparities in the level of rural development amongst the blocks.
2. To identify and evaluate the level of rural development in terms of infrastructural facilities.
3. To examine the social infrastructure and economic indicator of the study area and its reflection in rural development.

4. To evaluate the existing income generated rural development programmes implemented in the study area and to correlate it with the level of rural development.
5. To identify the problems of the study area in the way of rural development and suggest appropriate remedies.

1.5 Hypothesis

The entire study has been made on the basis of the following hypothesis:

1. Infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration.
2. The higher the level of literacy rate among the females the better is the economic growth in the rural households.
3. There is a significant rise in the level of family income and the per capita income from the pre-assistance period to post-assistance period.
4. Enhancement in generating alternative sources of employment varies in the remote villages and the villages adjoining to municipal areas.

1.6 Methodology

Methodology is the crucial part of every research work which helps to analyze the problems raised during the research work under the requisite number of terms. Methodology is a process adopted by the researcher for the fulfillment of the objectives mentioned above, in order to reach at a valid conclusion through precise and empirical explanation of the research work. In the present study, the major focus is on the assessment of the level of development in the rural areas and to measure the disparities amongst the blocks of Jalpaiguri district. The framework of the methodology for the present study is divided into the following three phases:

- Pre-field work
- Field work &
- Post- field work

The pre-field work includes the reconnaissance survey and planning of the entire research design. In this stage the relevant review of literature related to rural development and the knowledge of background are necessary in order to substantiate the study. The formulation of objectives and hypothesis along with the sources from where the data has been collected were also framed out.

Field-work involves the necessary collection of data through primary and secondary sources. Primary data has been collected personally through rigorous field survey at a

household level with the help of a household schedule containing a set of questionnaire through a direct communication with the villagers. The questionnaire survey was carried out to collect information from the schools, Sishu Siksha Kendras, Madhyamik Siksha Kendras, Anganwadi centres regarding the number of students, teachers, infrastructure of the institutions and the mid-day meals. The survey was also carried out in order to collect information regarding the demographic, social, economic condition of the households as well as the provision of the infrastructural facilities and the impact of the rural development programmes and policies upon the rural households.

Since, it becomes difficult to enumerate every household having a large number of population spread over a wide geographical area, the technique of sampling will reduce their number. A suitable sample size has been chosen for the field observation and on the spot data collection. There are different methods of sampling which ensure better representation under different situations. For the study, multi-stage random sampling technique without replacement has been applied considering the nature of the region. In the first stage, 7 CD Blocks of Jalpaiguri district has been considered as an independent sampling unit. In the second stage, 10% villages of the total inhabited villages of the Gram Panchayat have been selected from each CD block. The remote villages of the block and the villages to the nearest town has been prioritized and taken into consideration. In the third stage, from each inhabited village 5-10% of the total households have been taken as a sample randomly in order to avoid biasness. Therefore, a household level questionnaire has been used for conducting the household survey and to generate data relating to the level of development. Table 1.2 reveals that the total number of sampled villages has been 40 out of the total 391 inhabited villages in Jalpaiguri district.

Table 1.2: Sample Size of Villages and Households of Jalpaiguri District

Sl. No.	C.D. Block	Total Number of inhabited villages*	Sample size of villages**	Sample size of households**
1	Rajganj	26	3	65
2	Jalpaiguri	28	3	59
3	Maynaguri	79	8	176
4	Dhupguri	98	10	209
5	Mal	100	10	200
6	Matiali	27	3	40
7	Nagrakata	33	3	81
8	Total	391	40	830

Source- *Census of India, 2011 and
**Computed by author

Apart from the primary data, the secondary data has been collected from Gram Panchayat Office, Block Development Office, District Rural Development Cell, District Magistrate Office, Zilla Parishad and some of the other government offices, District Census Handbook, District Gazetteer, village directories, West Bengal Human Development Report, Statistical abstract published by Bureau of Applied Economics and Statistics of the Government of West Bengal, published data from the state institute of Panchayat and Rural Development and some other officially published and unpublished records, maps like district map with block boundaries of selected regions has been consulted. Library work has been done by visiting a number of libraries for all the relevant literature concerning the work. For the present research work maps and photographs that displays the rural areas of Jalpaiguri district has been used. The maps have been prepared using the GIS software, Arc GIS (9.1 version) to enhance the presentation of the statistical results by providing a visual impact to the research work. For the description and analysis of the work cartographic representation has been used which covers choropleths, bar diagrams and the pie diagrams.

After the completion of the collection of both primary and secondary data, relevant information has been checked, edited, coded and tabulated in a suitable form applying statistical analysis with R-software (version 3.1.6) and Microsoft excel. Accuracy assessment of the data has been done to bring out a number of valuable geographical results. In the analysis both simple and standard statistical techniques has been used to infer the ground facts. The methodologies that have been adopted for the research work are as follows:

$$1. \text{ Population Growth rate} = \frac{\text{Present Population} - \text{Previous population}}{\text{Previous population}} * 100$$

$$2. \text{ Population Density} = \frac{\text{Total Rural Population}}{\text{Total Rural Area}}$$

$$3. \text{ Decadal variation in population density} = \text{present rural population density} - \text{previous rural population density}$$

$$4. \text{ Sex ratio} = \frac{\text{Number of females}}{\text{number of males}} * 1000$$

$$5. \text{ Gender Disparity Index in literacy rate (Di)} = \text{Log} (X2/X1) + \text{Log} [(200-X1)/(200-X2)]$$

Where, Di is the disparity index

X1 denotes female literacy rate

X2 denotes male literacy rate

$$6. \text{ Dependency ratio} = \frac{p0-14+p60}{p15-59} K$$

$$7. \text{ Effective Literacy rate} = \frac{\text{Total literates}}{\text{Total Population (7 years and aboves)}} * 100$$

8. Male Literacy rate = $\frac{\text{Total male literates}}{\text{Total male Population (7 years and aboves)}} * 100$
9. Female Literacy rate = $\frac{\text{Total female literates}}{\text{Total female Population (7 years and aboves)}} * 100$
10. Room Density = $\frac{\text{Total Rural Population (sampled households)}}{\text{Total Number of Rooms}}$
11. Road Density = $\frac{\text{Total surface road length (km)}}{\text{Total Rural Area}}$

12. Z' score: In order to reach on standardization, the raw data for each indicator has been computed into standard scores. The 'Z' score or standard score technique for each indicator has been calculated. Further, composite standard score has been used to assess the disparities in the level of rural development in the study area. *Standard score is a dimensionless quantity that involves both varying means and varying standard deviation. Therefore, it can be suitably used to examine the pattern of regional distribution of a variable* (Sarkar, 2013).

Thus Z score technique is computed from the following equation:

$$z = \frac{x - \bar{x}}{SD}$$

Where, Z is the standard score
 x is original values of the score
 \bar{x} is the mean of variables, and
 SD is the standard deviation of variables

The composite Z score for each unit of the study area is expressed as:

$$CSS = \sum z_{ij} / N$$

CSS denotes composite standard scores
 z_{ij} indicates the sum of z scores of indicators j in the area i
 N is the number of variables

13. Student t-test was applied to find out the significance of the determinants at 5 percent level of significance (l.o.s).

The test statistic for Student's t – test is given by

$$\text{Students t – test} = t = \sqrt{\frac{r(n-2)}{1-r^2}}$$

14. Chi-square test - Chi – Square (χ^2) = $\sum \frac{(O_{ij}-E_{ij})^2}{E_{ij}}$

Where, O_{ij} = observed frequency of the cell in ith row and jth column
 E_{ij} = expected frequency of the cell in ith row and jth column

15. Welch Two Sample t- test-

$$t\text{-statistic} = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{S_1^2 + S_2^2}{n_1 + n_2}}}$$

In Welch Two Sample t- test, standard error has been calculated through sample standard deviation:

$$SE = \sqrt{\frac{S_1^2 + S_2^2}{n_1 + n_2}}$$

Where, 1 and 2 are the two groups,

\bar{x}_1 and \bar{x}_2 are the sample means of groups 1 and 2,

μ_1 and μ_2 are the two population means,

S is the standard deviation of variables,

n is the sample size of groups, and

SE is the standard error and in order to get the p-value from the t- statistic, t- distribution tables have been used.

16. Paired t- test: to calculate the paired t-test, the following steps have been used.

i.) $d_i = y_i - x_i$

Where, d_i is the difference,

y_i is the test score after the assistance,

x_i is the test score before the assistance,

ii.) \bar{d}

Where, \bar{d} is the mean difference,

iii.) $SE(\bar{d}) = \frac{S_d}{\sqrt{n}}$

Where, S_d is the standard deviation of the differences,

$SE(\bar{d})$ is the standard error of mean difference,

iv.) $T = \frac{\bar{d}}{SE(\bar{d})}$

Where, T is the t-statistic,

v.) in order to get the p-value for the paired t-test, t-distribution tables has been used.

17. ANOVA two-way model: to calculate the ANOVA two-way, the following steps have been used (Kothari, 2011).

i.) T is calculated firstly by taking the total of the values of individual indices,

ii.) Correction factor- $\frac{(T)^2}{n}$

iii.) Sum of squares deviation- $SS = \sum X_{ij}^2 - \frac{(T)^2}{n}$

Here, the square of all the individual indices has been calculated and then its total has been computed. To get the sum of squares deviation the correction factor has been subtracted from the total value.

- iv.) To calculate the SS between columns, the total of the individual columns along with the square of each column total has been calculated. After this computation, the squared values of the individual columns are divided by the number of indices in the column. Besides, to get the SS between columns, the correction factor has been subtracted from the total value.
- v.) To calculate the SS between rows, the total of the individual rows along with the square of each row total has been calculated. After this computation, the squared values of the individual rows are divided by the number of indices in the row. Besides, to get the SS between rows, the correction factor has been subtracted from the total value.
- vi.) SS for error variance- (SS between columns+ SS between rows)
- vii.) Degrees of freedom-
For variance between columns, it is calculated as (c-1), for variance between rows, it is calculated as (r-1), for error variance, it is calculated as (c-1) (r-1) where, c is the number of columns and r is the number of rows. Using the following steps the ANOVA table has been framed (Kothari, 2011).

Thus, with the application of the relevant statistical techniques along with the utilization of GIS software, the assessment of the level of rural development in terms of demographic, social, economic and infrastructural parameters the research work has been done.

Finally the post-field work comprises the preparation of tables, proper analysis, description and representation of data by the cartographic techniques. Thorough interpretation of the findings has been done in order to prepare proper and final report writing. Finally these techniques have been helpful in drawing proper conclusions so as to provide corrective measures for the development of the study area.

1.7 Research Design

The study has been designed into the following nine chapters keeping in view the objectives of the study in order to understand the assessment of the level of rural development in Jalpaiguri district, West Bengal. A detailed account of the research framework has been presented below:

Chapter I present the introductory part of the research. It gives a brief description of the statement of the problem of the inhabited villages of Jalpaiguri district. The chapter outlines the objectives, the research hypothesis, data sources, the sampling design, the methodology adopted through various statistical techniques for the entire research work and the literature reviews on the issues relevant to rural development.

Chapter II briefly traces the historical background of Jalpaiguri district. It presents the origin and the geographical extent of the district. Further it deals with the geographical background of the study area through the account of the physical and cultural set-up of Jalpaiguri district.

Chapter III is concerned with the meaning, concept and definition of rural development. The chapter discusses the history of rural development and a brief description of the five year plans and programmes. The chapter also discusses the conceptual framework of rural development and points out the scope and importance of the process of rural development. It briefly describes the state government schemes for the empowerment of women in West Bengal.

Chapter IV presents the demographic characteristics of rural Jalpaiguri district. The chapter is devoted to the study of the different demographic components of population like spatial variation in the distribution of rural population, the trend of growth rate of rural population, population density, sex ratio and the literacy rate. The study computes the gender disparity in terms of literacy rate in Jalpaiguri district. The occupational structure, population composition by religion, ethnic structure, age sex composition and the dependency ratio have also been discussed in this chapter. Z score has been applied in order to analyse the level of demographic development in the study area.

Chapter V deals with the social structure reflecting the rural development of Jalpaiguri district. It highlights the educational institutions, the student-teacher ratio, student-school ratio in order to describe the quality of education in rural areas of Jalpaiguri district. The level of literate population and the level of female literacy along with the awareness of women on social and economic issues have been highlighted. The research hypothesis that the higher the level of literacy rates among the females the better is the economic growth of the rural households has been tested with the application of chi-square test. Besides, the chapter deals with the detailed account of the health care facilities, the housing structure, and the sanitation facilities in order to measure the socio-economic status of the rural households. Using z-score, the level of social development in rural areas of Jalpaiguri district has also been measured in this chapter.

Chapter VI presents a detailed account of the economic structure of the study area which includes the size of land holding along with the area under non-agricultural uses, the cultivated area and the area under different crops at a point of time. Two-way ANOVA model has been applied to examine whether there is a significant variation in the crops and in the blocks of Jalpaiguri district. The chapter gives an account of the earning population and

the chemical fertilizers and bio-fertilizers used for intensive cultivation. Further, a detailed account of the households using different sources of irrigation and the distribution of livestock in the study area has been discussed. Besides, the different category of labourers, their place of work, the wage earners and the sources of income at household level has been presented in this chapter. The research hypothesis that the enhancement in generating alternative sources of employment varies in the remote villages and the villages adjoining to municipal areas has been tested using the Welch Two Sample t-test in this chapter. With regards to female workers, Chi square test has been applied in order to know whether the type of work that females does is influenced by the blocks. The chapter also deals with the monthly and annual income, expenditure, saving and indebtedness of the rural households of Jalpaiguri district.

Chapter VII presents an outlook of the infrastructural provisions and facilities of Jalpaiguri district. It focuses upon the condition of water supply, sources of drinking water, disposal of solid waste, electrified and not electrified households, the frequency of power cut in the rural households and the veterinary facilities for the livestock in rural Jalpaiguri district. The chapter further focuses upon the availability of rural regular and periodic market, and the accessibility to market in terms of distances covered by the rural households, the banking and the availability of the agricultural credit societies. The chapter discusses the numbers of primary schools, Anganwadi centres and the health care centres. The rural communication system in terms of post office and circulation of newspaper has been discussed in this chapter. The rural transport and rural connectivity in terms of road length along with the availability of the recreational provisions have been presented in this chapter. Z score has been applied for the measurement of the levels of infrastructural development. Further, following the Government norms and guidelines, the recommended standards have been identified in order to validate the research hypothesis that the infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration.

Chapter VIII discusses the impact of rural development programmes and policies upon the rural masses in the study area. It deals with the beneficiaries of the rural housing schemes, food security schemes and the NSAP schemes and the beneficiaries of the state government educational schemes. The chapter provides a detailed account of the involvement of the rural households in NREGS and in self-help groups. It highlights the impact assessment of the rural development programmes upon the rural households. The research hypothesis regarding the study that there is a significant rise in the level of family income and the per capita income from the pre-assistance period to post-assistance period has been tested

using the Paired t- test technique in order to understand the past and present conditions of the beneficiaries in the study area.

Chapter IX deals with the description of the problems of the study area and some possible mitigation measures with some suitable proposals which can be taken into consideration for the future development of the study area

Chapter X draws the conclusion for the entire study.

1.8 Conclusion

The present research work attempts to assess the level of rural development among the blocks in terms of demographic, social, economic and infrastructural facilities. Besides, the study highlights the rural development programmes implemented in the study area and its impact upon the rural people of Jalpaiguri district. The present study has been carried out very precisely and empirically through the application of different statistical and cartographic techniques and the maps have been prepared to provide a visual impact of the research work. Thus these techniques are very helpful in drawing proper conclusions so that suitable measures can be provided for the holistic development of the study area.

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2.1 Introduction

Jalpaiguri district has been named after its principal town Jalpaiguri, which is the divisional and the district headquarter town. The nomenclature of the district has its origins from the words 'Jalpai' which means olive in Bengali and the suffix 'Guri' meaning place, as the place previously had plenty olive trees. Another version states that the name is associated with 'Jalpes', the presiding deity "Shiva" of the entire region who had been the deity for worship since time immemorial. *Situated on the lower Himalayas, Jalpaiguri a unique district owing to its geographical diversity, traditional history, colourful ethnic groups, miscellaneous linguistic and religious groups and beautiful sceneries* (Census, 1991).

The Jalpaiguri sub-division of Rangpur, had been named since 1854, was adjacent to the earlier Sukhani sub-division and it was the core of the district formed in 1869. The local name of Jalpaiguri, which was the seat of a military cantonment, gave its name first to the sub-division and then to the district. Earlier in March 1849, Hooker had come at Jeelpigoree, which was then a large struggling village near the banks of the Tista, the southern part of the forest. According to Hooker, they were detained for several days, waiting for the elephants to proceed northwards which prove that Jeelpigoree was then a point of transshipment within an area covered by forests (Census, 1961, Gruning, J.F.1911).

The study area, Jalpaiguri district extends between 26°15'47" to 26°59'34" N latitude and 88°23'2" to 89°73'0" E longitude comprising an area of 3044.00 km². Jalpaiguri district is situated in the northern part of West Bengal and is bordered by Bhutan in the north, Darjeeling district in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar district in the east (Fig. 2.1).

The district is divided into 2 sub-divisions, 7 Community Development Blocks, 80 Gram Panchayats, 391 Inhabited Villages, 9 Police Stations, 7 Panchayat Samity, 1,177 Gram Sansad and 418 Mouzas and the total population of the district is 2,381,596 (Census, 2011).

STUDY AREA

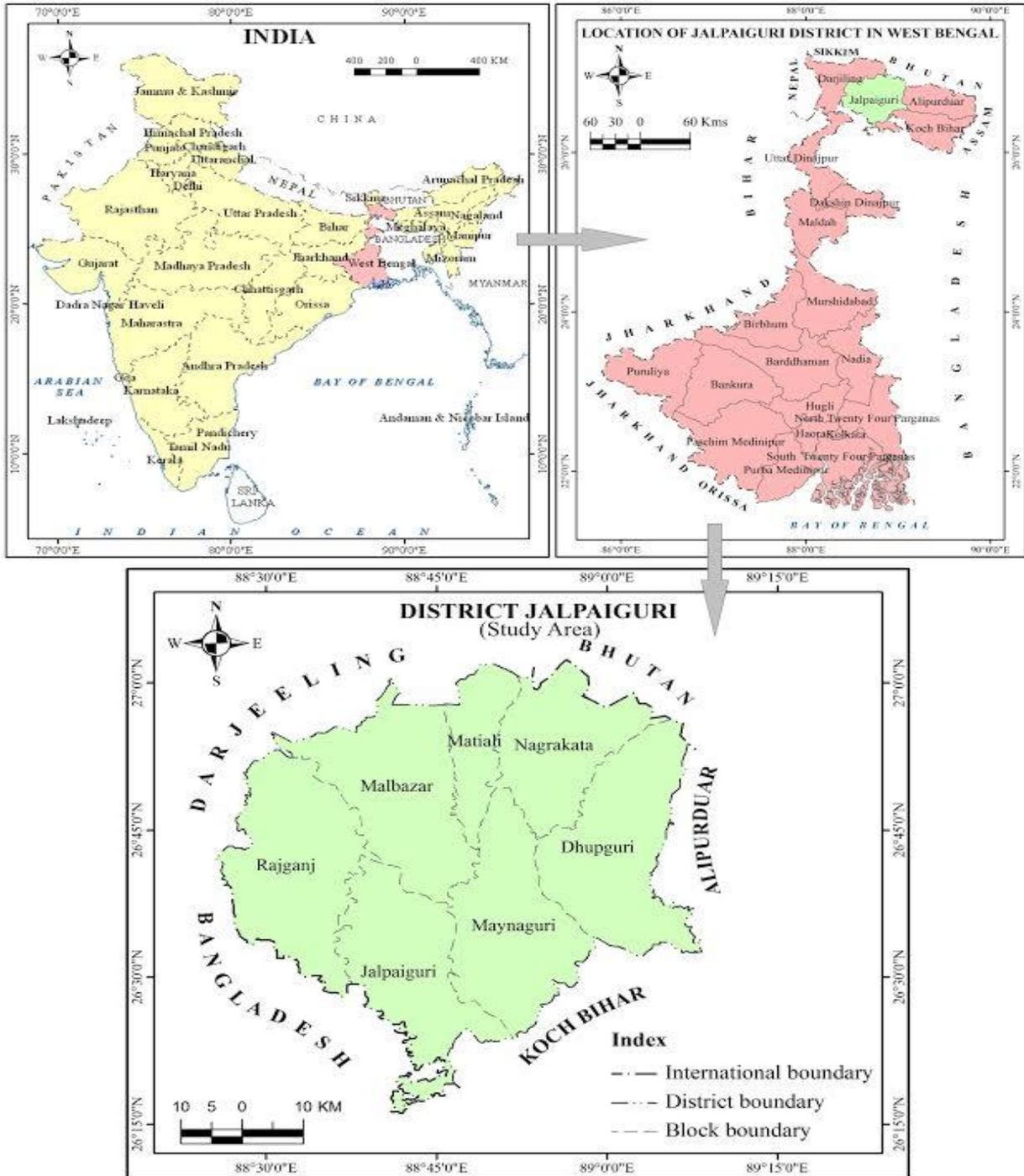


Fig. 2.1: Study Area

2.2 Physical Set Up of the District

Fundamentally, physical conditions are the prerequisite for the creation of a number of valuable resources. The essential physical conditions which make a direct or indirect contribution towards the genesis of natural resources are the geological structure, topography, drainage patterns, climate, soil and natural vegetation.

2.2.1 Topography

Jalpaiguri district is bordered by the Himalayan hill ranges in the north and the piedmont plains in the south, which gently grade into the alluvial plains further to the south. ‘The piedmont or Sub-Himalayan zone is locally known as Duars. It covers the tilted plains at the base of the Himalayas bounded by the 300 meter contour line to the north and 66 meter to the south. It includes the entire northern half of Jalpaiguri district. This is formed due to the coalescing of several alluvial fans within the catchment area of major rivers like Tista, Jaldhaka, Kaljani and Raidak’ (Sarkar, 1990). The fluvial activity of the rivers and streams has given birth to terraces over the undulating surface of ancient drift deposits and forms landscape which then connects to the plains of the south (Fig. 2.2). It is the rill and gully erosion over an extended period of time, which has created an undulating surface in the ancient drift deposits. ‘The plains of Jalpaiguri district is characterized by a 66 meter contour’ (Roy, 2011) covering the northern and southern part of the district along with a gentle slope of the land.

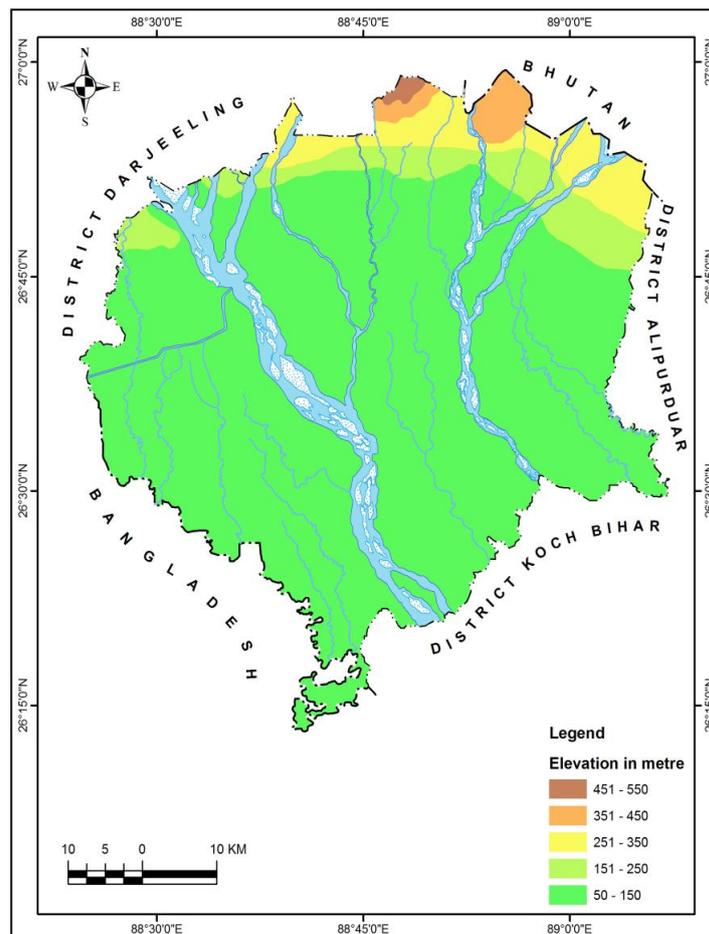


Fig. 2.2: Topographical Map of Jalpaiguri district

Source: NATMO, 2011

2.2.2 Geology

Geologically the district is dominated by schist, gneiss, phyllites, quartzite, dolomites, and coal. The northern part of the district experienced an extensive growth of alluvial fans. Black clay exists between the area of Tista and Jaldhaka rivers. The upper part of Jalpaiguri district comprises of thick boulders and conglomerates whereas in the lower part of the district there is a formation of terraces created by the fluvial activity of the rivers (Fig. 2.3). *‘With the exception of the hilly northern fringe, the whole of the district is covered by alluvial deposits. The alluvium consists of coarse gravels near the hills, and the presence of sandy clay and sandy loam further south (Census, 1961). The tectonic activity is the most crucial factor in developing the elevations and depressions and has an important effect on erosion and depositional aspect and the drainage networks of Jalpaiguri district.*

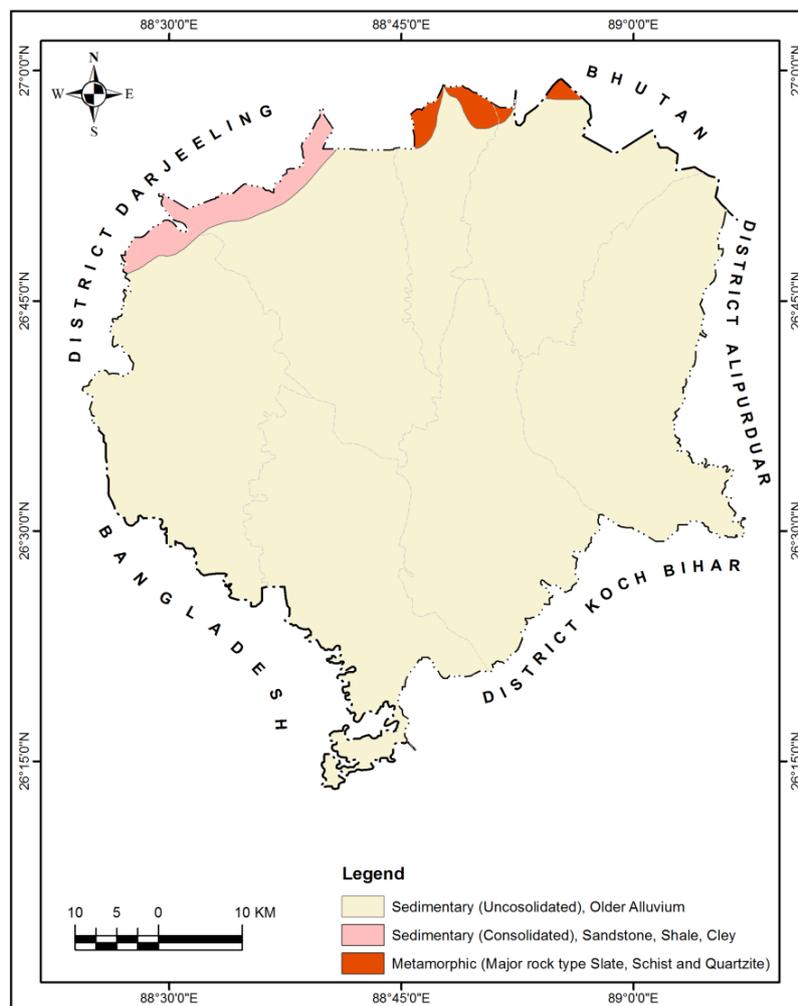


Fig. 2.3: Geological Map of Jalpaiguri district

Source: NATMO, 2011

2.2.3 Soil

Soil is a great natural resource which by means of climatic factors creates the base of the agricultural resources. The specific feature of the soil of Jalpaiguri district is its coarse texture, low water retaining capacity along with weak content of organic matter. According to the National Bureau of Soil Survey and Land Use Planning Regional Centre, Kolkata, the soils of Jalpaiguri district are coarse loamy to fine loamy type of soils (Fig. 2.4). The soils of the northern part of Jalpaiguri district are acidic in reaction with lesser amount of organic carbon whereas the soil pH increases southwards with its finest texture. *'The soils of river adjacent area have pH value between 5.0 to 6.5, medium quality of phosphate, higher quality in case of nitrogen and medium quality of organic carbon 0.5% to 0.75%'* (Biswas, 2013).

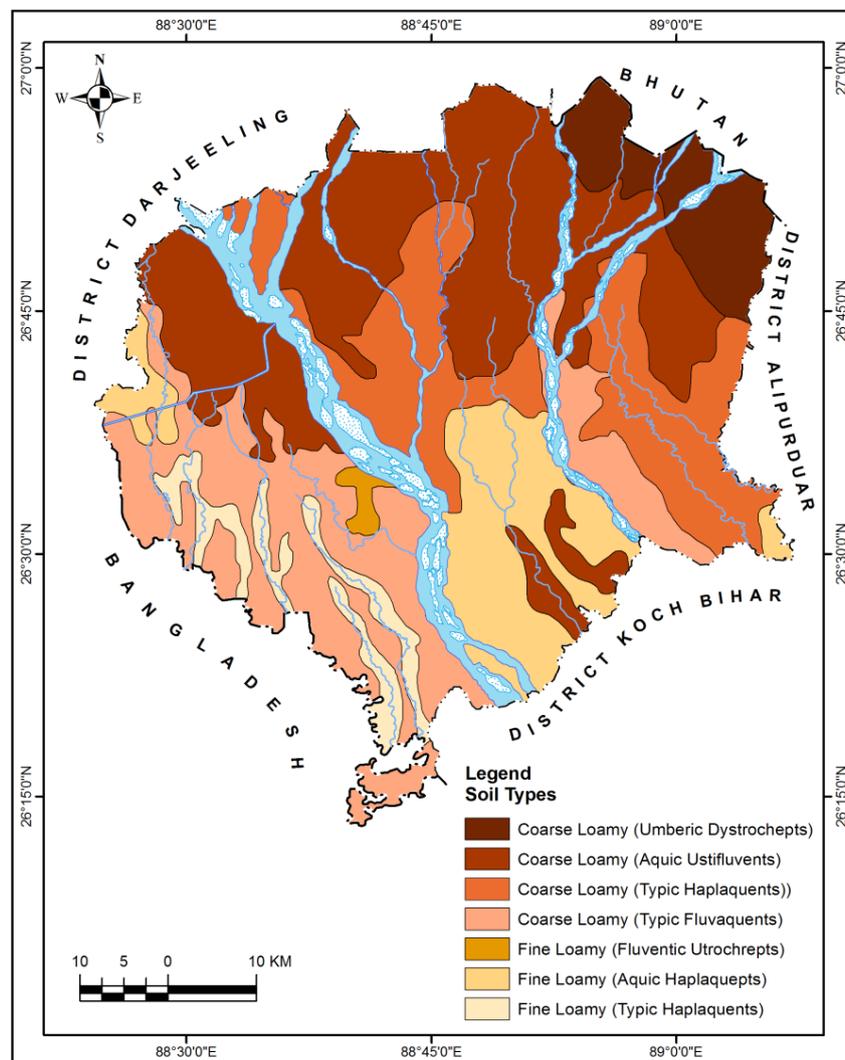


Fig. 2.4: Soil Map of Jalpaiguri district

Source: NATMO, 2011

2.2.4 Drainage

Majority of the rivers flowing in Jalpaiguri district originates in the northern hills and the rivers flows from the north towards the south and south-easterly direction among which Tista, Jaldhaka, Karotoya, Diana, Murti and Neora are noteworthy (Fig. 2.5). Jalpaiguri district is the interfluves of rivers and rivulets. Because of foothills rivers that flow from the hilly courses abruptly reaches the plain. The rivers after reaching the plains are braided and therefore the rivers are incapable of transporting their bed load. Hence, the river beds are raised resulting into floods during heavy monsoon rains in few parts of the plains. However, changing of the river courses and shifting of river are the common features in this region. Flooding, bank erosion is the problems which sometimes cause damage to agriculture, forest, tea garden and settlement.

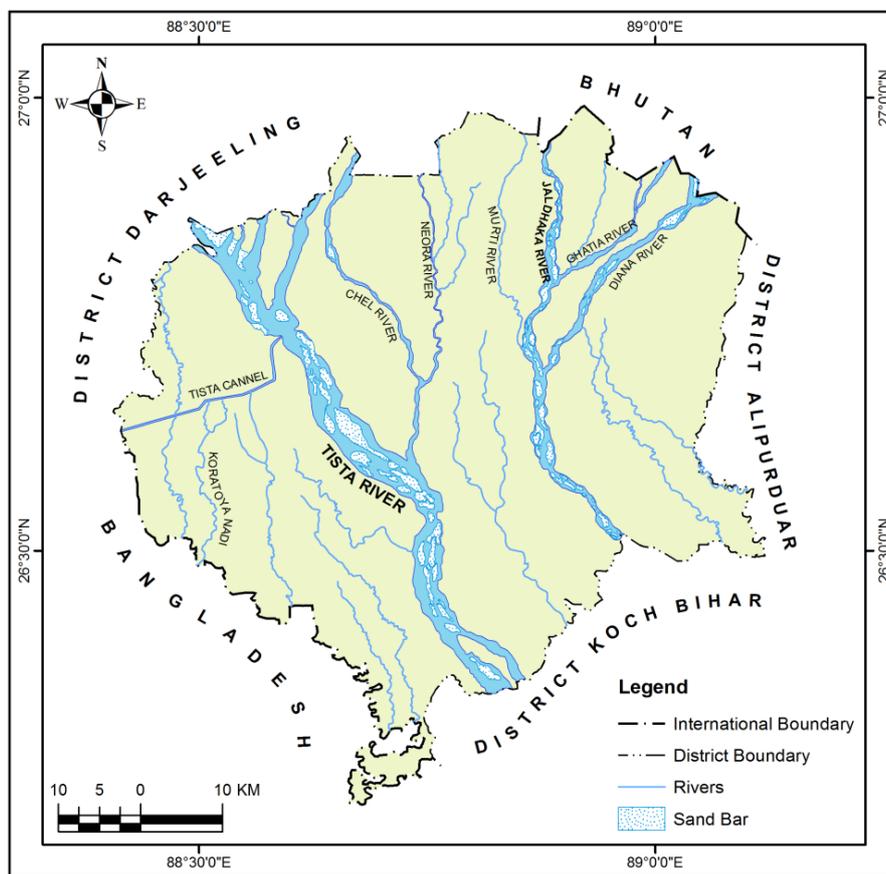


Fig. 2.5: Drainage Map of Jalpaiguri district

Source: NATMO, 2011

2.2.5 Natural Vegetation

Natural vegetation provides us a wide variety of valuable products. *‘In fact the impact of forests and their importance can hardly be exaggerated. It provides us timbers, fuel wood, food and fodder, source of raw materials for forest based industries and source of medicinal*

plants' (Rakshit, 2003). The forest cover of Jalpaiguri district consists of semi-moist-deciduous vegetation (Fig. 2.6). The common species is Sal (*Shorea robusta*) in this region. But Sal is found with varying amount of other species like *Langerstroemia parviflora*, *Terminilia crenutata*, *Amoora rohituka*, *Dalbargia sisoo* etc. *The quality of Sal forest in this district is better than any part of India* (Census, 1961).

Broadly the forests may be classified into the following types:

- i. Riverine forests,
- ii. Plain forests and
- iii. Savannah forests.

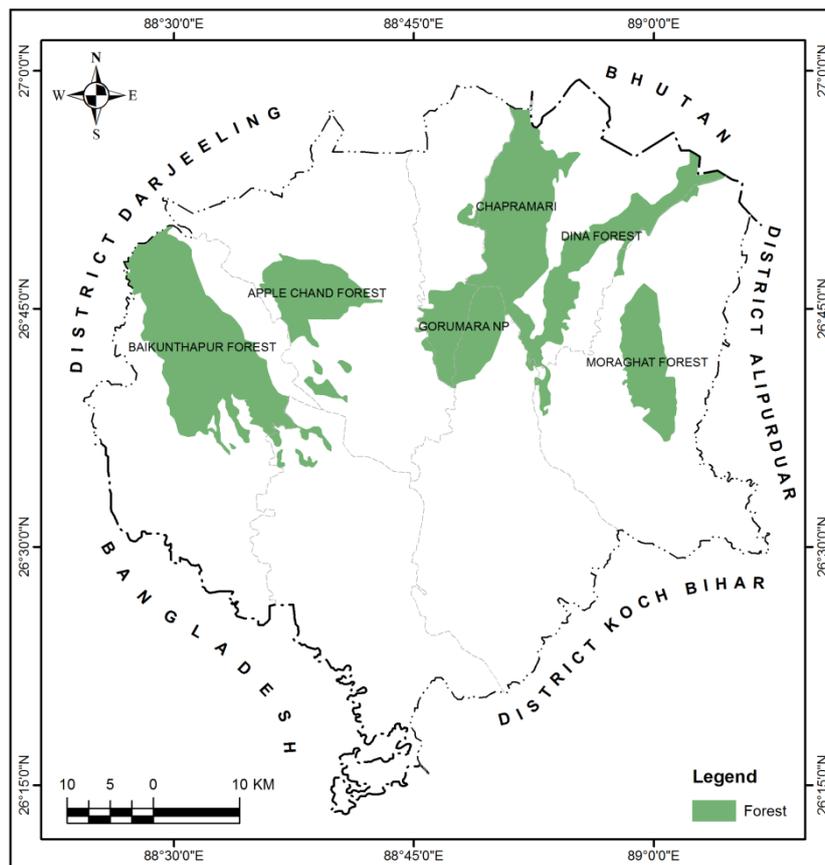


Fig. 2.6: Natural Vegetation Map of Jalpaiguri District

Source: NATMO, 2011

Riverine forests are deciduous forests and the major species are Khair and Sisoo of this region. These are found near the river beds on newly deposited sand and silt. At some places, Odal and Sidha are also found in large proportion.

The forests in the plains have specific types and can be primarily classified as mature sal, scattered sal, wet mixed and dry mixed sal (Census, 1961).

Savannah forests are found where a large amount of sand is present, and the common trees are Kumbhi, Amla, Sidha etc. The forests of Jalpaiguri district are significant for providing shelter and protection to the several species of wildlife.

2.2.6 Climate

The climate of Jalpaiguri district is sultry heat with high humidity and heavy precipitation (Chakraborty, 2007). It falls in the monsoon climatic zone and the effects of the south western monsoon against the Himalayan barrier allow the rain bearing winds to affect the temperature and rainfall of the district. The seasons are divided into cold, rainy and two relatively short periods of seasons i.e. spring and autumn is also noticed in Jalpaiguri district. 'However, the rainfall is heavy and the temperature is rarely excessive' (Gruning, 1911). Except in the northern part of the district, the ground water table is fairly near to the surface staying within a depth of 2 to 10 meter during summer' (Roy, 2011). Sometimes heavy monsoon rainfall in the catchments causes destructive floods in the district. Summers are hot and humid where May, June, July and August are generally the hottest months and December and January are the coldest months where there is a pronounced dryness in winter.

Temperature

Monthly average temperature records for the year 2016 reveals that April and August are generally the hottest months and December and January are the coldest months (Table 2.1 and Fig. 2.7). The maximum temperature recorded in the district is 32.6°C in the summer month and there is a marked decrease of temperature in the coldest month where the minimum temperature is recorded to be 10°C. Maximum and minimum temperature (in °C) for the successive years (2009-2016) is depicted in Table 2.2.

Humidity

The monthly average maximum and minimum humidity of Jalpaiguri district, 2016 has been presented in Table 2.1, where the highest percentage of humidity has been observed in the month of July (98) and the minimum percentage of humidity has been obtained in the month of March (47).

Table 2.1: Maximum and Minimum Temperature and Humidity of Jalpaiguri district, 2016

Month	Temperature		Humidity	
	Maximum in °C	Minimum in °C	Maximum (%)	Minimum (%)
Jan	22.5	10.0	92	57
Feb	25.9	13.5	88	53
Mar	30.0	15.8	84	47
Apr	31.6	18.5	85	57
May	31.3	19.9	92	65
Jun	31.5	21.7	95	76
Jul	29.8	22.4	98	84
Aug	32.6	23.8	94	75
Sep	30.7	22.7	96	78
Oct	31.3	19.9	91	65
Nov	29.9	15.0	88	50
Dec	26.8	11.8	91	49

Source: Meteorological Department, Govt. of West Bengal

Table 2.2: Maximum and Minimum Temperature (in °C)

YEAR	TEMPERATURE (°C)	
	Maximum	Minimum
2009	37	9
2010	36	7
2011	37	7
2012	37	8
2013	38	8
2014	36	9
2015	33	10
2016	33	10

Source: Meteorological Department, Govt. of West Bengal

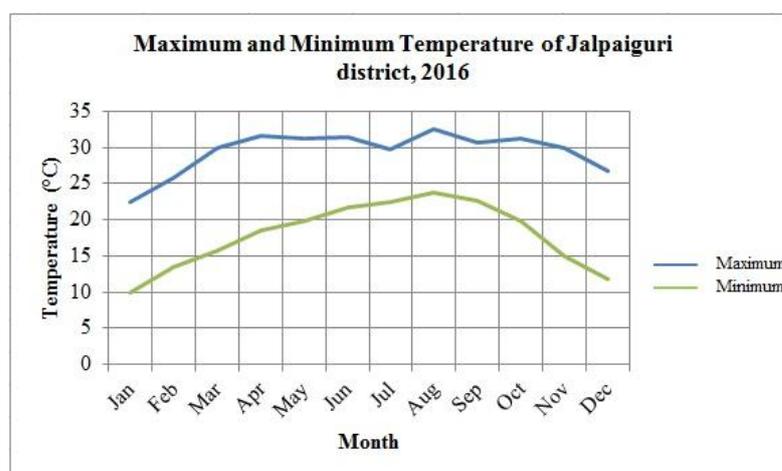


Fig. 2.7: Maximum and Minimum Temperature of Jalpaiguri district, 2016

Source: Meteorological Department, Govt. of West Bengal

Rainfall

Jalpaiguri district exhibits a great variety in its rainfall distribution. In this region the maximum concentration of rainfall occurs in the month of June, July, August and September. The mean annual rainfall ranges between 3000-4000 mm (IMD, 2011). The rainy season begins from early May and continues till October. Table 2.3 reveals that July has been recorded to be the month of highest rainfall with 1313.7 mm and December is the driest month with no rainfall (Fig. 2.8). The reason behind uneven distribution of rainfall is the variations in the topographic structure of the region. Rainfall is concentrated in four summer months and a distinct lack of rainfall has been observed in the month of November and December. Occasional heavy rainfall sometimes causes devastating floods with fissures in the river embankments due to sudden rise in the water levels. ‘After the devastating floods of 1954, 1959 and 1968, the issue of effective flood management in Jalpaiguri district received attention (Roy, 2011). The rainfall (in mm) of Jalpaiguri district for the successive years, from 2009 to 2016 has been depicted in Table 2.4.

Table 2.3: Monthly rainfall in Jalpaiguri district, 2016

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall in mm	6.9	4.6	8.5	112.5	266.0	950.3	1313.7	224.5	699.9	249.4	0.0	0.0

Source: Meteorological Department, Govt. of West Bengal

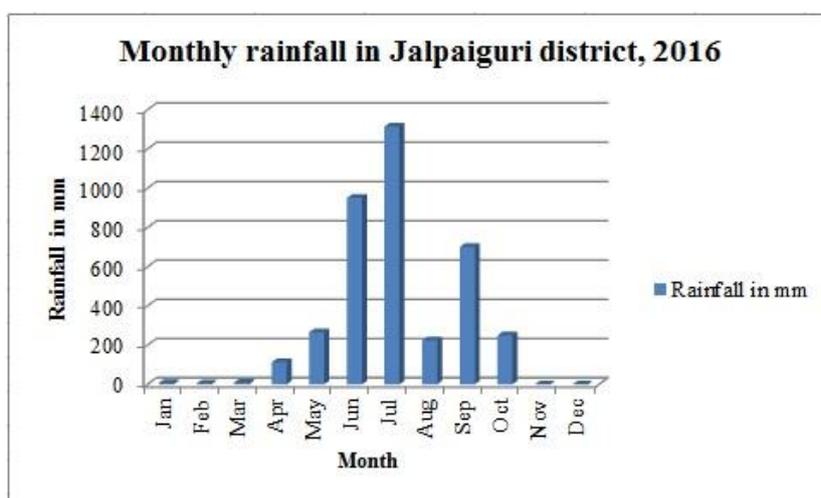


Fig. 2.8: Monthly rainfall in Jalpaiguri district, 2016

Source: Meteorological Department, Govt. of West Bengal, 2016

Table 2.4: Rainfall (in mm) for the successive years is shown below:

Year	Rainfall in mm
2009	3155
2010	3882
2011	3146
2012	3787
2013	3305
2014	3088
2015	3651
2016	3836

Source: Meteorological Department, Govt. of West Bengal

2.3 Cultural Set Up of the District

The analysis of the cultural set up of the district is significant because it provides the primary base for the study of spatial organization of the social and economic facilities being provided to the people of an area.

2.3.1 Distribution of Population

It is the varying physical, social, economic, infrastructural and historical factors which have a major influence upon the distribution of population in an area. Therefore, '*spatial distributions cannot be explained by reference to a given moment in time; they are constantly changing in response to changing human influence and values*' (Clarke 1973). Moreover, the migration of population has a direct affect upon the distributional changes of population over an area.

Table 2.5: Distribution of Total rural Population in Jalpaiguri district, 2001 & 2011

C.D. Blocks	2001	Population %	2011	Population %
Rajganj	283967	24.13	190645	16.97
Jalpaiguri	280927	23.88	261784	23.30
Maynaguri	254594	21.64	291073	25.90
Dhupguri	357134	30.35	380090	33.83
Total for Sadar sub-division	1176622	100	1123592	100
Mal	265392	54.47	275384	54.51
Matiali	105906	21.73	102418	20.27
Nagrakata	115907	23.80	127397	25.22
Total for Mal sub-division	487205	100	505199	100

Source- Census of India, 2001, 2011

Table 2.5 reveals the trend of the distribution of rural population in Jalpaiguri district. It has been observed that the rural population of Sadar sub-division consisting of the C.D. blocks of Rajganj, Jalpaiguri, Maynaguri and Dhupguri have slightly decreased from

11,76,622 in 2001 to 11,23,592 in 2011, whereas in Mal sub-division consisting of the C.D. blocks of Mal, Matiali and Nagrakata, the data reveals that the rural population have increased from 4,87,205 in 2001 to 5,09,199 in 2011. The total population of the district according to Census 2001 was 2,063,598 whereas the total population has risen to 2,381,596 in 2011 (Census, 2011).

Table 2.6: Distribution of Rural Male and Female Population of Jalpaiguri district

C.D. Blocks	Rural Population			
	Male		Female	
	2001	2011	2001	2011
Rajganj	147467	99129	136500	91516
Jalpaiguri	145272	134526	135655	127258
Maynaguri	131720	150757	122874	140316
Dhupguri	185929	193071	171205	187019
Mal	135344	139602	130048	135782
Matiali	53472	52476	52434	49942
Nagrakata	58790	64133	57117	63264

Source- Census of India, 2001, 2011

The distribution of rural male and female population for the district has been depicted in Table 2.6, according to 2001 and 2011 Census in order to understand the degree of differential distribution of rural population in Jalpaiguri district. The rural population of the district in Census 2001 was 16,63,827 whereas the rural population has decreased to 16,28,791 in 2011 due to the growth of census towns. However, the percentage of rural population in Jalpaiguri district is 68.39%, compared to the corresponding figure for West Bengal at 68.13% (Census, 2011).

2.3.2 The Economy

The economy of Jalpaiguri district is primarily agriculture based and it is the mainstay of the rural people. On the other side, the tea industry forms the core of Jalpaiguri's economy. The tea industry with tea processing, tea packaging provides a large scale employment and promotes the economy of the region by absorbing a large amount of labourers. Besides tea, small scale rice mills, oil mills and saw mills has been observed in the district. Apart from the presence of agriculture and tea industries, small scale industries and cottage industries in Jalpaiguri district includes the manufacturing of bamboo works, cotton and mat weaving products, pottery products, candle making etc. Furthermore, the cultivation of rice, jute, tobacco, mustard, are also extensively promoted in the district.

Table 2.7 depicts the area covered by the major crops of the district in thousand hectares and the production of the crops in thousand tons in Jalpaiguri district, 2011-12.

Table 2.7: Area and Production of major crops of Jalpaiguri District, 20011-12

Crops	Area*	Production**
Rice	224.6	469.7
Jute	35.7	467.2
Tea	77.3	151.7
Tobacco	0.5	0.8
Mustard	10.0	6.5
Pineapple	1.71	58.38
Banana	2.43	56.00

Source- Census of India, 2011

*In thousand hectares

** In thousand tons

Since, Jute is the principal cash crop of the district therefore the production of jute is obtained with 467.2 thousand tons. Moreover, Jalpaiguri district is well-known for the production of orchard fruits especially pineapple and banana which make a vital contribution to the district's economy.

2.3.3 Agriculture

Agricultural development plays an essential role in rural development. The sustainable development of agriculture is indispensable in the rural agrarian landscape of Jalpaiguri district. Agriculture is an important source of livelihood in the region where rice is the dominant food crop of the district. It is necessary for the large scale rural population as well as for the growth of national economy. The area is formed of alluvium and the silt carried by the rivers like Tista, Jaldhaka, Karotoya and Murti facilitates the development of agriculture in the district. The other major crops of the district consist of wheat, maize, jute and potato.

Table 2.8: Yield rates of major crops in Jalpaiguri district

Crops	2014-15	2015-16
Aus	3092	3156
Aman	3891	3959
Boro	5031	5393
Wheat	3451	3463
Maize	2934	3322
Potato	28209	30622
Jute	11.01	11.77
Tobacco	1645	1742

Source- Deputy Director of Agriculture, Jalpaiguri, Govt. of West Bengal

In Jalpaiguri district, the number of persons engaged in agricultural activities are generally dominated by the small farmers and the marginal farmers where the highest number small farmers has been observed in Dhupguri block with 9,605 persons followed by Maynaguri

block and in case of marginal farmers, 27,781 persons are engaged in Maynaguri block followed by Dhupguri block, (Census, 2011).

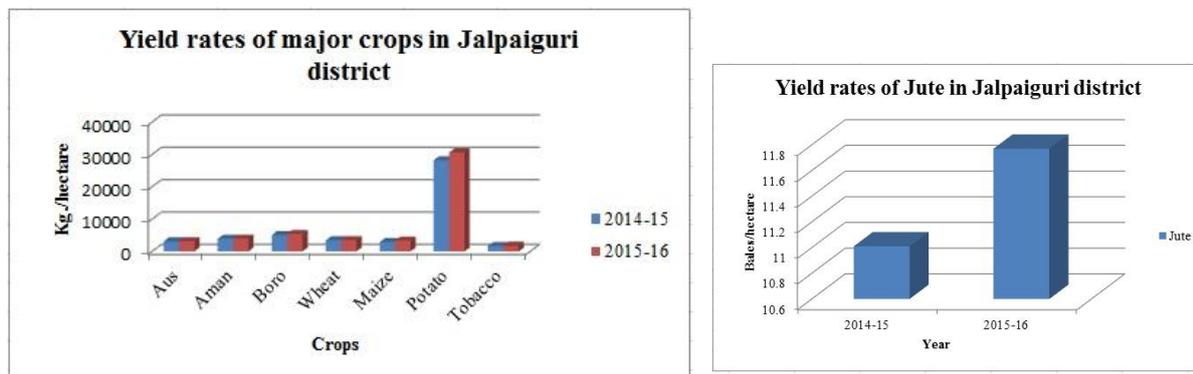


Fig. 2.9: Yield rates of major crops in Jalpaiguri district

Source- Deputy Director of Agriculture, Jalpaiguri, Govt. of West Bengal, 2014-16

Since agriculture and allied sectors is one of the major economic activities of the district, the yield rates of major crops for the successive years in (kilogram per hectare) and in (bales per hectare) has been depicted in Table 2.8. The trend reveals that the yield rates of paddy crops (Aus, Aman, Boro), wheat, maize, potato, jute and tobacco have increased from the year 2014-15 to 2015-16 (Fig. 2.9).

2.3.4 Work Force

The percentage of workers in total population is used as a vital indicator of the economic structure and dependency ratio of an area. The block wise percentage distribution of workers in different categories to respective total workers in Jalpaiguri district, 2011, has been depicted in Table 2.9, (Fig. 2.10). To assess the occupational structure of the study area the main workers are divided into four occupational categories:

- (A) Agricultural labourers,
- (B) Cultivators,
- (C) Household industry workers and
- (D) Other Workers.

Cultivators: According to Census 2011, 16.37% cultivators have been found in Jalpaiguri district. The highest percentage of cultivators is in Maynaguri block with 28.89% followed by Jalpaiguri block. It is Matiali block where the percentage of cultivators is lowest with 4.77% and this decrease is associated with the shift in the workforce away from agricultural operations towards the non-farm operations. The workers are engaged in the tea garden activities as the block is endowed with a number of tea factories.

Table 2.9: Percentage Distribution of Workers in Jalpaiguri district, 2011

C.D. Blocks	Cultivators	Agricultural Laborers	Household Industry Workers	Other Workers
Rajganj	10.56	15.08	3.31	71.05
Jalpaiguri	20.42	34.11	1.04	44.43
Maynaguri	28.89	35.12	1.72	33.27
Dhupguri	16.90	33.18	1.41	48.51
Mal	12.09	20.88	1.70	65.33
Matiali	4.77	10.76	1.43	83.04
Nagrakata	8.50	13.99	1.68	75.82

Source- Census of India, 2011

Agricultural Labourers: The percentage of agricultural labourers to its total workers is 25.94% in Jalpaiguri district. The highest percentage of agricultural labourers is in Maynaguri block with 35.12% followed by Jalpaiguri and Dhupguri block due to the high intensity of farming activities in these areas, whereas the lowest percentage of agricultural labourers is in Matiali block at 10.76%.

Household Industry Workers: The percentage of household industry workers is 1.80% in Jalpaiguri district. The work force involved in household industry is quite low as compared to the percentage of cultivators and agricultural labourers, because of the greater participation of people in the agricultural sector and the tea industries in the study area. However, the highest percentage of household industry workers is in Rajganj block with 3.31% followed by Maynaguri block and the lowest percentage of the workers is in Jalpaiguri block at 1.04% followed by Matiali block.

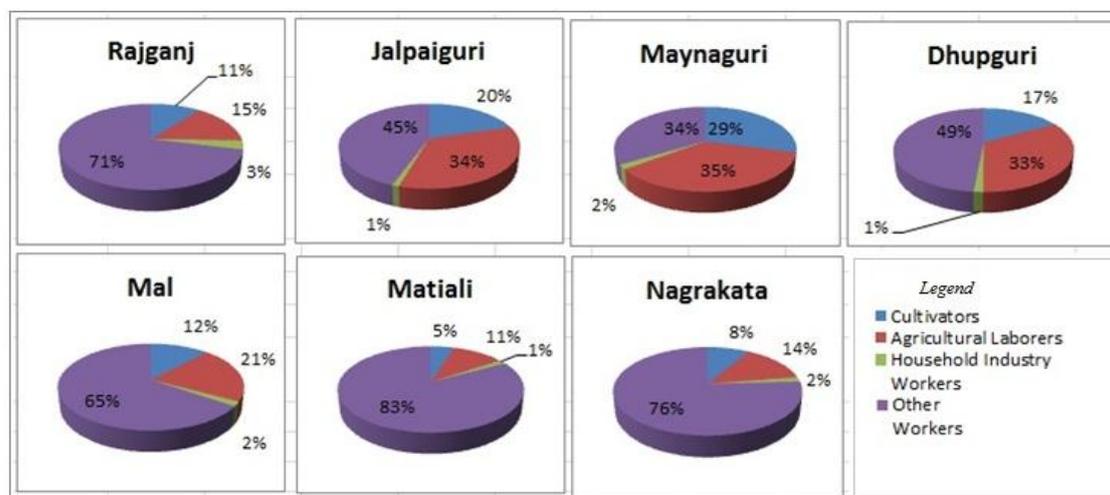


Fig. 2.10: Percentage Distribution of Workers in Jalpaiguri district, 2011

Source- Census of India, 2011

Other Workers: The other workers constitute 55.89% of workforce in Jalpaiguri district. The highest percentage of other workers has been observed in Matiali block with 83.04% followed by Nagrakata block and lowest percentage of the other workers is in Maynaguri block with 33.27% followed by Jalpaiguri block. The reasons behind the increase of other workers are the decrease of traditional agricultural activities in the study area with a sharp increase in non-farm activities.

2.3.5 Literacy

Literacy is one of the social indicators for human development. Higher literacy rate is fundamental because it brings socio-cultural and economic development of an area. However, literacy plays an important role in affecting the quality of human resources as it helps in conveying proper notions and thoughts across time and place.

Table 2.10 depicts that the total literacy rate for Sadar and Mal sub-division has increased by 10.37% during 2001-2011. Male literacy rate has increased by 6.66% and similarly the female literacy rate has increased by 14.71% over the period 2001-2011(Fig. 2.11). The increase in literacy rate is the consequence of increase in the numbers of educational institutions in the study area. The literacy rate in 2001 varied between a minimum of 48.50% in Nagrakata block to a maximum of 66.20% in the Maynaguri block. The minimum percentage for the males has been observed with 60.20% and for the females the minimum percentage has been obtained at 36.40% in Nagrakata block, whereas, the maximum percentage of literacy rate has been found with 76.70% for the males and 54.90% for the females in Maynaguri block.

Table 2.10: Effective Literacy rate of Male and Female in Jalpaiguri district

Blocks	Total Literacy Rate		Male Literacy Rate		Female Literacy Rate	
	2001	2011	2001	2011	2001	2011
Sadar sub-division						
Rajganj	59.10	72.08	70.50	78.52	46.50	65.18
Jalpaiguri	65.30	73.81	75.80	80.52	54.00	66.73
Maynaguri	66.20	75.63	76.70	81.98	54.90	68.84
Dhupguri	62.20	69.57	73.50	77.56	49.60	61.36
Mal sub-division						
Mal	53.50	66.31	64.80	74.23	41.80	58.17
Matiali	54.40	66.98	67.10	76.76	41.60	56.71
Nagrakata	48.50	61.27	60.20	70.51	36.40	51.93
Total	60.18	70.55	71.27	77.93	48.12	62.83

Source: Census of India, 2001, 2011

However for the promotion of literacy in Jalpaiguri district, the efforts of Sarba Siksha Abhiyan, National Adult Education Programme and Total Literacy Campaign of the National Literacy Mission leads to the improvement in literacy rate over the period of time.

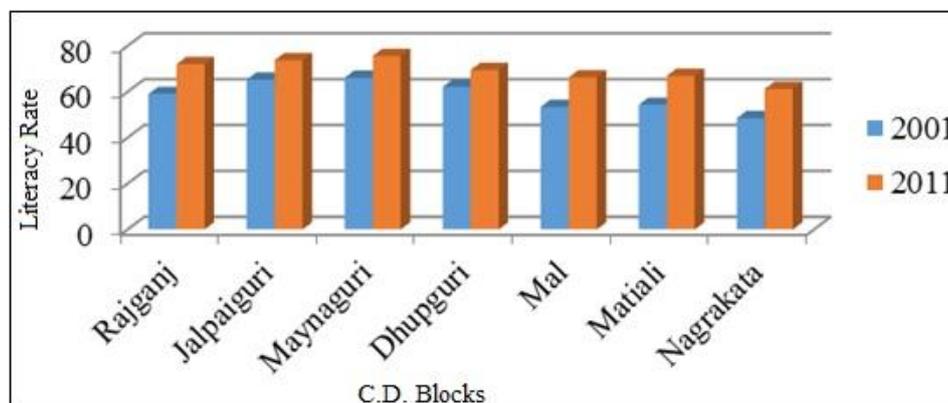


Fig. 2.11: Total Literacy rate

Source: Census of India, 2001, 2011

In 2011, the block that recorded the least percentage of total literacy rates is Nagrakata block with 61.27%, whereas Maynaguri block recorded the highest percentage of total literacy rate with 75.63%. The maximum absolute change in total literacy rate during the period 2001-2011 has been observed in Rajganj block with 12.98%, due to the presence of better transport network and higher number of educational institutions. Among the females the maximum difference has been obtained in Rajganj block with 18.68% whereas in case of males it has been observed in Nagrakata block with 10.31%, which indicates the existence of a sharp variation in the percentage of male and female literacy rate in Sadar and Mal sub-division of Jalpaiguri district.

2.3.6 Transport

Transport is an indispensable infrastructure for the rapid development of any region. Efficient transportation network acts as a catalyst in achieving social and economic development in the rural areas. Jalpaiguri district is located in the North-East Frontier Railway zone of the Indian Railways. The railway station that connects the district with the rest of the districts and states are the Jalpaiguri Road and Jalpaiguri Town Station. The national highway that passes through Mal, Matiali, Maynaguri and Rajganj blocks of the district is NH-31. NH-31c passes through Dhupguri and Nagrakata blocks and SH-12-A passes through Jalpaiguri Sadar block of Jalpaiguri district. Road length is one of the significant criterion to determine the accessibility of any region and the different agencies that maintain the length of the roads in the blocks of the district are P.W.D, Zilla Parishad, Gram Panchayat and Panchayat Samiti and Pradhan Mantra Gram Sadak Yojana (PMGSY).

524.04 km surfaced roads are maintained by the state Public Works Department (P.W.D), 811.17 km surfaced roads are maintained by the Zilla Parishad and 389.94 km surfaced roads are maintained by the Pradhan Mantra Gram Sadak Yojana (PMGSY), (Census, 2011).

2.4 Conclusion

It has been concluded that Jalpaiguri district is bordered by the hill ranges in the north and piedmont plains in the south and geologically it is dominated by schist, gneiss, quartzite, dolomites, coal and enormous alluvial deposits. The soil of this region varies from coarse loamy to fine loamy type. The inhabitants of this district are highly influenced by the rivers of this area, forest products of this district and the tea gardens. The major rivers like Tista, Jaldhaka, Karatoya, Murti, Diana sometimes causes damage to agriculture, forest, tea garden and settlement through flooding and bank erosion. The climate of this region is diversified in its rainfall and temperature pattern.

Temperature ranges from 33°C in the summer month to a marked decrease of temperature in the coldest month where the temperature is recorded to be 10°C. The mean annual rainfall for the district fluctuates between 3000-4000 mm. Jalpaiguri district consists of semi-moist-deciduous vegetation where sal is the most common species of this region. It is predominantly a rural region and the economy is predominantly agriculture based where 26% of the total workers are agricultural labourers. Besides agriculture, tea industry on the other hand is another source of livelihood in the region. Road transport is one of the key indicators of development of any region and Jalpaiguri district is no exception where the main mode of transport is the national highway NH-31 which passes through the district.

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Rural Development: Meaning, Concept and Definition

3.1 Introduction

According to the view of World Bank (1975) rural development was considered as *improving the living standards of the masses of low-income population residing in rural areas making the process of rural development self-sustaining*. In India, the emphasis on the development of rural areas is not a new one. It has been a matter of concern among the planners, social workers, academicians, and researchers for a long time. Rural development is overall development of rural areas with the purpose of improving the quality of life of the rural people. It is comprehensive and has many dimensions. The concept of rural development includes the development of all sectors in the rural areas. Mishra and Sunderam (1979) viewed that rural development is a desired positive change and it is a set of action or process of both qualitative and quantitative change in the existing system. It aims at rapid improvement of living conditions of the rural people or increase the potential for the progress of living conditions in future.

According to Rukhsana (2009), L.B. Moore stated, *rural development as a process of sustained improvement in the material and social welfare of total population with clear social emphasis on those living outside the urbanized areas*. Fundamentally, the process of rural development has three main aspects: improving the quality of life of the rural people, ensuring active participation of the rural masses in different developmental activities in the rural areas and making the process of rural development self-supporting. *The rural development is an integrated concept. It is a complete term which integrates a variety of elements of human life and related activities* (Singh, 2007). Thus, rural development implies a change in all aspects in terms of improvement of social, economic, infrastructural and technological aspects so that every aspect of rural life changes in a desired direction. In the context of rural development, *a change may be considered to be an instrument which can be used to promote rural development* (Singh, 1999). Hence, the process of rural development has immense social and economic significance.

In India, 68.84% (Census, 2011) population lives in the rural areas. Prior to independence, Gandhiji had emphasized the significance of developing villages in order to develop the country in every aspect. Gandhiji said *India lives in villages*. Hence, during post-independence period, the social thinkers, planners, educationists and the policy-makers put focus upon the self-sufficiency of the Indian villages.

Development in general refers to the process of a general improvement in levels of living together, decreasing inequality in incomes and the capacity to sustain continuous improvements overtime (Sahu, 2003). Overall development of the rural areas has been one of the major concerns of the policy planners and therefore a number of programmes were implemented by the Government which was framed in the various Five Year Plans of national development. To develop the social infrastructure and economic condition of the rural areas various strategies were formulated during post-independence period. In India, the process of rural development has specific objectives.

- To increase awareness among the rural people in order to develop the socio-cultural infrastructure of the rural areas.
- To create infrastructural provisions in the rural areas and generate employment opportunities for the rural people.
- To provide basic amenities for the rural people such as purified drinking water, better housing facility, better sanitation facility, and adequate health care facilities.
- To improve infrastructural facilities in the villages in terms of transport and communication along with provision of adequate educational institutions.
- To improve agricultural activities for the rural masses by the provision of modern agricultural inputs like fertilizers and improved seeds.
- To ensure a better quality of life for the rural people by providing nutritional food, better educational facilities in order to increase the level of literacy rate among the rural masses.
- To make the rural people aware so that they may take an active part in the decision-making and developmental activities of the rural areas.

In order to improve the quality of life of the large number of people living in rural areas various rural development policies and programmes has been formulated in the country since 1952. The brief history of rural development in India can be divided into two periods; before Independence and after Independence.

3.2 History of Rural development

Prior to independence, the process of rural development was viewed as an improvement in agriculture and allied sectors consisting of dairy, animal husbandry, fisheries and forestry. However, there were various important experiments and activities attempted for the process of rural development during pre-independence periods by several eminent philosophers, social thinkers, educationists and politicians.

- i. Shriniketan Experiment by Rabindranath Tagore, 1921
- ii. Gurgaon Experiment by Brayne ,1927
- iii. Martandum Experiment by Hatch, 1928
- iv. Baroda Experiment by V.T. Krishnamachari, 1932
- v. Sevagram Experiment by Gandhiji,1932
- vi. Bombay Experiment, 1942

3.2.1 Shriniketan Experiment (1921)

This programme was initiated by eminent educationist, philosopher and poet Sri Rabindranath Tagore. The important objective of the experiment was the economic development of the rural community. He started his programme with a view to remove the poverty of the rural people in order to make the villages' self-sufficient. He was always concerned with the life of the rural masses, and therefore worked for the well-being of the rural people.

Tagore wanted to reconstruct the rural areas in every sphere. Hence, he prioritized education for the development of human resources in the rural areas. He established a comprehensive educational institution with adequate financial facilities for the rural masses. Apart from educational facilities for the rural population, the institution dealt with the various problems of the villages including sanitation and health. In order to improve the health care needs of the rural masses medical facilities had been provided at the low cost. Various rural cooperative institutions were also initiated for the betterment of agriculture, fertility of soil and better agricultural inputs for the rural farmers. Besides, the institution emphasized to solve the problem of the selection of seeds, ways of cattle-breeding for the development of agrarian structure of the rural areas. Tagore emphasized the importance of small rural industries such as; tailoring, book binding and embroidery in order to strengthen the economy of the rural masses.

3.2.2 Gurgaon Experiment (1927)

I.L. Bryne was the Deputy Commissioner of Gurgaon district in 1920 and the programme started by him for the development of villages was called the Gurgaon Scheme or Gurgaon Experiment. Bryne made a large tour in the district and observed the extreme poverty and ignorance of the rural masses in Gurgaon district. During pre-independence, it was the first scheme introduced for the over-all development of the rural population and therefore it deals with the problems of the rural masses in every sphere in order to diminish the social, cultural and economic problems of the rural masses.

Bryne's main objective was improvement of the life of rural people in every aspect. He tried to increase agricultural production with improved methods which could reduce the poverty of the peasants in the rural areas. Therefore, he emphasized agricultural development by choosing better seeds and fertilizers for the rural masses. He also tried to develop the cattle breeding in the rural areas. Besides, he was concerned with the education of the women. Despite the above activities, he emphasized on improved sanitation and better health facilities in the rural areas. Bryne's Gurgaon Experiment was carried out in several Indian villages with official support and authority in order to achieve success in the process of rural development.

3.2.3 Martandum Experiment (1928)

Spencer Hatch implemented a programme of rural development at Martandum in the year 1928. Martandum was a densely populated village in Kerala. Hatch paid attention to the poverty of the rural masses and was concerned with the socio-cultural problems of the rural population. Hatch opened a rural reconstruction centre at Martandum with a view to focus the five sided triangle comprising of spirit, mind, physical, economic and social side of the rural masses.

However, the main objective of the rural reconstruction centre was to improve the social aspects of the rural areas in terms of the provision of free education and proper guidance to the rural population. The rural reconstruction centre maintained the principle of '*self-help*' and therefore comprehensive programmes were undertaken for the process of rural development. Thus, with the help of the government Hatch tried to bring out the rural masses from the acute problems of the rural areas.

3.2.4 Baroda Experiment (1932)

V.T. Krishnamachari, initiated the rural reconstruction programme in the year 1932 with the objective of development of rural areas. The programme tried to promote development in different fields of rural life in order to sustain the livelihood security and an economic protection of the rural masses.

The main aim of the programme was the improvement in the standard of living of the rural people and to develop the sense of *self-help* and *self-reliance* among the rural masses. The movement of the Baroda experiment was initiated in the villages of Kosamba. The programme was comprehensive and therefore it stressed the development of rural people in every aspect. He even tried to promote agricultural production so that agricultural economy could be strengthened and the rural infrastructure could be improved.

3.2.5 Sevagram Experiment (1932)

Mahatma Gandhi aimed to reorganize the rural areas of India for the betterment of the lives of the rural poor and reduction of poverty from the Indian villages.

Sevagram was a small village and the rural people lacked the basic requirements of life. At the age of 67, Gandhiji initiated his Sevagram project and prioritized the improvement of the socio-economic structure of the village. Gandhiji started small scale industries in the village especially khadi industries for the provision of work to the rural people so that it could contribute to rural economic development. Gandhiji tried to implant the principle of *self-help* among the rural masses. Besides, he tried to improve the agricultural techniques in the rural areas. Moreover, he was also aware of the problem of sanitation in the villages. His main objective in Sevagram Experiment was to construct self-supporting villages and to promote an over-all development of the rural people in India.

3.2.6 Bombay Experiment (1942)

Prior to independence, the Bombay government initiated a scheme which was completely based on the Gandhiji's idea of Sarvodaya. This particular scheme was sponsored by the government in the rural areas in order to develop the rural economy of the country. The basic objective of the experiment was to stop the out-migration of rural youths to towns and cities as the migration of the rural youth acted as a barrier to socio-economic development of the Indian villages.

Gandhiji tried to build the rural areas of India by strengthening the poor and the weaker section of the villages. He tried to organize self-sufficient Indian villages. Gandhiji viewed that the Indian villages must be self-sufficient and the rural population must be aware of food and other basic necessities. He even tried to expand transport and communication facilities in the villages for the benefit of the rural population. The scheme emphasized on the economic equality and therefore provided the basic amenities in the rural areas in order to develop the rural infrastructure. Besides, the programme emphasized the food supply for all the rural population, adequate medical and health care facilities, free educational facilities, local self-governing facilities and employment opportunities for the rural people through village industries in the rural areas.

3.3 Five Year Plans for Rural Development

After the independence, the planning for rural development was prioritized by the planners and the policy makers of the country. The planners formulated various rural development strategies for the economic development of the country in order to eradicate

poverty, food insecurity, unemployment and socio-economic inequalities. During the post-independent period, the successive governments have initiated a number of developmental activities for the rural areas in India through the Five Year Plans. The planners paid attention since 1951 for the upliftment of the rural masses in India.

First Five Year Plan (1951-56)

The major objective of the First Five Year Plan was to improve the process of economic development in the rural areas of the country. The plan focused on the production of agriculture in order to strengthen the rural economy. To eradicate the problem of unemployment and regional imbalances, Community Development Programme (CDP) was initiated in India.

The Community Development Programme was launched on 2nd October 1952 with an objective of improving the standard of living of the rural masses. *The rural development programme in India based itself, to begin with, on community development approach, combining its welfare aims and social and economic change through self-help and self-reliance techniques* (Sunderam., 1979). For the execution of rural development activities block administration was initiated during the First Five Year Plan. The main aim of the programme was to increase the rate of investment from 5% to 7% of the national income in order to reconstruct the rural economy. CDP prioritized the improvement in infrastructure in terms of transport, communication and electricity. Besides, the objective of the programme was to develop the socio-economic condition of the rural people in terms of the improvement in health, housing and education. But this programme could not succeed as it left the weaker section of the rural areas untouched. However, the programme was completed on 21st March 1956.

Second Five Year Plan (1956-61)

To achieve a rapid economic development in the country the Second Five Year Plan emphasized industrial development during this period. To reduce under employment and unemployment investment was made to construct heavy industries in order to strengthen the regional economy. Besides, cottage and small scale industries were introduced in the rural areas to expand the rural non-farm employment for the rural masses. Strategically, the plan aimed at enhancement of employment opportunities and reduction of the economic disparities among the rural masses. During the Second Five Year Plan steps were taken to ensure that the benefits of economic development could be achieved by the weaker sections of the society. Thus, the panchayati system was introduced during this period. Besides, rural development

programmes like Intensive Agricultural Development Programme (IADP) 1961, Khadi and Village Industries Programme, Multipurpose Tribal Development, Village Housing Schemes were also launched in the rural areas of the country.

Third Five Year Plan (1961-66)

During the Third Five Year Plan, development of agricultural production and allied activities was conceived. Priority was given to the introduction of agricultural development programmes, like Intensive Agricultural Area Programme (IAAP), and High Yielding Varieties Programme (HYVP) in the country. The HYV seed was introduced for increasing agricultural production and reducing food shortages in the rural areas. Basically during the Third Five Year Plan objectives of the Second Five Year Plan were considered and in order to remove poverty of the rural masses medium and small scale industries were promoted during this period. Health and nutrition were also prioritized in the Third Five Year plan which was required for improvement of the quality of life of the rural masses. Applied Nutrition programme was introduced in order to ensure proper nutrition and growth to the children in the rural areas of the country.

Fourth Five Year Plan (1969-74)

The Fourth Five Year Plan laid stress on social justice for upliftment of the weaker sections of the rural areas in the country. Various area development and target oriented programmes were introduced during this period in order to reduce poverty among the rural masses. Programmes like Small Farmer Development Agency (SFDA) 1970, Marginal Farmers and Agricultural Landless Development Agency (MFALDA) 1970, Tribal Area Development Programme (TADP) 1962, Drought Prone Area Programme (DPAP) 1970-71, were launched as important rural development programmes. Cash Scheme for Rural Employment and Programme for Women was also introduced during this period for the development of backward areas and backward communities in the country.

Though the planners were successful in initiating these programmes yet the socio-economic disparities were prevalent in the rural areas. Hence, the success of rural development programmes was limited to certain areas of the country. However, during this period these programmes were implemented at block and village levels in order to promote a better quality of life of the rural masses.

Fifth Five Year Plan (1974-79)

The prime objective of the Fifth Five Year Plan was the reduction of poverty among the rural masses along with the achievement of self-reliance. In order to fulfill the objectives, numbers of programmes were introduced; namely Command Area Development Programme

(CADP) 1974, Hill Area Development Programme (HADP) 1962, Food for Work Programme (FFW) and Minimum Needs Programme (MNP) 1974. It was observed by the planners that the benefits of social services failed to reach the weaker sections of the country. Hence, Minimum Needs Programme focused on the basic requirements of the rural people with the provision of elementary and adult education facilities, facilities of rural health, rural electrification, rural water supply, rural roads, housing assistance to rural landless labourers, and proper nutrition to families below poverty line. During this plan period the planners promoted the development of human resources. In order to upgrade small scale village and cottage industries the district industries centres were created in all the districts of the country.

Sixth Five Year Plan (1980-85)

The major objective of the Sixth Five Year Plan was the promotion of overall development in the rural areas of the country and therefore the plan emphasized on social justice, modernization and growth of socio-economic sectors. In order to reduce the socio-economic disparities in the rural areas Integrated Rural Development Programme (IRDP) 1980, was introduced as a beneficiary oriented programme of the country. It was a comprehensive programme and the main objective of the programme was to reduce the below poverty line families of the rural areas. IRDP was regarded as a multi-sectoral concept of rural development because it includes development in various sectors with certain objectives such as:

- i. To raise the level of per capita income and standard of living of the rural masses who were below poverty line.
- ii. To increase the production of agriculture,
- iii. To create employment opportunities in the rural areas and
- iv. To provide basic amenities like supply of drinking water, education centres and health care centres in the rural areas.

In order to remove the regional disparities the programme tried to improve the quality of life of the rural masses. It also encouraged socio-economic development of the small farmers, marginal farmers, landless and agricultural labourers. Besides, employment generation programmes namely National Rural Employment Programme (NREP) 1980, Rural Landless Employment Programme (RLEP) 1983, Development of Women and Children in Rural Areas (DWCRA) 1982, Training of Rural Youth for Self-Employment (TRYSEM) were also initiated during this period.

Seventh Five Year Plan (1985-90)

During this plan period the planners emphasized on the reduction of regional imbalances throughout the country. The major objectives of the Seventh Five Year plan were to adopt modern technologies, to create a self-reliant economy and to establish social equity and social justice for the vulnerable sections of the society. Basically, the plan continued the rural development programmes of the Sixth Five Year Plan. All the ongoing rural employment programmes like NREP and RLEP were merged into a single programme as Jawahar Rojgar Yojana (JRY) in 1989. This programme provided employment opportunity to at least one member of each poor family in order to reduce the problem of unemployment, and reserved the provision of employment for the women under the programme. Some other rural infrastructural development programmes were also introduced during this period namely Indira Awas Yojana (IAY) 1986 and Integrated Rural Energy Planning Programme (IREP).

Eighth Five Year Plan (1992-97)

The earlier rural development and poverty alleviation programmes were continued during this plan period. The central thrust of the Eighth Five Year Plan was the generation of adequate employment opportunities, provision of basic minimum need to the weaker section of the society, provision of safe drinking water, health care facilities and the provision of elementary education in the rural areas. In order to improve the agricultural production priority was given to minor irrigation and improvement of rural infrastructure during this period. The plan approached the involvement of the people in the developmental processes and tried to strengthen the village institutions and the panchayats so that there is an active involvement of the panchayats in the formulation and implementation of the developmental schemes. Along with these the involvement of women through an active participation in various developmental processes in the rural areas was also conceived during this period. Besides, to rise the earlier employment generation programmes new programmes namely, Intensified Jawahar Rozgar Yojana (IJRY), Employment Assurance Scheme (EAS) etc. were introduced to strengthen the rural economic sector.

Ninth Five Year Plan (1997-2002)

The Ninth Five Year Plan focused on the promotion of agricultural sector and generated employment opportunities so that poverty of the rural masses could be eradicated. In order to strengthen the rural economic sector development of agro based industries, small scale village and cottage industries were prioritized. During this period nutritional food supply and provision of basic minimum services were ensured particularly for the people below poverty line. Besides, empowerment of women and socio-economic development were

encouraged for the backward classes and minorities. In order to ensure the overall development, poverty alleviation programmes namely IRDP, JRY were reframed during the Ninth Five Year Plan. The JRY had been reframed as Jawahar Gram Samridhi Yojana (JGSY) and the programmes like IRDP, TRYSEM and DWCRA had been merged into the Swaranyanti Gram Swarozgar Yojana (SGSY). For the infrastructural development the Jawahar Gram Samridhi Yojana (JGSY) was launched during the Ninth Five Year Plan.

Tenth Five Year Plan (2002-07)

The major emphasis of the Tenth Five-Year Plan was on the alleviation of poverty, generation of adequate employment opportunities and provision of basic amenities to the rural masses such as drinking water, housing and transport facilities for all by improving the infrastructural facilities. Several programmes were initiated during this plan period in order to provide employment opportunities and generation of income among the rural people. However, employment opportunities for the rural poor were one of the significant steps of rural development strategies adopted by the Government of India. Fundamentally, skill upgradation training under SGSY and wage employment programme under SGRY were initiated during this plan period. SGSY was a major programme of self-employment generation for the vulnerable sections of rural areas.

During this period wage employment programmes namely, JGSY and EAS were merged into a new scheme called SGRY in 2001 in order to strengthen the infrastructure of the villages. The aim of the programme was to provide additional wage employment opportunities and adequate food supply in the rural areas. The Tenth Five-Year Plan aimed at improvement in the social and economic infrastructure of the rural areas. Indira Awaas Yojana (IAY) was launched in 1985 in order to provide houses to the rural people below poverty line. Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in the year 2000-2001 which aimed to provide road connectivity to all unconnected villages. Universal access to elementary education, expansion of health care services, reduction of infant mortality rate to 45 per 1000 live births and maternal mortality rate to 20 per 1000 live births was targeted during this plan period. Besides, efforts had been made to promote the use of information technology. Special Area Development Programme like DPAP was initiated in the villages for the expansion of the developmental processes.

Eleventh Five Year Plan (2007-12)

The Eleventh Five Year Plan put its constant effort in rural development in terms of education, agriculture, infrastructure, health and nutrition. During this period emphasis had been given on the development of elementary education and the development of necessary

infrastructure in secondary education. The planners focused on the enhancement of agricultural yields and promoted the cultivation practices through the availability of essential agricultural inputs. In order to raise the agricultural production, availability of water was necessary and therefore the Plan emphasized on the improvement of the irrigation systems. The plan even focused on the management of water resources through watershed development. Accelerated Irrigation Benefit Programme and Rashtriya Krishi Vikas Yojana (RKVY), were initiated during this period.

Strategically, the National Rural Employment Guarantee Scheme (NREGS) was renamed as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) on October 2, 2009. NREGS has improved the employment generation of the rural people and provides an income support to the underprivileged people of the rural areas. The scheme is a revolutionary measure to eradicate poverty in India. Eleventh Plan was a comprehensive strategy for development of both rural and urban infrastructure and in rural areas the plan aimed to provide the essential rural infrastructure in terms of distribution of electric power, metalled roads, railway connectivity, telecommunications, irrigation facilities, drinking water and sanitation facilities. The National Rural Health Mission was an important step of this period for improvement in health care facilities in the rural areas.

Twelfth Five Year Plan (2012-17)

The Twelfth Five Year Plan emphasized the growth of GDP for the improvement of economy in the country. The planners paid attention to increase the growth of agricultural GDP in order to eradicate poverty. For the improvement in living standards of the underprivileged sections of the rural areas focus had been given by the planners on the growth of non-agricultural occupations for the provision of beneficiary employment opportunities to the large number of rural people. The Twelfth Plan aimed at expanding access to the essential services in terms of access to education, health, sanitation and safe drinking water, which are vital for the process of development.

3.4 NITI Aayog

Government of India has established NITI Aayog (National Institution for Transforming India), as an alternate to the Planning Commission on 1st January, 2015, in order to serve the needs of the people of India. This institution plays a leading role in framing policies and programmes in the central government along with the state governments. Strategically, it helps to provide advices to the central and state governments in terms of the social sector, economic structure and infrastructural facilities for the overall development of

the country. It examines and evaluates the level of improvement in the implementation of policies and programmes of the Government of India.

In terms of rural development NITI Aayog put focus on skill development, employment opportunities for the rural masses and provision of basic services to the Indian villages. Emphasis has been given on educational opportunities and digital connectivity in the rural areas. Further, NITI Aayog appraises the improvement made under *Pradhan Mantri Awaas Yojana* which aims at 'Housing for All' in rural areas and *Deendayal Antyodaya Yojana* under *National Rural Livelihood Mission* (DAY-NRLM) in the rural areas of the country. NITI Aayog has provided support for developing water sources in arsenic affected areas of the country. Further, after the recommendations of NITI Aayog, the Government of India provided financial assistance for the installation of Community Water Purification Plants (CWPPs) in 19 arsenic affected states in India. Besides, NITI Aayog had assessed the schemes under *National Rural Drinking Water Programme* (NRDWP) for the states of Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

3.5 Rural Development: Conceptual Framework

The concept of rural development is comprehensive. It involves achievement in many aspects involving economic, social, and ecological aspects of development at the aggregate national level for the socio-economic betterment and environmental conservation. The objectives of rural development have multiple directions. It aims at human development through increased employment opportunities, higher income as well as an increase in the levels of nutritional food, clothing, housing, health care and educational facilities.

Rural development should be viewed as a process of balancing the rural environment. However, rural environment does not only signify the development of a single aspect but it includes development of overall aspects of the rural life considering the social, cultural, economic and infrastructural aspects. As referred by N. Battu., (2012) Michael Todaro views that *rural development encompasses, improvement in levels of living, including employment, education, health and nutrition, housing and a variety of social services; decreasing inequality in the distribution of rural incomes and in rural-urban balances in incomes and economic opportunities; and the capacity of the rural sector to sustain and accelerate the pace of these improvement.*

The concept of development has been interpreted in many ways. Economists, planners, academicians and researchers have given different interpretations but all of them have agreed with the concept, that development means improvement in the living standard of the people. Actually, there is no official definition of development. As referred by Rao, (1984),

according to Jan Drewnowski the definition of development was, *development is a process of qualitative change and quantitative growth of the social and economic reality which we can call either society or economy. Because of the close inter-relation of economic and social elements no 'purely' social or 'purely' economic development is possible. It is a single process which is best called simply development.* It is in this context that development is considered as a change process with several dimensions. It *implies an improvement in the material well-being of the people* (Rao, 1984) which can be identified with the development of the parameters like increase in the production and distribution, availability of infrastructural facilities, amenities and services, better employment opportunities, practice and adoption of modern and improved technology and increased rate of investment and consumption.

The process of rural development requires concurrent activities in various sectors. It is due to the matter of fact that not only the economic structure is involved but also the social infrastructure is inter-related in the rural areas. Development of rural areas has been the prime objective of planning in India. Eradication of poverty and socio-economic welfare of the people basically involves a balance between the production and distribution, and creation of employment opportunities for rural people both in farm and in non-farm sectors.

The idea of integrated rural development is the outcome of the experiences gained through various programmes framed for the rural development. *The term integrated has different meaning and connotations. Integration - geographic, economic or social - can be defined as a process in which the individual processes and different area levels become interrelated* (Gaur, 1985). Even as a concept, the term rural development has undergone a lot of changes. Earlier rural development was considered to be similar with agricultural development. But it was perceived that the scope of rural development was much wider. It signifies developing the essential infrastructure, cottage and small scale industries, improvement in marketing structure as well as development in secondary and tertiary sectors in the rural areas which are crucial for the process of economic development.

The rural environment is dominated by a number of factors, which in turn plays a fundamental role in the quality of life of the rural masses. To make the rural area endurable and productive, proper analysis of the rural environment and a systematic assessment of the level of development of the rural sector are necessary for the planners, researchers and the social scientists. Thus in order to know the rural areas, thorough analysis is required in terms of the following:

Demographic Characteristics:

- i. population composition
- ii. population growth
- iii. population density
- iv. sex ratio
- v. dependency ratio
- vi. ethnic structure
- vii. religion
- viii. migration and
- ix. fertility and mortality

Economic Characteristics:

- i. land holding pattern
- ii. cropping pattern
- iii. irrigational facilities
- iv. work participation of women
- v. number of earning family members
- vi. occupational structure
- vii. composition of work force and
- viii. per capita income

Social Characteristics:

- i. availability of health care facilities
- ii. number of schools and other educational institutions in the rural area
- iii. condition of housing structure and amenities
- iv. availability of proper food and nutrition
- v. number of NGOs involved in the process of development and
- vi. problems of locality

Infrastructural Characteristics:

- i. modes of transport and communication system
- ii. drainage system and sanitation
- iii. adequate water supply
- iv. availability of banking facilities
- v. availability of rural electrification and
- vi. availability of marketing facilities

Thus, in order to determine the level of development in the rural areas the information about the quantitative as well as the qualitative indicators becomes very essential.

3.6 Rural Development: Scope and Importance

There is an extensive scope of rural development. It is a process of improving the quality of social and economic life of the rural masses. In the rural areas, the landless labourers, the small farmers, artisans and the people who live below poverty line are subjected to low per capita income and are confronted with a number of problems. Therefore, the rural areas should undergo the improvement in all aspects so that it can catch the mainstream of the national development and contribute its share for a sustainable development of the economy as a whole.

In India a large proportion of people are the village dwellers with 68.84% (Census, 2011). Therefore, it is necessary to have a sustainable development with a speedy rise in per capita income and employment opportunities in the rural areas. The provision of infrastructural facilities should be thoroughly planned in order to reduce the disparities among the rural areas. Undoubtedly, the rural sector should experience the significant changes in terms of improvement for the national development. Rural development is a national necessity and has ample importance in India as proposed by the various researchers, academicians and planners. Hence, rural development as a process involves the following:

- Developing the living standard of the rural masses and that of the rural areas as a whole in terms of economy, technology, health and education;
- Developing the infrastructural facilities in the rural areas through the provision of adequate pure drinking water facility along with the construction of small dams, canals and tanks in order to improve the water management. Developing the village institutions like Panchayat, cooperatives, sub-post office, banking outlets and institutional credit facilities;
- Provision of financial assistance to develop the artisans in the rural areas, farmers and agrarian unskilled labourers, small and big entrepreneurs to improve the economy and to develop the agriculture and allied sectors, and animal husbandry;
- Developing the rural industries through the development of handicrafts, small scale industries, rural crafts, cottage industries which are based on local resources and other related economic operations in the rural sector;
- Developing irrigational facilities and motivate farmers to adopt improved seeds, bio and chemical fertilizers, practice of crop cultivation and soil conservation methods;

- Developing the scientific knowledge to apply appropriate technology for improving productivity at all levels;
- Developing recreational facilities for the rural masses;
- Improving electricity and proper transport and communication network;
- Solving the problem of the basic needs of the rural masses by appropriate decision-making actions;
- Developing the rural youths and children by providing proper educational facilities and employment opportunities by supplementary occupations so that human resource of the rural areas are improved in terms of their skill, knowledge and abilities;
- Developing the rural women so that they are empowered and can take an active part in the process of rural development.

West Bengal government has initiated specific schemes for the empowerment of women. For the promotion of income among the rural women, West Bengal Women Development Undertaking was established in July 1993. The prime objective of the undertaking is the planning and implementation of various programmes for the benefit of women. It promotes the creation of business and facilitates the women to earn and improve their livelihood.

- *Swabalamban Scheme* was implemented by the Department of Women and Child Development in the year 1982. The State Women Development Undertaking is responsible for the implementation of the scheme in West Bengal for achieving socio-economic development of the women. The scheme aims at the provision of training to the poor women on a wide range of activities for the generation of income among the underprivileged women of the state, e.g., training for zari craft, readymade garment-making, handloom weaving, beautician courses, training for the community health worker, wood carving, etc.
- *Anandadhara scheme* was introduced in West Bengal in 2012 under the poverty eradication programme *National Rural Livelihood Mission* (NRLM). The scheme aims at empowering women and their livelihood security. The scheme functions through Self-help groups of the women and promote income and earning among the rural women of the state.
- *Kanyashree Prakalpa* was introduced in West Bengal in the year 2013, where financial assistance has been given to the girls for continuity in educational attainment. The scheme has been introduced by the Department of Women Development and Social

Welfare, Government of West Bengal (DWD&SW). Under this programme annual Scholarship of Rs. 500 and one time grant of Rs. 25,000 is provided to the girl child. West Bengal state government aims to provide financial assistance to the women's cooperative societies for their development. The state put focus in creating employment opportunities for the women, through the development of skill in various sectors. The involvement of rural women in small business ensures better economic security to them in the rural areas. The women have been empowered in various aspects under NREGS, indicating the livelihood security of the rural women in West Bengal.

3.7 Rural Development: Policies and Programmes

Rural development in India is extremely involved in the different planning process and it signifies the formulation of appropriate policies, programmes and strategies which are essential to rebuild the rural areas. The concept has been utilized in indicating the process of social and economic transformation in terms of improvement in the rural areas. But it is very important to figure out the distinction between the projects and programmes. A rural development project is defined *as a single, grassroots, or micro level attempt at bringing about a specific type of change in a specific rural area, say a village or a group of villages* (D.A.M. Lea and D.P. Chaudhri, 1983), and *a programme may consist of several projects* (Singh, 1999).

Though, Five Year Plans have earned benefits to the rural areas with an improvement in their traditional way of living yet, low income level, lack of adequate facilities for a better quality of life are some of the specific problems in rural India. But the successive plans have emphasized into the problem of rural poverty and in turn the rural development programmes made an attempt to eradicate rural poverty in order to reach the vulnerable rural people by providing beneficial employment opportunities and creating improved infrastructure for a sustainable livelihood. Larger participation of the rural people in the rural developmental activities, maximum utilization of natural and human resources, up gradation of skills of rural people and increased access to credit make an important contribution in providing the rural people with better possibilities for economic and social development.

The Balwantray Mehta Committee stressed the necessity for the initiation of democratic institution at the village level i.e. Panchayats in order to ensure the participation of rural people in the implementation of the rural development programmes. Consequently, the Panchayati Raj system was introduced in order to create an administrative efficacy in the process of rural development. The number of programmes has been launched to promote the

social and economic improvement of the rural people with an active participation in the process of development.

Katar Singh, (1999) was of the views that rural development policies are the specific set of actions taken by the Government with certain aims and objectives of rural development. Fundamentally it is a broad term which comprises a set of operations regarding the things to be done for the rural areas. The first step is to put focus on the problem of the rural areas and after the identification of the problems, a set of programmes has been framed consisting of several projects in terms of certain objectives of the programmes, along with the location and time period of the programme and the financial requirements for the execution of the programmes in the rural areas. The rural development programmes involves every sphere of the economic and social welfare of the country. The various rural development programmes and policies have followed several strategies of development and after gaining knowledge from a particular plan in a definite period of time, various programmes were introduced thereafter.

The strategies, approaches and the opinions to rural development have changed with the passage of time. The policy makers not only planned to enhance the pace of development in social and economic infrastructure in the rural areas but also ensured to diminish the economic inequalities in the rural areas. But in spite of the implementation of the rural development programmes in India, yet number of problems is persisting in the rural areas and the rural masses suffer with poor infrastructure, poor education and poor health care facilities. Although attempt has been made to increase the institutional credit, yet the rural masses depend upon the private moneylenders with high rate of indebtedness. Thus it hinders the primary objective of planned development, which is strategically, the improvement of the living standard of the rural masses.

During the last decades, the process of rural development has been a bold effort with various policies, and models involving policy makers, planners, administrators, social scientists, technologists, academicians and social workers. Rural development programmes aims at developing the rural areas with an involvement of multiple tiers of administrative organizations starting from the village level to the national level. Rural development policies should be framed to improve the conditions under which rural people can work and live. Since its being a multi-sectoral programme introduced and launched with high expectations and assurances, the government has a crucial role to play in providing social and economic security to the rural masses and the vulnerable rural people in particular. In this context, the sectors that demand greater attention are education, basic health care, development of micro-

credit, promotion of productive employment generation, and empowerment of rural poor and women in India. Thus the primary concept of rural development is with a view to increase the productivity and incomes of the rural workers. *Thus, economic growth with social justice became the proclaimed objective in the planning process of rural development* (K. Singh, 1999).

India is achieving rural development goals through several rural development programmes. Rural development programmes were initiated in the last decade of 19th century in different parts of the country. The ignorance and the poverty of the rural people led the decision makers and the planners to formulate rural development schemes for the development of the rural areas with serious attempt. Government of India has introduced a number of schemes for the development of the people and especially the rural poor.

The programmes launched by the Central and State Governments of India since independence are as follows:

- i. Community Development Programme (CDP) 1952,
- ii. Intensive Agricultural Development Programme (IADP) 1961,
- iii. Tribal Area Development Programme (TADP) 1962,
- iv. High Yielding Variety Seeds Programme (HYVP) 1966-67,
- v. Small Farmer Development Agency (SFDA) 1970,
- vi. Marginal Farmers and Agricultural Landless Development Agency (MFALDA) 1970,
- vii. Minimum Needs Programme (MNP) 1974,
- viii. National Rural Employment Programme (NREP) 1980,
- ix. Integrated Rural Development Programme (IRDP) 1980,
- x. Development of Women and Children in Rural Areas (DWCRA) 1982,
- xi. Training for Rural Youth for Self Employment (TRYSEM)
- xii. Rural Landless Employment Programme (RLEP) 1983,
- xiii. Indira Awas Yojana (IAY) 1986,
- xiv. Jawahar Rojgar Yojana (JRY) 1989,
- xv. Swarnjayanti Gram Swarajgar Yojana (SGSY) 1999,
- xvi. Pradhan Mantri Gramin Sadak Yojana (PMGSY) 2000,
- xvii. Annapurna Sampurna Grameen Rojgar Yojana (ASGRY) 2001,
- xviii. Mid -Day Meal (MDM) 2002,
- xix. National Rural Employment Guarantee Act (NREGA) 2005,
- xx. National Livelihood Mission (NLM) 2009-10,
- xxi. National Rural Livelihood Mission (NRLM) 2011,

xxii. Pradhan Mantri Jan Dhan Yojana (PMJDY) 2014.

The three social security schemes promulgated by the government of India include:

- i. Pradhan Mantri Suraksha Bima Yojana (PMSBY),
- ii. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY),
- iii. Atal Pension Yojana (APY), (2015)

Some of the other programmes including the social assistance programmes launched by the Government of India are as follows:

- i. National Social Assistance Programme (NSAP),
- ii. Aam Admi Bima Yojana (AABY)
- iii. Rashtriya Swashtya Bima Yojana (RSBY)
- iv. National Old Age Pension Scheme
- v. Indira Gandhi National Widow Pension Scheme (IGNWPS)
- vi. National Family Benefit Scheme
- vii. National Maternity Benefit Scheme
- viii. Integrated Child Development Service (ICDS)
- ix. Balika Samridhi Yojana
- x. Early Child Care Scheme
- xi. National Handicap Aid Programme
- xii. National Widow Grants in Aid Scheme
- xiii. Schemes for Scholarship for Primary Education
- xiv. Adult Education or Neo-Literate Programmes
- xv. Sarva Shiksha Abhiyan (SSA)
- xvi. Rajiv Gandhi National Drinking Water Mission
- xvii. Backward Region Grant Fund (BRGF)
- xviii. Pradhan Mantri Gram Sadak Yojana (PMGSY)

Though these programmes were framed by the Central Government but the State Government is assigned to implement the programmes under the specific direction of the Central Government. The West Bengal Government implements the rural development schemes under its authority through District Rural Development Agency (DRDA). The directors of DRDA in turn are responsible to implement the schemes and programmes in their respective districts.

Rural development policy refers to an explicit course of action precisely framed by the strategists, government, institutions, a group or an individual in certain conditions to determine the present and future decisions. Therefore, an integrated national policy for a

longer period of time is essential because it clearly describes or formulates the plans for the future course of rural development in the country. *The goals of all the rural development policies are governed by what actually the rural people desires, and the measure of policies by what people think the government can and ought to do to bring about a desired change* (Singh, 1999), (Fig. 3.1). According to K. Singh, the Hierarchy of Policy Goals is shown below:

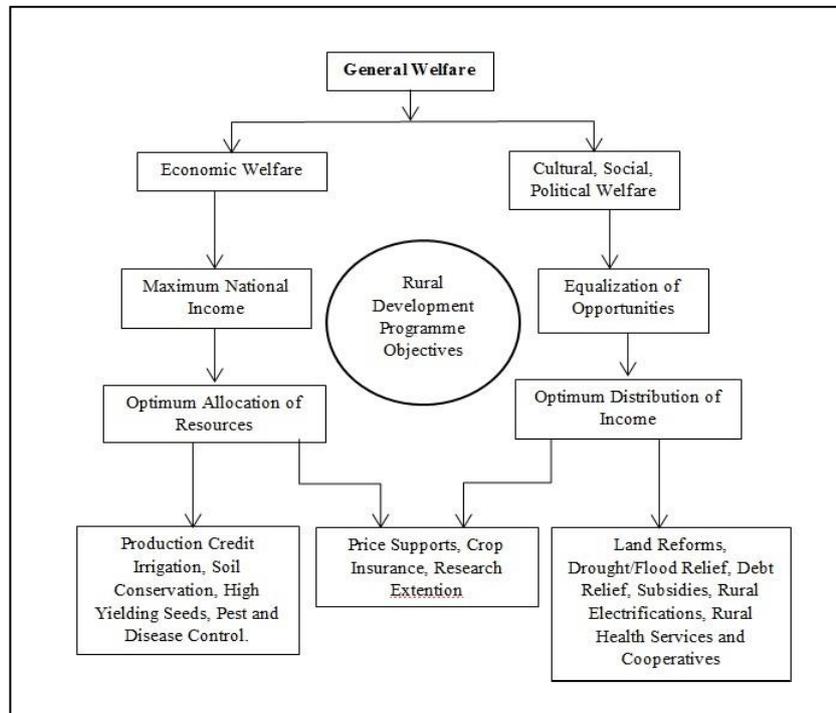


Fig. 3.1: Hierarchy of Rural Development Policy Goals

*Source: Singh, K., (1999):
Rural Development: Principles, Policies and Management*

Katar Singh is of the view that the major concern for the rural development policies is to promote a general welfare of the rural masses which is the actual purpose of all the policies. It comprises of the economic, cultural, social and infrastructural welfare with a balance of opportunities to the rural people in order to achieve a maximum national income. The aims are complex in nature as it involves the people, regions and commodities along with the specific objectives of the rural development programmes which are framed to remove the problems of the rural areas by providing the basic amenities and infrastructural facilities to the rural masses.

3.8 Conclusion

Hence, rural development which is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate socio-cultural services and minimum basic needs, becomes fundamental for the development of the rural areas in India. The present strategies of rural development mainly put focus on poverty

eradication, better livelihood opportunities, provision of basic amenities and infrastructural facilities through many innovative programmes of wage and self-employment. Thus, the above goals can be achieved by the implementation of the various programmes in the rural areas with an active involvement of the governmental organizations, non-governmental organizations, institutions, PRIs, rural development agencies, etc. But above all, for the success of all the rural developmental programmes social integrity and active participation of the rural masses is very essential which will ultimately lead to transformation of rural life in terms of improvement in the rural areas.

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4.1 Introduction

Man is the pivotal point from which all other elements are observed and derive their meaning and significance. While defining population geography, Trewartha stressed that *it was concerned with understanding the regional differences in the earth's covering the people* (Trewartha, 1969). Since, population plays a key role in the formulation of strategies and developmental processes of the country therefore, for the effective developmental planning, relevant data on population structure and composition is very significant. The study of demography not only deals with the size and distribution of population but also it determines the rate of social and economic changes in the society and helps to reduce the regional imbalances in socio-economic aspects.

Demographic characteristics are the important components of the society because it deals with the population figures and emphasizes the spatio-temporal variation of an area in terms of population. *Demography does not deal with the behavior of individuals but only the aggregates of people or even part thereof. The numerical portrayal of human population is known as demography* (Barckley, 1958). Fundamentally, it is viewed that demography is the study of size, nature and composition and distribution of population in a broader aspect. However the scope of demography has been grouped into micro demography and macro demography. *Micro demography is the study of the growth, distribution and redistribution of the population within community, state, economic area or other local area* (Bogue, 1969). Whereas, macro demography deals with the birth rate of population, death rate of population, the causes of slow and rapid birth rate and death rate, population growth, sex ratio, occupational structure, health condition, education and the social and economic conditions of the people.

The necessity of demographic analysis is very important because with the help of population data the planners would be able to frame proper developmental strategies of a region with a view to reduce the regional disparities in socio-economic and infrastructural sectors. The study of demographic characteristics consist of the various aspects of population studies and the present chapter deals with the distribution, growth, density of population, sex ratio, occupational structure, population composition by religion, ethnic structure, age-sex structure and dependency ratio of Jalpaiguri district.

4.2 Population Distribution

Population growth and their distribution are the two major issues in population studies. The change in the size and distribution of population over an area in a definite course of time has a significant impact upon the socio-economic as well as on the environment of an area. *By population distribution we mean the geographical and spatial study of distribution of population of a territory and the way in which the people are distributed over it* (Hans Raj, 2006). Thus, the distribution of population of an area is determined on the basis of the spatial pattern of location of a population. The analysis of population distribution deals with the way in which the population is distributed over an area which either may be sparse, dense or agglomerated. Table 4.1 reveals the block-wise distribution of rural population of Jalpaiguri district from 1951-2011.

Table 4.1: Distribution of Rural Population in Jalpaiguri district (1951-2011)

Rural Population							
C.D. Blocks	1951	1961	1971	1981	1991	2001	2011
Rajganj	51723	80766	128744	120688	166888	283967	190645
Jalpaiguri	74200	123084	162251	205182	261379	280927	261784
Maynaguri	88315	103264	144716	169602	203872	254594	291073
Dhupguri	110910	157671	98597	122145	307259	357134	380090
Mal	88158	126032	155191	183766	220093	265392	275384
Matiali	49188	57697	61045	74649	93253	105906	102418
Nagrakata	42389	58635	53694	70148	101782	115907	127397

Source- Census of India, 1951-2011

There exists a spatial variation in the distribution of rural population at the block level in Jalpaiguri district from the post-independence period to 2011. However from 1951 to 2011 Census, the trend shows that, the distribution of population is high in the eastern and particularly in the south eastern part of the district consisting of Dhupguri and Maynaguri blocks while the northern part of the district consisting of Matiali and Nagrakata blocks is sparsely inhabited. However, the distribution of rural population varies in terms of regional resources and the social structure of an area. With the increase of socio-cultural provisions along with the infrastructural facilities the size of population of a particular area tends to increase.

In 2011, the population distribution reflects varying patterns of unevenness (Fig. 4.1). The maximum concentration of population has been observed in Dhupguri, Jalpaiguri and Maynaguri blocks of the district owing to its level surface and fertile soils. Whereas the

northern part of the district covering Matiali and Nagrakata blocks have sparse population distribution due to its undulating topography.

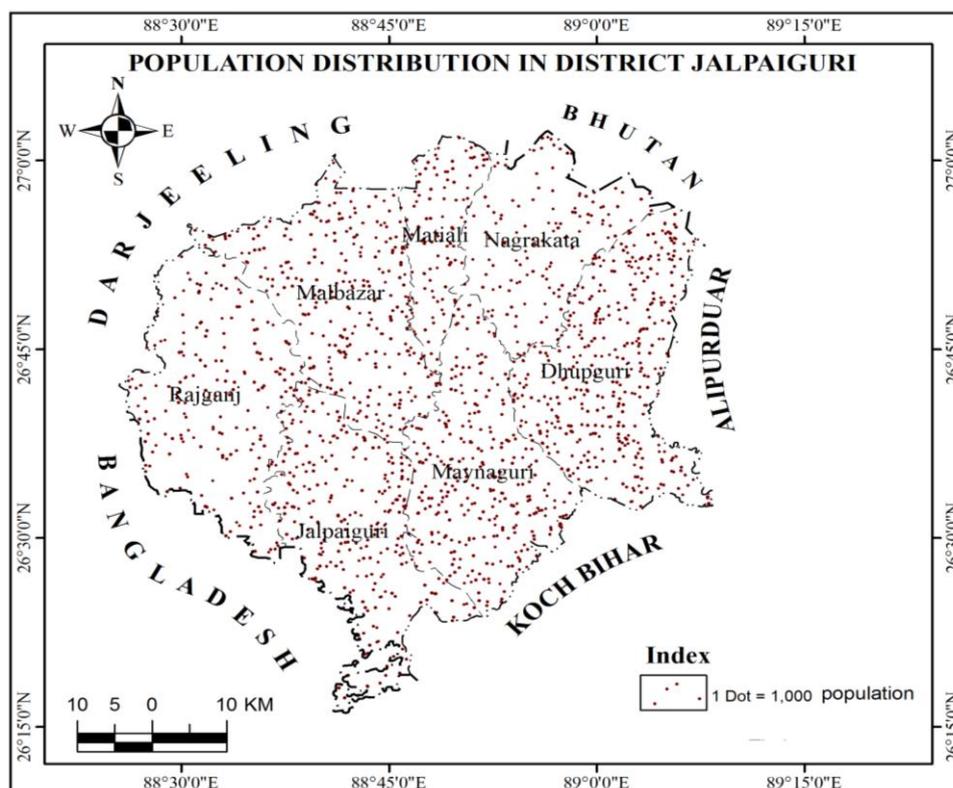


Fig. 4.1: Population Distribution of Jalpaiguri district, 2011

Source- Census of India, 1951-2011

4.3 Population Growth

The concept of population change or growth of population is often used to connote the change in the number of inhabitants of a territory during a specific period of time, irrespective of the fact whether the change is negative or positive (Chandna, 2001). The growth of population is the outcome of the three basic demographic factors, i.e. fertility, mortality and migration.

Table 4.2: Growth Rate of Rural Population of Jalpaiguri district

Growth rate of Rural Population and Decadal Variation						
C.D. Blocks	1951-61 (%)	1961-71 (%)	1971-81 (%)	1981-91 (%)	1991-2001 (%)	2001-2011 (%)
Rajganj	56.15	59.40	-6.25	38.28	70.15	-32.86
Jalpaiguri	65.88	31.82	26.45	27.38	7.47	-6.81
Maynaguri	16.93	40.14	17.19	20.20	24.87	14.32
Dhupguri	42.16	-37.47	23.88	151.5	16.23	6.42
Mal	42.96	23.14	18.41	19.76	20.58	3.76
Matiali	17.30	5.80	22.28	24.92	13.56	-3.29
Nagrakata	38.33	-8.43	30.64	45.09	13.87	9.91

Source- Computed by researcher from Census of India, 1951- 2011

Since the growth of population is associated with the change in the size of population therefore the geographical study of population growth is essential for understanding the population dynamics of Jalpaiguri district over a period of time. The trend of population growth in block level of Jalpaiguri district has been examined here in the perspective of the last six decades from 1951-2011. The percentage of population varies widely from place to place at any given time.

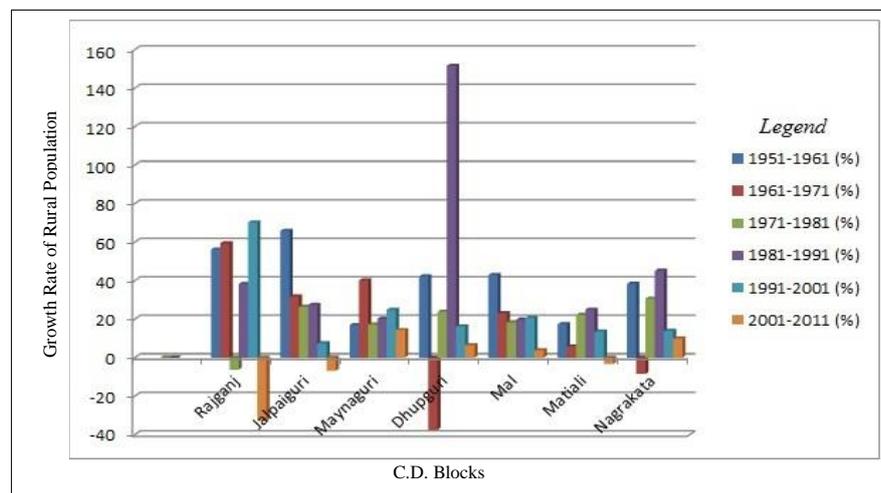


Fig. 4.2: Growth Rate of Rural Population of Jalpaiguri District

Source- Computed by researcher from Census of India, 1951- 2011

A study of the rural population of Jalpaiguri district reveals that it has experienced a positive growth rate of population from 1951-2001 (Fig 4.2). From Table 4.2 it is evident that the growth rate of rural population of the district has increased steadily from 1951-1961. *In Jalpaiguri district population growth is very much dependent on its increasing prosperity due to the growth of tea industries in this region* (District Census Handbook, Jalpaiguri, 1961). The growth rate of rural population of the district has been more rapid during 1981-91 and in 1991-2001. Such a remarkable increase in the growth rate of rural population is attributed to immigration of labourers in the growing tea industries, fertile land, improved agricultural facilities, better transport and commercial facilities, expansion of food supply and the extension of health care facilities played a significant role in this field.

Though a successive increase in the growth rate of rural population has been observed during the post-independence period but the growth of rural population in Jalpaiguri district has surpassed the negative impact during 2001-11 in Rajganj, Jalpaiguri and Matiali blocks of the district. The reason behind this decline is the emigration of youths in search of better prospects and better economic life. However another reason and explanation for the negative growth rate of rural population is the growth of census towns and a decline in the number of inhabited villages which has been observed in the district.

According to the District Statistical Handbook 2001 and 2011, there were 404 inhabited villages during 2001 whereas it has declined to 391 inhabited villages during 2011. The rural population growth of Rajganj block fell down immensely in 2001–2011 with - 32.86% and this is attributed to the fact that there were 29 inhabited villages during Census 2001, which has declined into 26 inhabited villages during Census 2011. Moreover, Dabgram, Binnaguri and Chakiabhita have become census towns in the present decade. Hence, a steady fall in the growth rate of rural population has been observed in the district.

4.4 Population Density

Fundamentally, the higher the population concentration in a region the greater is the pressure of population upon the available basic amenities and the natural resources of the region. The density of population refers to the number of persons per square kilometer. Population density is related to population size and the land area and the measures of population density helps in assessing the distribution of population and the pressure of population upon the available resources of an area. Therefore, the density of population is considered to be proportional and it is highly significant in assessing the demographic characteristics of an area.

Table 4.3: Area (km²) and total population of Jalpaiguri district

C.D. Blocks	1951		1961		1971	
	Area (km ²)	Total population	Area (km ²)	Total population	Area (km ²)	Total population
Rajganj	636.6	51723	636.6	80766	636.6	128744
Jalpaiguri	492.9	74200	492.9	123084	492.9	162251
Maynaguri	620.4	88315	620.4	103264	615.4	144716
Dhupguri	547	110910	547	157671	546.9	98597
Mal	541	88158	541	126032	541	155191
Matiali	206.2	49188	206.2	57697	206.2	61045
Nagrakata	276.4	42389	276.4	58635	276.4	53694

1981		1991		2001		2011	
Area (km ²)	Total population						
590.7	120688	589.9	166888	614.82	283967	614.82	190645
492.9	205182	503.06	261379	500.65	280927	500.65	261784
494.2	169602	612.47	203872	530.6	254594	530.6	291073
264.9	122145	544.1	307259	565.1	357134	565.1	380090
531.8	183766	536.72	220093	545.9	265392	545.9	275384
206.2	74649	206.2	93253	204.9	105906	204.9	102418
284	70148	397	101782	397.48	115907	397.48	127397

Source- Census of India, 1951-2011

In demographic study, population density is one of the crucial aspects which determine the level of population concentration and the spread of population in a spatio-temporal perspective. The density of population is largely affected by the physical factors

such as climate, landforms, soils, energy resources and minerals, accessibility, socio-cultural factors, economic factors and the demographic factors of an area.

G. T. Trewartha had suggested three types of density calculations, i.e. arithmetic density, nutritional density and agricultural density. The ratio between the total population and the total land area which is expressed in terms of persons per unit area is designated as arithmetic density. It is calculated as:

$$\text{Arithmetic density} = \frac{\text{Total population}}{\text{Total land area}}$$

An effort has been made here to explain the spatial-temporal variation of arithmetic density in the rural areas of Jalpaiguri district since it is the simplest ratio between the total population and the total land area. The density of population increases proportionately when the population of a region increases over a period of time and the area of the region remains constant. Table 4.3 depicts the area in km² and total population of Jalpaiguri district for the successive years i.e. from 1951 to 2011. The average density of rural population per km² for Jalpaiguri district according to census 2011 is 483 persons.

Table 4.4: Density of Rural Population per km² in Jalpaiguri district (1951-2011)

Rural Population							
C.D. Blocks	1951	1961	1971	1981	1991	2001	2011
Rajganj	81	126	202	204	282	462	310
Jalpaiguri	150	249	329	416	519	561	523
Maynaguri	142	166	235	343	332	479	549
Dhupguri	202	288	180	461	564	631	672
Mal	163	232	286	345	410	486	504
Matiali	238	279	296	362	452	517	500
Nagrakata	153	212	194	247	256	292	320

Source- Computed from Census of India, 1951-2011

However as per the average density of India with 216 persons per km² in 1981, R.C. Chandna had categorized the classes for population density for the Census data 1981 which are as follows.

- i.) Areas of high density with more than 350 persons per km²
- ii.) Areas of moderate density with 150 to 350 persons per km²
- iii.) Areas of low density with less than 150 persons per km²

Table 4.4 depicts that the density of rural population varies widely from place to place at any given time. Following the above categories, it has been observed that the blocks of Jalpaiguri district falls under areas of moderate and low density during the decade 1951, 1961 and 1971. During 1981 above 350 persons per km² has been observed in Jalpaiguri, Dhupguri and Matiali blocks of the district with high density of rural population.

Further, in Census, 1991 high density of rural population with above 500 persons per km² has been observed in Jalpaiguri and Dhupguri blocks whereas Rajganj, Maynaguri, Mal, Matiali and Nagrakata blocks constitutes the moderate density of population. Due to a high population growth during 1981-91 and in-migration of people from the neighbouring districts the decade experienced a high and a moderate density of population. In 2001 except in Nagrakata block the remaining six blocks experienced high population density with more than 400 persons per km².

During 2011, the trend shows almost similar to that of 2001 having a high and a moderate population density in rural Jalpaiguri district. Thus, it is clear from the above fact that the population in the study area is increasing with time. Moreover, the raise in population also reflects the fact that the study area has undergone socio-economic changes in the recent decades along with the improvement of socio cultural provisions, infrastructural facilities, improvement in health status, increase in agricultural production, irrigational facilities and the presence of tea gardens which attracts a large number of labourers. In addition to these, the comprehensive rural development schemes for poverty alleviation also affect the growth of rural population in the study area.

Table 4.5: Difference in Density of Rural Population in Jalpaiguri District (1951-2011)

C.D. Blocks	1951-61	1961-71	1971-81	1981-91	1991-01	2001-11
Rajganj	45	76	2	78	180	-152
Jalpaiguri	99	80	87	103	42	-38
Maynaguri	24	69	108	-11	147	70
Dhupguri	86	-108	281	103	67	41
Mal	69	54	59	65	76	18
Matiali	41	17	66	90	65	17
Nagrakata	59	-18	53	9	36	28

Source- Computed by researcher from Census of India, 1951-2011

However, the changes in density of rural population have been studied by comparing the density pattern of the present decade with the past decadal years (Fig. 4.3). Table 4.5 reveals the decadal variation in rural population density during the successive Census years from the post-independence period to 2011. A continuous increase in the population density have been observed in Jalpaiguri district in every decade except during 1961-1971 in Dhupguri block and Nagrakata block and during 1981-1991 in Maynaguri block which experienced a negative population growth. In Census 2011, a decrease in the density of rural population has been observed in comparison to Census 2001 in Rajganj and Jalpaiguri blocks of the district, due to the growth of census towns.

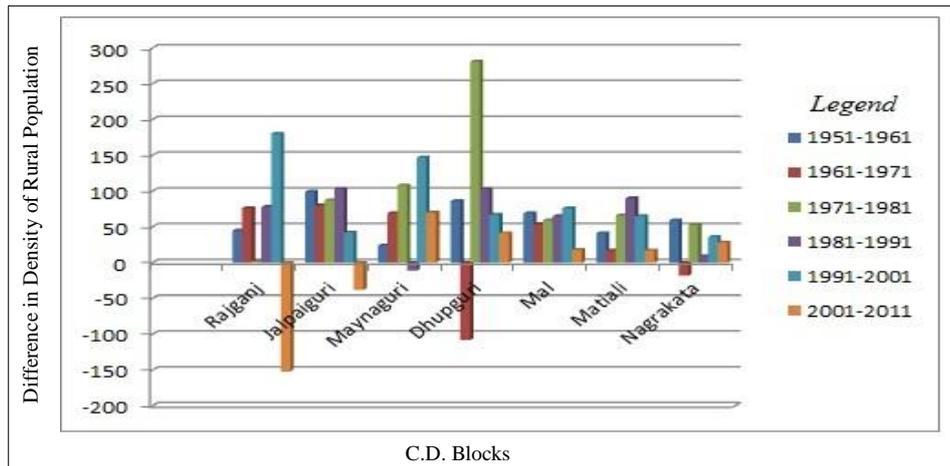


Fig. 4.3: Difference in Density of Rural Population in Jalpaiguri District (1951-2011)

Source- Computed by researcher from Census of India, 1951-2011

However, the maximum increase has been observed since 1971, owing to the growth of tea industries which attracted a large number of labourers. Further the rise in population was attributed to the influx of population from Bangladesh during 1971-81. *In the seventies, India experienced the highest decadal population growth and West Bengal grew fast because of large scale immigration from Bangladesh* (Majumdar, 2013).

Table 4.6: Density of Population, 2011

Density of population per km ²	Category	Blocks
150-350	Moderate	Rajganj, Nagrakata
>350	High	Jalpaiguri, Maynaguri, Mal, Matiali and Dhupguri

Source- Computed from Census of India, 2011

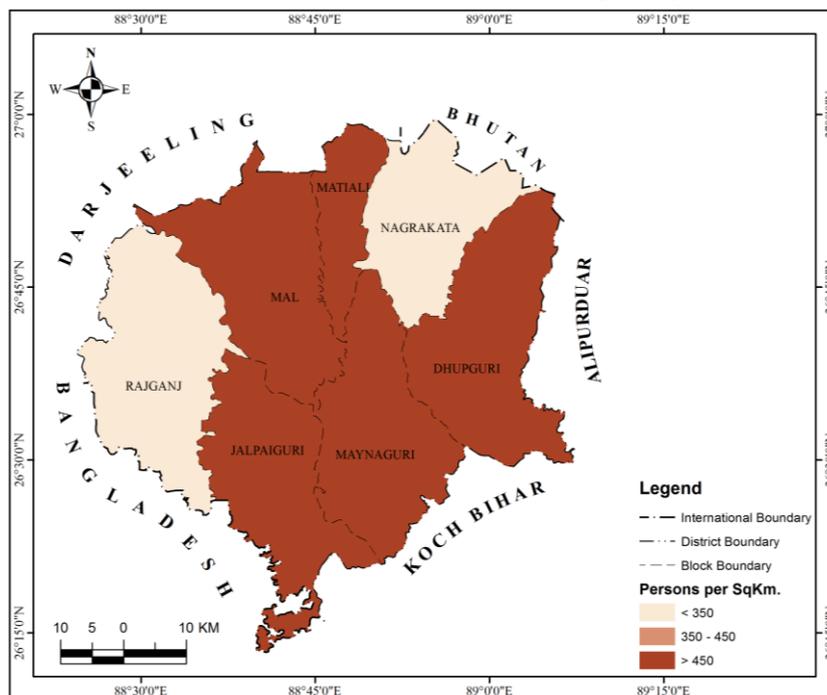


Fig. 4.4: Density of Population of Jalpaiguri district, 2011

Source- Computed from Census of India, 2011

Following the classification of population density by R.C. Chandna, two distinct categories of population density regions has been identified in Jalpaiguri district, 2011. Table 4.6 depicts the density of population for 2011. The area having population density, 150-350 persons per km² shows a moderate population density in Rajganj and Nagrakata blocks of Jalpaiguri district whereas Jalpaiguri, Maynaguri, Mal, Matiali and Dhupguri blocks falls under the high category of population density with more than 350 persons per km² in 2011 (Fig. 4.4).

4.5 Sex Ratio

Sex ratio is the measurement of sex composition of a population in an area. In India sex ratio is measured as the number of females per 1000 males. It is expressed as:

$$P_f/P_m \times 1000$$

In order to determine the demographic characteristics, the study of sex ratio assumes greater significance because the proportion of males and females in an area is an important indicator of the population analysis. Sex ratio is an important component for the assessment of the number of males and females which is significant for the developmental planning of an area in terms of socio-economic aspects. The factors that affect the sex ratio are the sex ratio at birth, mortality rates of the males and females and the migration of population.

Franklin (1956) rightly observed that *sex ratio is an index of economy prevailing in an area and is useful tool for regional analysis as population growth, marriage; occupation structure is dependent on it*. In India, the sex ratio is 940 females per 1000 males (Census, 2011). However, the overall sex ratio of the total rural population of Jalpaiguri district is 954 i.e. 954 females per 1000 males according to Census, 2011. It has been observed that the sex ratio of the district is higher than the state average (950 females per 1000 males). Since the classification of population according to sex is a crucial part of demographic studies therefore a balanced sex ratio is always desired because it influences the socio-economic structure of a region.

The proportion of men and women in the total population has a vital bearing as it affects the marriage rates, fecundity and the occupational structure of an area. R. C. Chandna has categorized the sex ratio for 2011 Census data, which are as follows:

- i.) Above 1000 (very high sex ratio where the females outnumbered the males)
- ii.) 950-1000 (high sex ratio)
- iii.) 900-950 (moderate sex ratio)
- iv.) 850-900 (areas of low sex ratio where there is an acute paucity of females)

However, the categories of R. C. Chandna have been followed for the sex ratio of Jalpaiguri district. Table 4.7 reveals the sex ratio of rural population of Jalpaiguri district from the post-independence period to 2011. It has been observed that the trend of sex ratio in rural Jalpaiguri district marked substantial improvement in all the successive census years from 1951-2011. Considerably low sex ratio has been observed in Jalpaiguri district during Census 1951 and 1961 indicating deficiency of females due to socio-economic and demographic problems of the study area which reduces the quality of life of the rural people.

Table 4.7: Sex ratio of Rural Population of Jalpaiguri district (1951-2011)

Sex ratio for rural population of C.D. Blocks							
C.D. Blocks	1951	1961	1971	1981	1991	2001	2011
Rajganj	817	843	848	899	909	926	923
Jalpaiguri	860	862	896	913	922	934	946
Maynaguri	832	866	895	905	911	933	931
Dhupguri	813	877	894	908	936	921	969
Mal	811	847	893	896	943	961	973
Matiali	865	864	915	927	955	980	952
Nagrakata	837	854	906	910	939	971	987

Source- Computed from Census of India, 1951-2011

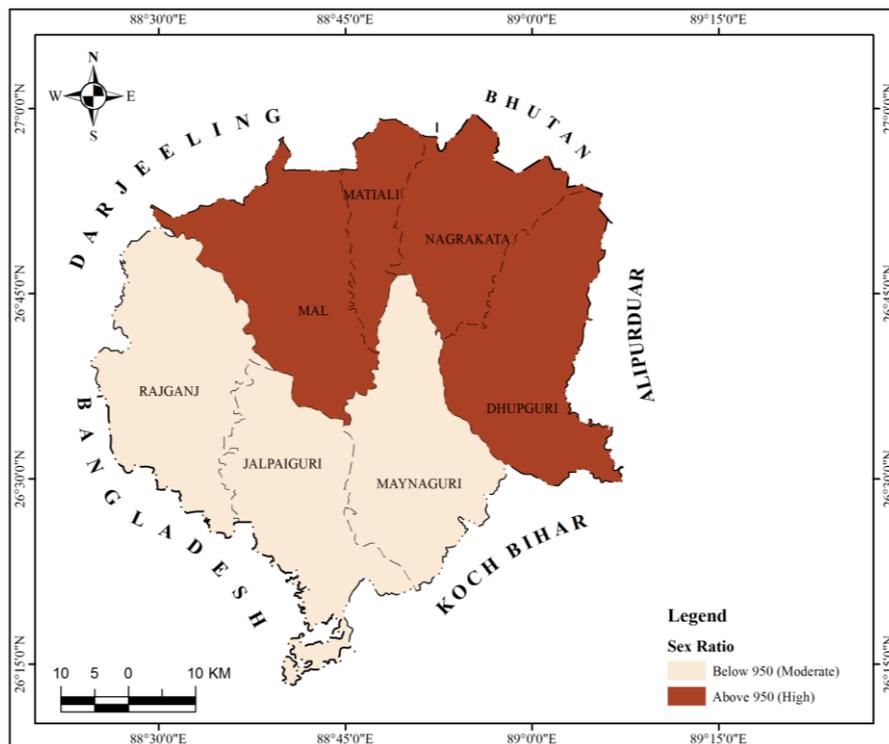


Fig. 4.5: Sex ratio of Rural Population of Jalpaiguri district, 2011

Source- Computed by researcher from Census of India, 1951-2011

However, moderate and high sex ratio has been observed from 1981-2011 Census years. The reason for the increasing trend in sex ratio in rural area is attributed to the preponderance of male migration to urban areas. According to Census 2011, high sex ratio

has been observed in Dhupguri, Mal, Matiali and Nagrakata blocks of the study area indicating a balanced distribution of sexes whereas Rajganj, Jalpaiguri and Maynaguri blocks observe a moderate sex ratio which is close to the National average. Further, it has been observed that in Census, 2011 none of the blocks have low sex ratio which is below 900 females per 1000 males (Fig. 4.5).

4.6 Literacy

Literacy is an important demographic component and it is a good measure of human resource development. Education plays a key role in influencing the quality of human resources as it helps in conveying proper ideas and thoughts over time and space. Literacy acts as a tool in achieving skills for raising the economy, socio-cultural well-being of the society and the overall development of a country.

Proportion of literate population is the prime indicator of the socio-economic development of a country and it is the socio-economic constraints which affect the expansion of literacy. Hence, for the reduction of poverty in an area literacy assumes added significance.

Table 4.8: Effective Literacy rate of Rural Population of Jalpaiguri district

Literacy rate for rural population of C.D. Blocks							
C.D. Blocks	1951	1961	1971	1981	1991	2001	2011
Rajganj	13.15	20.68	24.00	25.57	41.63	59.10	72.08
Jalpaiguri	12.70	20.94	28.00	30.34	48.23	65.30	73.81
Maynaguri	17.49	19.28	22.00	19.24	45.53	64.20	75.63
Dhupguri	11.06	13.93	17.00	24.00	37.33	59.50	69.57
Mal	10.32	14.47	16.00	18.42	31.38	53.50	66.31
Matiali	9.67	14.37	17.00	22.28	32.94	54.40	66.98
Nagrakata	9.55	14.72	14.00	17.88	29.45	48.50	61.27

Source- Computed from Census of India, 1951-2011

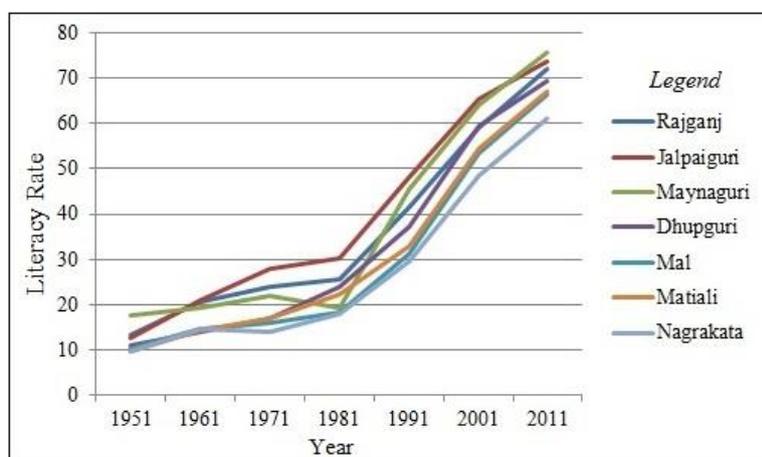


Fig. 4.6: Effective Literacy rate of Rural Population of Jalpaiguri district

Source- Computed by researcher from Census of India, 1951-2011

According to Census of India, from 1991 onwards, literacy rate denotes the percentage of population, with age above seven years, who is able to read and write and have the ability to understand any language and therefore, all children below the age of six years are treated as illiterate. However, Jalpaiguri district provides varying degrees of the concentration of literate population. According to Census 2011, India has recorded 74.04% literacy rate where the male literacy rate is 82.14% and female literacy rate is 65.46%. However, the literacy rate for rural Jalpaiguri district is below the national average with 60.62% where the male literacy rate is 67.42% and the female literacy rate is 53.50%. It is evident from Table 4.8 that there has been substantial improvement in literacy rate in rural areas of Jalpaiguri district from 1951 to 2011.

The literacy rate of Jalpaiguri block is 12.70% in 1951 which has increased to 73.81% in 2011 (Fig. 4.6). Improvement in formal and informal educational institutions, adequate infrastructural facilities influence the raise in the literacy rate of the rural areas of the district. In 2011, Maynaguri block recorded the highest share of male and female literates in the study area followed by Rajganj and Jalpaiguri blocks. The reason behind the higher literacy growth rate is the increase in the number of educational institutions over the decades and also the initiatives that had been taken in the study area in order to fulfill the fundamental right for free elementary education for all children below the age of 15, along with the facility of scholarships and free mid-day meal programme in the schools of Jalpaiguri district. The least percentage of literacy rate is confined in the northern part of the study area consisting of Mal, Matiali and Nagrakata blocks because of the female literacy which is significantly low than the male counterpart in this part of the district.

4.6.1 Gender disparity Index

Though there has been a significant improvement in literacy rate of the seven blocks of Jalpaiguri district from the post-independence period to 2011, but a difference between literacy rate among the males and females has been observed in Census, 2011. To examine the male-female disparity pattern in literacy rate, an index was formulated by Sopher in (1974) and has been modified by Kundu and Rao (1985) which is the most widely used method in analyzing the gender disparity in literacy rate. The gender disparity in literacy rate of Jalpaiguri district has been computed with the help of the following method.

$$D_i = \text{Log} (X_2/X_1) + \text{Log} [(200-X_1)/(200-X_2)]$$

Where, D_i is the disparity index,

X_1 denotes female literacy rate and X_2 denotes male literacy rate.

Table 4.9: Gender disparity Index in Literacy rate of Jalpaiguri district, 2011

C.D. Blocks	Male literacy rate (%)	Female literacy rate (%)	Gender Gap (%)	Gender Disparity Index
Rajganj	79.25	65.42	13.82	0.12
Jalpaiguri	79.62	65.06	14.56	0.14
Maynaguri	80.96	66.90	14.06	0.13
Dhupguri	77.25	60.96	16.29	0.15
Mal	73.53	57.09	16.44	0.18
Matiali	75.80	54.61	21.19	0.21
Nagrakata	70.51	51.93	18.58	0.19

Source- Computed from census of India, 2011

The disparity in male-female literacy rate is prevailing in many parts of the country and Jalpaiguri district is no exception. It is evident from Table 4.9 that the male literacy rate is substantially higher in all the blocks of Jalpaiguri district as compared to its female counterpart. In spite of the implementation of the educational programmes and policies to increase the rate of female literacy, a gender gap in literacy rate still exists in the study area. It varies from 13.82% in Rajganj block to 21.19% in Matiali block of Jalpaiguri district.

Similarly, the disparity index has been calculated for all the blocks of Jalpaiguri district and the values ranges from 0.12 in Rajganj block to 0.21 in Matiali block (Fig. 4.7). The traditional outlook of the parents and the unequal access to educational facilities is the prime reason behind the lower literacy rates of the females as compared to the males in the study area. Hence, the government should take more initiatives in order to reduce the gender disparity in literacy rate with a view to strengthen the overall socio-economic condition of the study area.

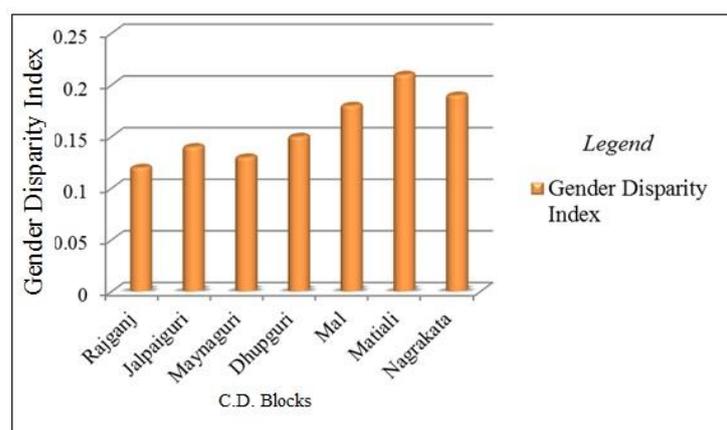


Fig. 4.7: Gender disparity Index in Literacy rate of Jalpaiguri district, 2011

Source- Computed by researcher from census of India, 2011

4.7 Demographic characteristics of the sampled villages of Jalpaiguri district

4.7.1 Population Distribution

A distribution of rural population of the sampled villages of each block of Jalpaiguri district has been depicted in the Table 4.10.

There is an existence of spatial variation of rural population distribution in the study area. The high concentration of population lies mainly in the eastern part of the study area owing to the fertile land, good irrigation provision and better transport and commercial facilities as compared to the northern part of the district consisting of Matiali and Nagrakata blocks where the percentage of rural population distribution is low.

Table 4.10: Distribution of Rural Population of the sampled villages of Jalpaiguri district, 2001, 2011

Sampled villages	Male		Female	
	2001	2011	2001	2011
RAJGANJ				
Araji Bhelakoba I	297	186	253	167
Gadheganj	1956	1886	1795	1753
Badlagachha	801	960	772	924
JALPAIGURI				
Araji Amarkhana	130	130	111	132
Maria Kamala Pukhari	239	254	183	257
Shakati	1672	1761	1557	1736
MAYNAGURI				
Purbba Dobbari	0	57	0	58
Kajaldighi	711	786	668	728
Gopalganj	0	257	0	265
Sisuabari	531	358	511	366
Chapgar	1413	1454	1323	1350
Purbba Baragharia	698	1415	671	1380
Purba Sisuabari	346	717	320	636
Gaurgram	1281	1568	1198	1448
DHUPGURI				
Gosairhat Chhits	377	378	336	352
Tuklimari	1052	1420	1028	1315
Chanadipa	1229	1462	1163	1405
Jakhaikona	331	366	277	350
Garakhuta	749	901	675	844
Bamantari	1231	1415	1140	1291
Gosairhat Forest	499	610	477	543
Totopara Tea Garden	1871	1572	1921	1636
Lakshmikantapur Tea Garden	551	604	529	625

Jalapara	283	306	277	301
MAL				
Kalagaity	195	157	170	144
Sundaribasti	70	144	75	146
Kodalkati	1348	1556	1253	1511
Purbba Sangapara	768	924	738	872
Nipuchhapur	1101	1297	1047	1224
Ellenbury Tea Garden	1269	1254	1188	1216
Purbba Totgaon	103	144	90	146
Tunbari Tea Garden	586	604	539	600
Saogaon	338	501	339	480
Basusuba	1113	1326	1005	1189
MATIALI				
Engo Tea Garden	496	510	507	553
Paschim Batabari	139	148	143	149
Chhaoaphali	264	304	232	290
NAGRAKATA				
Upar Kalabari	632	732	603	622
Hridaypur	1171	1281	1083	1235
Ghasmari	789	888	700	799

Source-Census of India, 2001, 2011

4.7.2 Occupational Structure

The demographic structure as well as the economic and social development of an area depends upon the occupational structure of the population. The higher rate of working population in different sectors of economy implies a higher rate of economic development of an area depending upon the availability of the resources, socio-cultural conditions and the structure of demography. The study of occupational structure of any area is of immense significance for the formulation of strategies and for the development of human resource. On the basis of economic composition, the population can be categorized into two groups: (a) economically active or labour force of an area and the (b) economically inactive or the dependent population of an area.

An economically active population comprises both males and females, who are engaged in the production of economic goods and services over time and space. An economically active population constitutes the core of the economic system. An economically inactive population is the dependent population who are not engaged in the production of economic goods and services. The economically inactive population consists of the home-makers, students, income-recipients etc. The analysis of occupational structure of an area holds an important place as it exerts vital influence on the socio-economic structures of the

working population. *Occupation is a paramount importance among all the social attributes of any individual or group. However, occupation depends upon the degree of economic development and sophistication of any area* (Ghosh, 1985).

A worker is one who participates in economically productive work. As per Census, 1981, persons who did not work during the reference period (i.e. 183 days or more) are referred as non-workers. The economic status of a person can be classified as: main, marginal and non-worker. Workers who had worked for the major part of the reference period (183 days or more) are referred as the main workers. The main workers are divided into four occupational categories:

- (a) Agricultural labourers,
- (b) Cultivators,
- (c) Household industry workers and
- (d) Other Workers.

Agricultural Labourers

A person working on another person's land for wages in money or kind is regarded as an agricultural labourer.

Cultivators

A person is considered as a cultivator if the person is engaged in cultivation of land as a single worker or the household is engaged in cultivation of land either owned or held from government or held from private persons or institution for payment in cash or kind.

Household Industries

Household Industry is an industry organized by one or many members of the household at home or within the village in rural areas. Household Industry relates to the production, processing, servicing, repairing or making and selling of goods.

Table 4.11: Main Workers of the Sampled Villages of Jalpaiguri District, 2011

Sampled villages	Total	Main workers (numbers)			
		Cultivators	Agricultural Labourers	Household Industry Workers	Other Workers
Araji Bhelakoba I	122	23	50	0	49
Gadheaganj	860	147	278	6	429
Badlagachha	537	115	68	1	353
RAJGANJ	1519	285	396	7	831
Araji Amarkhana	115	23	3	0	89
Maria Kamala Pukhari	125	28	18	1	78
Shakati	1130	314	327	10	479
JALPAIGURI	1370	365	348	11	646
Purbba Dobbari	36	36	0	0	0
Kajaldighi	483	185	210	30	58
Gopalganj	120	31	45	0	44

Sisuabari	264	92	120	1	51
Chapgar	794	290	348	5	151
Purbba Baragharia	882	396	287	3	196
Purba Sisuabari	398	127	152	1	118
Gaurgram	910	502	349	5	54
MAYNAGURI	3887	1659	1511	45	672
Gosairhat Chhits	239	85	115	0	39
Tuklimari	1072	219	793	0	60
Chanadipa	892	266	439	1	186
Jakhaikona	197	72	52	3	70
Garakhuta	477	232	196	0	49
Bamantari	762	397	289	3	73
Gosairhat Forest	165	124	33	0	8
Totopara Tea Garden	880	1	13	1	865
Lakshmikantapur Tea Garden	309	3	57	0	249
Jalapara	226	108	95	1	22
DHUPGURI	5219	1507	2082	9	1621
Kalagaity	17	2	2	1	12
Sundaribasti	29	4	19	3	3
Kodalkati	821	271	358	17	175
Purbba Sangapara	564	337	127	1	99
Nipuchhapur	694	154	316	2	222
Ellenbury Tea Garden	642	17	58	3	564
Purbba Totgaon	96	88	0	0	8
Tunbari Tea Garden	347	3	0	0	344
Saogaon	189	169	1	0	19
Basusuba	571	239	223	13	96
MAL	3970	1284	1104	40	1542
Engo Tea Garden	45	2	0	3	40
Paschim Batabari	72	26	32	0	14
Chhaoaphali	200	10	1	0	189
MATIALI	317	38	33	3	243
Upar Kalabari	406	231	95	7	73
Hridaypur	655	249	287	0	119
Ghasmari	415	130	48	3	234
NAGRAKATA	1476	610	430	10	426

Source- Census of India, 2011

The total numbers of the 4 categories of main workers of the sampled villages of Jalpaiguri district has been depicted in Table 4.11.

Other workers

The remaining workers (other worker than cultivators, agricultural workers and household industry workers) are known as other workers. They comprise of the teachers, factory workers, government officials, workers engaged in business and trade, transport and communication, banking sector, construction workers, social workers, workers engaged in the field of entertainment, etc.

Table 4.12 reveals the occupational structure of the study area based on the sampled villages of the district. The main workers or the working population has been divided into four categories who are engaged in the diverse sectors of economy (Fig. 4.8).

Table 4.12: Occupational Structure of Jalpaiguri district

C.D. Blocks	Cultivators (%)	Agricultural Labourers (%)	Household Industry Workers (%)	Other Workers (%)	Non Workers (%)
Rajganj	5.16	7.16	0.13	15.04	72.51
Jalpaiguri	10.35	9.86	0.31	18.31	61.17
Maynaguri	13.93	12.69	0.38	5.64	67.36
Dhupguri	9.91	13.69	0.06	10.66	65.69
Mal	9.03	7.77	0.28	10.85	72.07
Matiali	2.05	1.78	0.16	32.92	63.09
Nagrakata	12.53	8.83	0.21	8.75	69.68
Total	32.36	33.24	0.70	33.68	68.70

Source- Primary Census Abstract, Jalpaiguri district, 2011

Cultivators: The highest percentages of cultivators has been observed in Maynaguri block with 13.93% and Nagrakata block with 12.53% and lowest has been observed at Matiali block with 2.05% since the people are engaged in non-farm occupations apart from their traditional agricultural work.

Agricultural Labourers: The highest percentages of agricultural labourers has been obtained in Dhupguri block with 13.69% followed by Maynaguri and Jalpaiguri block, and the lowest percentage of labourers has been obtained in Matiali block with 1.78% due to the presence of tea factories which supports a large amount of labourers. Thus lower percentage of agricultural labourers indicates that people are changing their occupation according to the development of the region.

Household Industry Workers: The highest proportion of household industry workers has been obtained in Maynaguri block with 0.38% followed by Jalpaiguri block and lowest percentage of the workers has been observed in Dhupguri block with 0.06% followed by Rajganj block as the workers are engaged in the cultivation of paddy in this part of the study area.

Other Workers: The highest proportion of other workers has been observed in Matiali block with 32.92% followed by Jalpaiguri block and lowest percentage of the workers has been found in Maynaguri block with 5.64% followed by Nagrakata block. The higher share of the other workers indicates the engagement of the rural population in non-farm activities of the study area. However, the percentage is lower for Maynaguri block due to the larger share of cultivators and agricultural labourers.

Non Workers: Persons who did not work during the reference period (183 days) are referred as non-workers or the economically inactive population. The highest percentage has

been found in Rajganj block with 72.51% and the lowest percentage has been obtained in Jalpaiguri block with 61.17%. They are the dependent population of the study area who are not engaged in economically productive work and it constitutes students, persons engaged in regular household activities and the retired persons.

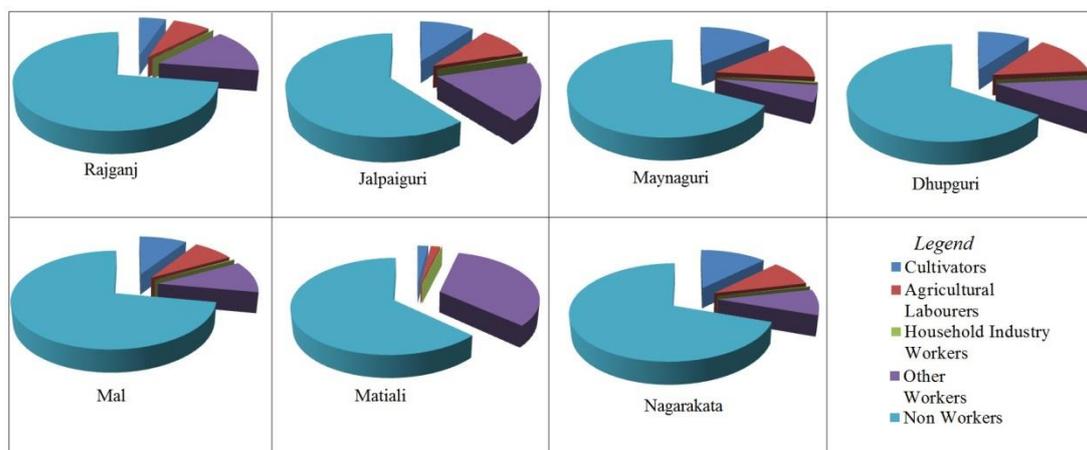


Fig. 4.8: Occupational structure of the sampled villages of Jalpaiguri district
Source- Primary Census Abstract, Jalpaiguri district, 2011

4.7.3 Religion

Population composition is an important aspect of demographic study. It deals with the people of different religion in a population group. According to field survey, 2015-2016, in the 7 community development blocks of Jalpaiguri district it has been observed that Hindus and Muslims are the two major religious groups in the study area.

Table 4.13: Population Composition by Religion

C.D. Blocks	Hindu (hh)*	Hindu (%)	Muslim (hh)*	Muslim (%)	Christian (hh)*	Christian (%)
Rajganj	43	66.15	22	33.80	0	0.0
Jalpaiguri	51	86.44	8	13.56	0	0.0
Maynaguri	171	97.15	5	2.85	0	0.0
Dhupguri	169	80.86	26	12.44	14	6.70
Mal	132	66.00	49	24.50	19	9.50
Matiali	39	97.5	0	0.00	1	2.50
Nagrakata	70	86.42	7	8.64	4	4.94
Total	675	81.32	117	14.09	38	4.57

Source- Field survey, 2015-16
**Numbers of Households*

It is evident from Table 4.13 that Jalpaiguri district is predominantly a Hindu dominated region and 81.32% Hindu households has been observed in the sampled villages of the district. The highest percentage of the Hindu households has been observed in Maynaguri block with 97.15% (Fig. 4.9).

Further, 14.09% Muslim households has been observed in the sampled villages of the district where the highest percentage has been found in Rajganj block with 33.8%. 4.57% Christian households has been obtained in the sampled villages of the district where the highest percentage has been found in Mal block at 9.5%. It has been observed that the major proportion of Hindu household has been found in Maynaguri, Jalpaiguri and Nagrakata blocks. Similarly, the larger proportion of Muslim household has been found in Rajganj, Mal and Dhupguri blocks whereas the major proportion of Christian household is in Mal block followed by Dhupguri and Nagrakata block.

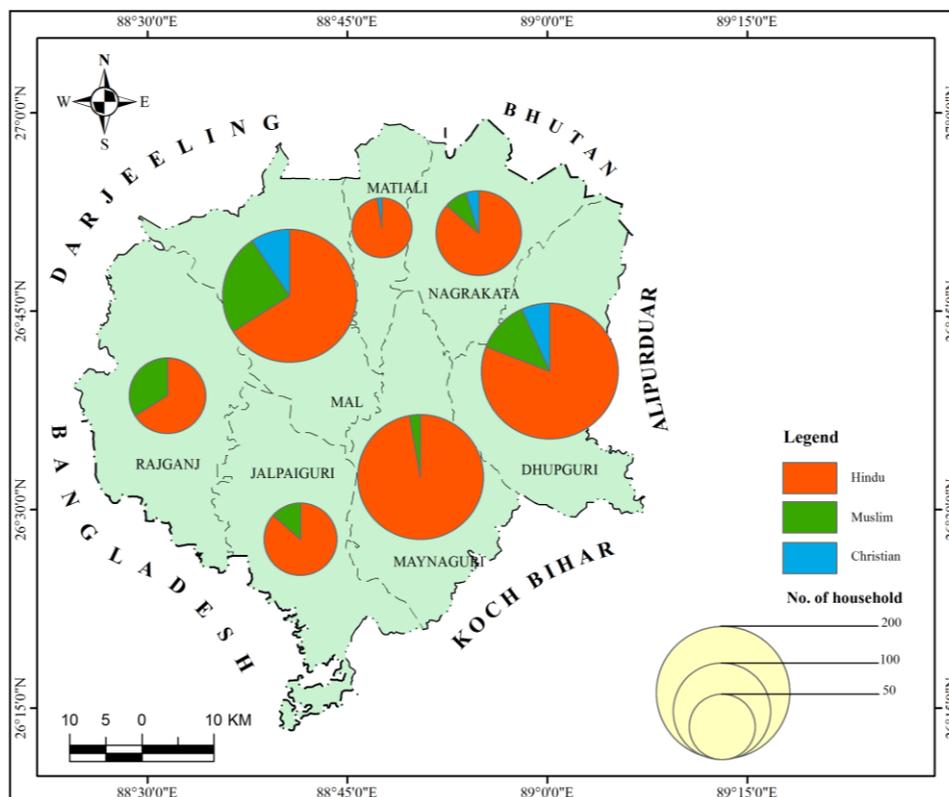


Fig. 4.9: Population Composition by Religion of Jalpaiguri district

Source- Computed by researcher, 2016

4.7.4 Ethnic Structure

Caste is a basic attribute of the Indian social structure. Social hierarchy is based on caste and it is this philosophical vision that determines the behavior of millions of Indian people in whichever walk of life they are (Ahmad, 2004). Scheduled Castes and Scheduled Tribes are the important ethnic segments of the population of our society. A tribe is an age-old indigenous, by and large unstratified, and egalitarian ethnic group in both appearance and content (Thakur and Sharma, 2012). The study of the proportion of Scheduled Caste and Scheduled Tribe population living in the rural areas of Jalpaiguri district is of vital importance because it helps in analyzing the quality of their role in the process of socio-

economic development. *India being a melting pot of various races and tribes presents multifaceted ethnic composition* (Bhattacharya, 1978). However, in Jalpaiguri district higher concentration of scheduled castes and scheduled tribes population has been observed. The population is broadly divided into four minor social groups:

- (a) Scheduled Caste (SC)
- (b) Scheduled Tribe (ST)
- (c) Other Backward Caste (OBC)
- (d) General

Table 4.14 reveals that the blocks of Jalpaiguri district is dominated by the Scheduled Caste population. There exists a widespread disparity in the spatial distribution of SC population. 48.19% SC household has been obtained in the sampled villages of the district (Fig. 4.10). It varies from 2.5% in Matiali block to 93.75% in Maynaguri block followed by Jalpaiguri, Dhupguri and Rajganj blocks.

During the field survey 2015-16, tribal groups such as; Lodha, Mech, Rabha, Mahali, Oraon, Santhan and Munda is found in the rural areas of the district. 24.57% ST household has been observed in the study area. In Rajganj and Jalpaiguri blocks none of the Scheduled Tribe's household has been found whereas the highest share of ST household has been obtained in Matiali block with 92.5% followed by Nagrakata block.

Table 4.14: Ethnic Structure (household level)

C.D. Blocks	Scheduled Caste (SC)	(SC) %	Scheduled Tribe (ST)	(ST) %	Other Backward Caste (OBC)	(OBC) %	General	General %
Rajganj	17	26.15	0	0.0	37	56.92	11	16.93
Jalpaiguri	78	78.0	0	0.0	6	10.17	7	11.8
Maynaguri	165	93.75	1	0.57	7	3.98	3	1.70
Dhupguri	108	51.7	63	30.14	19	9.08	19	9.08
Mal	55	27.5	72	36.0	48	24.0	25	12.5
Matiali	1	2.5	37	92.5	0	0.0	2	5.0
Nagrakata	8	9.87	31	38.27	5	6.18	37	45.68
Total	400	48.19	204	24.57	122	14.69	104	12.53

Source- Field survey, 2015-16

14.69% OBC household is in the sampled villages of the district. The highest concentration of OBC household has been observed in Rajganj block with 56.92% followed by Mal block with 24.0%. 12.53% household belonging to general castes has been observed during the field survey. The highest percentage of general castes household has been observed in Nagrakata block with 45.68% followed by Rajganj and Mal blocks in the study area.

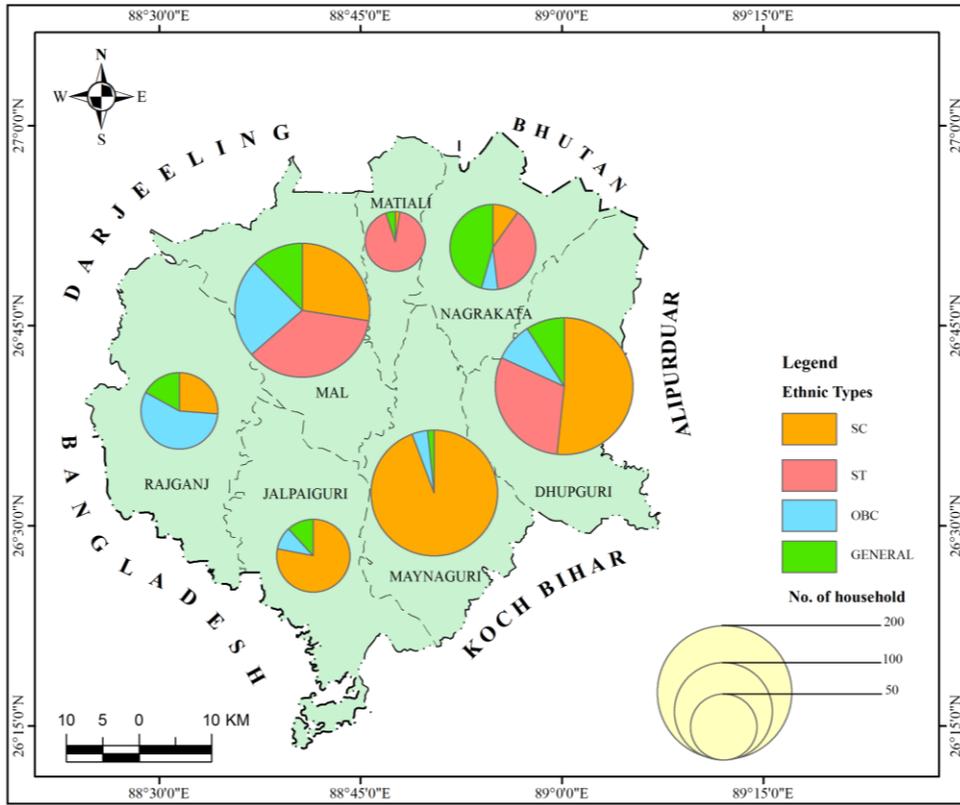


Fig. 4.10: Ethnic Structure of Jalpaiguri district

Source- Computed by researcher, 2016

4.7.5 Age Sex Composition of Population

Demographic structure consists of the various aspects of population studies and age sex structure is one of the important aspects of it. The collection of data on male-female ratio and the age structure of population are necessary in order to analyze the factors of population change. Table 4.15 reveals the age and sex structure of the sampled population of Jalpaiguri district and has been grouped into thirteen broad categories. However R.C Chandna, (1986) has categorized the population into three broad age groups which are as follows:

- i.) The young (below 15 years of age)
 - ii.) The adult (age group between 15-59 years)
- The old age group (age of 60 years and above)

Following his classification, the young age group includes children below 15 years of age which accounts for 27.65% of the total sampled population (Fig. 4.11). The adult age group comprises of population falling in the age group between 15-59 years which constitutes 65.73% of the total population and the old age group who have attained the age of 60 years and above accounts for 6.62% of the total sampled population in the sampled villages of Jalpaiguri district.

Table 4.15: Age Sex Composition of Population

Age group	Male	Female	% of Male	% of Female
0-4	113	135	5.66	7.23
5-9	188	199	9.42	10.65
10-14	220	213	11.03	11.40
15-19	259	229	12.98	12.26
20-24	177	195	8.87	10.44
25-29	146	179	7.32	9.58
30-34	158	128	7.87	6.91
35-39	139	148	6.92	7.99
40-44	149	119	7.47	6.37
45-49	126	92	6.32	4.93
50-54	99	57	4.96	3.05
55-59	78	57	3.91	3.05
60+	155	101	7.77	5.41
Total	2007	1852	100	100

Source- Field survey, 2015-16

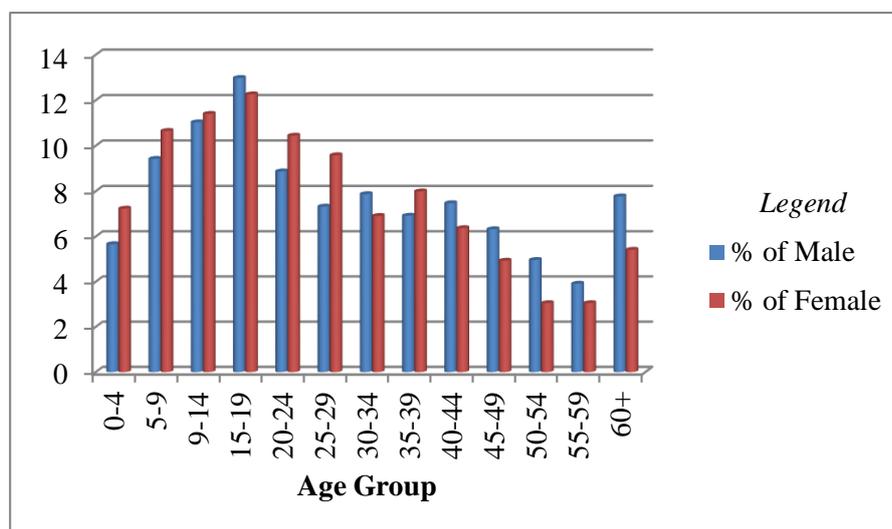


Fig 4.11: Age Sex Composition of Population of Jalpaiguri district

Source- Computed by researcher, 2016

4.7.6 Dependency Ratio

Another measure to study the structure of population is the dependency ratio. Demographers employ dependency ratio to measure the impact of age composition on the livelihood activity of the population (Bogue, 1969). Dependency ratio indicates the number of dependents per 100 persons and may be computed on the basis of the broad age groups. i.e. below 15 or the young dependents, 15-59 or the working population and the old dependents who are either or above the age 60.

The dependency ratio is computed with the help of the following formula:

$$\text{Dependency Ratio} = \frac{P_{(0-14)} + P_{60}}{P_{(15-59)}} K$$

Where $P_{(0-14)}$, P_{60} and $P_{(15-59)}$ denote the populations in the age groups 0-14, 60+ and 15-59 respectively and K is 100

$$\text{Dependency Ratio} = \frac{433 + 256}{2539} 100 = 27.13$$

As stated by Bhende & Kanitkar, 2006, the measure of dependency ratio gives us an idea of the economic dependency in any population. However the dependency ratio for the sampled population of Jalpaiguri district is 27.13.

4.8 Level of Demographic Development

Demographic development holds a crucial role in the process of rural development. It helps to understand the quality of population in a region. In order to identify the inter-block disparities in the level of demographic development among the blocks of Jalpaiguri district, considerable emphasis are placed on the selection of variables. Z-score method transforms the individual raw data into standard score and therefore it has been applied for identifying the level of development based on the demographic scores.

For the analysis of the data the following six indices have been taken into account: rural density persons/km² (X_1), percentage of rural population growth (X_2), sex ratio of rural population/1000 males (X_3), rural literacy rate in percentage (X_4), percentage of agricultural labourers to total workers (X_5) and percentage of cultivators to total workers (X_6).

For analyzing the development scenario in the study area as a whole the results of the standard score for all the indicators are taken collectively, and on the basis of the values of the composite standard score of variables, the blocks have been divided into high, medium and low category which clearly depicts the disparities in the level of demographic development in the different blocks of Jalpaiguri district. Table 4.16 depicts the z-score values of the demographic development in the blocks of Jalpaiguri district.

Table 4.16: z-score of Demographic Development in the blocks of Jalpaiguri district

C.D. Blocks	X_1	X_2	X_3	X_4	X_5	X_6	Composite scores
Rajganj	-1.34	-2.01	-1.35	0.54	-0.49	-0.92	-0.91
Jalpaiguri	0.31	-0.35	-0.36	0.89	0.67	0.32	0.36
Maynaguri	0.51	0.98	-1.00	1.26	1.79	1.19	0.78
Dhupguri	1.47	0.48	0.62	0.03	0.25	0.22	0.64
Mal	0.16	0.31	0.80	-0.62	-0.31	0.00	0.02
Matiali	0.13	-0.13	-0.10	-0.48	-1.17	-1.68	-0.49
Nagrakata	-1.26	0.70	1.40	-1.63	-0.73	0.85	-0.40

Source: Computed by Author

Table 4.17 depicts that the high level of demographic development has been observed in Dhupguri (0.64), and Maynaguri (0.78) blocks located in the eastern and south-eastern part of Jalpaiguri district.

Table 4.17: Level of Demographic Development

Category	Z score range	Name of the Blocks
Low	<0	Rajganj, Matiali, Nagrakata
Moderate	0 – 0.45	Jalpaiguri, Mal
High	>0.45	Maynaguri, Dhupguri

Source- Calculated by Author

These blocks have obtained high values in terms of the percentage of rural population growth, sex ratio of rural population/1000 males, rural literacy rate in percentage, percentage of agricultural labourers to total workers and percentage of cultivators to total workers. However, It is due to the fact that the cultivation of food crops is dominant in these part of the study area along with the predominance of farming households which requires large number of agricultural labourers.

Again, the blocks which display moderate level of development is Jalpaiguri (0.36), and Mal (0.02) blocks. The main variables which appear to have influenced the moderate level of development includes the sex ratio of rural population/1000 males, percentage of rural literacy rate, percentage of cultivators to total workers and percentage of agricultural labourers to total workers.

Whereas, the low level of demographic development based on composite standard scores is confined to three blocks of Rajganj (-0.91) and Matiali (-0.49) and Nagrakata (-0.40) in Jalpaiguri district. In terms of rural population density/km², growth of rural population and in terms of the percentage of cultivators and agricultural labourers to total workers the variables has negative scores in this category. Owing to the predominance of tea gardens in the northern and western part of the study area the households of these blocks have a meager proportion of cultivated land and consequently the percentage of agricultural labourers are lower. Moreover, the percentage of rural literacy rate is low in Matiali and Nagrakata blocks of the study area. Hence in order to reduce the disparities in the rural literacy rate the educational programmes should be properly implemented in the study area along with the proper monitoring and evaluation of the programmes.

4.9 Conclusion

From the above discussion it has been concluded that broadly the demographic study not only includes the quantitative study of population but also the interrelationships between population and social, economic and cultural variables. However in Jalpaiguri district from the post-independence period to 2011 Census, the distribution of rural population is high in the eastern and particularly in the south eastern part of the district while the northern part is sparsely inhabited. Though the rural population had grown rapidly during 1981-91 and in

1991-2001, but in 2001-11 there is a decline in the growth rate of rural population in Rajganj, Jalpaiguri and Matiali blocks especially due the out migration of the adult age group in other urban areas for better economic facilities. According to Census 2011, the average density of rural population per km² for Jalpaiguri district is 483 persons. The district has observed an increasing trend in the sex ratio and literacy rate from 1951-2011. It has been observed that the study area is predominantly a Hindu dominated region and dominated by the Scheduled Caste population. However, necessary measures should be taken regarding the expansion of non-farm activities part from the traditional agricultural activities in the study area for the socio-economic development of the district.

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Social Structure Reflecting Rural Development**5.1 Introduction**

Man is by nature a rational being whose wants and needs have been changing since the dawn of civilization. Men need society for existence as well as for the development of his quality of life (Singh, 1986). In the context of Indian developmental planning, the development of social sector in the rural areas has always been an area of prime concern for the planners, social activists and academicians. The concept of social structure reflecting rural development emphasizes the improvement of the society in its social aspects in the rural areas. Investment in areas like education, health, medical care, housing and sanitation has been considered to be the investment for the process of social development. Hence, *social development refers to all those activities that contribute to human development for building human capital* (Pant, Pandey, 2004). Therefore for the improvement of the rural areas development of both economic and social sector is important because economic development provides affluence and alleviation of poverty and social development provides an improvement in the quality of life in its social aspects. Therefore, emphasis on social development is not only a significant factor but a prerequisite to overall development of the rural areas.

5.2 Education

Education is the most important factor for human resource development and it is considered as an indispensable unit of a social system. Only education can raise socio-cultural advancement and economic development of the society and therefore it is one of the ever increasing demands of the modern society. It helps to enhance knowledge, skills, talent, and raises the quality of life of the people.

Total eradication of illiteracy has been an area of prime concern of the Indian Government. Since independence, there has been an expansion of formal education at all levels. The National Literacy Mission (NLM) was introduced in May 1988 for the provision of functional literacy to non-literates in the age group of 15-35 years. Thus to promote education system in the country the Total Literacy Campaign and the Post Literacy Campaign was the principal strategy of the NLM. Further, the centrally sponsored District Primary Education Programme was launched in 1994 in order to promote high enrollment in the primary schools of the country. The scheme which has become very popular in India is the Mid-Day Meal Scheme, a centrally sponsored effort, launched on 15 August 1995. The major objective of the scheme is to increase the school enrollment and the number of attendance for

7-14 years old children in school. The National Educational Policy, 1999, has been framed to improve the educational system and to eradicate illiteracy from the country.

However, the Government of India made elementary education a Fundamental Right of every single child for 6-14 years age group through the introduction of the 86th Constitutional Amendment Act, 2002, by the provision of free and compulsory education to all children. The programme of Sarva Siksha Abhiyan (SSA) was launched in India on 2001 which attempts to provide elementary education to all children for age group between 6-14 years. However in all the districts of West Bengal the name Sarva Siksha Abhiyan (SSA) has been changed to Paschim Banga Sarva Siksha Mission on 31 October, 2006. Rashtriya Madhyamik Shiksha Abhiyan (RMSA) is an extension of SSA launched on March, 2009 throughout the country in order to universalize the secondary education for the age group between 15-16 years. Again, Saakshar Bharat Mission was initiated in India, 2009, for the promotion of adult education and particularly the female education in the areas *where there are less than 50 percent literate women, as per Census 2001* (Das, 2018).

However in 2001, Sarva Siksha Abhiyan (SSA) has been implemented in Jalpaiguri district for universalizing elementary education for children within age group of 6 to 14 years. Again, in Jalpaiguri district a Baseline Assessment Survey (BAS) had been carried out for evaluating the *infrastructure of schools, rate of enrollment, quality of education and retention of the students. Under NLMA (National Literacy Mission Authority) Continuing Education Programme (CEP) was launched in Jalpaiguri district, on 1st May 2005, for the promotion of literacy for the age group between 15-45 years. Nine districts of West Bengal came under the scheme Saakshar Bharat Mission and in Jalpaiguri district it has been implemented in 2010 and has been continuing under the supervision of Jalpaiguri Zilla Lok Siksha Samiti* (Das, 2018). However, the expansion of formal education is not yet enough to ensure education for the entire people of the country. Therefore, the central and the state governments should have the provision of adequate educational infrastructure in order to provide education for all.

5.2.1 Educational Institutions of the sampled villages of Jalpaiguri district

Educational institutions are those, which imparts primary, secondary and tertiary education to the illiterate and uneducated persons of the country. It has a great impact on literacy as it serves the base of educational structure. The educational facilities available in the sampled villages of Jalpaiguri district ranges from primary schools to higher secondary schools. However, none of the college has been found in the sampled villages of the district. On the basis of the data available for Census, 2011, it is observed that achievement with

regard to primary schools in the sampled villages of Jalpaiguri district is significant as compared to the numbers of middle, secondary and higher secondary schools.

Table 5.1: Numbers of Educational Institutions

C.D. Blocks	Primary school	Middle School	Secondary School	Higher Secondary School
Rajganj	4	0	1	0
Jalpaiguri	5	4	0	0
Maynaguri	10	2	0	0
Dhupguri	17	7	0	0
Mal	15	5	0	1
Matiali	5	3	2	0
Nagrakata	5	1	0	0
Total	61	22	3	1

Source- Village and Town Directory, Census, 2011

According to government source, there are 61 primary schools in the sampled villages of the seven blocks of Jalpaiguri district (Village and Town Directory, Census, 2011). Table 5.1 highlights that primary school is widely distributed in the villages of Dhupguri block followed by Mal, Maynaguri, Jalpaiguri, Matiali, Nagrakata and Rajganj blocks.

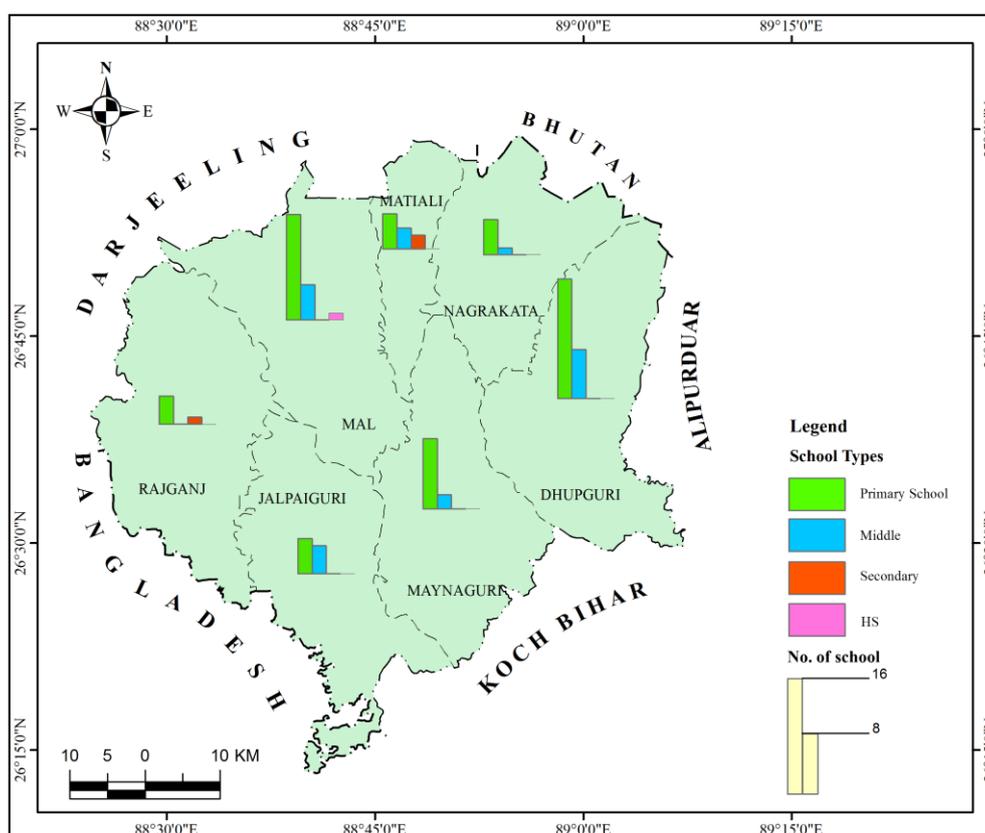


Fig. 5.1: Educational Institutions of Jalpaiguri district

Source- Village and Town Directory, Census, 2011

The institution which provides education from class V to VIII has been considered as the middle school or the junior high school. Among the sampled villages 22 middle schools

have been obtained in the villages of Jalpaiguri, Maynaguri, Dhupguri, Mal, Matiali and Nagrakata blocks of Jalpaiguri district (Fig. 5.1). The institution which has the provision of imparting education from class V to X has been considered as the secondary schools and there are only 3 secondary schools in the sampled villages of Rajganj and Matiali blocks of Jalpaiguri district. Higher secondary school provides education from class V to XII and there is only one higher secondary institution in the sampled village of Mal block of Jalpaiguri district.

Table 5.1 presents that the sampled villages of *Dhupguri block have the highest number of educational institutions as compared to the sampled villages of the other blocks* (Das, 2018). It is due to the fact that the block lies in the eastern part of Jalpaiguri district and is connected to NH-31 and NH-31c which provides a better means of transport in the block. Thus, *high degree of accessibility by the roadways has played a significant role in the development of educational institutions in the block* (Das, 2018) of Jalpaiguri district.

5.2.2 Non- Formal Educational Institutions of the sampled villages of Jalpaiguri district

The central and the state governments have formulated various plans for the elimination of illiteracy in the country. The Panchayat and Rural Development Department, Government of West Bengal in 1997-98 planned a programme as Shisu Shiksha Karmasuchi, and have decided to construct Shishu Shiksha Kendras (SSK), for the rural areas where there were at least twenty children deprived of getting access to any existing primary school. Similarly, with the objective to enhance accessibility to secondary education Madhyamik Siksha Kendras (MSK) were constructed and Jalpaiguri district is no exception. Table 5.2 discloses that there are 13 SSK and 5 MSK obtained in the sampled villages of Jalpaiguri district.

Table 5.2: Numbers of Non- Formal Educational Institutions

C.D. Blocks	Sishu Siksha Kendras (SSK)	Madhyamik Siksha Kendras (MSK)	Anganwadi Centres under ICDS
Rajganj	2	0	4
Jalpaiguri	1	0	2
Maynaguri	2	1	10
Dhupguri	4	2	24
Mal	2	1	26
Matiali	1	0	4
Nagrakata	1	1	9

Source- Gram Panchayat Office and Field Survey, 2015-16

The ICDS (Integrated Child Development Scheme) is a unique programme for early childhood care and development and it is the Anganwadi Centres through which the ICDS Scheme delivers its services with the objective of early childhood education, improving health, nutrition and development of children along with the pregnant women. There are 79 Anganwadi centres obtained in the sampled villages of the district. However, Dhupguri block is highest in terms of non-formal educational institution followed by Mal, Maynaguri, Nagrakata, Matiali, Rajganj and Jalpaiguri blocks (Fig. 5.2).

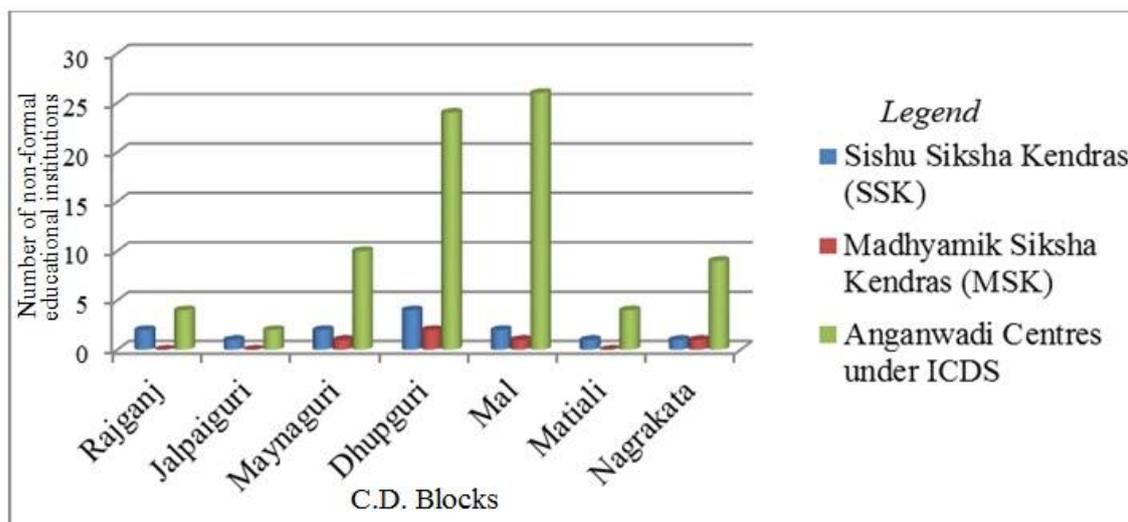


Fig. 5.2: Non-Formal Educational Institutions of Jalpaiguri district

Source- Gram Panchayat Office and Field Survey, 2015-16

5.2.3 Distance to Educational Institution

The distance to educational institution has a crucial impact on accessing educational facilities. During the course of field survey 2015-2016, it has been observed that 36.98% households travel below 1 km for the educational institution. The students have been benefitted from the availability of schools within their village and are therefore facilitated by the walking distance to educational institutions. Table 5.3 depicts that the highest percentage of households having accessibility to educational institution at a distance below 1 km is 49.38% in Nagrakata block followed by Matiali block with 45.00%. The lesser the distance to educational institutions the greater is the educational facility for the children in the study area. It has been observed that 43.01% households travel more than 1 km for the educational institutions where the highest percentage of households is obtained in Matiali block with 55.00% followed by Nagrakata block with 50.62%.

During the field survey it has been obtained that 14.93% households travel within 2 to 3 km from their household to educational institutions. The highest percentage of households has been found in Jalpaiguri block with 40.68% followed by Maynaguri, Rajganj and

Dhupguri blocks. Likewise, 5.06% households travel above 3 km, from their households to the educational institutions in the sampled villages of the district (Fig. 5.3).

Table 5.3: Distance to Educational Institution

C.D. Blocks	0-1 km	1-2 km	2-3 km	>3 km
Rajganj	35.38	46.15	15.38	3.08
Jalpaiguri	27.12	25.42	40.68	6.78
Maynaguri	30.11	34.66	28.98	6.25
Dhupguri	37.80	48.80	13.40	0.00
Mal	39.00	43.00	5.50	12.50
Matiali	45.00	55.00	0.00	0.00
Nagrakata	49.38	50.62	0.00	0.00
Total	36.98	43.01	14.93	5.06

Source- Field survey, 2015-16

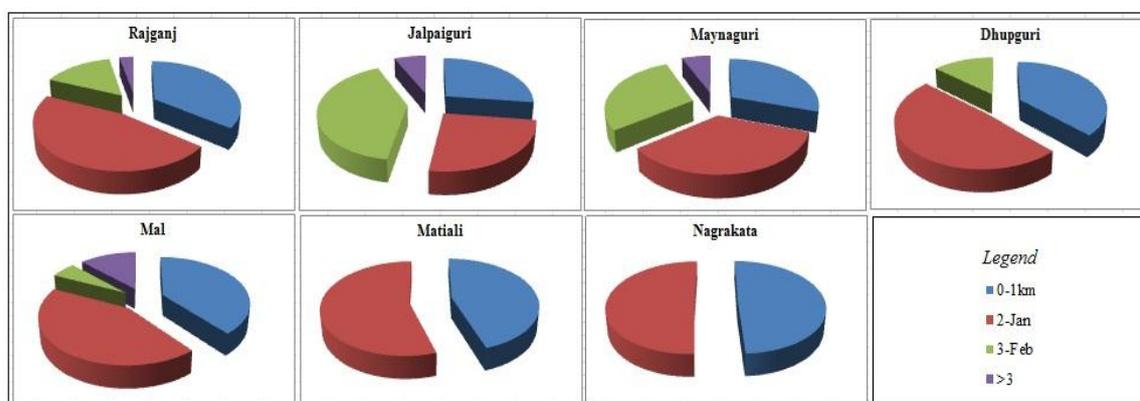


Fig. 5.3: Distance to Educational Institution in Jalpaiguri district

Source- Computed by researcher, 2016

The larger distance to educational facilities in the rural areas increases the commute time of the students creating an adverse effect on the level of education. During the field survey 2015-16, it has been observed in the rural areas that the girls has the pressure of household activities, therefore larger distance to educational institutions acts as a barrier to the improvement of education for the children in the sampled villages of Jalpaiguri district.

Thus, apart from the availability of the infrastructural facilities in the educational institutions, stipulated distance to educational institutions plays a vital role in attracting children in the rural areas of Jalpaiguri district.

5.2.4 Student-Teacher Ratio

In order to analyze the quality of education received in any educational institution the student-teacher ratio is one of the prime indicators. *The high value of student-teacher ratio indicates a high pressure of students on teacher, whereas, its low value exhibits high level of educational development* (Das, 2018).

At national level according to RTE Act 2009, the student teacher ratio for primary school should be 30:1, for upper primary school the ratio should be 35:1 and for secondary school the student teacher ratio should be 30:1. According to West Bengal school education survey report, 2011, the norm for student-teacher ratio of the state is 40:1, excluding the head teacher. Table 5.4 exhibits the student-teacher ratio for the sampled villages of Jalpaiguri district. The ratio of primary school student and teacher is 21:1, for middle school student and teacher the ratio is 36:1, for secondary school student and teacher the ratio is 60:1 and the ratio for Higher Secondary school student and teacher is 57:1. Following the standard *student-teacher ratio of the state, it has been observed that the ratio is lower for primary school and middle school whereas it is high for the secondary and higher secondary school in the sampled villages of Jalpaiguri district (Das, 2018)*. In other words, *the high value of student-teacher ratio indicates less number of teachers in the institutions (Das, 2018)*.

For primary school, low student-teacher ratio has been observed in every blocks of Jalpaiguri district as per the standard student-teacher ratio of the state. Though, higher number of students studying in different classes is the indicator of educational status of any region yet high student-teacher ratio reveals educational backwardness and low quality education at all levels. It is due to the fact that lower number of students per teacher indicates *lesser pressure of students on teacher where the students get the chance of individual attention from the teachers (Das, 2018)*.

Table 5.4: Student-Teacher Ratio

C.D. Blocks	Student-teacher ratio			
	Primary school	Middle School	Secondary School	Higher Secondary School
Rajganj	23:1	-	55:1	-
Jalpaiguri	14:1	27:1	-	-
Maynaguri	18:1	33:1	-	-
Dhupguri	21:1	42:1	-	-
Mal	22:1	29:1	-	57:1
Matiali	22:1	49:1	63:1	-
Nagrakata	21:1	37:1	-	-

Source- Calculated by Author, 2015-16

However, in Dhupguri, Matiali and Nagrakata blocks the level of student-teacher ratio for the middle schools is high as per the RTE Act, 2009. Jalpaiguri, Maynaguri, and Mal blocks exhibits low student teacher ratio with lower number of students per teacher in the district.

Similarly, for secondary and higher secondary schools the student-teacher ratio exhibits high ratio. Rajganj and Matiali blocks comprises high student-teacher ratio for

secondary schools and Mal block observes high student-teacher ratio for the higher secondary school in Jalpaiguri district. However, the higher the number of students per teacher the greater is the pressure of students per teacher which hampers the quality of education at all levels.

5.2.5 Student-School Ratio

Student-school ratio is the computation of the number of students per school which in turn points to the enrollment of children in educational institutions. As a whole, the ratio of primary school students and primary school is 92:1, the ratio for middle school student and middle school is 100:1, the ratio for secondary school school student and secondary school is 815:1 and for the Higher Secondary (HS) student and HS school the ratio is 1078:1. Table 5.5 represents the ratio of the students per primary, middle, secondary and higher secondary school among the seven blocks of Jalpaiguri district.

There exists a sharp variation in the student-school ratio in the seven blocks of Jalpaiguri district. This variation is due to the fact that the children do not get an easy access to adequate educational facilities in terms of distance to educational institutions and institutional infrastructure. Moreover, the family pressure for domestic work and farm operations hampers the level of literacy in the study area.

Table 5.5: Student-School Ratio

C.D. Blocks	Primary school	Middle School	Secondary school	Higher Secondary School
Rajganj	128:1	-	818:1	-
Jalpaiguri	65:1	81:1	-	-
Maynaguri	83:1	99:1	-	-
Dhupguri	86:1	119:1	-	-
Mal	98:1	75:1	-	1078:1
Matiali	101:1	115:1	814:1	-
Nagrakata	104:1	112:1	0	-

Source- Calculated by Author, 2015-16

The student-school ratio ranges from 65:1 in Jalpaiguri block to 128:1 in Rajganj block for primary school. Similarly for the middle school the ratio ranges from 75:1 in Mal block to 119:1 in Dhupguri lock. Again, for the secondary school the ratio varies from 814:1 in Matiali block to 818:1 in Rajganj block. *Whereas for higher secondary school the student school ratio is 1078:1 in Mal block (Das, 2018).*

5.2.6 Teacher-School Ratio

The higher number of teachers in any educational institution indicates the quality of education of the institution. However, the ratio of teachers and school varies in different level

of educational institutions. As a whole, the ratio of primary school teacher and primary school is 4:1, the ratio for middle school teacher and institution is 3:1, the ratio for secondary school teacher and institution is 14:1 and the ratio for HS school teacher and institution is 19:1.

Table 5.6: Teacher-School Ratio

C.D. Blocks	Primary School	Middle School	Secondary school	Higher Secondary School
Rajganj	6:1	-	15:1	-
Jalpaiguri	5:1	3:1	-	-
Maynaguri	5:1	3:1	-	-
Dhupguri	4:1	3:1	-	-
Mal	4:1	3:1	-	19:1
Matiali	5:1	2:1	13:1	-
Nagrakata	5:1	3:1	-	-

Source- Calculated by Author, 2015-16

Table 5.6 reveals the ratio of the teachers per primary school, middle school, secondary school and higher secondary school of the seven blocks of Jalpaiguri district. A variation in the teacher-school ratio has been observed in the blocks of Jalpaiguri district. The ratio ranges from 4:1 in Dhupguri and Mal blocks to 6:1 in Rajganj block for primary school. Similarly for the middle school the ratio varies from 2:1 in Matiali block to 3:1 in Jalpaiguri, Maynaguri, Dhupguri, Mal and Nagrakata blocks. Again, for the secondary school the ratio varies from 13:1 in Matiali block to 15:1 in Rajganj block. Whereas for higher secondary school the teacher school ratio is 19:1 in Mal block.

5.3 Literate and Illiterate Population

Literacy is an indispensable means to acquire skills for improving socio-economic development of well-beings (Nayak, 2011). Education is essential for the development in social structure, improvement of quality of life and preparation of skilled man power for the development of society. Besides, it helps to overcome the social barriers and improves earning capability of the people through acquirements of skill and information for various employment opportunities. Therefore, inequality in the literacy rates tends to create a number of socio-economic problems, which may lead to regional imbalances. The data pertaining to the percentage of the literate and the illiterate males and females of the rural areas of Jalpaiguri district are presented in Table 5.7.

According to the field survey 2015-2016, Matiali block has the highest percentage of male literates with 67.74% whereas Nagrakata block has the lowest percentage of male literates with 59.20%. So far the female literacy is concerned, the highest female literacy has

been observed in Jalpaiguri block with 64.71% whereas Mal block has the lowest percentage of female literates with 53.91%.

Table 5.7: Literate and Illiterate Population

C.D. Blocks	Literate (%)		Illiterate (%)	
	Male	Female	Male	Female
Rajganj	62.42	60.00	37.58	40.00
Jalpaiguri	63.49	64.71	36.51	35.29
Maynaguri	61.89	62.62	38.11	37.38
Dhupguri	63.68	61.35	36.32	38.65
Mal	60.41	53.91	39.59	46.09
Matiali	67.74	56.72	32.26	43.28
Nagrakata	59.20	55.77	40.80	44.23
Total	62.13	59.42	37.87	40.58

Source- Field survey, 2015-16

The reason behind the lower literacy rates of the females as compared to the males in the study area is the traditional outlook of the parents (Das, 2018) in which less emphasis has been placed on education. Besides, lack of interest in study, inability to meet the educational expenses, unequal access to educational facilities, need for assistance in domestic and farm work and trends of early marriage restricts them from pursuing higher studies.

Illiteracy is one of the major problems of the society as it hinders the socio-economic status of the whole country. According to UNESCO, there exists a correlation between illiteracy, poverty and low life expectancy. The higher the level of illiteracy among the people the greater is the incidence of poverty and low life expectancy. Among the sampled households the total percentage of illiterates accounts 37.87% male illiterates and 40.58% female illiterates (Fig. 5.4). Further, the highest percentage of male illiterates has been found in Nagrakata block with 40.80% whereas the highest percentage of female illiterates has been accounted in Mal block with 46.09%. *The reasons behind the illiteracy in the northern part of the district covering Mal and Nagrakata blocks are the inadequate educational institutions in the sampled villages, lack of accessibility to school (Das, 2018), engagement in unskilled farm operations and working as tea garden labourers due to the incidence of poverty has forced the rural masses to quit study and seek jobs (Das, 2018) in order to maintain the livelihood.*

However educational development and economic planning should be considered as an integral part of the process of rural development. Besides, educational facilities should be increased and the rural people should be encouraged for the utilization of these facilities in order to decline the level of illiteracy from the rural areas of the district.

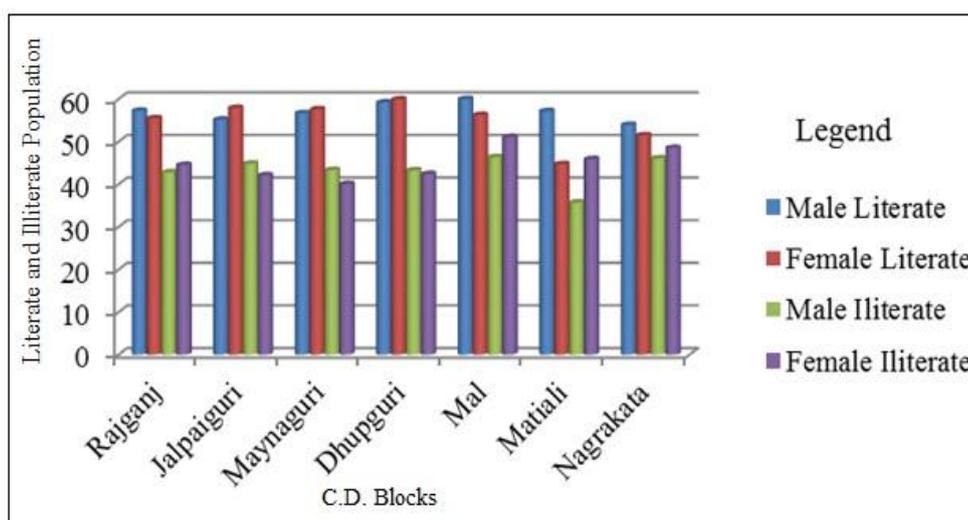


Fig. 5.4: Literate and Illiterate Population of Jalpaiguri district

Source- Computed by researcher, 2016

5.4 Level of Literate population

The level of literacy is an essential means for human development and poverty reduction. Analysis of the level of literacy is highly significant in the process of rural development, as it is very useful for manpower planning in the rural areas. However, there exists variation in the level of literacy from one block to another, depending upon the educational facilities and the socio-economic factors of the rural people in the sampled villages of Jalpaiguri district.

According to the field survey 2015-2016, it has been observed that 27.23% rural population of the sampled villages are educated up to primary school while 35.81% rural population of the sampled villages have their level of literacy up to the middle school. Table 5.8 reveals that 21.97% rural population of the sampled villages are educated up to secondary school (Das, 2018), whereas the level of literacy of the rural population for higher secondary school is 8.38%, likewise 5.91% rural population are graduates and 0.7% population have availed higher studies and has been categorized as other literates in the sampled villages of Jalpaiguri district. Education from primary institution is the most basic and the fundamental criterion of the educational structure. The percentage of population who are educated up to primary school varies from 35.78% in Matiali block to 24.46% in Rajganj block followed by Jalpaiguri and Dhupguri blocks (Fig. 5.5).

Since the primary schools are distributed widely in the sampled villages of the district therefore the study area comprises 27.23% of rural population, educated up to the level of primary institutions in Jalpaiguri district. Moreover, it has been observed during the field

survey 2015-16, that the pressure of joining the farm operations as agricultural labourers and working for long hours per day for wages due to poor socio-economic conditions compels the rural population to discontinue their higher studies.

Table 5.8: Level of Literate population

C.D. Blocks	Primary	Middle	Secondary	Higher Secondary	Graduate	Others
Rajganj	24.46	25.54	26.09	11.96	9.78	2.17
Jalpaiguri	24.84	35.03	21.66	10.83	7.64	0.00
Maynaguri	26.57	36.81	21.26	9.25	4.72	1.38
Dhupguri	24.57	37.24	22.87	7.94	6.81	0.57
Mal	29.30	39.70	22.08	4.25	4.46	0.21
Matiali	35.78	34.86	15.60	6.42	7.34	0.00
Nagrakata	31.05	30.53	21.05	13.16	4.21	0.00
Total	27.23	35.30	21.97	8.37	5.91	0.69

Source- Field survey, 2015-16

There has been a considerable variation in the number of educational institutions in the rural areas of Jalpaiguri district. However, it has been observed that Mal block accounts the highest percentage of rural population educated up to middle school with 39.70% followed by Dhupguri and Maynaguri blocks.

Whereas, Rajganj and Nagrakata blocks observed the least percentage of rural population educated up to middle school. It is due to the fact that the sampled villages of Rajganj block lack the middle or upper primary schools while there is only 1 middle school in the sampled villages of Nagrakata block of Jalpaiguri district.

The highest percentage of population with the level of literacy up to secondary school has been obtained in Rajganj block with 26.09% and the lowest in Matiali block with 15.60% (Das, 2018). However, the percentage of the rural population with the level of literacy up to the higher secondary school is considerably low with 8.37% as compared to the percentage of rural population educated up to primary and middle school. It is due to the fact that there is a complete absence of secondary schools in the sampled villages of Jalpaiguri, Maynaguri, Dhupguri, Mal and Nagrakata blocks. Further, except a single higher secondary school in the sampled village of Mal block there is a complete absence of higher secondary school in the sampled villages of the seven blocks of Jalpaiguri district. Besides, lack of awareness and negative attitude of parents in sending children to school, adversely affect the level of literacy in the sampled villages of Jalpaiguri district.

Therefore provision of adequate educational institutions in every village is necessary in order to improve the level of literacy of the rural population in the study area. The

percentage of graduates from the colleges is low with 5.91% as compared to the percentage of rural population with the level of literacy up to primary and middle school.

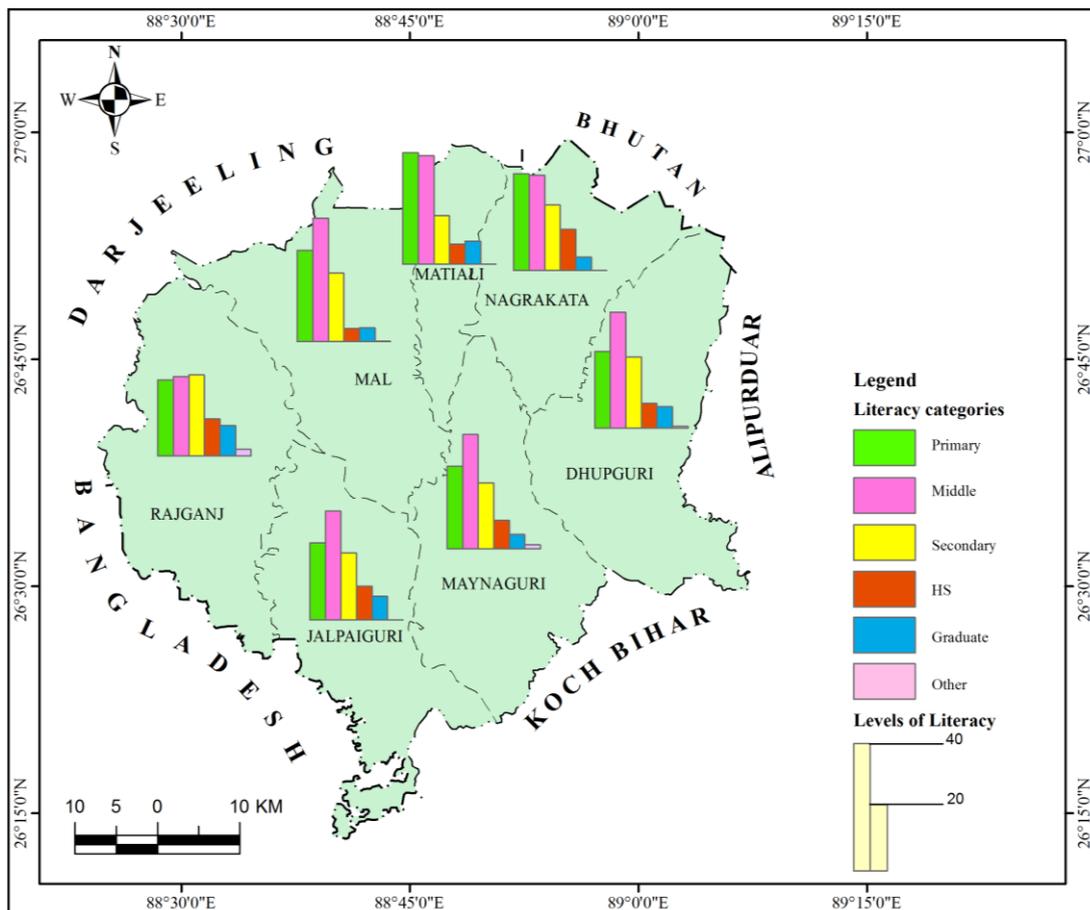


Fig. 5.5: Level of Literate population of Jalpaiguri district

Source- Computed by researcher, 2016

The reason behind the fact is that none of the sampled village has general degree college in Jalpaiguri district. Therefore, development of the higher educational institutions is necessary as higher education always provides a way to better employment in a region. Moreover, owing to the dependency in farm activities and due to abject poverty, the rural population face difficulties in getting affordable access to higher studies.

5.5 Level of Female Literacy

Level of female literacy in any geographical unit is one of the most important indicators to measure the index of development in general and female development in particular (Pant, 2013). Education is an important component of social system and it is essential for the empowerment of an individual and particularly for women. The higher the female literacy, the greater will be the effective participation of women in various developmental and decision making activities in any region. Hence it is always imperative to

make the females literate in order to promote and maintain the education, health, nutrition and socio-economic well-being of the entire family.

Regarding the female literacy in the sampled villages of Jalpaiguri district, Table 5.9 depicts that 26.95% females are educated up to the primary institutions. Matiali block has the highest percentage with 34.78% of females with the level of literacy up to primary school followed by Nagrakata block with 32.18%. As observed during the field visit 2015-2016, a female is meant for domestic chores and therefore least priority has been given in female education. Further, the family compulsion for unskilled household activities restricts the females from continuing higher studies.

However, the percentage of females with the level of literacy up to middle school is remarkably higher with 34.76% than that of the females educated up to primary school with 26.95% (Fig. 5.6).

Table 5.9: Percentage of Female Literates

C.D. Blocks	Primary	Middle	Secondary	Higher Secondary	Graduate	Others
Rajganj	24.69	24.69	29.63	11.11	9.88	0.00
Jalpaiguri	19.48	33.77	23.38	14.29	9.09	0.00
Maynaguri	25.69	33.60	27.27	7.11	4.35	1.98
Dhupguri	28.57	37.00	23.81	6.96	3.30	0.37
Mal	26.09	41.06	24.15	5.31	2.90	0.48
Matiali	34.78	36.96	10.87	8.70	8.70	0.00
Nagrakata	32.18	25.29	24.14	16.09	2.30	0.00
Total	26.95	34.76	24.60	8.39	4.58	0.68

Source- Field survey, 2015-16

The highest percentage has been obtained in Mal block with 41.06% followed by Dhupguri block with 37.00%. This is due to the increasing level of awareness for female education along with the positive impact of the educational programmes implemented in the study area. However, 24.60% females are educated up to secondary schools where, the highest percentage of females has been observed in Rajganj block with 29.63% followed by Maynaguri and Mal blocks. Further, 8.39% females are educated up to the higher secondary schools where 16.09% females has been observed in Nagrakata block followed by Jalpaiguri and Rajganj block in the sampled villages of Jalpaiguri district.

But apart from the level of school education, the level of literacy among the females is not satisfactory regarding college education and higher studies. 4.58% females are graduates and 0.68% females availed higher studies in the sampled villages of the district. Since, there

has been a traditional outlook of the households regarding the female education, therefore either the females get married at an early age or they look after their siblings.

Hence, disparities in the male and female literacy persist in the study area. Though the Government of India as well as the government of West Bengal has implemented a number of educational schemes for the upliftment of quality education yet on the basis of the field survey 2015-16, 37.87% males and 40.58% females are illiterate in the sampled villages of Jalpaiguri district.

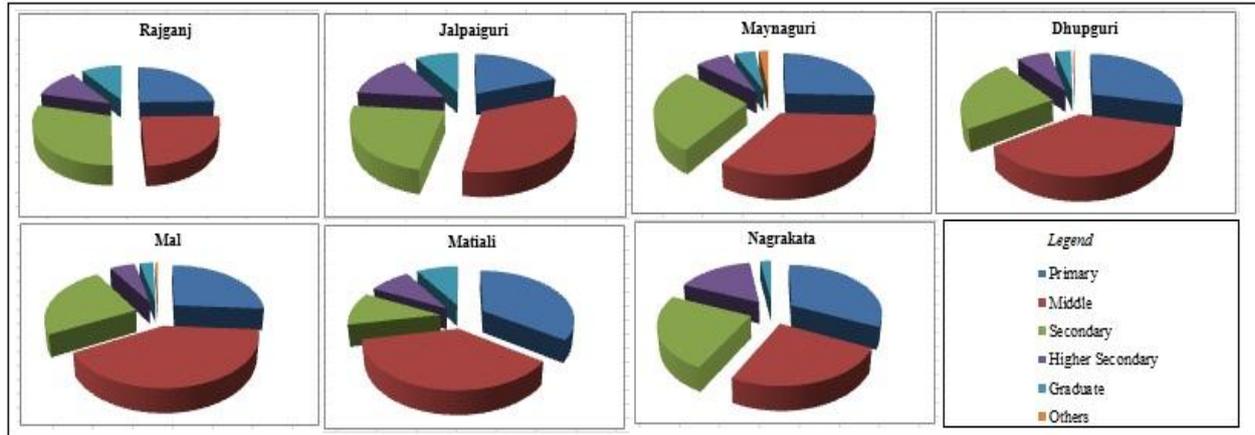


Fig. 5.6: Level of Female Literacy in Jalpaiguri district

Source- Field survey, 2015-16

Therefore, the awareness of the parents regarding sending their children to school has to be increased as it bears a significant impact upon the status of education. However, the government should take more initiatives regarding the allocation of more educational institutions especially higher educational institutions in the study area and emphasis should be given on reduction of gender disparity in literacy rate which in turn will raise the total literacy. The hypothesis as mentioned in the introduction chapter ‘*The higher the level of literacy rate among the females the better is the economic growth in the rural households*’ has been tested here.

Considering the categorical data of the form , ‘A’ corresponds to the *maximum literacy of a female in the given household*, with alternatives as $A_1, A_2, A_3, A_4, A_5, A_6$ which correspond to different levels of literacy as follows:

Table 5.10: Level of Literacy

Notation	Level of Literacy
A_1	Illiterate
A_2	Primary School
A_3	Middle School
A_4	Secondary
A_5	Higher Secondary
A_6	Graduate

Source-Computed by author

‘B’ corresponds to the *monthly household income* with alternatives as B₁, B₂, B₃, B₄, B₅, B₆ which correspond to different levels of monthly family income as depicted in Table 5.11.

Table 5.11: Monthly Household Income

Notation	Monthly Household Income
B ₁	<1000
B ₂	1001-5000
B ₃	5001-10,000
B ₄	10,001-15,000
B ₅	15,001-20,000
B ₆	>20,000

Source-Computed by author

1. Formulation of the statistical hypothesis: The statistical hypothesis can be statistically re-formulated as:-

H₀: There is no association between A (level of literacy) and B (monthly household income)

H₁: There is an association between A (level of literacy) and B (monthly household income)

An appropriate test is the Chi-squared test for independence of attributes taking attribute A as forms of literacy and attribute B as monthly household income (in Rs.)

2. Assumptions for statistically testing the Hypothesis:-

- i) The data is categorical in nature.
- ii) Levels/ Categories are mutually exclusive.
- iii) Each subject contributes to the data in one and only one cell.
- iv) All observations are random and independent.

3. The inference from the Chi-Squared test:-

The respective values for Chi-squared statistic along with their degrees of freedom and p-value have been shown below.

Table 5.12: Observations for each Block

C.D. Blocks	Chi-squared	Degree of freedom	p-value
Rajganj	86.133	20	$3.489*10^{-10}$
Jalpaiguri	121.66	20	$2.2*10^{-16}$
Maynaguri	221.54	20	$2.2*10^{-16}$
Dhupguri	334.49	20	$2.2*10^{-16}$
Mal	202.97	20	$2.2*10^{-16}$
Matiali	106.75	20	$8.697*10^{-14}$
Nagrakata	121.66	20	$2.2*10^{-16}$

Source: Calculated by author

According to Table 5.12 it has been observed that the p-value for all the C.D. blocks are less than the level of significance ($\alpha= 0.05$), hence we reject the null hypotheses and believe that there is an association between the female literate and the monthly household income of the households.

It is the level of education which creates awareness among the women workers about their rights and prepares them to shift their occupational structure from farm operations to non-farm operations. The higher the level of literacy among the rural women the higher they are engaged in the supplementary sources of income. Women who are employed in different economic activities are confined to both permanent and non-permanent or casual works. 35.80% women workers are engaged in different service sectors. It has been observed that the rural women are engaged as casual workers in gram panchayat office, primary health centres and in mini banks. Further they are also engaged as contractual workers or para-teachers in formal and non-formal educational institutions. Besides, the women are found to be employed in essential public services like Anganwadi workers, Anganwadi helpers and ASHA workers.

5.6 Healthcare Facilities

Health is the most important factor for the well-being of humanity. The status of health care facilities is an important indicator of the process of rural development in its social aspects and therefore the variation in the distribution of health services is an indicator towards the disparities in the social development of a region. Since availability of health care facilities plays a crucial role in maintaining the quality of human resources therefore it is regarded as an important indicator of economic and social well-being. *Equitable distribution of healthcare facilities matter a lot for serving the needy population and it is critical in the context of time and space* (Lalmalsawmzauva, 2013).

It has been observed that there is a complete absence of primary health centres in the sampled villages of Jalpaiguri district. However, in terms of Primary Health Sub-Centres (PHSC), Dhupguri block have 7 Primary Health Sub-Centres, followed by Jalpaiguri, Maynaguri and Mal block (Fig. 5.7). Various kinds of vaccination, elementary medicines for ailments are provided by these centres through ANM (Auxiliary Nurse Midwife) workers and male health workers. Besides, ASHA (Accredited Social Health Activist) worker has also been observed in the primary health sub-centres during the course of field survey 2015-16, for the creation of health awareness and provision of curative care facilities for the rural population. However, the supervision of the LHV (Lady Health Visitor) is very irregular in

the study area. The PHSC provides services related to the antenatal and postnatal care along with the prevention of malnutrition in the sampled villages of the district.

According to the field survey 2015-2016, it has been observed that the healthcare services rendered across the sampled villages of the district is inadequate. Table 5.13 represents the healthcare facilities and the inter-block variations in Jalpaiguri district. In order to identify the number of population served by each primary health sub-centre, the ratio of primary health sub-centre and the total population of the sampled villages for each block have been calculated. The ratio reveals a wide range of variation in the study area.

Table 5.13: Healthcare Facilities

C.D Blocks	Total population of sampled villages	Primary Health Sub-Centre	Medicine Shop
Rajganj	5876	1	0
Jalpaiguri	4270	3	0
Maynaguri	12135	3	2
Dhupguri	17705	7	4
Mal	15435	3	0
Matiali	1954	1	0
Nagrakata	5587	1	1

Source: Village and Town Directory, Census, 2011

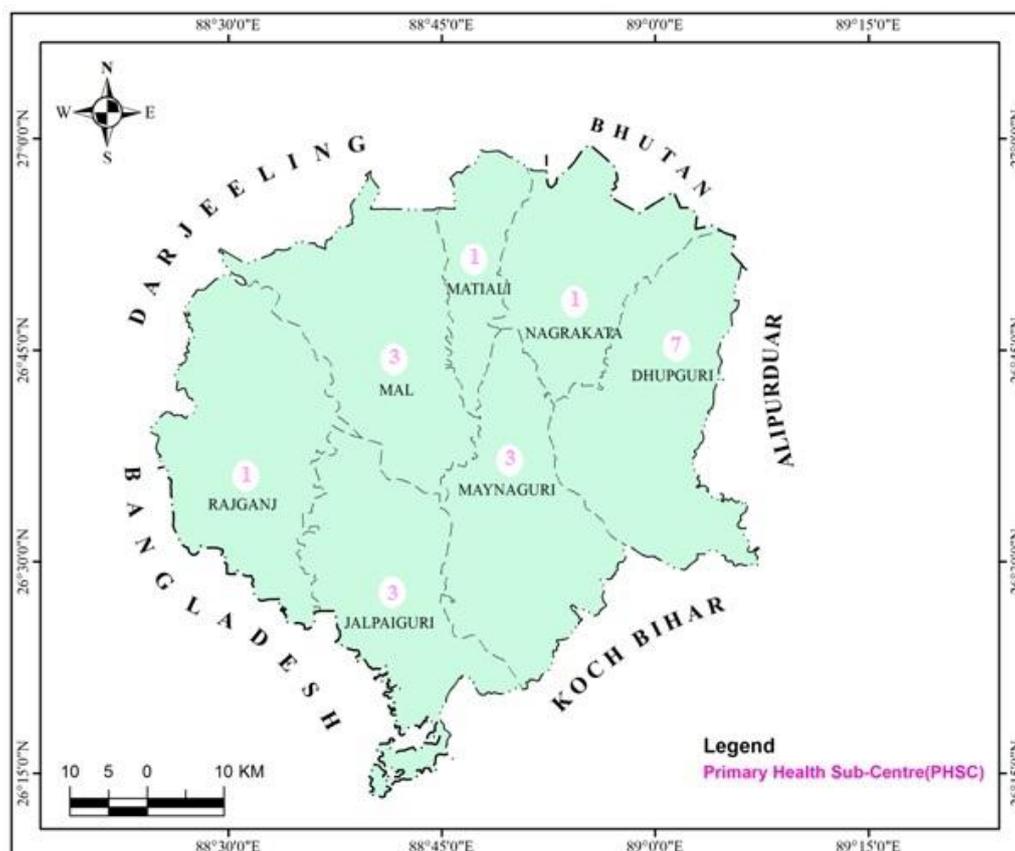


Fig. 5.7: Healthcare Facilities of Jalpaiguri district

Source: Village and Town Directory, Census, 2011

As per norms of the RADPFI, there should be 1 primary health sub-centre for 5000 rural population in the plain areas. In Rajganj block the ratio for health centre and the rural population of the sampled villages is 1:5876 which is higher than the guidelines of RADPFI; similarly, the ratio is again higher for Mal block with 1:5145 and Nagrakata block with 1:5587. Hence, establishment of adequate health centres and health care facilities is necessary for the provision of basic health care services in the sampled villages of Rajganj, Mal and Nagrakata blocks of Jalpaiguri district.

However, the ratio observed for primary health sub-centre and rural population in Maynaguri block is 1:4045, likewise for Dhupguri block the ratio is 1:2529, for Jalpaiguri block the ratio is 1:1423 and for Matiali block the ratio is 1:1954, which is less as per the RADPFI guidelines. In terms of the numbers of medicine shops in the sampled villages of Jalpaiguri district, there is an availability of 7 medicine shops catering to the needs of the rural people. Thus the numbers of medicine shop is inadequate for the large scale rural population in the sampled villages of the district.

5.6.1 Medical Facilities

Disparities in the availability of health facilities should be brought down by providing proper accessibility to the health services because health development directly benefits the individuals (Rao, 1984). In the context of socio-economic development and the status of health care facilities of an area, staffs, beds and wards are the basic medical facilities which should be adequate in numbers in order to provide easy access to health care facilities in the rural areas. It has been observed that there are disparities on the availability of institutional beds as it ranges from a single bed facility in Rajganj and Maynaguri blocks to 25 bed facilities in Dhupguri block (Fig 5.8).

Table 5.14: Medical Facilities

C.D. Blocks	Staffs	Beds	Wards
Rajganj	1	1	1
Jalpaiguri	2	2	2
Maynaguri	3	1	1
Dhupguri	4	25	5
Mal	2	6	1
Matiali	2	2	2
Nagrakata	1	1	1
Total	15	38	13

Source- Field survey, 2015-16

During the field survey 2015-2016, the households revealed that, there is no easy access to well-equipped health centres and the availability of trained doctors in the rural sub-

centres. The medical staffs intend to provide their service in private sectors rather than government primary health sub-centres in the rural areas.

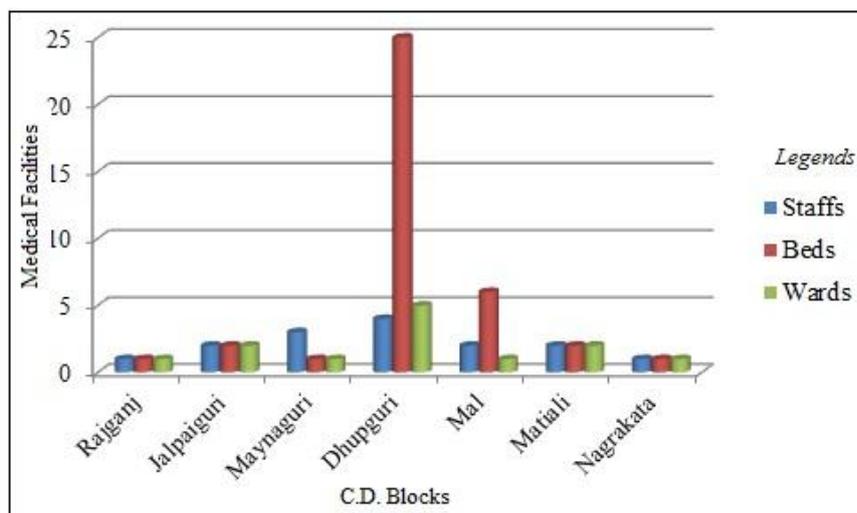


Fig. 5.8: Medical Facilities in Jalpaiguri district

Source- Computed by researcher, 2016

From Table 5.14 it has been noted that are 15 medical staffs, 38 numbers of beds and 13 wards available in the study area (Fig. 5.8). However, inadequate number of wards, beds, medicine supply, unavailability of medical staffs, poor care of patients and poor sanitary facility within the primary health sub-centre has been the major problem in the study area. Moreover, the sub-centres are functioning in a single room therefore lack of specialized services due to lack of infrastructure is further aggravating the problem in the sampled villages of Jalpaiguri district.

Health care facilities of a rural area are dependent on the availability of health care facilities because the issue of accessibility is dependent upon the availability of the health care services. It has been observed that the healthcare services rendered across the sampled villages of the district is not satisfactory and therefore there is an urgent need of the quantitative expansion of the healthcare services in terms of wards, beds and medical staffs with adequate infrastructural facilities in every village. Furthermore, there should be adequate provision of PHC in order to meet the health care needs of the rural masses of the district.

5.6.2 Type of Medicine

Though allopathic medicines are very popular yet a number of households have been observed in the sampled villages of Jalpaiguri district preferring homeopathic medicines with 31.20% and ayurvedic medicines with 11.92% for their health care needs. During the field survey 2015-16, it has been observed that, Matiali block has the highest percentage of households with 82.50% preferring allopathic medical provision for the health

care needs followed by Rajganj and Jalpaiguri block. However, from Table 5.15 it has been noted that in terms of homeopathy and ayurvedic medicines Nagrakata block has the highest percentage of households with 53.09% preferring homeopathy medicine and 24.69%

Table 5.15: Percentage of Households Adopting the Type of Medicine

C.D. Blocks	Allopathy	Homeopathy	Ayurveda
Rajganj	76.92	13.85	9.23
Jalpaiguri	74.58	15.25	10.17
Maynaguri	58.52	31.25	10.23
Dhupguri	66.03	22.97	11.00
Mal	43.00	47.00	10.00
Matiali	82.50	2.50	15.00
Nagrakata	22.22	53.09	24.69
Total	56.86	31.20	11.92

Source- Field survey, 2015-16

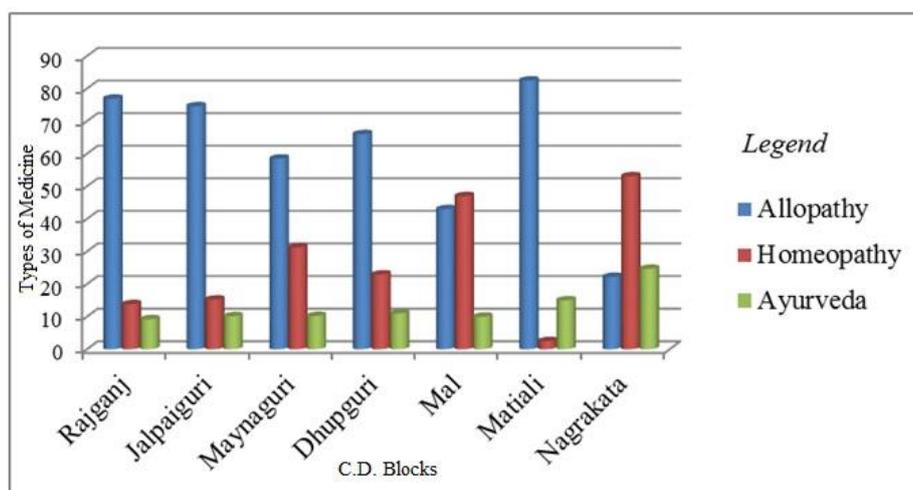


Fig. 5.9: Type of Medicine in Jalpaiguri district

Source- Computed by researcher, 2016

households preferring Ayurveda medicines followed by Mal block with 47.00% households preferring homeopathy medicine (Fig. 5.9). The households revealed during the field survey 2015-16, that the preference of the rural population for the homeopathic medicines is high with respect to allopathic medicines for the long term diseases in order to avoid adverse effects of allopathic medicines. Further, apart from homeopathic and allopathic medical provision it has been observed that the rural population depends upon Ayurveda medicines as these medicines are prepared from the herbal material or the natural systems and are also available at lower prices in the rural areas. However, this reflects the traditional outlook of the rural masses in the sampled villages of Jalpaiguri district.

5.7 Housing Structure

Housing is an indispensable need of people. Food, clothing and shelter are the three basic requirements for the survival of human beings and the function of a house is to provide shelter to the people. It is usually felt that every person would like to have a well-equipped house of his own. The quality and nature of houses is a reflection of the socio-economic condition of the households. Government of India has implemented a number of rural housing schemes which aims at providing dwelling houses to the poor families who are below poverty line in the rural areas of the country.

However, Census of India (1961) classified houses based on the type of predominant wall and roof materials. A house will be called as *pucca* when the roof and walls will be constructed with brick, GI or other metal sheets and cement. A wall and the roof of a house will be treated as *kutcha* if the material used includes mud, unburnt brick, bamboos or leaves. Further a house will be considered as *semi-pucca* when either the wall or the roof is built by the combination of both *kutcha* and *pucca* materials.

5.7.1 Roof Type

Table 5.16 depicts the block wise roof type condition of the households in the sampled villages of Jalpaiguri district. The material used for the construction of houses reflects the social and the economic condition of the rural households in the study area. According to the field survey 2015-2016, it has been observed that 78.67% households have the roof build with GCI sheets in the sampled villages of Jalpaiguri district. The highest percentage of households has been observed in Matiali block with 90.00% followed by Nagrakata block with 87.65%.

Table 5.16: Roof Type of the Percentage of Households

C.D. Blocks	GCI sheets	Asbestos	Pucca	Kutcha
Rajganj	78.46	15.39	6.15	0.00
Jalpaiguri	59.32	28.82	8.47	3.39
Maynaguri	71.02	17.05	0.57	11.36
Dhupguri	82.30	5.74	3.83	8.13
Mal	86.5	3.00	1.50	9.00
Matiali	90.00	2.50	2.50	5.00
Nagrakata	87.65	3.70	0.00	8.65
Total	78.67	9.75	3.01	8.55

Source- Field survey, 2015-16

Again, it has been observed that 9.75% households have asbestos roof in the study area where the highest share of households has been obtained in Jalpaiguri block with 28.82% and the lowest percentage of households has been found in Matiali block with 2.50%. However, it has been found during the field survey, that only 3.01% households have pucca

roof in the study area where 8.47% households have been found in Jalpaiguri block and 0.57% has been found in Maynaguri block. Hence there exists variability in the roof type of the rural households in the study area. This is due to the fact that building pucca houses, the roof type in particular is beyond the affordability of the rural masses in the study area.

Due to high incidence of poverty and low income the rural population is unable to construct pucca houses. Hence, 8.55% of the households have been found with kutcha roof in the sampled villages of Jalpaiguri district. Poor housing structure affect the level of social development in the rural area. Moreover during monsoon or during the heavy downpour the leaking kutcha roofs have been a major problem for the rural masses.

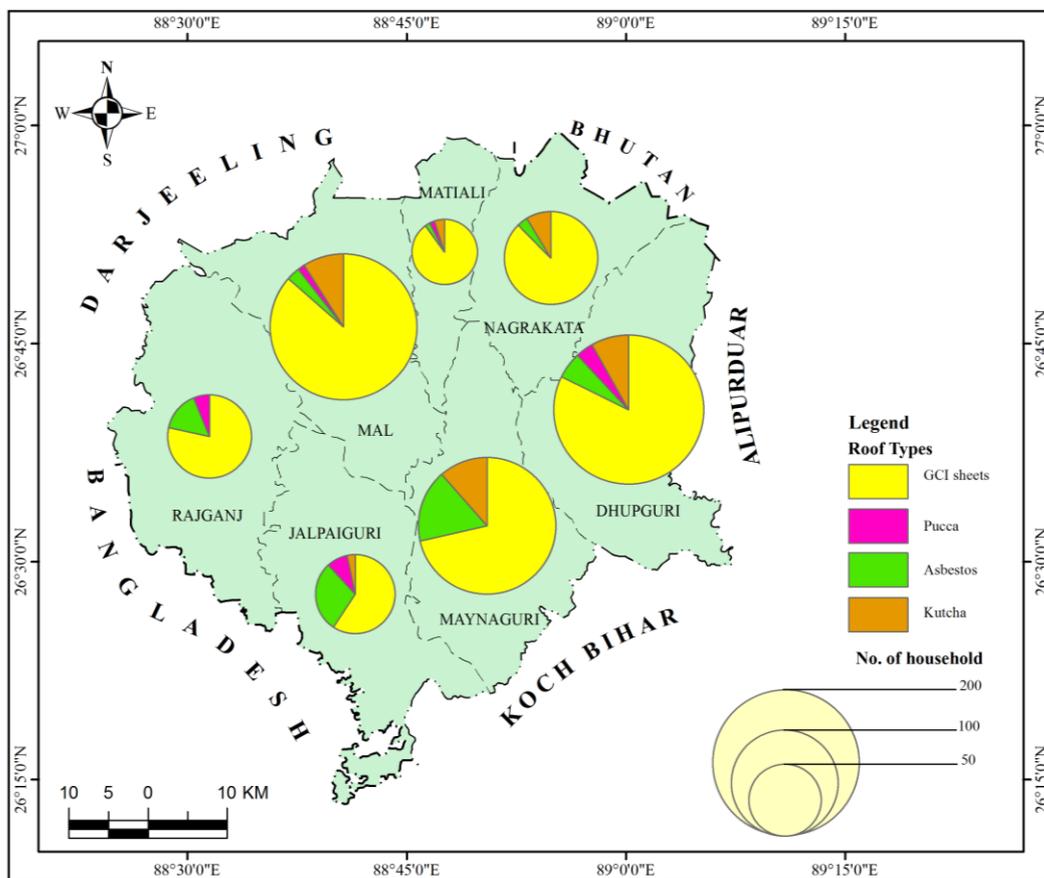


Fig. 5.10: Roof Type in Jalpaiguri district

Source- Computed by researcher, 2016

The percentage share of the kutcha roof is high in Maynaguri block with 11.36% households while none of the household in Rajganj block has kutcha roof due to the higher proportion of asbestos and GCI sheets roof houses (Fig. 5.10). However during the field survey 2015-16, it has been observed, that the percentage of kutcha roof type is considerably low as compared to the roof build with asbestos or GCI sheets. The reason behind the lower percentage of kutcha roof type is attributed to the implementation of the Rural Housing

Programmes which provided financial assistance to the weaker sections of the rural areas for the construction of new pucca houses in the sampled villages of Jalpaiguri district.

5.7.2 Wall Type

Table 5.17 depicts the wall type of the rural houses in the sampled villages of Jalpaiguri district. 17.22% households has been observed with pucca wall in the study area where the highest percentage of households has been observed in Rajganj block with 46.15% and the least has been observed in Mal block with 5.50%. It is due to the fact that 82.00% households have kutcha houses in Mal block (Fig. 5.11).

It has been observed during the field survey 2015-16, that the poor economic condition and the occurrence of poverty has been reflected by the type of houses in the rural areas of the study area. Despite the implementation of the rural housing schemes for the families below poverty line, there are 66.38% households observed with kutcha wall houses in the study area. The percentage share of houses having kutcha wall is higher in all the blocks as compared to the pucca wall. In terms of kutcha wall, the highest percentage has been observed in Mal block with 82.00% whereas the least percentage has been observed in Matiali block with 42.50%. The tea garden labourers, daily wage earners, agricultural land less laboureres in particular have kutcha houses in the study area. Further, 7.46% households have been found with GCI sheets wall where the highest percentage has been found in Dhupguri block with 14.35% followed by Maynaguri block.

Table 5.17: Wall Type of the Percentage of Households

C.D. Blocks	Pucca	Kutcha	GCI sheets	Wooden
Rajganj	46.15	50.77	1.54	1.54
Jalpaiguri	33.90	61.02	5.08	0.00
Maynaguri	11.36	72.72	13.64	2.27
Dhupguri	20.09	60.29	14.35	5.26
Mal	5.50	82.00	4.00	8.50
Matiali	15.00	42.50	7.50	35.00
Nagrakata	12.35	56.79	0.00	30.86
Total	17.22	66.38	7.46	8.91

Source- Field survey, 2015-16

Whereas in Nagrakata block none of the houses have been found with GCI sheets wall as 56.79% households have kutcha houses. Likewise, 8.91% has been observed with wooden wall type houses in the sampled villages of the district. The highest proportion of households has been observed in Matiali block with 35.00% followed by Nagrakata block. Hence, the percentage of rural population living in kutcha houses reflects their poverty and economic

backwardness. Moreover the poor quality of the housing material creates an unhygienic condition particularly during rainy season.

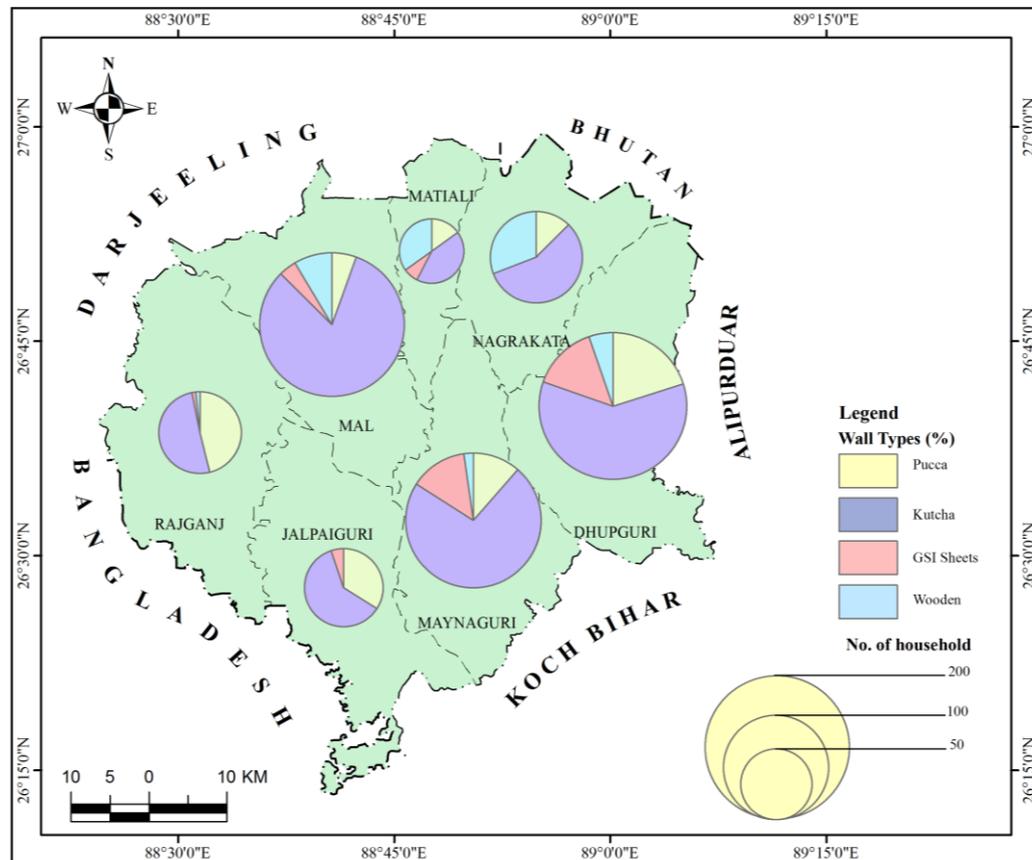


Fig. 5.11: Wall Type in Jalpaiguri district

Source- Computed by researcher, 2016

5.7.3 Floor Type

Table 5.18 depicts the floor type of the rural households in the sampled villages of Jalpaiguri district. During the field survey 2015-16, 25.30% households has been observed with pucca floor where the highest share of households has been obtained in Rajganj block with 50.77% whereas the least has been observed in Mal block with 12.00%, as 88.00% households has been found with kutcha floor in the sampled villages of the Mal block (Fig. 5.12). However, despite the implementation of the rural housing schemes by the government the households with kutcha floors are significantly high with 74.69% in every block in comparison to pucca floors in the sampled villages of Jalpaiguri district.

The major reason behind this fact is the poor socio-economic condition of the rural households. Therefore adequate housing facility for the weaker sections of the people in the rural areas of Jalpaiguri district is essential as leaking roofs, large cracks in walls and damaged floors have an adverse effect upon the health and hygiene of the rural masses in the study area.

Table 5.18: Floor Type of the Percentage of Households

C.D. Blocks	Kutcha	Pucca
Rajganj	49.23	50.77
Jalpaiguri	66.10	33.90
Maynaguri	79.55	20.45
Dhupguri	75.60	24.40
Mal	88.00	12.00
Matiali	67.50	32.50
Nagrakata	82.72	17.28
Total	74.69	25.30

Source- Field survey, 2015-16

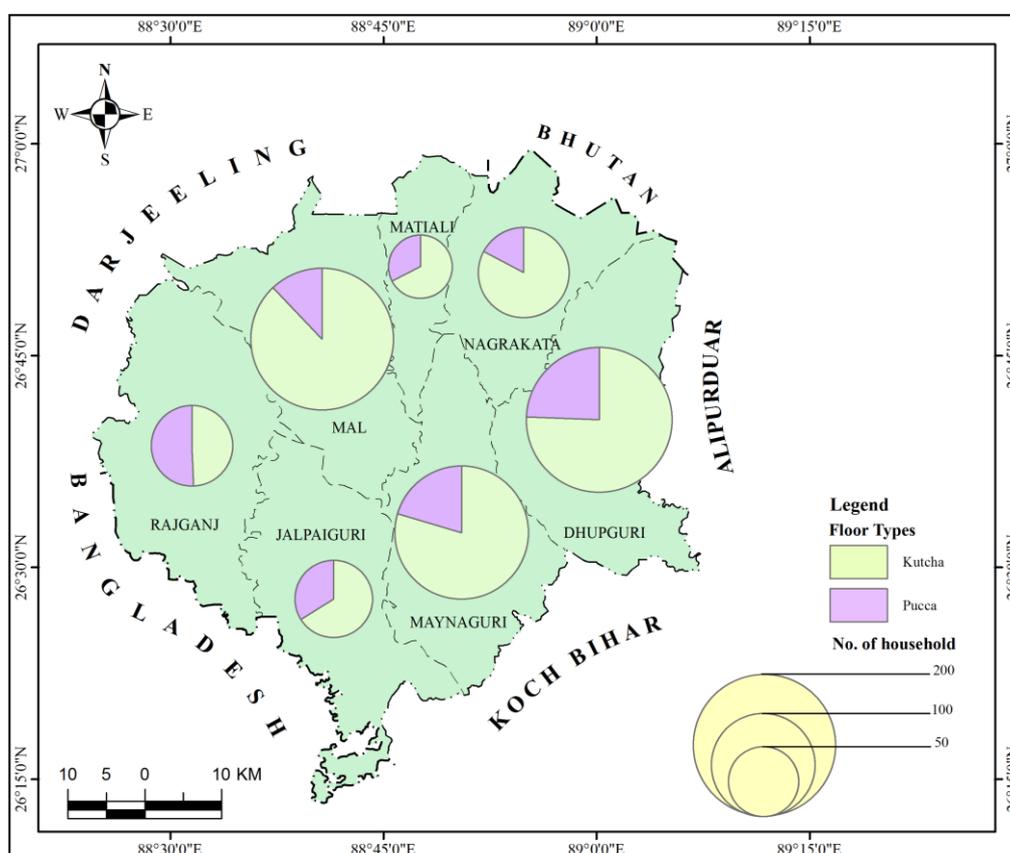


Fig. 5.12: Floor Type in Jalpaiguri district

Source- Computed by researcher, 2016

5.7.4 Kitchen Type

The type of kitchen is one of the indicators of the quality of housing. Place of cooking or domestic kitchen is not only important for a family but also significant factor in establishing healthy environment in the households.

Table 5.19 reveals that majority of the households have a separate built kitchen where Rajganj block has the highest percentage of households with 81.53% and Matiali block has the least percentage of households with 62.5%. The separate kitchen however symbolizes the

bigger size of landholding of the household. As far as combined kitchen is concerned, 14.09% households has combined kitchen in the study area where 23.73% households in Jalpaiguri block have their kitchen attached with their rooms whereas the lowest percentage of households with combined kitchen type has been observed in Nagrakata block with 11.11%.

Table 5.19: Kitchen Type of the Percentage of Households

C.D. Blocks	Separate	Combined	None
Rajganj	81.53	13.85	4.62
Jalpaiguri	74.58	23.73	1.69
Maynaguri	72.73	11.93	15.34
Dhupguri	64.59	13.40	22.01
Mal	67.00	14.50	18.50
Matiali	62.5	20.00	17.5
Nagrakata	67.90	11.11	20.99
Total	69.39	14.09	16.50

Source- Field survey, 2015-16

However, it is a matter of concern that 16.50% households observed in the study area with a complete absence of a built kitchen within their premises. The highest share of household with the absence of a built kitchen has been observed in Dhupguri block with 22.01% and the least has been obtained in Jalpaiguri block with 1.69%. Cooking in an open ground is not suitable for health as it reflects the unhygienic condition of the rural household in the sampled villages of the district.

5.7.5 Room density

Room density is a useful index reflecting the housing conditions of an area. It is an indicator of the availability of space within a dwelling unit. Room density refers to the number of persons per room.

Table 5.20: Room density in Jalpaiguri district

C.D. Blocks	Population of the sampled households*	Number of rooms*	Room density**
Rajganj	326	130	3
Jalpaiguri	278	113	2
Maynaguri	872	343	3
Dhupguri	925	404	2
Mal	915	370	2
Matiali	183	73	3
Nagrakata	360	140	3

*Source- *Field survey, 2015-16*

***calculated by author*

Since the number of rooms indicates the level of congestion in the house therefore it is a crucial factor in judging the quality of housing. Further availability of adequate space is also a reflection of the socio-economic status of the households. *In general, 1 person or fewer per room is regarded as desirable and 1.51 or more persons per room may be defined as crowded housing* (Bogue, 1969). Table 5.20 discloses that the room density ranges between 2 to 3 persons per room in the sampled villages of the district.

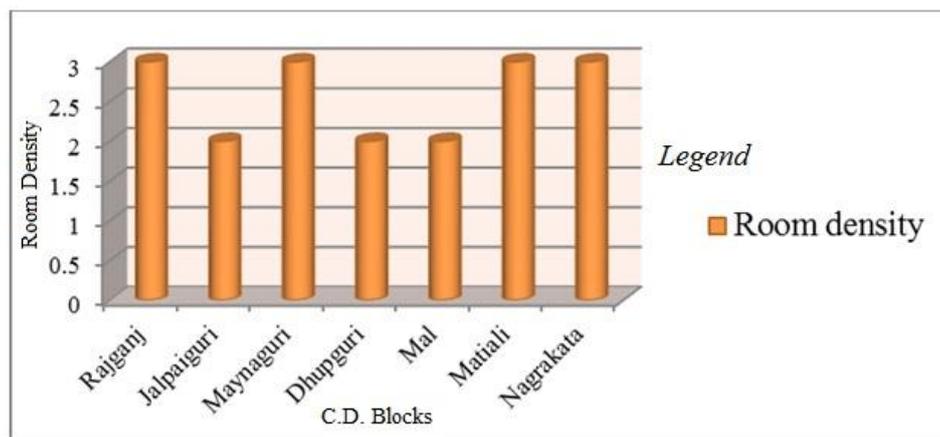


Fig. 5.13: Room density in Jalpaiguri district

Source- Computed by researcher, 2016

Except in Jalpaiguri, Dhupguri and Mal blocks the density is 3 persons per room in Rajganj, Maynaguri, Mal, Matiali and Nagrakata blocks (Fig. 5.13). However it has been observed that none of households have adequate space because in every blocks of the study area, there is more than one person per room which reflects the problem of residential crowding in the households.

5.8 Sanitation

Access to sanitation is not only an important measure of the socio-economic status of the household but also it is a fundamental element to the hygienic health of the people. Absence of sanitary facilities within the household premises of the rural areas of the district forces the rural masses to resort to open defecation which leads to many public health hazards. Table 5.21 reveals the percentage of households with sanitary facilities within their premises, the percentage of beneficiary households and the percentage of households without any sanitary facility within their premises. The highest share of households having the sanitary facilities within their dwelling house has been obtained in Jalpaiguri block which is 62.71 % whereas the lowest has been found in Matiali block at 2.50% (Fig. 5.14).

It is evident from the Table 5.21 that, the highest proportion of households having access to government facilitated rural sanitation has been obtained in Mal block with 18.00% under the target of Swachh Bharat Mission (SBM), Ministry of Drinking Water and

Sanitation, whereas the least percentage of household has been found in Rajganj block with 1.54%.

Table 5.21: Sanitation Facilities of the Percentage of Households

C.D. Blocks	Within premises	Within premises (Government Facilitated)	Without sanitation facility
Rajganj	46.15	1.54	52.31
Jalpaiguri	62.71	6.78	30.51
Maynaguri	27.27	16.48	56.25
Dhupguri	22.49	14.83	62.68
Mal	14.5	18.00	67.5
Matiali	2.50	12.50	85.00
Nagrakata	14.82	14.81	70.37
Total	25.18	14.21	60.60

Source- Field survey, 2015-16

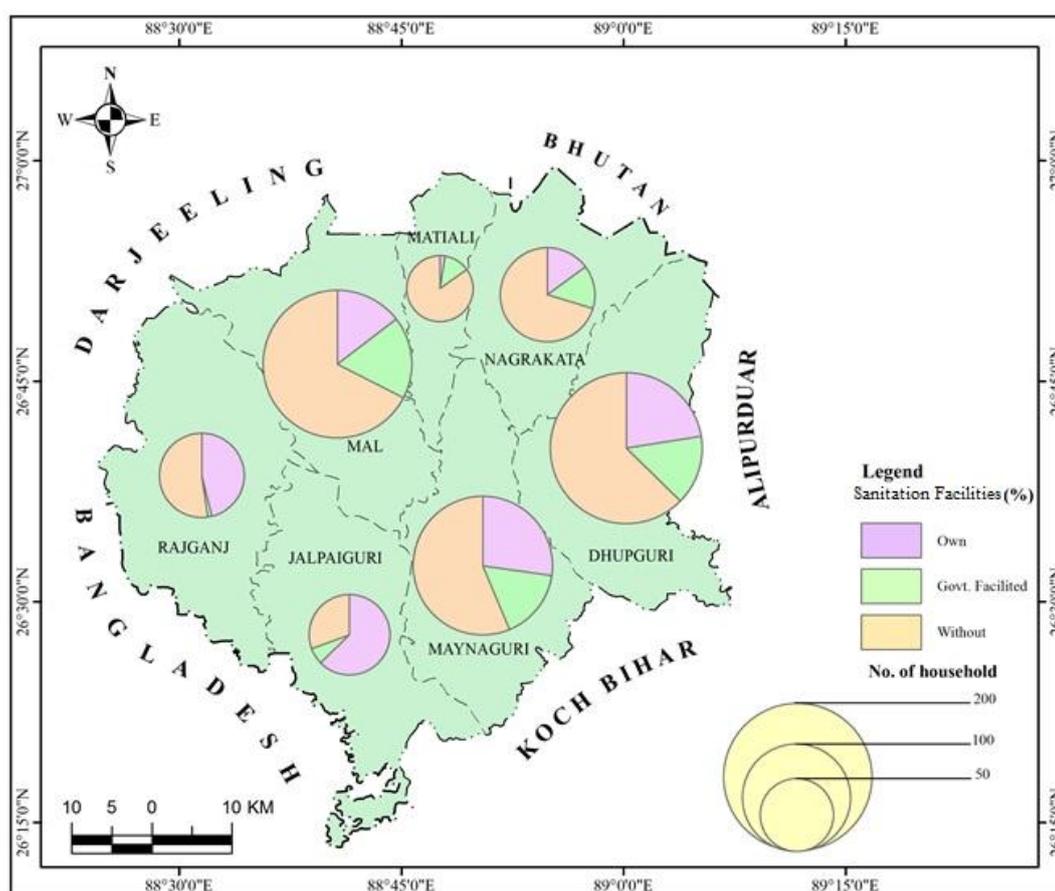


Fig. 5.14: Sanitation Facilities in Jalpaiguri district

Source- Computed by researcher, 2016

However, it has been observed during the field survey period 2015-2016, that the state of sanitation facilities is in the worst condition as 85.00% sampled households of Matiali block are deprived of sanitation facility and basic hygiene within their premises, followed by Nagrakata block with 70.37%. The failure to achieve 100 percent sanitation coverage by the

Swachh Bharat Mission as a whole in the study area is due to the fact that the investments that are made in rural sanitation do not yield proportionate results because of poor planning and implementation.

Hence, though funds are available, the skills of the concerned officials are lacking regarding the proper implementation of the schemes in the study area. Moreover, it has been observed that there is an urgent need to increase the level of awareness and knowledge of the rural population regarding the hygienic practices in the study area.

5.9 Women's Awareness

For the economic and the social development in the rural areas it is important to assess women's awareness in terms of literacy, family planning, employment and decision making. Literally, *educational opportunities and the empowerment of women go hand-in-hand* (Jha, and Dutta, 2014). Table 5.22 represents that 46.02% women are aware about the importance of literacy in Maynaguri block followed by Dhupguri block. However, it has been observed that the rural women have the awareness regarding the quality education. Hence, the effect of education has lead the women to understand the value of small family size adopting family planning methods as has been observed during the field survey 2015-16.

Table 5.22: Awareness of Women (in percentage)

C.D. Blocks	Literacy	Family planning	Employment	Decision making
Rajganj	43.08	21.54	29.23	6.15
Jalpaiguri	38.98	15.26	32.20	13.56
Maynaguri	46.02	13.64	27.84	12.50
Dhupguri	44.98	14.83	26.79	13.40
Mal	41.50	15.00	29.00	14.50
Matiali	42.50	17.50	27.50	12.50
Nagrakata	29.63	22.22	40.74	7.41

Source- Field survey, 2015-16

The economic condition of the household is of prime concern in determining the structure of employment for the rural women. However, 40.74% women in Nagrakata block followed by Jalpaiguri block are aware of the scenario that proper employment is necessary for a better socio-economic status.

The highest percentage of women regarding their participation in decision making has been obtained in Mal block followed by Jalpaiguri block reflecting women's empowerment in the study area. During the field survey 2015-16 it has been observed, that the women age group between 25-35 years participates the highest in their household decision making activities.

5.10 Level of social development

Social development holds the key role in the process of rural development. An attempt has been made to find the disparities in the level of social development in the sampled villages of the 7 community development blocks of Jalpaiguri district. Based on the indices that support the level of social development the blocks has been classified into high, moderate and low level of social development which clearly depicts the disparities in the level of social development in Jalpaiguri district. Z-score and composite score technique has been applied for identifying the level of development based on the scores of social development.

For the analysis of the data the following thirteen components have been taken into account affecting the level of social development: number of primary school per 5000 of population (X_1), Number of middle school per 5000 of population (X_2), Number of SSK per 5000 of population (X_3), Number of MSK per 5000 of population (X_4), Percentage of male literate (X_5), Percentage of female literate (X_6), Number of primary health sub centres per 5000 of population (X_7), Number of medical staffs per 5000 of population (X_8), Number of beds per 5000 of population (X_9), Number of wards per 5000 of population (X_{10}), Percentage of household with pucca roof (X_{11}), Percentage of household with pucca wall (X_{12}), Number of household with sanitation (X_{13}).

Table 5.23: z-score of Social Development in the blocks of Jalpaiguri district

C.D. Blocks	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	Composite scores
Rajganj	-0.73	-0.92	0.65	-0.92	0.08	0.14	-0.84	-0.56	-0.72	-0.07	0.92	1.77	0.91	-0.02
Jalpaiguri	0.03	0.79	-0.15	-0.92	-0.89	0.60	1.76	0.37	-0.12	0.06	1.67	0.92	1.71	0.45
Maynaguri	-0.51	-0.62	-0.68	0.41	-0.17	0.54	-0.47	-0.32	-0.89	-0.11	-0.87	-0.64	0.003	-0.34
Dhupguri	-0.29	-0.20	-0.21	0.70	1.02	1.00	0.26	-0.38	1.76	-0.01	0.17	-0.03	-0.22	0.27
Mal	-0.28	-0.33	-0.95	0.00	1.38	0.29	-0.72	-0.68	-0.28	-0.12	-0.57	-1.05	-0.61	-0.30
Matiali	2.20	1.90	1.94	-0.92	0.04	-1.95	0.83	2.12	0.98	0.33	-0.25	-0.39	-1.19	0.43
Nagrakata	-0.40	-0.60	-0.57	1.66	-1.48	-0.63	-0.80	-0.53	-0.70	-0.06	-1.06	-0.57	-0.59	-0.49

Source- Calculated by Author

Besides, for analyzing the development scenario in the study area as a whole, the z-scores of all the variables have been aggregated block wise. The summed up z-scores are divided by the number of variables in order to derive the composite score and compare the degree of social development in CD Blocks. Jalpaiguri district displays wide disparities in the level of social development. Table 5.23 depicts the z-score values for social development in the blocks of Jalpaiguri district.

Table 5.24: Level of Social Development

Category	Z score range	Name of the Blocks
Low	<-0.2	Maynaguri, Mal, Nagrakata
Moderate	-0.2 – 0.1	Rajganj
High	>0.1	Jalpaiguri, Dhupguri, Matiali

Source- Calculated by Author

Table 5.24 depicts high level of social development based on composite standard scores has been observed in Jalpaiguri (0.45), Dhupguri (0.27) and Matiali (0.43) blocks of Jalpaiguri district. The main variables which appear to have influenced the high level of social development include the educational institutions, health care facilities, housing structure, and medical facilities which are adequate in these blocks. The formal, non-formal educational institutions and the primary health sub centres are uniformly distributed in these blocks. Further, owing to the provision of assistance from the rural housing schemes the pucca houses are constructed in these blocks contributing to better level of social development.

However, Rajganj (-0.02) block displays moderate level of social development. Availability of educational institutions, numbers of primary health sub-centres along with the number of medical facilities are inadequate in the sampled villages of the block. Moreover, in Rajganj block the ratio for health sub-centres and the rural population of the sampled villages is higher than the RADPFI guidelines; therefore there is an immediate need for the improvement of healthcare facilities in the sampled villages of the block. Maynaguri (-0.34), Mal (-0.30) and Nagrakata (-0.49) block falls in the lowest category in terms of social development. Except for the number of MSK, negative scores have been obtained in all the variables of the blocks. The blocks lack the adequate number of formal and non-formal educational institutions. The blocks do not have adequate primary health centres. Thus, they have inadequate medical staffs, beds and wards, leading to backwardness in terms of social development. Besides, the proper housing structure and the sanitation facilities which are the basic component of social development in rural areas are inadequate in these blocks of Jalpaiguri district.

Hence, there is a need to conduct strategies, and the government should adopt holistic approaches that could cater to underdeveloped blocks of the district for the balanced regional development.

5.11 Conclusion

From the above discussion it can be concluded that the social infrastructure in terms of health, education and sanitation facilities are inadequate in the rural areas of Jalpaiguri

district. Educational institutions form the backbone of the whole educational system but it has been noticed that there is only one higher secondary school in the sampled villages of Jalpaiguri district. Therefore, construction of higher educational institutions is necessary as higher education always provides a way to better employment and educational development. Considering the student-teacher ratio of the state 40:1, it has been observed that the ratio is lower for primary school and middle school whereas it is high for the higher secondary school in the rural areas of Jalpaiguri district. In terms of literacy Jalpaiguri district has witnessed, 62.13% males and 59.42% females are literate, whereas, 37.87% males and 40.58% females are illiterate. In this context, access to quality education for the rural population should be increased with proper infrastructural facilities in order to lower the level of illiteracy from the sampled villages of the district.

It has been observed that the healthcare services rendered across the sampled villages of the district is inadequate. Out of the total seven blocks, there is a complete absence of Primary Health Centre (PHC) in the sampled villages of the district. In terms of Primary Health Sub-Centres (PHSC), Dhupguri block has 7 Primary Health Sub-Centres catering to the needs of the rural people. Apart from education and health, housing is an indispensable need for healthy living. Interestingly, the proportion of kutcha roof is considerably low as compared to the roof build with asbestos or GCI sheets and the reason behind this is attributed to the Rural Housing Programmes which have provided assistance in the construction of houses. But regarding sanitation facilities, there has been a failure in achieving 100 percent sanitation coverage by the Swachh Bharat Mission in the study area. The reason behind this fact is the poor planning, implementation and execution of the programmes for rural sanitation in the sampled villages. Hence for the process of social development extension of facilities in areas like education, health, medical care, housing and sanitation is of immense significance.

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Economic Structure and Rural Development**6.1 Introduction**

‘Economic development includes economic growth and it encompasses questions regarding patterns of production, distribution of national income, consumption behavior of the people and concern for environment’ (Mukundan, 2009). Katar Singh states that ‘the economic perspective of rural development emphasizes the materialistic dimension of development, which is measured by the rate of growth in real per capita income’. Traditionally development and economic growth have been considered to be similar but with time development involves the result of intricate relationships of the social, economic and infrastructural sectors. The concept of economic structure and rural development emphasizes the economic indicators of the society which reflects the development in the rural areas. Economic development in this context implies improvement of the quality of life of rural masses through a reduction on their poverty. Since, a large number of rural population in India is engaged in agriculture therefore in any scheme of economic development of the country, agricultural sector holds a position of basic importance. Hence, agriculture and allied activities occupy a vital position in the Indian rural economy.

The process of development in the rural areas has many dimensions which involve the re-organization of the overall economic, social and infrastructural systems. Increasing the employment opportunities, reducing the number of people living below poverty line and raising the standard of living reveals the country’s economic development. Hence, the objective of economic development in rural areas includes the improvements of the well-being of rural masses, especially with persons of lowest incomes, and shifts the structure of economy away from farm towards the non-farm economic activities. Thus, economic development means *‘growth of output per capita, reduction of poverty, growth of employment and change in the sectoral composition of output and labour use’* (Thakur, 1991).

6.2 Land Utilization Pattern

Land is a basic resource to man and the efficiency of all the socio-economic and cultural functions of an area depends upon it. *‘The study of land utilization pattern in a region enables the planners to understand how well and efficiently the land is being put to productive use and suggest possible areas of interventions’* (Pant, Pandey, 2004).

The general land-use pattern implies how the land is put into different types of economic and other uses. *‘Analysis of land utilization pattern is an important aspect of agricultural planning as it provides a basis to understand the typology of development at*

micro-level' (Rao, 1984). The study of land utilization pattern in Jalpaiguri district has been taken into account and out of the total geographical area of the land (Fig.6.1), 510.44 km² of its land is under arable irrigated land, as large as 1173.42 km² land in the district is arable unirrigated land, the tea garden area covers 425.94 km², 639.35 km² of the area is covered by the forests, the urban settlement covers 26.80 km² area and the remaining 268.05 km² area is under the rivers and waterbeds (Census, 2011).

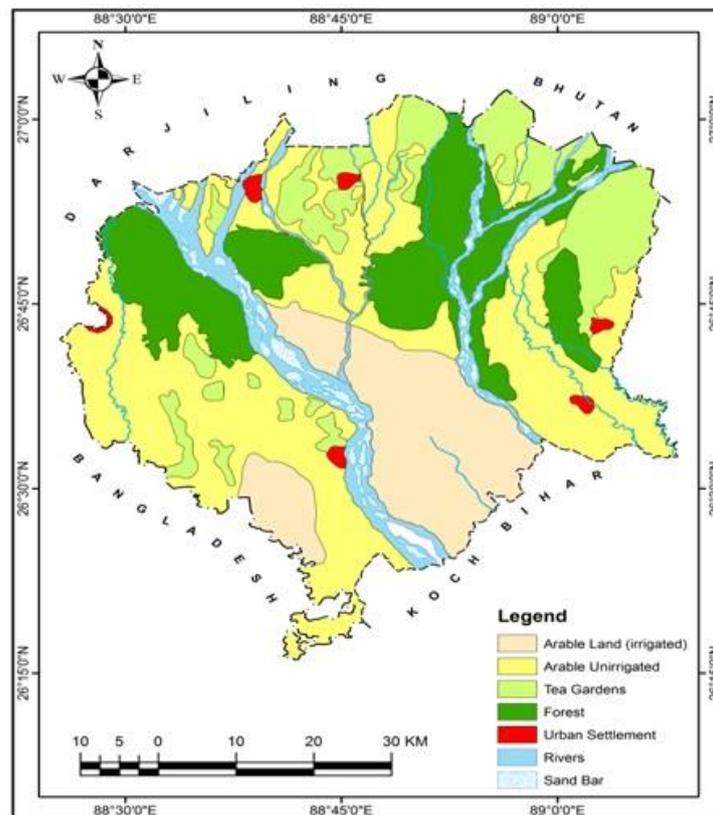


Fig. 6.1: Land use map of Jalpaiguri district

Source-NATMO, 2011

Since the economy of the rural areas of Jalpaiguri district is predominantly agriculture based therefore it will be worthwhile to study the land utilization pattern, the non-availability of land for cultivation (build up area), the availability of land for cultivation, the size of land holding pattern, cropping pattern and the remaining size of wastelands of the rural sampled households. The entire data has been collected through field survey, 2015-16 from the sampled households of Jalpaiguri district.

6.3 Build-up area

This category of land includes the area under non-agricultural uses, i.e. area covered by settlements, shops, temples, animal sheds, ponds, etc. During the field survey 2015-16, in the sampled villages of Jalpaiguri district, it has been noted that the land available for cultivation up to 2 decimal is accounted to be highest in Mal block with 14.00% followed by

Dhupguri block with 10.53% due to the fact that these households are involved in non-farm activities as well as it has also been observed that the households have occupied the areas for the building of houses.

Table 6.1 depicts that the percentage of households who have 2 to 4 decimal land as build up area is accounted to be high in Mal block with 38.50% followed by Jalpaiguri block with 37.29% and Dhupguri block with 30.62% whereas the least percentage has been found in Matiali block with 22.50% followed by Maynaguri block with 26.55% (Fig. 6.2). The percentage of households who have above 4 decimal lands as their build up area is higher in Nagrakata block with 69.14% followed by Rajganj block with 66.15% and Maynaguri block with 63.28%. It has been observed that these households have used their areas for the purposes like settlements, animal sheds and ponds for fishing at the subsistence level.

Table 6.1: Percentage of Landholders by Build-up area

C.D. Blocks	2 Decimal	2-4 Decimal	>4 Decimal	Nil
Rajganj	4.62	29.23	66.15	0.00
Jalpaiguri	8.47	37.29	52.54	1.69
Maynaguri	9.60	26.55	63.28	0.56
Dhupguri	10.53	30.62	38.76	20.10
Mal	14.00	38.50	33.00	14.50
Matiali	0.00	22.50	20.00	57.50
Nagrakata	0.00	29.63	69.14	1.23

Source- Field survey, 2015-16

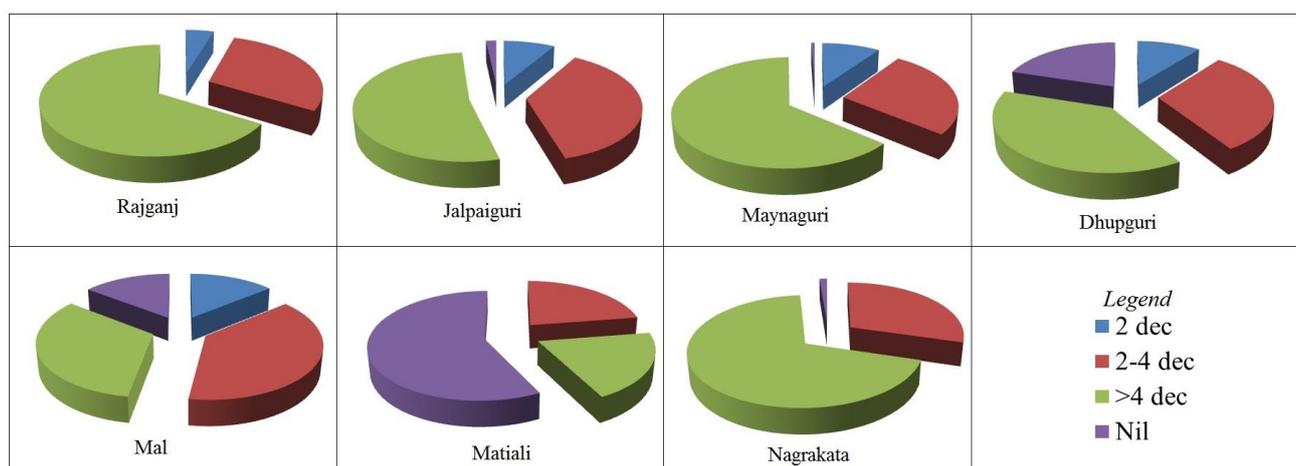


Fig. 6.2: Percentage of Landholders by Build-up area

Source- Computed by researcher, 2016

Field data reveals that the percentage of households with absence of build-up area is accounted to be highest in Matiali block with 57.50% followed by Dhupguri block at 20.10% and Mal block with 14.50% owing to the fact that they are settled in the rented houses or

quarters obtained from the tea gardens whereas in Rajganj block none of the households fall in this category as the land area has been used for construction purpose.

6.4 Cultivated area

The cultivated area of Jalpaiguri district includes the land which is under cultivation and it exhibits the intensity of land resource utilization. The spatial distribution of the percentage of households by the size of cultivated land over the entire area has been divided into three categories along with the percentage of households without any land for cultivation. It is evident from Table 6.2 that Matiali block has the highest percentage of households at 80.00% with the absence of cultivated land. Owing to the predominance of tea gardens in the northern part of the study area the sampled households have a less proportion of cultivated land. Moreover, the households are engaged as tea garden labourers as observed during the course of field survey, 2015-16, whereas in this category (Nil) lowest percentage of households is found in Jalpaiguri block with 47.46% where the land is devoted to the cultivation of paddy.

Table 6.2: Percentage of Landholders by Cultivated area

C.D. Blocks	Nil	<1 bigha	1-3 bigha	>3 bigha
Rajganj	50.77	0.00	35.38	13.85
Jalpaiguri	47.46	8.47	18.64	25.42
Maynaguri	49.71	5.14	21.14	24.00
Dhupguri	70.33	2.87	18.18	8.61
Mal	66.00	6.00	15.00	13.00
Matiali	80.00	2.50	7.50	10.00
Nagrakata	53.09	0.00	30.86	16.05
Total	60.48	3.97	20.12	15.42

Source- Field survey, 2015-16

It could be seen that 8.47% of households of Jalpaiguri block have their cultivated area less than 1 bigha and it has been observed that they are the daily wage earners who have a very small proportion of land for cultivation whereas the least percentage is observed in Matiali block with 2.50% followed by Dhupguri block at 2.87%. Since the cultivation of food crops is dominant in the study area therefore the highest percentage of households having their cultivated land holdings between 1-3 bigha is found in Rajganj block with 35.38% and the least percentage of households has been observed in Matiali block with 7.50%.

The maximum percentage of households having their land holding more than 3 bigha is observed in Jalpaiguri block with 25.42% followed by Maynaguri block with 24.00% whereas the lowest percentage of households has been obtained in Dhupguri block at 8.61% (Fig. 6.3). Hence, the higher proportion of the households having cultivated land is found in

the southern part of the district which indicates fertile soils along with the good sources of irrigational facilities.

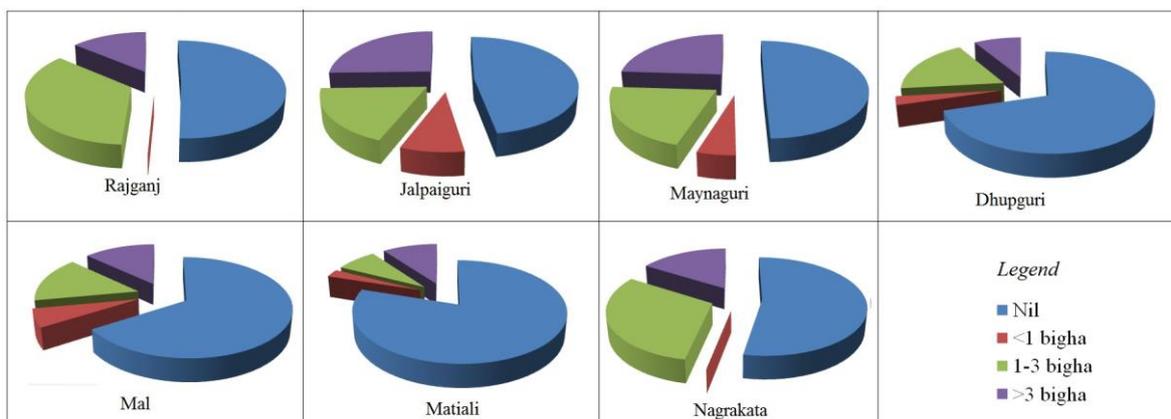


Fig. 6.3: Percentage of Landholders by Cultivated area

Source- Computed by researcher, 2016

6.5 Size of Land Holding

The size of land holding among the household plays a key role in the success of agricultural development. Table 6.3 reveals that Matiali block with 57.50% has the highest percentage of landless households. The reason behind this fact is that they are the tea garden labourers staying in the quarters obtained from the tea gardens, as observed during the course of field survey. Apart from this fact, the higher proportion of landless households is attributed to the higher incidence of poverty and most of the households have to depend on daily wage earnings. However, least percentage of landless households is in Nagrakata block with 1.23% whereas it has been found that every household of Rajganj block have their possession of land holdings which implies their involvement in agricultural practices.

Table 6.3: Percentage of Landholders by the Size of Land Holding

C.D. Blocks	Landless	Up to 2 bigha	2-4 bigha	4-8 bigha	>8 bigha
Rajganj	0.00	61.54	27.69	6.15	4.62
Jalpaiguri	10.17	47.46	15.25	15.25	11.86
Maynaguri	0.00	44.32	22.16	21.02	12.50
Dhupguri	20.10	39.71	28.71	7.66	3.83
Mal	14.50	55.50	16.00	9.00	5.00
Matiali	57.50	25.00	2.50	5.00	10.00
Nagrakata	1.23	61.73	18.52	13.58	4.94
Total	12.16	48.19	20.96	11.68	6.98

Source- Field survey, 2015-16

The prevalence of small holdings upto 2 bigha is highest in Nagrakata block with 61.73% households which indicates that non-agricultural activities are more prevalent in this part of the study area whereas the lowest percentage of household in this category has been

obtained in Matiali block with 25.00%. Further, the percentage of household having their land holding between 2-4 bigha is observed in Dhupguri block with 28.71% and the lowest in Matiali block at 2.50%. Table 6.3 depicts that the maximum percentage of households has their operational holding up to 2 bigha and between 2-4 bigha. As observed during the survey period, 2015-16, the reason behind the fact is the law of inheritance where the fragments of larger holdings are responsible for smaller holdings, as the property of one household has been divided equally into its shares.

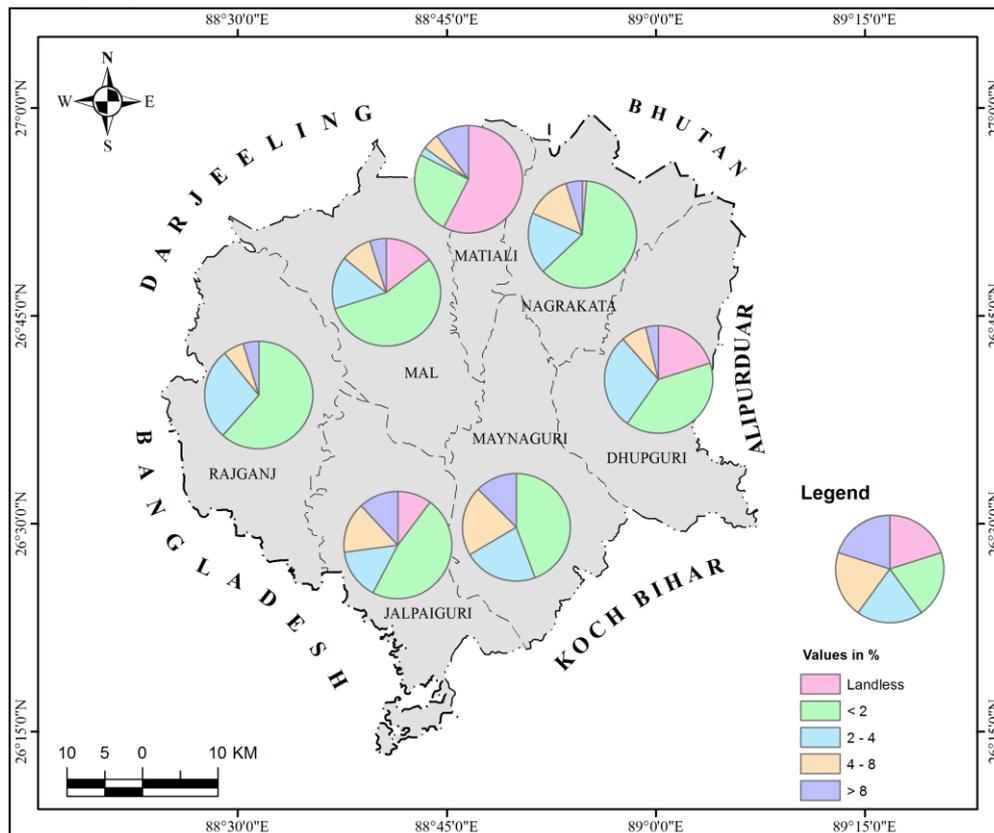


Fig. 6.4: Size of Land Holding in Jalpaiguri district

Source- Computed by researcher, 2016

Likewise, 11.68% households have their land holding between 4-8 bigha and 6.98% households have their land holding above 8 bigha. However, during the course of field survey 2015-16, it has been observed that the distribution of land in the sampled villages of Jalpaiguri district is not skewed and therefore scientific cultivation could be implemented in the study area for the agricultural development. The percentage of households in possession of land holdings between 4-8 bigha is attributed to be high in Maynaguri block with 21.02% is due to the fact that 24.00% households have more than 3 bigha land area under cultivation. The least percentage of household under this category is obtained in Matiali block with 5.00%. Similarly, the size of land holding more than 8 bigha, is observed in few parts of the study area. The percentage share is comparatively high in the southern part of Jalpaiguri

district consisting of Maynaguri block with 12.50% followed by Jalpaiguri block at 11.86% due to the predominance of farming households (Fig. 6.4).

6.6 Cropping pattern

By cropping we mean the area under various crops at a point of time (Rao, 1984). Jalpaiguri district is predominantly agriculture based and the crop pattern is inclined towards paddy cultivation. There are two main crop seasons in Jalpaiguri district i.e. kharif or the summer crops and rabi crops which are grown in the winter season. Paddy, the most dominant food crop of Jalpaiguri district is grown in kharif season which requires high temperatures and plenty of water. This is generally harvested at the end of monsoon, i.e., September to October. Wheat is grown in rabi season during winter which requires moderate supply of water and is harvested from March to April.

Since this study is based on selected crops it will be worthwhile to examine the major crops grown in the study area. Paddy occupies the leading position in the cropping pattern of the study area. It is evident from Table 6.4, that 39.39% of the households are engaged in the production of paddy in Jalpaiguri district where Nagrakata block has the highest percentage of households with 73.08% followed by Mal block with 50.00%. It is due to the fact that there is sufficient water and a suitable fertile soil. Further, the average annual rainfall is 3000-4000 mm in Jalpaiguri district which is satisfactory for the production of paddy.

Table 6.4: Percentage of Households by the Cropping pattern

C.D. Blocks	Paddy	Wheat	Jute	Tea	Potato	Others	None
Rajganj	45.71	2.86	24.29	2.86	17.14	2.86	4.29
Jalpaiguri	26.83	0.00	4.88	14.63	18.29	2.44	32.93
Maynaguri	42.86	0.00	13.10	10.12	22.62	2.38	8.93
Dhupguri	29.65	0.00	15.70	0.58	17.44	1.74	34.88
Mal	50.00	0.00	6.82	0.00	10.61	3.03	29.54
Matiali	7.14	0.00	2.38	4.76	2.38	7.14	76.19
Nagrakata	73.08	7.69	0.00	0.00	17.31	1.92	0.00
Total	39.39	0.83	11.10	4.72	16.50	2.64	24.83

Source- Field survey, 2015-16

The percentage of households engaged in the production of rabi crop or the wheat concentration in Jalpaiguri district is 0.83%, which is meager compared to paddy, jute and potato. However, the crop is found only in Nagrakata block with 7.69% followed by Rajganj block with 2.86%. It is generally grown due to the available moisture in the soil during the winter season.

Jute is the principal cash crop of Jalpaiguri district and is largely grown in the study area. The cultivation of this crop is determined by the physiography, climate, soil and water

resources. Being suitable in the study area the highest concentration of households engaged in the cultivation of jute is found in Rajganj block with 24.29% followed by Dhupguri block at 15.70% while there are no households found to be cultivating jute in Nagrakata block due to the predominance of tea gardens.

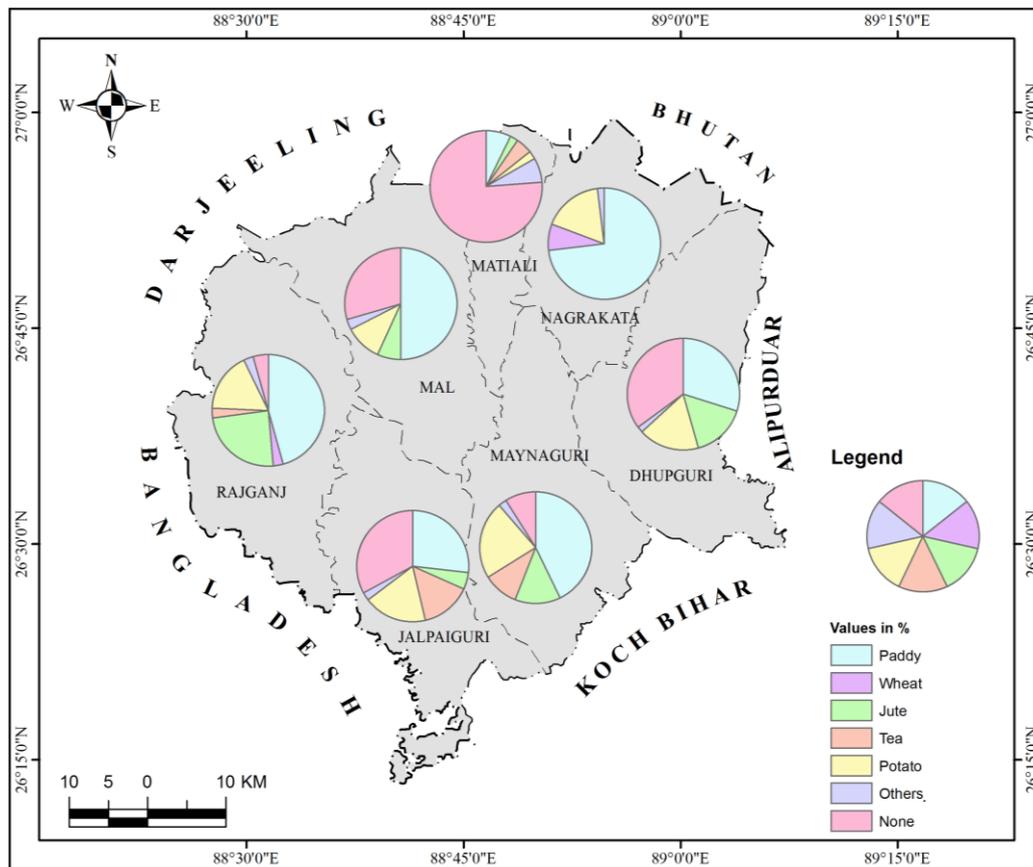


Fig. 6.5: Cropping pattern in Jalpaiguri district

Source- Computed by researcher, 2016

Tea is one of the most important principal crops of Jalpaiguri district. Tea plantation is very important in as it provides both employment and earnings to the people in the study area. The plucking of the tea leaves in the study area begins with the early rain in May and ends till the end of November. 4.72% households of the sampled villages have been found to be engaged in the plantation of tea. Among the sampled households, Jalpaiguri block with 14.63% ranks the highest position in terms of the cultivation of tea.

Potato is an important cash crop of the district and is largely grown for commercial gains after the consumption of the households. 16.50% households cultivate potato in the study area. Its highest concentration is confined into the households of Maynaguri block with 22.62% followed by Jalpaiguri block at 18.29%. For the household consumption the households also cultivate brinjal, pumpkin, radish and varieties of green leafy vegetables.

Other crops include food grains like maize, mustard and sugarcane as cash crop. 2.64% households in the study area cultivate these three crops. But the cultivators do not grow these crops on a large scale due to the necessity of the supply of heavy manuring into the soil. It is evident from table 6.4 that 24.83% sampled households in Jalpaiguri district does not cultivate any crop (Fig. 6.5). They are the tea garden labourers and the agricultural wage earners as observed during the field survey 2015-16.

The different varieties of crops cultivated by the sampled households and the 7 C.D. blocks of Jalpaiguri district have been taken into consideration. The ANOVA two-way model has been carried out and the results of ANOVA two-way model have been depicted in Table 6.5. It helps to examine the significant difference in the varieties of crops cultivated by the sampled households of Jalpaiguri district and also helps to identify whether there is a significant variation in the C.D. blocks in terms of the number of households by the cropping pattern in the district. The rows signifies the replication value in $(7-1) = 6$ degrees of freedom for the Community Development Blocks. Since the p value of the rows is lesser than the level of significance which is $(\alpha=0.05)$, therefore replication value is statistically significant and it is accepted that there is a significant variation between the rows. Similarly, in column, the p value is less than the level of significance which is $(\alpha=0.05)$, therefore it is concluded that the columns are statistically significant and it is believed that there has been a significant differences between the columns.

Table 6.5: ANOVA

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	2525.388	6	420.898	2.662956	0.030521	2.363751
Columns	8585.673	6	1430.946	9.053369	4.75E-06	2.363751
Error	5690.041	36	158.0567			
Total	16801.1	48				

Source- computed by author

Hence, on the basis of p-value which is lesser than the level of significance, it is evident that there is a significant variation both in the varieties of crops and in the different C.D. blocks of Jalpaiguri district.

6.7 Wasteland

This category of land includes pastures and grazing lands and these kinds of lands are generally uncultivable and unproductive lands. Though the size of wasteland is widely distributed among all the sampled households yet it is noted that more than 60.00% households does not have any wasteland among all the blocks. Table 6.6 depicts that the prevalence of wasteland upto the size of 0 to 1 bigha is highest in Jalpaiguri block with

23.73% followed by Maynaguri block with 15.34% which is used in the grazing of livestock in this part of the study area, whereas 5.00% household of Matiali block kept 0 to 1 bigha land fallow as observed during the course of field survey 2015-16.

Table 6.6: Percentage of Landholders by Wasteland

C.D. Blocks	Nil	0-1 bigha	1-3 bigha	>3 bigha
Rajganj	83.08	13.85	3.08	0.00
Jalpaiguri	67.80	23.73	5.08	3.39
Maynaguri	67.05	15.34	13.07	4.55
Dhupguri	78.95	11.96	7.18	1.91
Mal	85.00	10.50	4.50	0.00
Matiali	92.50	5.00	2.50	0.00
Nagrakata	75.31	17.28	6.17	1.23

Source- Field survey, 2015-16

Likewise, the proportion of wasteland between 1 to 3 bigha and more than 3 bigha has been accounted to be highest in Maynaguri block with 13.07% households and with 4.55% households respectively. It has been observed that these lands are either waterlogged or marshy land or are covered with shrubs and jungles which are not put to any agricultural use and are kept uncultivated. However, none of the household in Mal, Matiali and Nagrakata block fall under the category of waste land more than 1 bigha as in the northern part of the study area the households occupy the land for personal tea gardens and for the cultivation of various cash crops (Fig. 6.6).

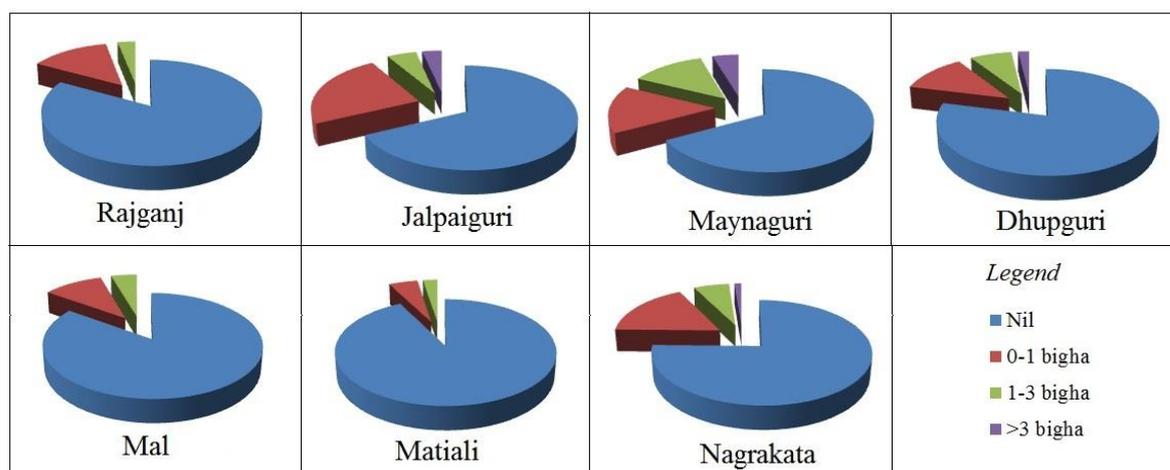


Fig. 6.6: Percentage of Landholders by Wasteland

Source- Computed by researcher, 2016

6.8 Type of Farming

In the rural landscape of Jalpaiguri district agriculture is the main source of livelihood. It is important not only to meet the requirement of household consumption but also for providing forage to the animals. It contributes a great share to the income of the rural

people and hence plays a crucial role in the economic development of the study area. Therefore it is worthwhile to analyze the type of farming in the study area. Subsistence type of farming practices includes the crops which are cultivated for individual household requirement and it has been observed that the households cultivate food grains especially paddy. The highest share of subsistence farming is found in the western and north-eastern part of the study area where the percentage of households engaged in the subsistence type of farming is highest in Rajganj block with 47.06% followed by Nagrakata block with 40.91%.

Table 6.7: Percentage of Households in the Type of Farming

C.D. Blocks	Subsistence	Commercial
Rajganj	47.06	47.06
Jalpaiguri	39.39	54.55
Maynaguri	23.85	56.88
Dhupguri	15.58	64.94
Mal	20.62	49.48
Matiali	30.00	50.00
Nagrakata	40.91	45.45
Total	26.73	54.21

Source- Field survey, 2015-16

In commercial type of agriculture the cultivators put their attention upon the market. Hence the productivity of the crops is generally higher in order to earn profit from the existing crops. As observed, the households cultivate cash crops like jute, potato and sugarcane in the study area.

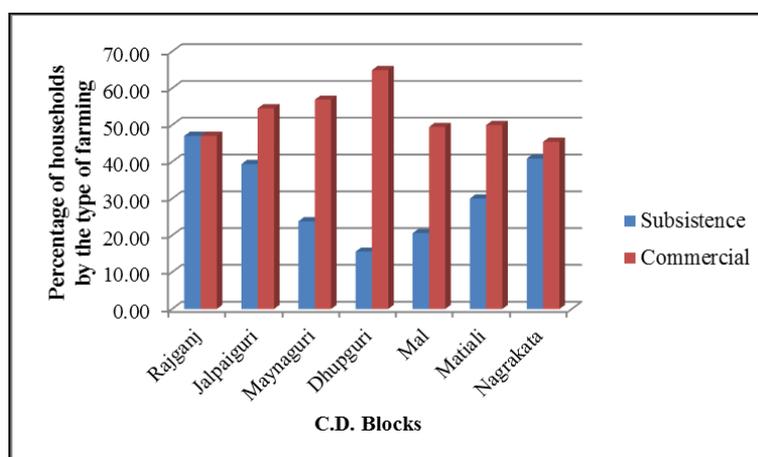


Fig. 6.7: Type of Farming in Jalpaiguri district

Source- Computed by researcher, 2016

In this type of farming, the highest percentage of household is attributed to Dhupguri block followed by Maynaguri block. Table 6.7 depicts that in Dhupguri block 64.94% households cultivate their crops for commercial purpose, where 34.88% households are engaged in the production of cash crops. Similarly in Maynaguri block 56.88% households

are engaged in commercial type of agriculture, where 38.1% households are engaged in the cultivation of cash crops (Fig. 6.7).

6.9 Earning and Dependent population

Earning population includes the economically active population who are engaged in different economic activities and has the ability to produce goods and services. Table 6.8 reveals that in rural areas of Jalpaiguri district the earning population is largely engaged in the agricultural activities which are the most promising occupation where 40.22% households cultivate food grains and 30.24% households cultivate cash crops. Matiali block has accounted the highest percentage of population with 41.53% in the category of earning population followed by Rajganj block with 40.80% indicating a better economic status of population in this part of the study area.

Furthermore, during the field survey 2015-16 it has been observed that in Matiali block the earning population is engaged as tea garden workers while in Rajganj block the earning members of the household are involved in various non-farm activities like trade and hotel business as well as the construction labourers. This is due to the fact that Rajganj block lies in the eastern part of the district and the block is in close proximity to urban areas which facilitate the households to commute daily for employment.

Table 6.8: Households with Earning and Dependent population

C.D. Blocks	Earning	Dependent
Rajganj	40.80	59.20
Jalpaiguri	37.41	62.59
Maynaguri	33.94	66.06
Dhupguri	34.92	65.08
Mal	39.02	60.98
Matiali	41.53	58.47
Nagrakata	31.67	68.33
Total	36.35	63.64

Source- Field survey, 2015-16

However, Table 6.8 depicts that 63.64% are the dependent population in the sampled villages of Jalpaiguri district where 27.67% are the juvenile population, 6.63% are the senile population and 29.34% of the dependent population are engaged in household activities either at their own house or at the houses of their relatives. It has been observed in the sampled villages of Jalpaiguri district during the field survey, 2015-16, that the highest share of dependent population has been observed in Nagrakata block with 68.33% followed by Maynaguri block with 66.06% due to the prevalence of the economic dependency of the child and the old-age persons. The dependent population is generally referred as the economically

inactive population (Fig. 6.8) who are either engaged as home-makers or inmates of institutions or students (Chandna, 2008) or retired personnel.

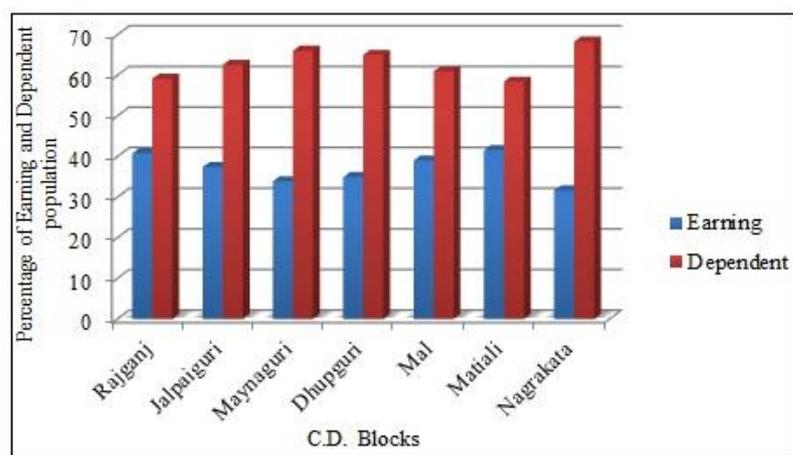


Fig. 6.8: Earning and Dependent population

Source- Computed by researcher, 2016

6.10 Consumption of Improved Seeds and Fertilizers

In order to get an assured increase in the level of crop production improved seeds and fertilizers are generally used by the households in intensive cultivation. It plays a pivotal role in improving the agricultural production. It was observed during the field visit, 2015-16 that the fertilizers are generally applied in the soil when the plants have taken firm roots and grown to a certain size before the flowering stage. From Table 6.9 it is evident that the demand for the fertilizers is quite high in Jalpaiguri district particularly in commercial type of farming.

Table 6.9: Percentage of Households using Fertilizers

C.D. Blocks	Improved seeds	Bio fertilizer	Chemical fertilizer
Rajganj	50.00	31.25	75.00
Jalpaiguri	44.44	38.89	88.89
Maynaguri	27.42	24.19	90.32
Dhupguri	24.00	32.00	68.00
Mal	20.83	33.33	87.50
Matiali	0.00	80.00	80.00
Nagrakata	50.00	85.00	55.00

Source- Field survey, 2015-16

Regarding the application of improved seeds in the land holding the data varies considerably with a maximum of 50.00% households in Rajganj block followed by 44.44% households in Jalpaiguri block in order to get a huge yield of food grains as well as cash crops, whereas the application of improved seeds by the households is found to be minimum

in Mal block with 20.83%. Basically the introduction of improved seeds depends upon the application of fertilizers and adequate sources of irrigation.

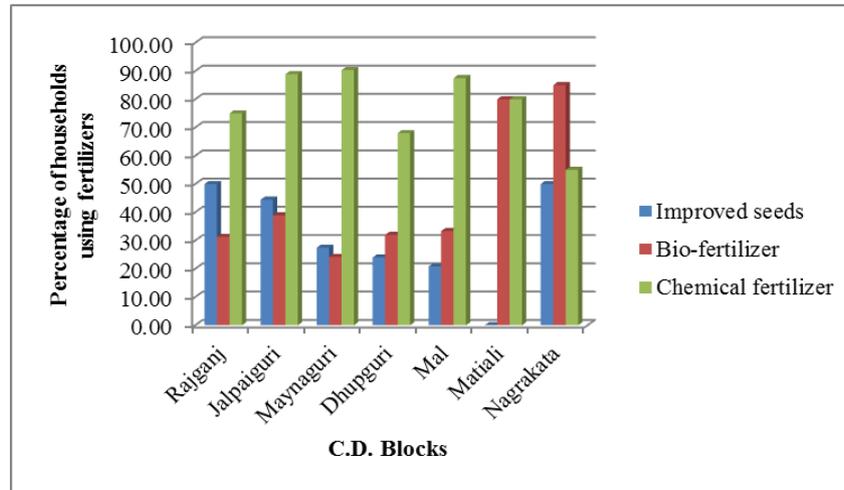


Fig. 6.9: Consumption of Improved Seeds and Fertilizers

Source- Computed by researcher, 2016

The use of bio-fertilizers by the sampled households is accounted to be highest in Nagrakata block with 85.00% and least in Maynaguri block with 24.19%. The quantity of bio-fertilizers or the organic manures is comparatively lower than the use of chemical fertilizers. This is due to the fact that there is an increasing pressure for growing more food grains and cash crops with the increasing use of chemical fertilizers. However, the highest consumption of chemical fertilizers is found in Maynaguri block with 90.32% followed by Jalpaiguri block with 88.89%, where 38.1% households are engaged in the production of cash crops in Maynaguri block which requires an adequate amount of chemical fertilizers. It has been observed in the study area that the chemical fertilizers that are used are especially the urea, DAP (di-ammonium phosphate), NPK (nitrogen, phosphorous, potassium) and SSP (single super phosphate). The abundant use of chemical fertilizers is due to the fact that the organic manures is inadequate to meet the nutritional requirement of the crops and hence chemical fertilizers are added to the soil in order to raise the productivity of the seeds within a required time (Fig. 6.9).

6.11 Sources of Irrigation

Suitable means of irrigation provides better prospects for the development of agriculture and through the study of the sources of irrigation we can predict or analyze the agricultural operations in Jalpaiguri district. Rainfall in Jalpaiguri district follows typical monsoon pattern. Though the mean annual rainfall fluctuates between 3000-4000 mm (IMD, 2011) yet a great variability is noticed in the rainfall distribution of the study area. Further there is inadequate water for irrigation purpose during winter which is a prolonged dry

season. In Jalpaiguri district, out of the total geographical area of the land, 510.44 km² of its land is arable irrigated land. Hence, it is worthwhile to evaluate the various sources of irrigation available in the study area.

Table 6.10 depicts the details regarding availability of irrigation by various sources in the sampled villages of Jalpaiguri district. Furthermore, as observed during the course of field survey 2015-16, the cultivators enjoyed irrigation from bigger public schemes like DTW Scheme (Deep Tube Well) and RLI Scheme (River Lift Irrigation) in the study area. The cultivators have the accessibility to privately installed irrigation scheme like STW (Shallow Tube Well) scheme. The measures taken under minor irrigation projects like the Dutch assisted North Bengal Terai Development Project and from the plan grants to Zilla Parishad by the Water Investigation and Development Department ensure the benefits of irrigation in Jalpaiguri district. The data presented in Table 6.10 reveals that the agriculture in the study area is largely dependent on wells and tube-wells irrigation.

During the field survey, 2015-16, it has been observed that well irrigation is generally used for smaller cultivating areas either near the premises of the households or in the low-lying lands. Open dug wells were found during the survey period in the study area. Table 6.10 depicts that the highest percentage of households using well irrigation is found in Matiali block at 37.50% followed by Jalpaiguri block with 25.81%. On the other hand, Dhupguri block with 1.61% has least percentage of household using well irrigation as the share for shallow tube-well, river lift irrigation and surface flow irrigation is more in this part of the study area. However, due to the undulating topography none of the households in Nagrakata block is using well irrigation.

The use of tube well is well established in all the blocks of Jalpaiguri district. The higher the level of ground water the more will be the use of tube well irrigation. Further, the mechanized tube wells are capable of utilizing vast ground water and help the cultivators to increase their farming operations. The highest percentage has been found in Jalpaiguri block where 58.06% households are dependent in this source of irrigation followed by Dhupguri block with 38.71%. Cultivation of paddy, potato and jute are dominant in this part of the study area. The private entrepreneurs are engaged in the management of tube wells which is very important for the irrigation network in the rural areas of Jalpaiguri district.

Jalpaiguri district has a large number of perennial rivers like Tista, Jaldhaka, Karotoya, Diana, Murti, Chel and Neora which provide water for irrigation throughout the year. The river water is used significantly for the irrigation purpose by the river lift irrigation system.

Table 6.10: Sources of Irrigation in Jalpaiguri District (in percentage)

C.D. Blocks	Well	Tube Well	River	Canal	others	None
Rajganj	9.38	6.25	0.00	56.25	0.00	28.13
Jalpaiguri	25.81	58.06	12.90	0.00	0.00	3.23
Maynaguri	12.22	28.89	15.56	12.22	1.11	30.00
Dhupguri	1.61	38.71	14.52	0.00	8.06	37.10
Mal	8.82	19.12	17.65	0.00	2.94	51.47
Matiali	37.50	25.00	0.00	0.00	37.50	0.00
Nagrakata	0.00	2.63	21.05	7.89	0.00	68.42
Total	9.78	26.29	14.37	9.78	3.36	36.39

Source- Field survey, 2015-16

The volume of flow in these rivers becomes quite high during the rainy season while it becomes less during the winter season. The highest percentage of households engaged in river irrigation is found in the northern part of the study area i.e. in Nagrakata block at 21.05% followed by Mal block with 17.65% due to the presence of Tista, Chel, Jaldhaka and Diana rivers.

Canal irrigation plays a crucial role for the agricultural development and its formation is dependent upon the slope of land and the nature of soil. For the canal irrigation the use of surface water is essential. Table 6.10 depicts that Rajganj block has the highest percentage of households using canal irrigation at 56.25% owing to the presence of canal in this part of the study area. The percentage of households engaged in canal irrigation has also been observed in Maynaguri block with 12.22% and in Nagrakata block at 7.89% in Jalpaiguri district.

The other sources of irrigation are not well developed in the rural areas of Jalpaiguri district. The other sources of irrigation comprises of spring, nulla and pond irrigation as observed during the survey period as these sources of irrigation do not remain as the permanent supplier of water to the fields throughout the year. Other irrigation system is well developed in Matiali block at 37.50% followed by Dhupguri block with 8.06% in the study area. None of the households in Rajganj, Jalpaiguri and Nagrakata block are using the other sources of irrigation due to the availability of tube-well irrigation (Fig. 6.10).

The highest percentage of households without any means of irrigation has been observed in the northern part of Jalpaiguri district especially in Nagrakata block at 68.42% followed by Mal block with 51.47%. During the field survey, 2015-16, it has been observed that the households are engaged as daily wage earners, agricultural wage labourers and tea garden labourers and the construction of a private tube-well in the fragmented holdings of a small cultivator is beyond their financial affordability.

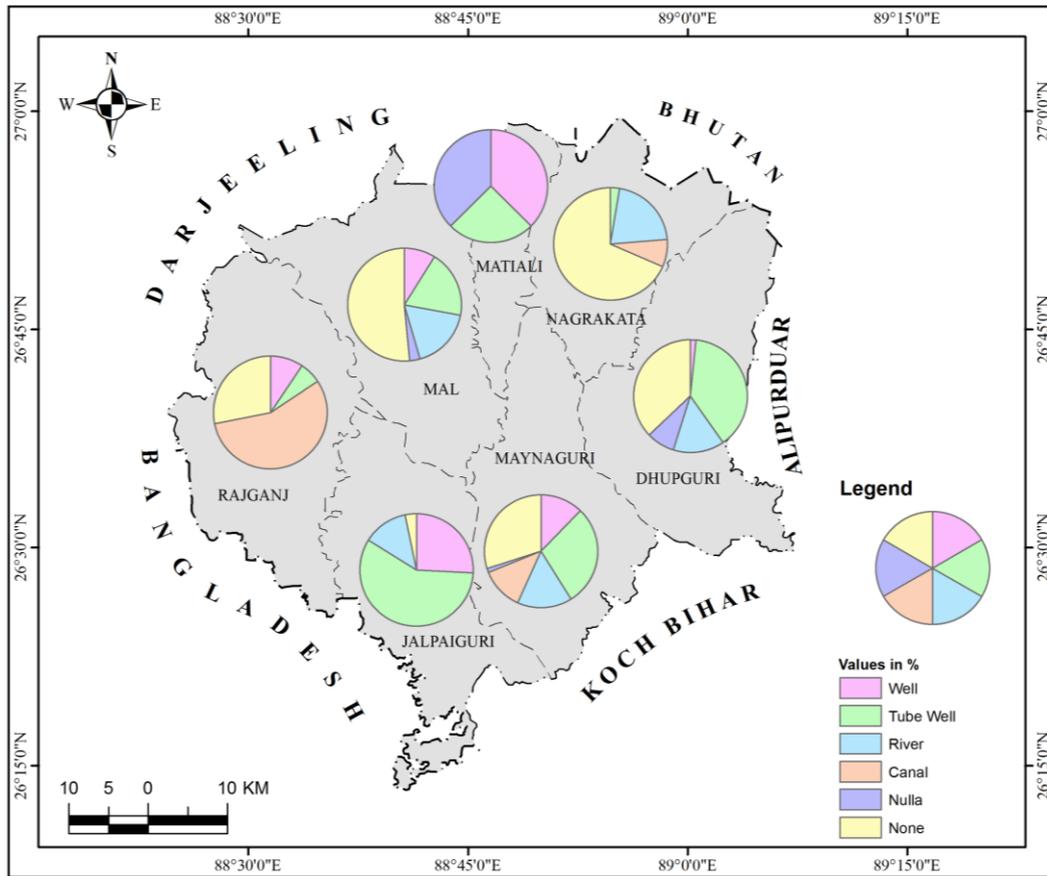


Fig. 6.10: Sources of Irrigation in Jalpaiguri District

Source- Computed by researcher, 2016

6.12 Livestock

In the rural agrarian system of Jalpaiguri district livestock is of vital importance. It is considered to be a significant part of the agricultural economy. The development of livestock rearing has become an important element in strengthening the development of agriculture. The livestock in Jalpaiguri district includes cattle, pigs, goats and poultry. The livestock has been reared for eggs, milk, and meat and as source of manures. Hence the dependency of livestock is indispensable in the rural areas of Jalpaiguri district. Therefore emphasis should be given on the means to improve this sector.

The distribution of livestock is dependent upon many factors such as suitability of physical environment, availability of grazing land and fodder, size of land holding, cropping pattern, purchasing power of the people and various transport and marketing facilities in the rural areas of Jalpaiguri district. For the improvement of livestock proper breeding, feeding and management are necessary. It has been observed that for the prevention of diseases of the animals, the veterinary facilities, the artificial insemination centres and dispensaries is quite inadequate which may lead to a significant economic loss. Since livestock rearing acts as an

important occupation next to agriculture which renders benefits to the people therefore it is essential to raise the health standard of livestock in the study area.

Table 6.11: Livestock (in percentage)

C.D. Blocks	Cow/Bull	Pig	Goat	Poultry
Rajganj	54.22	0.00	25.30	20.48
Jalpaiguri	49.63	0.00	25.93	24.44
Maynaguri	54.55	0.00	20.10	25.36
Dhupguri	55.24	3.12	19.55	22.10
Mal	36.27	3.81	16.83	43.09
Matiali	20.31	9.38	24.22	46.09
Nagrakata	43.28	0.00	19.90	36.82
Total	45.62	2.31	20.03	32.03

Source- Field survey, 2015-16

Cattle includes both cows and bulls which are overwhelmingly the most important livestock as it accounts for 45.62% of the total livestock population of Jalpaiguri district. It has been observed that every household of the study area possess cattle population for milk, cow dung which acts as a source of manures in the land holdings. From Table 6.11 it has been observed that the highest share of cattle units are found in the eastern and southern part of the district where 55.24% has been found in Dhupguri block followed by Maynaguri block at 54.55%. Cattle are the main source of energy involving in various agricultural operations in this part of the study area whereas the importance of cattle units is less significant in Matiali block where poultry occupies the highest share accounting for 46.09%.

Poultry keeping is very simple as it requires meager investment. Moreover it provides steady income through eggs and meat. Thus due to its advantages poultry farming acts as an important alternative to the poor rural labourers of Jalpaiguri district. With little investment of labour, time and money the rural households are able to get a steady income apart from their farm operations. Out of the total livestock population, poultry accounts for 32.03% in the study area. Matiali block has the highest share of poultry with 46.09% followed by Mal block with 43.09%. However as observed during the survey period, 2015-16, due to the unavailability of the medicines for the birds and inadequate veterinary facilities the health of the poultry is adversely affected in the study area.

The pig rearing on a commercial scale is less as the demand for pork is low in Jalpaiguri district. During the field survey 2015-16, it has been observed that pig survives on leafy vegetables and rice-gruel and the Scheduled Tribe households rear pigs within their premises. Owing to its low cost the tribal community consumes pork. Moreover, the maintenance cost of the pigs is low. Out of the total livestock population, the proportion of

pigs is only 2.31%. Its share is confined in the northern and eastern part of the study area where Matiali block accounts for 9.38% of pigs followed by Dhupguri block with 3.12%.

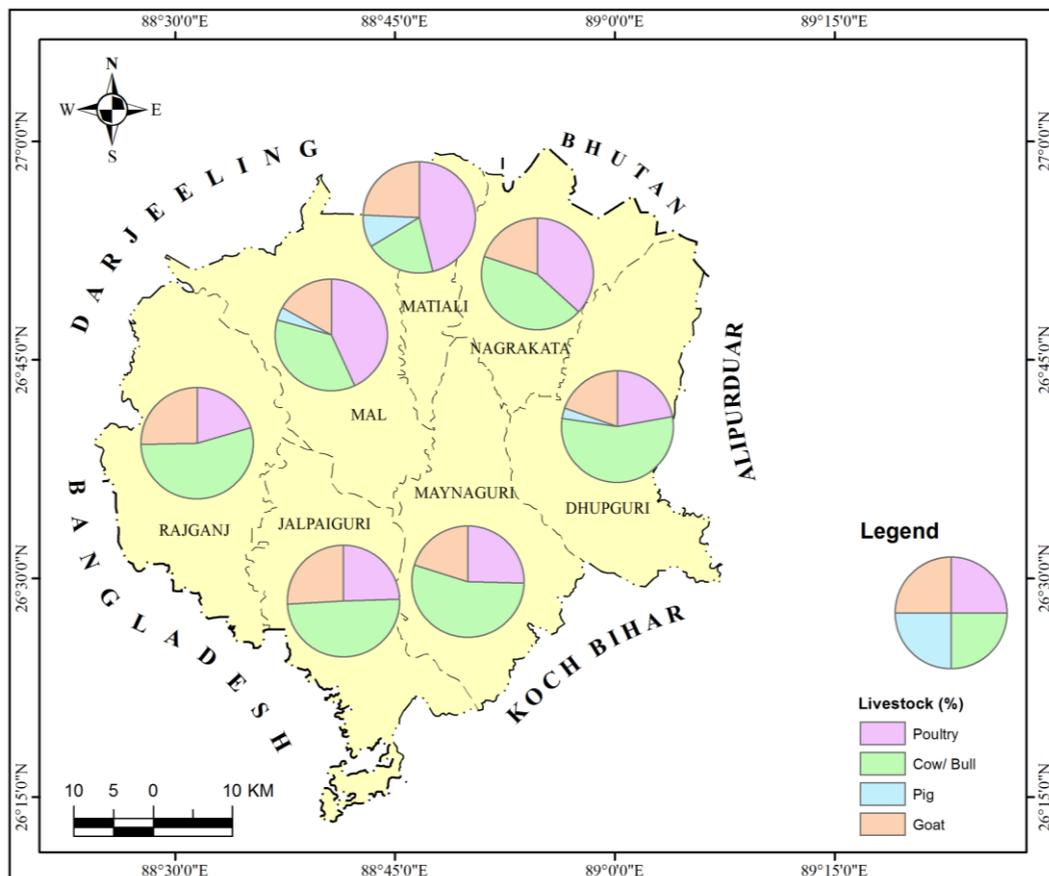


Fig. 6.11: Livestock in Jalpaiguri district

Source- Computed by researcher, 2016

Though goats are allied to sheep, they are more hardy and active. In the rural agrarian structure of Jalpaiguri district goat breeding is profitable than other breeds because of their low cost of maintenance and their hardy nature. The goats accounted for 20.03% of the total livestock population of Jalpaiguri district. The highest proportion of goat is found in Jalpaiguri block accounting for 25.93% followed by Rajganj block with 25.30% (Fig. 6.11). Goats are reared in every household especially for mutton since the goats provides less amount of milk which does not have a market due to lack of demand.

6.13 Category of Labourers

The term labour implies as the work done by an individual or a group for which they are paid. During the course of field survey 2015-16, it has been observed that there are several households in which the members of the households worked as a labour in different sectors of economy namely; agricultural sector, in construction works or as tea garden labourers. Table 6.12 shows the percentage of population employed as labourers in the study area. The analysis of the category of labourers has two important aspects; firstly it affects the

generation of income in the study area and secondly it determines the standard of living of the rural households of Jalpaiguri district.

Agricultural labourers are those workers who are employed on wages for agricultural occupations. These workers are unskilled and unorganized and their employment is seasonal. Agricultural labourers constitute 31.66% of the total labourers in the study area. The highest proportion of agricultural labourers has been found in Nagrakata block with 47.89% followed by Maynaguri block at 39.29% owing to its vast farm operations. In Nagrakata block 73.08% households are engaged in the cultivation of paddy followed by Maynaguri block with 42.86%. On the other hand lower proportion of agricultural labourers is observed in Matiali block at 4.44% as the maximum number of labourers work in tea gardens in this part of the study area.

Table 6.12: Category of Labourers (in percentage)

C.D. Blocks	Agriculture	Construction	Tea garden labourers
Rajganj	25.40	66.67	7.94
Jalpaiguri	31.37	49.02	19.61
Maynaguri	39.29	40.48	20.24
Dhupguri	29.90	35.78	34.31
Mal	29.38	44.33	26.29
Matiali	4.44	20.00	75.56
Nagrakata	47.89	52.11	0.00
Total	31.66	42.72	25.62

Source- Field survey, 2015-16

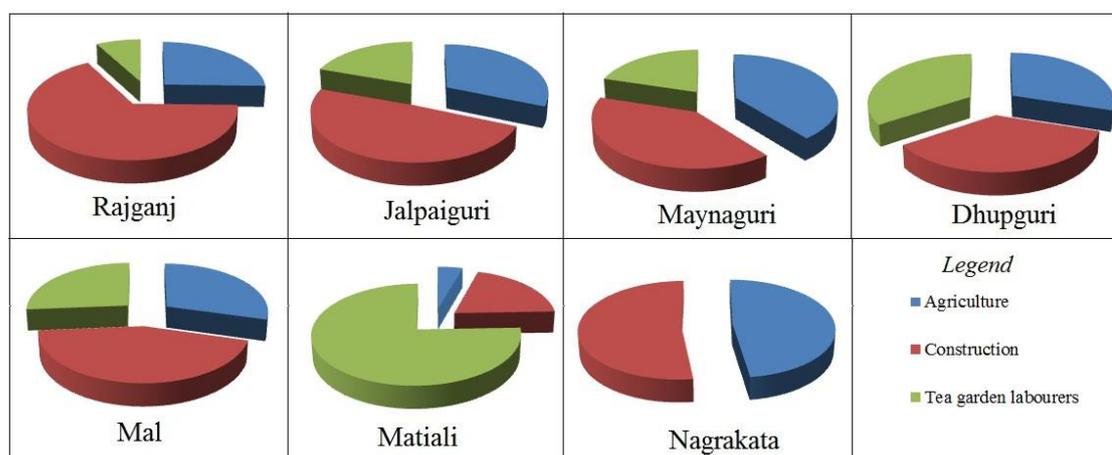


Fig. 6.12: Category of Labourers in Jalpaiguri district

Source- Computed by researcher, 2016

Largest proportion of workers are found in construction work at 42.72%. The highest percentage has been found in Rajganj block at 66.67% owing to the fact that the block is connected to NH-31 and it is located at a distance of only 25 km from the District Headquarter. Thus, the growing labour force has direct accessibility to the nearby urban areas

which have facilitated them to shift from the traditional agricultural sector to the construction works.

Jalpaiguri district is occupied by vast tea gardens and it is worth mentioning that tea cultivation needs a huge supply of labour force during the plucking, manufacturing and processing stage. Apart from agriculture and construction labourers 25.62% of the total labourers are engaged as tea garden labourers where Matiali block has the highest percentage with 75.56% (Fig. 6.12). They are found working as weekly based wage earners in the study area.

6.13.1 Place of Labour work

Place of labour work is an important factor in determining the migration of rural labour in the study area. It has been observed in the sampled villages of Jalpaiguri district that most of the labourers are working within their own village especially those who are employed as agricultural labourers or tea garden labourers. The labourers migrate from the rural areas to the urban areas especially to the urban farms, industries and urban labour markets in order to maximize their earnings as the wages received within the village is comparatively less than the wages they receive outside the villages. As observed during the course of field survey, 2015-16, the highest percentage of migrant workers is involved in the construction sector than in the other sectors. The percentage share of construction labourers is 42.72% in the study area.

It is evident from the Table 6.13 that 63.90% labourers are working within their own village and the highest percentage of labourers in this category has been found in the northern part of the study area where Matiali block has 84.44% followed by Mal block at 65.46% labourers. This part of the study area has a large number of tea gardens which requires a large number of labourers.

Table 6.13: Place of Labour work

C.D. Blocks	Within Village	Outside Village	Outside District	Outside State
Rajganj	64.52	29.03	6.45	0.00
Jalpaiguri	52.94	19.61	17.65	9.80
Maynaguri	63.69	22.02	7.74	6.55
Dhupguri	60.29	21.57	1.96	16.18
Mal	65.46	27.32	1.03	6.19
Matiali	84.44	6.67	0.00	8.89
Nagrakata	64.79	29.58	1.41	4.23
Total	63.90	23.40	4.15	8.55

Source- Field survey, 2015-16

23.40% labourers are found to be working outside their village but within the district. It is due to two factors; firstly due to inadequate and irregular employment opportunities in

their village and secondly due to the low wage structure and indebtedness. Nagrakata block accounts for the highest percentage at 29.58% of labourers working outside the village followed by Rajganj block at 29.03%.

4.15% labourers are found to be working outside the district but within the state. The highest percentage is obtained in Jalpaiguri block with 17.65%. However the inter-state labour migration is increasing day by day and the rural areas of Jalpaiguri district is no exception to this phenomenon. It has been observed during the field survey, 2015-16, that 8.55% of the total labourers seasonally migrate for work and wages outside the state and shift their employment structure from agricultural to non-agricultural activities. They get their employment especially through the intermediaries. The highest share of labourers accounts for 16.18% in Dhupguri block followed by Jalpaiguri block at 9.80%. The field survey reinforces the fact that various development works and large construction projects attract the labour force into urban areas from the rural areas of Jalpaiguri district. During the course of field survey it has been observed that the migrant labourers are attracted especially to Delhi, Maharashtra, Kerala and Karnataka for higher income.

6.13.2 Wage Earners

Larger the earning strength the better is the economic well-being of the rural households in Jalpaiguri district. During the field survey 2015-16, it has been observed that the phenomenon of permanent wage labour is reducing in the study area. Casual labourers are higher both in farm and in non-farm operations. Though labour wages generally depend upon the demand for labour yet it is also determined by the economic status of different areas.

Table 6.14: Wage Earners

C.D. Blocks	Daily Wage	Weekly wage
Rajganj	29.03	70.97
Jalpaiguri	45.10	54.90
Maynaguri	46.78	53.22
Dhupguri	29.90	70.10
Mal	43.81	56.19
Matiali	22.22	77.78
Nagrakata	60.56	39.44
Total	40.25	59.75

Source- Field survey, 2015-16

Table 6.14 reveals that the proportion of weekly wage earners is comparatively higher than the proportion of daily wage earners. 40.25% are the daily wage earners of the total wage earners of rural Jalpaiguri district. It constitutes the poor landless agricultural labourers. 59.75% of the total wage earners are the weekly wage earners in the study area. The highest

proportion of daily wage earners has been observed in Nagrakata block at 60.56% followed by Maynaguri block with 46.78% and they are engaged as regular farm workers.

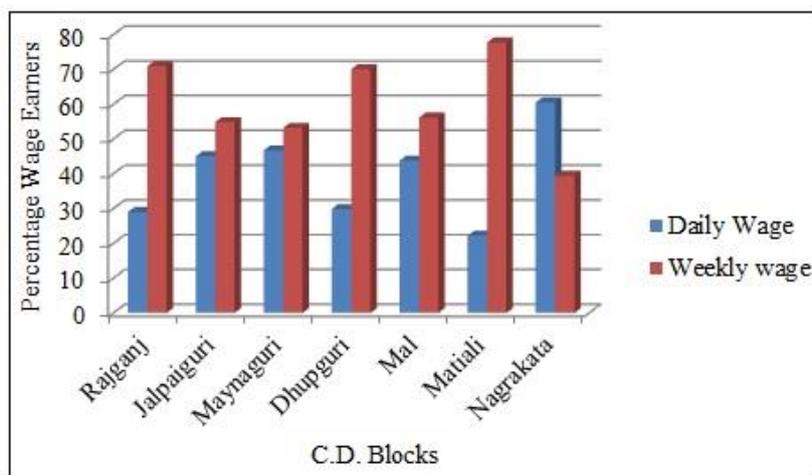


Fig. 6.13: Wage Earners

Source- Computed by researcher, 2016

On the other hand, the highest share for the weekly wage earners has been found in Matiali block accounting for 77.78% followed by Rajganj block with 70.97% and Dhupguri block with 70.10% as this part of the study area constitutes the non-farm wage earners engaged in the tea gardens as well as in the construction works (Fig. 6.13).

6.14 Sources of Income

The study of the sources of income at household level occupies an important place in the planning process. It is because the data related to income is the most significant factor in determining the economic status of individuals which varies on account of the variation in the ranges of income within the same occupation.

Table 6.15: Sources of Income by Occupation

C.D. Blocks	Daily Wage	Agriculture	Service	Business
Rajganj	27.69	24.62	16.92	7.69
Jalpaiguri	33.90	30.51	11.86	13.56
Maynaguri	34.09	35.23	6.25	6.25
Dhupguri	41.15	23.92	17.22	3.83
Mal	43.00	24.00	15.00	7.50
Matiali	40.00	12.50	30.00	2.50
Nagrakata	40.74	24.69	8.64	13.58
Total	38.43	26.39	13.73	7.11

Source-Field survey, 2015-16

Table 6.15 reveals that 38.43% of the households are the daily wage earners of Jalpaiguri district. They are the poor landless agricultural labourers who sustain their livelihood on daily wage earnings. The data depicts that Mal block has the highest proportion of daily wage earners at 43.00% followed by Nagrakata block with 40.74%. The proportion

of the households engaged in various agricultural operations is 26.39%. The highest percentage of the households engaged in agricultural operations has been observed in Maynaguri block with 35.23% followed by Jalpaiguri block at 30.51%. The reasons are attributed to higher proportion of the cultivated area, adequate size of operational holdings, fertile soils and suitable sources of irrigation in the southern part of the study area whereas due to the presence of 40.00% of daily wage earners, the proportion of household engaged in agricultural operations is least in Matiali block at 12.50%.

However in the rural agrarian economy of Jalpaiguri district 13.73 % households are engaged in the service sector. The highest proportion of the household in this sector has been observed in Matiali block at 30.00%. Likewise, a considerable proportion of households engaged in services have been noticed in Dhupguri block at 17.22% owing to its connectivity to National Highway-31 and NH-31c which facilitates the people to engage in the various service sectors in the nearby urban areas.

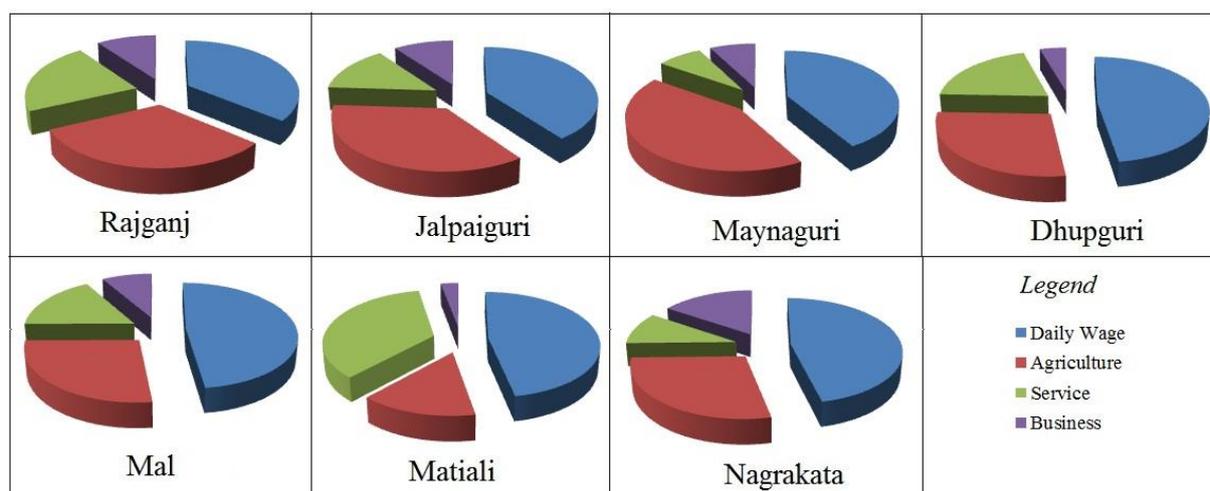


Fig. 6.14: Sources of Income by occupational group in Jalpaiguri district

Source- Computed by researcher, 2016

Apart from daily wage earnings, agriculture and service sector, 7.11% households are engaged in business activities. The proportion of households engaged in this sector is highest in Nagrakata block with 13.58% followed by Jalpaiguri block at 13.56% (Fig. 6.14). They earn their source of livelihood doing business through rice mills, small shops, tailoring business and few of them are engaged as contractors.

6.14.1 Alternative sources of employment

In the process of economic development, the structure of rural employment has undergone several changes in Jalpaiguri district. Apart from the daily wage earning and the traditional agriculture and allied activities the growing labour force has engaged themselves in rural non-farm operations. The reason behind the occupational diversion is attributed to the

fragmented farm holdings, irregular employment opportunities in agricultural operations, lower agricultural wage rates, raising the rate of literacy and the adjoining urban areas which attracts a large number of labourers from the rural areas. Moreover the transport network and highway connectivity in the study area has promoted the rural masses to shift in the rural non-agricultural sector in order to sustain their livelihood.

It is furnished in Table 6.16 that the highest percentage of households engaged in the other sources of employment are in Rajganj block with 23.28% followed by Maynaguri block at 18.18% and Matiali block at 15.00%. Further, the sampled villages of these blocks are adjoining the urban areas which in turn facilitate the households to engage themselves in alternative sources of employment. They are engaged in non-farm activities like carpentry, basketry and matting and trade and hotel business. Apart from this, the rural households are also engaged in the activities of transport, storage and communication.

Table 6.16: Alternative Sources of Income

C.D. Blocks	Other sources of income
Rajganj	23.08
Jalpaiguri	10.71
Maynaguri	18.18
Dhupguri	13.88
Mal	10.50
Matiali	15.00
Nagrakata	12.35
Total	14.4

Source- Field survey, 2015-16

In general alternative sources of employment for the rural households play an important role in the rural economic structure of Jalpaiguri district. The more the rural non-agricultural employment the more will be the enhancement of the annual income of the poor rural households which will significantly reduce the income inequality in the study area. The hypothesis as mentioned in the introduction chapter '*Enhancement in generating alternative sources of employment varies in the remote villages and the villages adjoining to municipal areas*' has been tested here.

Considering a bi-variate setup with variables X_1 and X_2 of the form

X_1 : The proportion of generation of employment (per unit households) in the inhabited villages adjoining to the municipal areas.

X_2 : The proportion of generation of employment (per unit households) in the remote villages

1. Formulation of the statistical hypothesis: The hypothesis can be statistically formulated as:-

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \leq \mu_2$$

Where,

H_0 : There is no effect of the village distance on the proportion of generation of employment

H_1 : There is an effect of the village distance on the proportion of generation of employment

μ_1 : Average generation of alternative sources of employment in (per unit household) of the villages adjoining to the municipal areas

μ_2 : Average generation of alternative sources of employment (per unit households) of the remote villages

Where, μ_1 corresponds to the population mean of X_1 and μ_2 corresponds to the mean of X_2 . In order to classify the inhabited villages into the “villages adjoining the municipal areas” and “remote villages”, the distance from the nearest town is used as the key determinant for the classification where the statistical mean of the distances to nearest town (18.47kms \approx 18kms) is taken as the limit.

The classification is as follows:

Table 6.17: classifications of villages with distance to nearest town

Classification of villages	Distance to nearest town (kms)
Adjoining the municipal areas	0-18 km
Remote villages	>18km

Source: Calculated by author

An appropriate test for testing such a hypothesis; the Welch Two Sample t-test has been conducted by the author.

2. Assumptions for statistically testing the hypothesis:

Primarily, the Welch Two Sample t-test for testing the equality of two population means is conducted under the following assumptions:-

- i) All observations are taken into the sample at random
- ii) The normality condition holds.
- iii) A reasonably large sample has been collected
- iv) The data shows homoscedasticity (equality in variances)

3. The inference from the Welch Two Sample t- test

The corresponding values of t-statistic, degree of freedom, p-value along with the 95% confidence interval has been reported below.

Table 6.18: Observations

t-statistic	3.6305
Degree of freedom	37
p value	0.9996
Confidence interval (95 %)	(∞ ,0.1790544)

Source: calculated by author

As reported in Table 6.18 the p-value corresponds to 0.999 which is greater than the level of significance ($\alpha= 0.05$), therefore we accept the null hypothesis. Hence, it has been concluded that alternative sources of employment in average (per unit) households of the villages adjoining the municipal areas are more than that in the remote villages.

Though traditional agriculture and allied activities are the prime source of rural economy and rural employment yet the households which are adjoining the municipal areas facilitate the growth of non-agricultural activities which are considered as an important source of economic development and transformation in rural economy. The workers are engaged in skilled and semi-skilled activities in the adjoining municipal areas. It has been observed that the alternative sources of employment involves the rural households in employing the family labour force in the non-farm activities like construction labourers which accounts 42.72% of the total labourers, labour contractor, *toto* drivers, truck drivers, security guards and workers of different shops in adjoining municipal areas. Besides, the workers are engaged in trade and commercial activities like pan shops, tea and snacks stalls, supplying confectionaries to the shops in the adjacent municipal areas. Further, the non-farm activities in which the rural population is employed are confined to tailoring, hair cutting, iron and steel works and workers in sector of public utilities in nearby municipal areas.

6.15 Female Workers

Any female who is in paid employment is treated as a female worker (Das, 2017). The socio-economic status of women in the rural areas of the district is closely related to the economic position which again depends upon the rate of opportunities for the participation of the women in various occupational activities. Table 6.19 reveals that in the rural areas of Jalpaiguri district the women workers are employed in several sectors of economy which includes agriculture, service, daily wage earners and business activities.

It is found that the rural women help their husbands or any other members in the family in performing various economic activities apart from their daily domestic work.

35.80% female workers of Jalpaiguri district are engaged in agricultural activities. The proportion of women workers in this category is highest in Maynaguri block with 46.67% followed by Mal block at 37.11% while it is less in Nagrakata block with 17.65%. The highest share of women workers in this category is due to the fact that agricultural operations and allied activities are more productive and profitable in this part of the study area which significantly fetches a high amount of unskilled women workers.

Table 6.19: Female Workers by Occupational Group

C.D. Blocks	Agriculture	Service	Daily Wage	Business
Rajganj	23.33	40.00	36.67	0.00
Jalpaiguri	21.43	35.71	42.86	0.00
Maynaguri	46.67	25.00	26.67	1.67
Dhupguri	36.90	30.95	32.14	0.00
Mal	37.11	37.11	23.71	2.06
Matiali	45.45	36.36	18.18	0.00
Nagrakata	17.65	82.35	0.00	0.00
Total	35.80	35.80	27.51	0.89

Source- Field survey, 2015-16

Apart from agriculture and allied activities, 35.80% of the female workers are engaged in rural non-agricultural sector in Jalpaiguri district. It is the level of education which creates awareness among the female workers about their rights and prepares them to shift their occupational structure from farm operations to non-farm operations. The share of female employment is considerably high in this sector where Nagrakata block accounts 82.35% followed by Rajganj block with 40.00%. As observed during the survey period, 2015-16, these women are pursuing services in the non-formal educational institutions which include Shishu Shiksha Kendras (SSK) and the Anganwadi Centres within or outside the village premises.

27.51% of the female workers depend upon the daily wage earnings in rural Jalpaiguri district. The proportion of daily wage earners is high in Jalpaiguri block with 42.86% while it is least in Matiali block with 18.18%. The highest percentage of women workers in this category is attributed to inadequate employment opportunities, limited skills, and a low educational status of the women which reduces their economic protection. Hence, the women workers are compelled to join the unorganized sector in the rural society without having fair wages and occupational amenities.

However, 0.89% of women workers of the rural households are engaged in small business activities of Jalpaiguri district (Fig. 6.15). They are engaged in weaving, rope making, basketry and mat making, and making small handicrafts products.

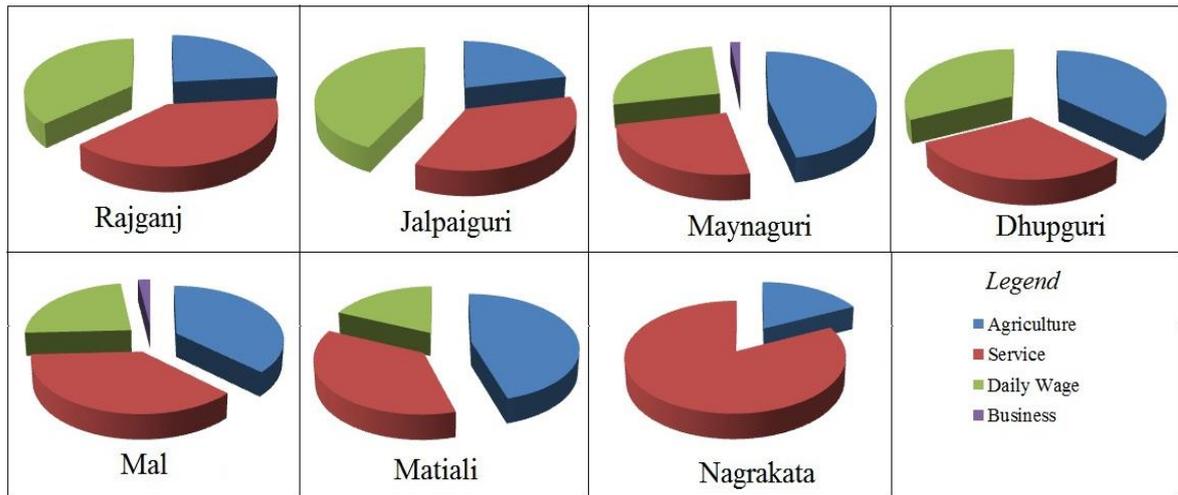


Fig. 6.15: Female Workers by Occupational Group in Jalpaiguri district

Source- Computed by researcher, 2016

The chi-squared test for independence of attributes has been applied and results of the chi-squared test have been depicted in Table 6.20. It enables us to know whether the type of work that females does in different sectors is influenced by the blocks of Jalpaiguri district.

Table 6.20: Chi-Square Test

C.D. Blocks	Chi Value			
	Agriculture	Service	Daily Wage	Business
Rajganj	1.302	0.148	0.913	0.266
Jalpaiguri	1.615	0.000	2.395	0.249
Maynaguri	1.980	1.954	0.016	0.410
Dhupguri	0.029	0.551	0.654	0.746
Mal	0.047	0.047	0.510	1.507
Matiali	0.573	0.002	0.696	0.195
Nagrakata	1.565	10.292	4.678	0.151

Source- computed by author

The respective values for Chi-squared statistic along with the degrees of freedom and p-value have been shown in Table 6.21. Applying the chi-squared test it has been found that the calculated value of chi-square is 33.49 for 18 degrees of freedom (row-1column-1) at 0.05 percent level of significance.

Table 6.21: Observations of Chi-Square Test

Chi-squared test	Degree of freedom	p-value
33.49	18	0.0145

Source- Computed by author

Since the calculated value of chi-square is greater than the tabulated value of chi-square which is 28.869 at 0.05 percent level of significance therefore we reject the null hypothesis and believe that there is an association between the female workers in different sectors of economy and all the C.D. blocks of Jalpaiguri district. Further it has been observed

that the p-value for all the C.D. blocks are less than the level of significance ($\alpha= 0.05$), hence we reject the null hypotheses and believe that the different types of occupation in which the females of the sampled villages are engaged is significantly influenced in the 7 Community Development Blocks of Jalpaiguri district.

6.16 Monthly Income and Expenditure

The study of income and expenditure pattern of the rural households is one of the significant tasks in the assessment of economic development of the rural areas of Jalpaiguri district. The data about the level of income and expenditure is significant because it facilitates the planners in understanding the socio-economic status of the individual household and accordingly suggests some appropriate policies.

Table 6.22: Monthly Household Income

C.D. Blocks	<1000	1001-5000	5001-10,000	10001-15,000	15,001-20,000	>20,000
Rajganj	0	7	19	27	8	4
Jalpaiguri	2	6	18	23	6	4
Maynaguri	5	29	53	71	9	9
Dhupguri	5	37	69	73	16	9
Mal	1	26	75	71	17	10
Matiali	2	2	15	14	4	3
Nagrakata	0	3	36	28	7	7
Total	15	110	285	307	67	46

Source- Field survey, 2015-16

Table 6.22 reveals that 15 households have a monthly income of less than Rs.1000 in the study area. As observed, the members of the households are employed for five to six months in a year. The data further shows that the share of household whose monthly income ranges between Rs.1001-5000 is 110 households (Fig. 6.16).

285 households' monthly income ranges between Rs.5001-10,000. Likewise, 307 households' monthly income ranges between Rs.10,001-15,000 in the study area. They are either agricultural daily wage earners or are engaged in small business activities.

The numbers of household, whose monthly income group ranges between Rs.15,001-20,000 is 67. The numbers of the household whose monthly income group is highest i.e. more than Rs.20,000 is 45. During the survey, it has been observed that the members of the households who earns more than Rs.20,000 are engaged either in cultivation possessing a large size of farm holdings or they pursue service in the formal sector.

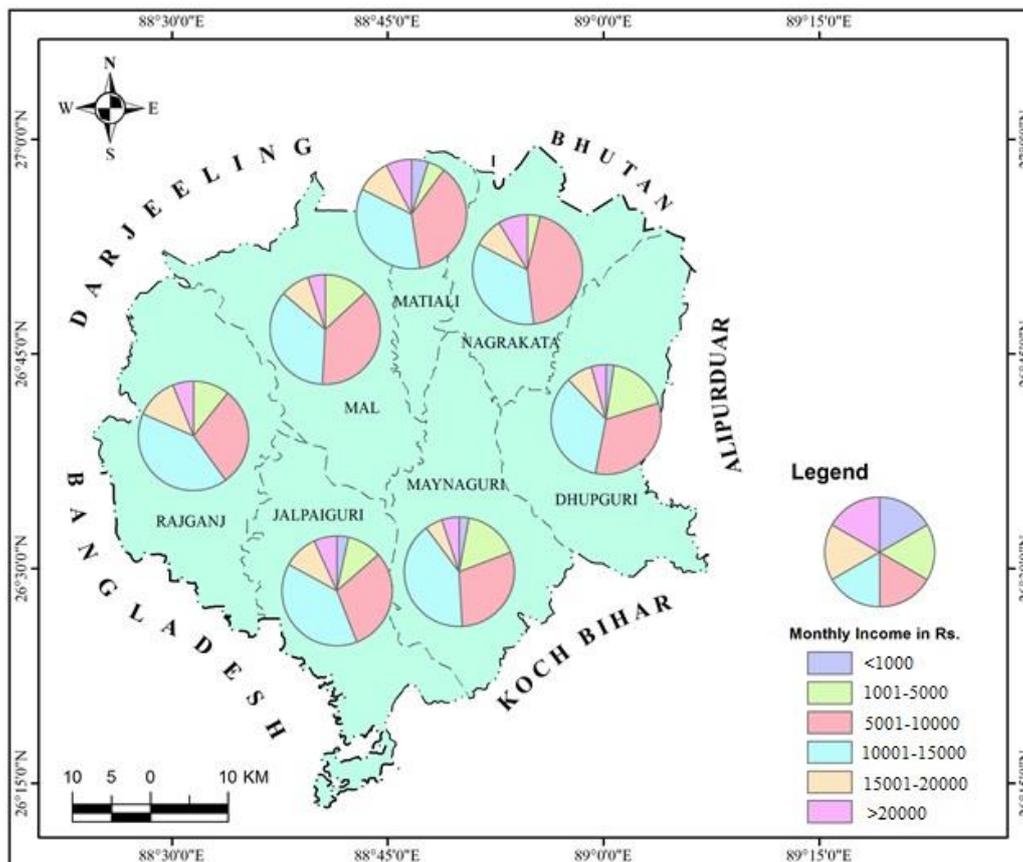


Fig. 6.16: Monthly Household Income of Jalpaiguri district

Source- Computed by researcher, 2016

Pattern of expenditure for the rural population in Jalpaiguri district depicts that 16 numbers of households have a monthly expenditure of less than Rs.1000. However, 15 households have their monthly income less than Rs.1000 indicating a higher monthly expenditure than the monthly earning of the households promoting indebtedness in the study area.

Table 6.23: Monthly Household Expenditure

C.D. Blocks	<1000	1001-5000	5001-10,000	10,001-15,000	15,001-20,000	>20,000
Rajganj	0	7	22	26	7	3
Jalpaiguri	2	10	17	20	6	4
Maynaguri	5	31	56	68	9	7
Dhupguri	5	44	66	69	16	9
Mal	2	26	76	69	17	10
Matiali	2	2	35	14	4	3
Nagrakata	0	3	39	27	5	7
Total	16	123	291	293	64	43

Source- Field survey, 2015-16

Table 6.23 depicts that 123 households has a monthly expenditure of Rs.1001-5000. Again, 291 household has a monthly expenses ranging between Rs.5001-10,000. Furthermore, 293 households have a monthly expenditure of Rs.10,001-15,000. The numbers of household whose monthly expenditure is between Rs.15,001-20,000 is 64 and 43 households have a monthly expenditure more than Rs.20,000 (Fig. 6.17).

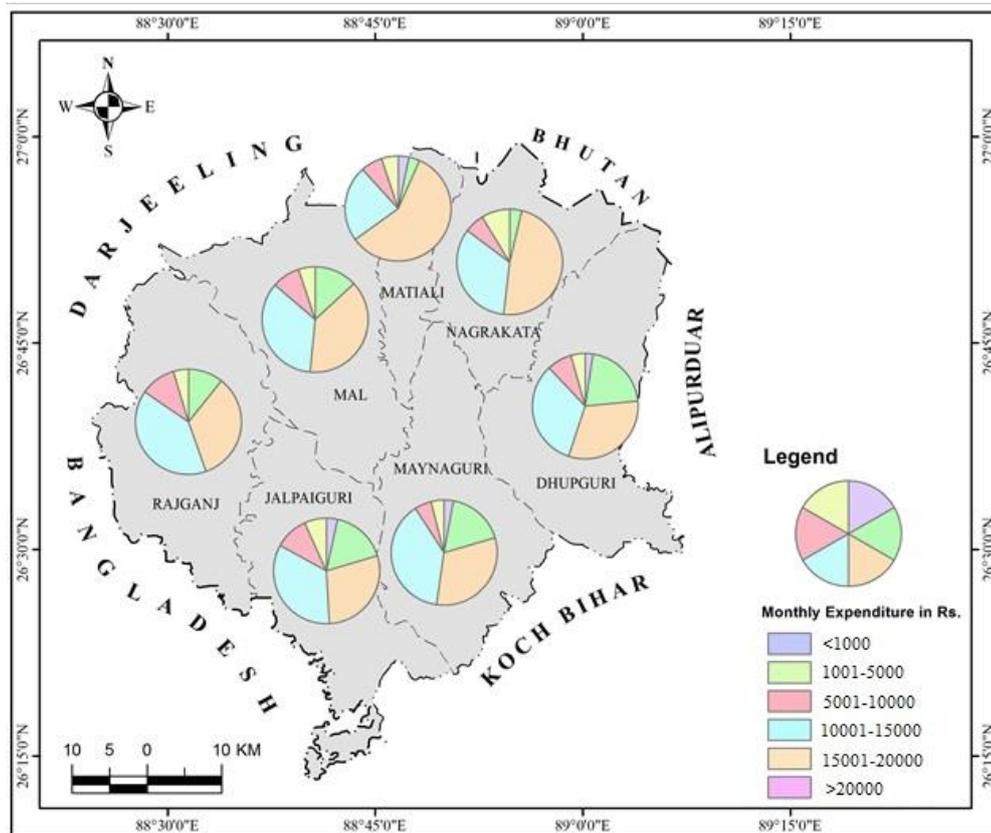


Fig 6.17: Monthly Household Expenditure of Jalpaiguri district

Source- Computed by researcher, 2016

6.17 Annual Income and Expenditure

Table 6.24 furnishes the annual income and expenditure pattern of the rural households of Jalpaiguri district. The annual household income and expenditure has been grouped into the following six categories. Firstly, income and expenditure below Rs.10,000, secondly, income and expenditure ranges between Rs.10,001-25000, thirdly, between Rs.25,001-50,000, fourthly, income and expenditure ranges between Rs.50,001-75,000, fifthly, between Rs.75,001-1,00,000, and lastly income and expenditure above Rs.1,00,000.

From Table 6.24 it is observed that 16 households has their annual income less than Rs.10,000. The members of these households depend on daily wage earnings and their employment structure is irregular. Again 51 households have an annual income of Rs.10,001-

25000. Further the numbers of households with an annual income ranges between Rs.25,001-50,000 is 198.

Table 6.24: Annual Household Income

C.D. Blocks	<10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0	7	12	22	12	12
Jalpaiguri	2	2	13	21	10	11
Maynaguri	5	13	38	53	52	15
Dhupguri	5	21	47	70	44	22
Mal	2	7	45	64	57	25
Matiali	2	1	16	11	4	6
Nagrakata	0	0	8	35	24	14
Total	16	51	198	265	200	100

Source- Field survey, 2015-16

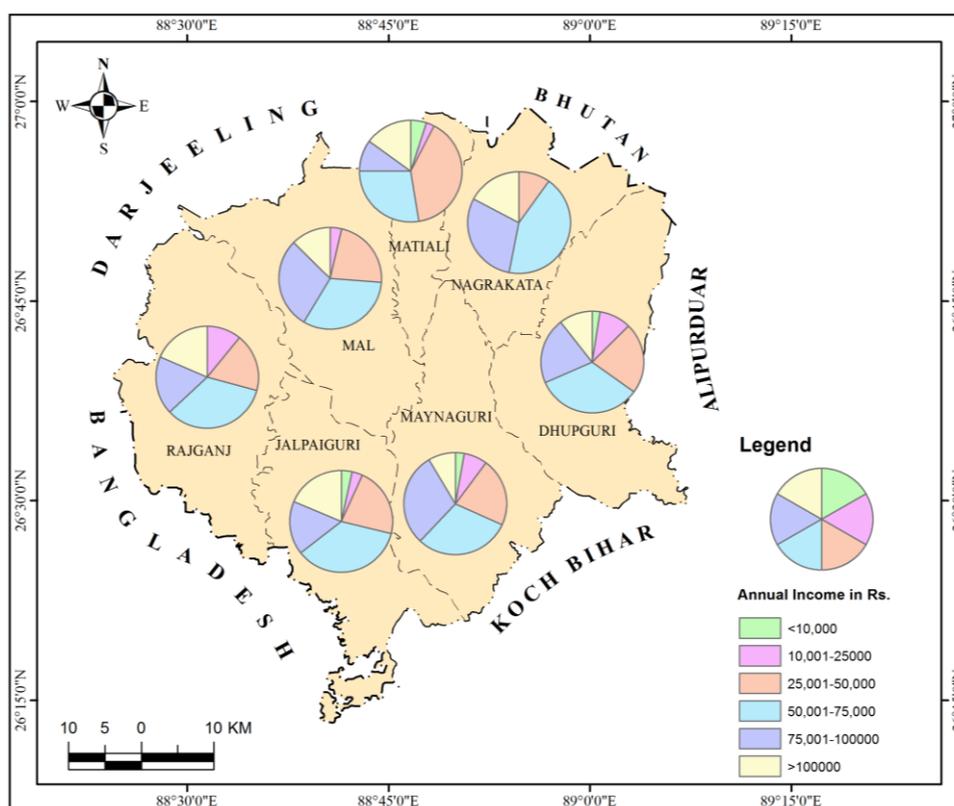


Fig. 6.18: Annual Household Income of Jalpaiguri district

Source- Computed by researcher, 2016

However the majority of the sampled households i.e. 265 households has their annual income ranges between Rs.50,001-75,000. It has been observed that these households are engaged as wage earners and participate in small business activities. Likewise, 200 households of rural Jalpaiguri district has their income ranges between Rs.75,001-1,00,000 per annum and the numbers of households who earns more than Rs.1,00,000 annually is 100 who are engaged in farming activities and in service sectors (Fig. 6.18).

The analysis of the expenditure of a household is important as it provides the knowledge of the standard of living of the households. However it has been observed during the course of field survey 2015-16, that a huge amount of all expenses have been incurred on the consumption of food articles and on clothing and miscellaneous goods and services.

Table 6.25: Annual Household Expenditure

C.D. Blocks	<10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0	9	13	24	10	9
Jalpaiguri	2	2	11	25	12	7
Maynaguri	5	17	43	47	50	14
Dhupguri	5	24	51	65	46	18
Mal	2	20	55	58	48	17
Matiali	2	13	4	11	4	6
Nagrakata	0	3	28	25	18	7
Total	16	88	205	255	188	78

Source- Field survey, 2015-16

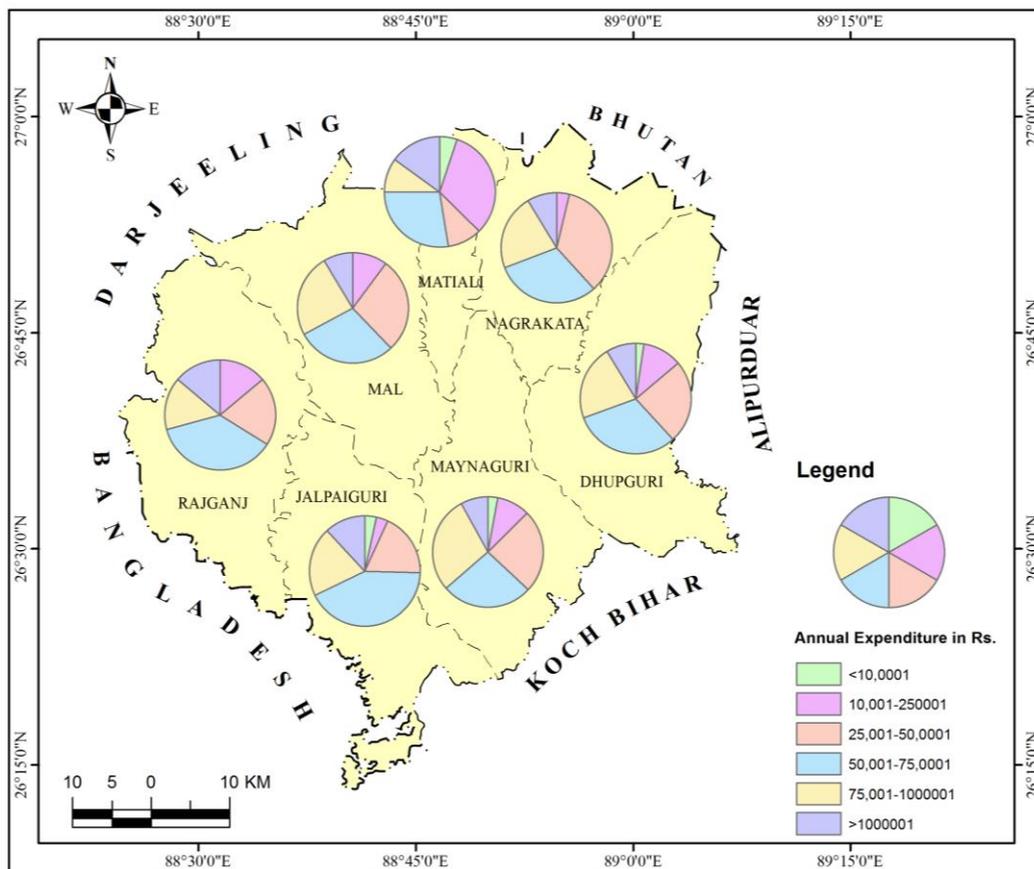


Fig. 6.19: Annual Household Expenditure of Jalpaiguri District

Source- Computed by researcher, 2016

Table 6.25 depicts that 16 households has their expenditure less than Rs.10,000 per annum which is similar to the numbers of household whose earns less than Rs.10,000 annually in the study area. Further 88 households have an annual expenditure ranges between

Rs.10,001-25000. Again, the numbers of households with an annual expenditure ranges between Rs.25,001-50,000 is 205 which is higher than the percentage of households who earns between Rs.25,001-50,000 annually. However, 255 households have an annual expenditure ranges between Rs.50,001-75,000. 188 households of Jalpaiguri district have an expenditure ranges between Rs.75,001-1,00,000 per annum and the number of households with an expenditure more than Rs.1,00,000 annually is 78 (Fig. 6.19). Moreover, it has been observed that these households have their annual income level higher than their annual expenses.

6.18 Annual Saving

Annual household savings is significant for a long-term economic development of a region and Jalpaiguri district is of no exception. It has been inferred from the study area that the annual expenditure is equal to the annual earnings of the low income group and therefore they do not get any opportunity of saving any surplus income.

Table 6.26: Annual Saving of the Percentage of Households

C.D. Blocks	Nil	0-5000	5001-10,000	10,001-15,000	>15,000
Rajganj	15.38	52.31	21.54	10.77	0.00
Jalpaiguri	32.20	35.59	20.34	8.47	3.39
Maynaguri	43.18	33.52	19.32	3.41	0.57
Dhupguri	44.29	31.43	14.76	7.14	2.38
Mal	52.50	32.00	11.50	4.00	0.00
Matiali	37.50	40.00	10.00	10.00	2.50
Nagrakata	55.56	27.16	11.11	6.17	0.00
Total	43.73	33.98	15.18	6.02	1.08

Source- Field Survey, 2015-16

Table 6.26 depicts that a significant percentage of 43.73% of households does not have any saving. However, 33.98% household saves income upto Rs.5000 annually. 15.18% household saves an income ranges between Rs.5000-10,000 and a meager proportion of household at 6.02% saves income between Rs.10,001-15,000 per annum. Further, 1.08% household saves an income more than Rs.15,000 annually (Fig. 6.20). As observed during the field survey, 2015-16 the high range of savings in the study area is attributed to the proportion of households cultivating a large size of land holdings, procuring bulk of livestock and pursuing business activities.

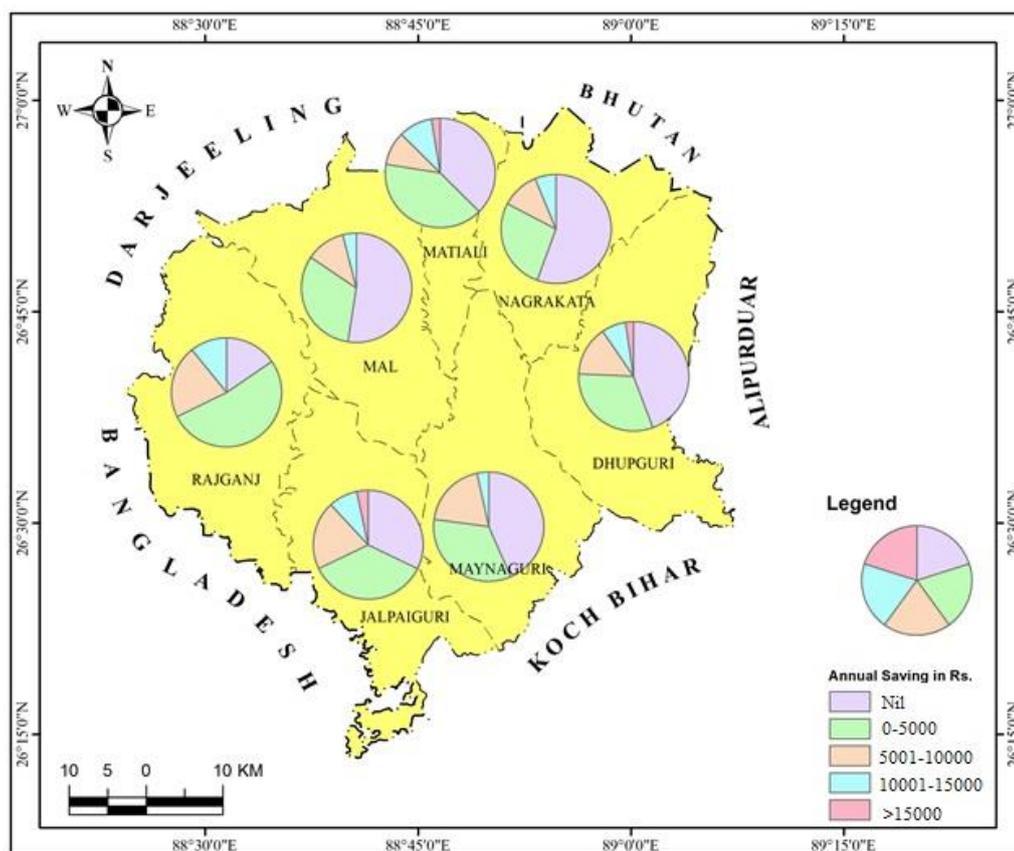


Fig. 6.20: Annual Saving of Jalpaiguri district

Source- Computed by researcher, 2016

6.19 Indebtedness

It has been observed that 33.25% households representing all occupation groups have taken loan or debts from various agencies in the study area. 4.22% households have taken loan less than Rs.10,000 annually.

Table 6.27: Indebtedness of the Percentage of Households

C.D. Blocks	Nil	0-10,000	10,001-15,000	15,001-20,000	>20,000
Rajganj	52.31	3.08	12.31	18.46	13.85
Jalpaiguri	37.29	18.64	18.64	20.34	5.08
Maynaguri	50.57	6.25	19.32	6.82	17.05
Dhupguri	71.29	1.44	11.96	6.70	8.61
Mal	80.00	3.50	5.00	6.00	5.50
Matiali	95.00	2.50	0.00	0.00	2.50
Nagrakata	76.54	0.00	7.41	6.17	9.88
Total	66.75	4.22	11.33	8.07	9.64

Source- Field survey, 2015-16

Likewise, it is noted from Table 6.27 that the highest share of household who have borrowed between Rs.10,001-15,000 is 11.33%. It has been observed that the borrowers in

the rural areas are not only dependent upon the indigenous money lenders charging high rate of interest but also they have taken loan from various financial institutions, cooperative societies, Government schemes and commercial banks at a low rate of interest. The loans taken from the various sources have been used by the debtors for the treatment of prolonged illness, celebrations of birth or marriage ceremonies or for the purchase of livestock.

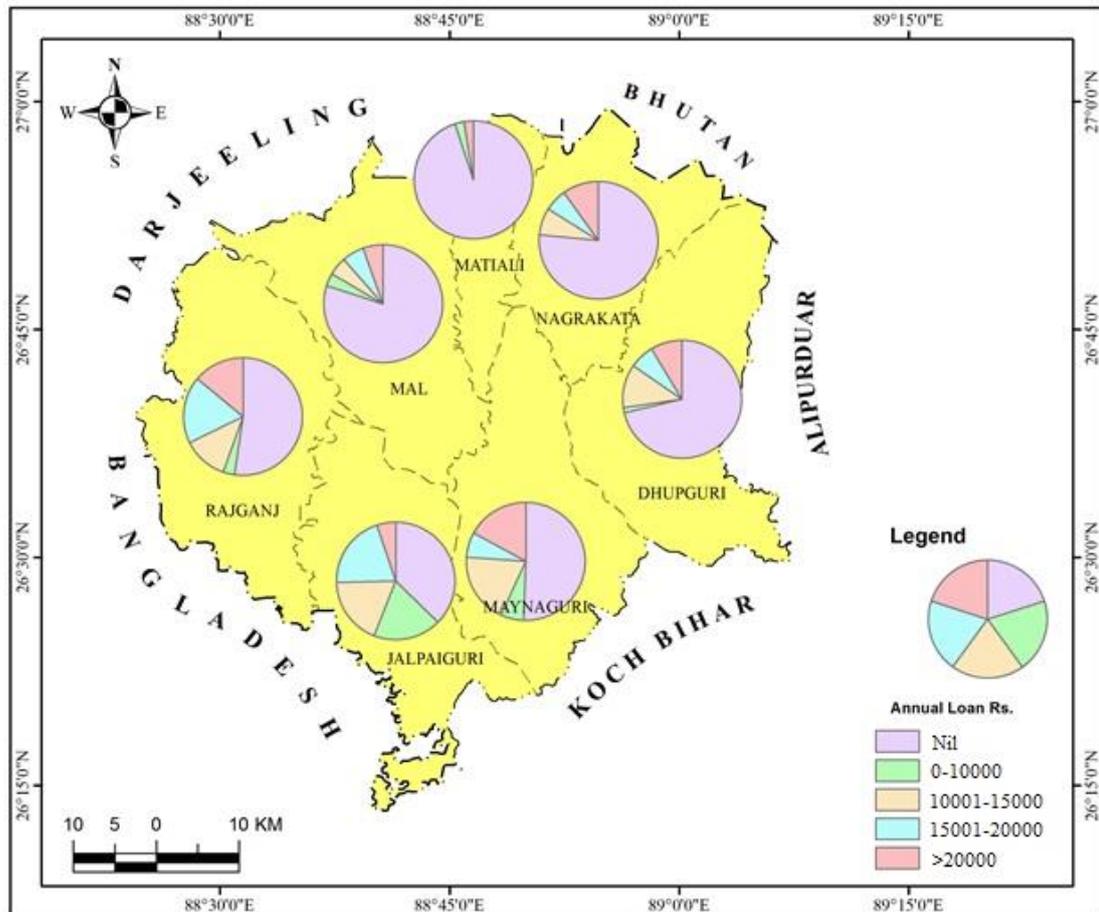


Fig. 6.21: Household Indebtedness in Jalpaiguri district

Source- Computed by researcher, 2016

8.07% households have taken loan ranges between Rs.15,001-20,000 and 9.64% households have borrowed money more than Rs.20,000 annually (Fig. 6.21). The reason behind the high range of indebtedness of the households in the study area is attributed to the purchasing of agricultural implements, for non-farm operations which involves small shops and business activities.

6.19.1 Purpose of Indebtedness

In order to explore the needs of the rural people the respondents were asked to state their purpose of indebtedness in the study area. Table 6.28 depicts the various reasons for which the households have taken loans from various agencies. 32.97% of the households revealed that they borrowed money for the purpose of house-building.

Table 6.28: Purpose of Indebtedness of the Households in percentage

C.D. Blocks	House Building	Livestock	Vehicles Purpose	Cultivation	Business	Others
Rajganj	25.81	9.68	0.00	22.58	6.45	35.48
Jalpaiguri	29.73	10.81	8.11	18.92	18.92	13.51
Maynaguri	25.29	4.60	2.30	36.78	18.39	12.64
Dhupguri	38.33	1.67	1.67	23.33	6.67	28.33
Mal	47.50	10.00	2.50	2.50	7.50	30.00
Matiali	0.00	50.00	0.00	50.00	0.00	0.00
Nagrakata	42.11	15.79	0.00	10.53	5.26	26.32
Total	32.97	7.25	2.54	23.19	11.96	22.10

Source- Field survey, 2015-16

7.25% household has taken debt for the purchase of livestock; the proportion of household who have taken loan for the purchase of vehicles is 2.54%. 23.19% household reveals that they have taken their loans for agricultural purposes; such as, for purchasing bulls or establishing pumping sets. To support small shops or to help small handicrafts 11.96% households have borrowed money from various agencies. Similarly 22.10% households have borrowed money for other purposes which involve their socio-economic necessities like expenses on clothing, education, health and nutrition.

6.20 Level of Economic Development

Economic development determines the improvement in the quality of life of the rural people. Hence it plays a decisive role in the process of rural development. In order to identify the disparities in the level of economic development, Z-score and composite score technique has been applied. The extent of disparities has been analysed by classifying the development blocks of Jalpaiguri district into high, moderate and low level of economic development based on the economic scores.

For the analysis of the data, the following five variables which determine the level of economic development have been taken into account: percentage of households cultivating paddy (X_1), percentage of households cultivating jute (X_2), percentage of earning population (X_3), percentage of households with commercial type of farming (X_4) and percentage of households using improved seeds (X_5). Besides, for analyzing the economic development in the study area as a whole all the indicators are taken collectively, and the values of the composite standard score of variables group have been divided into high, medium and low category which clearly displays the disparities in the level of economic development in the different blocks of Jalpaiguri district. Table 6.29 depicts the z-score values of the economic development in the blocks of Jalpaiguri district.

Table 6.29: z-score of Economic Development in the blocks of Jalpaiguri district

C.D. Blocks	X ₁	X ₂	X ₃	X ₄	X ₅	Composite scores
Rajganj	0.31	1.68	1.03	-0.10	0.05	0.06
Jalpaiguri	-0.59	-0.53	-0.03	0.03	0.04	-0.22
Maynaguri	0.17	0.40	-0.84	0.08	-0.01	-0.04
Dhupguri	-0.45	0.75	-0.57	0.23	-0.02	-0.01
Mal	0.50	-0.30	0.49	-0.05	-0.03	0.12
Matiali	-1.56	-0.88	1.30	-0.04	-0.09	-0.26
Nagrakata	1.61	-1.12	-1.38	-0.13	0.05	-0.19

Source- Calculated by Author

Table 6.30: Level of Economic Development

Category	Z score range	Name of the Blocks
Low	<-0.25	Matiali
Moderate	-0.25 – 0.25	Jalpaiguri, Maynaguri, Dhupguri, Mal, Nagrakata,
High	>0.25	Rajganj

Source- Calculated by Author

Table 6.30 depicts that the high level of economic development based on composite standard scores has been observed in Rajganj (0.06) block of Jalpaiguri district. The variables which have influenced the high level of economic development include the percentage of households cultivating paddy, percentage of households cultivating jute, percentage of earning population, percentage of households with commercial type of farming and percentage of households using improved seeds. Since paddy is the most dominant food crop and jute being the principal cash crop of the study area therefore the households are highly engaged in the production of these crops. Further owing to the cultivation and production of these crops the households are consequently engaged in the commercial type of agriculture which requires a large number of agricultural labourers. Moreover, the households are also involved in various non-farm activities apart from the agriculture and allied activities in the study area which contributes to better economic development.

However, Jalpaiguri (-0.22), Maynaguri (-0.04), Dhupguri (-0.01), Mal (0.12) and Nagrakata blocks (-0.19) blocks displays moderate level of economic development where the cultivation of jute, percentage of households engaged in commercial type of farming and percentage of earning population are inadequate in this block. Further Matiali (-0.26) block falls in the lowest category in terms of economic development. The variables have negative scores in terms of cultivation of paddy, jute, commercial type of farming along with the use of improved seeds. Since there is a predominance of tea gardens in the northern part of the study area therefore the sampled households have a small proportion of cultivated land and hence the cultivation of paddy, jute are inadequate in this part of the study area. Hence, there is a need to promote rural economic development in each and every inhabited village of the

study area, as it is an important aspect of the process of rural development. Therefore development strategies should be formulated in order to reduce the disparities in the level of economic development in the rural areas of Jalpaiguri district.

6.21 Conclusion

It may be concluded that the economy of the rural areas of Jalpaiguri district is predominantly agriculture where paddy is the most dominant food crop of the district. Apart from the food crops jute and potato are the principal cash crops of the district along with tea cultivation which is very important as it is one of the main sources of employment and income in the rural areas of the district. Since, agriculture is the crucial sector of rural economy; 510.44 km² of its land is arable irrigated land (Census, 2011). Despite of this fact more than 60.00% sampled households do not have any cultivated area in the district. The percentage share of large operational holdings is also comparatively low in the rural sampled households.

Agriculture in the rural areas of Jalpaiguri district is largely dependent on wells and tube-wells irrigation at varying levels and cattle are overwhelmingly the most important livestock in this area. The study has highlighted the fact that among the various sources of income the poor landless agricultural labourers occupy the highest position sustaining their livelihood on daily wage earnings. Respondents are found to be indebted in the study area and it is due to the expenditure on socio-economic necessities. However, the villages which are in close proximity to the urban areas facilitate the households to engage themselves in non-farm activities. In Jalpaiguri district the economic indicators which are associated with the development of the rural areas includes agriculture, livestock, tea cultivation, suitable sources of irrigation and the growing labour forces and therefore to accelerate the pace of economic development proper emphasis should be given on these indicators to remove the slow and sporadic development of the rural economy.

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7.1 Introduction

Infrastructure plays a pivotal role in expediting the process of country's economic and social development as well as the promotion of balanced regional development. Basic infrastructural development of a region is significant because it facilitates rapid economic growth and reduces the regional disparity in terms of socio-economic development. Infrastructural facilities in the rural areas are necessary in order to improve the sustainability of the provision of basic needs such as water supply, electricity, communication, transport, health and education which accelerates both social and economic growth. Since the aspects of economic and social well-being are essentially associated with the infrastructural development therefore the adequate provision of basic infrastructural facilities for the large section of rural population is of utmost importance.

Infrastructural development has many dimensions. It involves the development related to roads, agriculture, irrigation, power and telecommunications, information technology, market centres, sanitation, and veterinary services in the rural areas of the country. Thus adequate provision of infrastructure is not only significant for the development of an area but also it forms an indicator of the scope of development of an area. Since sustainable rural development has always been one of the major concerns for development of the country therefore it is always necessary to increase investment in rural infrastructure in order to generate new economic aspects, additional employment opportunities and assets creation consequently leading to the improvement of the quality of life of rural masses.

To enhance the existing status of basic infrastructure in the rural areas, Government of India has introduced a number of infrastructural development programmes in the country and Jalpaiguri district of West Bengal is no exception. To achieve this objective major programmes like; Rural Infrastructure Development Fund (RIDF), 1995-96, was formed for the provision of loans to the State Governments for the completion of the rural infrastructural projects, Pradhan Mantra Gram Sadak Yojana (PMGSY), 2000, was implemented to provide road connectivity in the rural areas, Rajib Gandhi Grameen Vidyutikaran Yojana (RGGVY) in 2005, was initiated for rural electricity and household electrification and Bharat Nirman Programme (BNP) in 2005, was launched for the development of rural infrastructure through the provision of all-weather roads in the rural areas, construction of rural houses for the rural poor, provision of water supply to all uncovered rural households, electricity to the villages which are not electrified, creating additional irrigation facilities, and connecting the villages

with public telephone. However in spite of these implemented developmental programmes, inadequate infrastructural provision continues to remain as a constraint to rural development in the sampled villages of Jalpaiguri district as observed during the field survey, 2015-2016. Therefore, the present chapter deals with some of the notable features of different components of infrastructure in the rural areas of Jalpaiguri district.

7.2 Water Supply

Water supply is the matter of the state and the Government of India is responsible for setting the standards of the quality of water for the rural and urban areas. However the state governments have to establish departments or special agencies for the supply of domestic water for the rural and the urban areas. The Central Government increases states efforts through financial and technical support. National Rural Drinking Water Programme (NRDWP) launched on April 2009, Ministry of Drinking Water and Sanitation, was implemented in rural India with the objective of reducing the water crises and ensuring safe drinking water facility to all rural households. The programme was launched after merging the three programmes; Accelerated Rural Water Supply Programme (ARWSP), Swajaldhara and National Rural Water Quality Monitoring & Surveillance. In West Bengal the Zilla Parishad has Public Health & Environment Standing Committee, which works in close coordination with the Public Health Engineering Department (PHE), for the provision of safe and clean rural water supply in the district. In Jalpaiguri district a wide range of activities of rural drinking water supply programme have been initiated for the infrastructural development with the aim of ensuring adequate water supply at the household level in the rural areas.

During the field survey 2015-16, it has been observed that though the PHE of Jalpaiguri district have focused the sustainability of fresh drinking water supply yet there is an acute shortage of water supply observed in the sampled villages of Jalpaiguri district. Out of the seven Community Development blocks of the district, only the sampled villages of Dhupguri and Mal block have access of a single piped water supply available from the tea gardens for the consumption needs of the households. However there are no filtering facilities found in any of the sampled villages of Jalpaiguri district.

7.2.1 Drinking water source

Since there is a scarcity of rural water supply in the district, provision of safe and clean drinking water has emerged as a major challenge in the rural areas of Jalpaiguri district. Hence, it is worthwhile to examine the various sources of drinking water in the households of the sampled villages of the district. It has been observed during the field survey 2015-16, that

there is a complete absence of PHE tap water supply in the sampled villages of Jalpaiguri district.

Table 7.1: Household Sources of Drinking Water (in percentage)

C.D. Blocks	Well (covered/uncovered)	Tube Well	Hand Pump	Others
Rajganj	84.62	4.62	3.08	7.69
Jalpaiguri	83.05	5.08	3.39	8.47
Maynaguri	90.86	1.71	4.00	3.43
Dhupguri	76.08	3.83	3.35	16.75
Mal	80.00	4.00	3.00	13.00
Matiali	90.00	2.50	0.00	7.50
Nagrakata	83.95	3.70	3.70	8.64
Total	82.75	3.50	3.26	10.49

Source- Field Survey, 2015-16

A large part of the rural households depend on their private wells, and hand pumps within their premises. Besides, an increasing use of hand pumps clearly points to the over exploitation of ground water in the sampled villages of the district. Therefore the Government should focus on mapping the different aquifers in order to identify the quantity and quality of ground water resource for the reduction of the declining ground water levels in the rural areas of Jalpaiguri district.

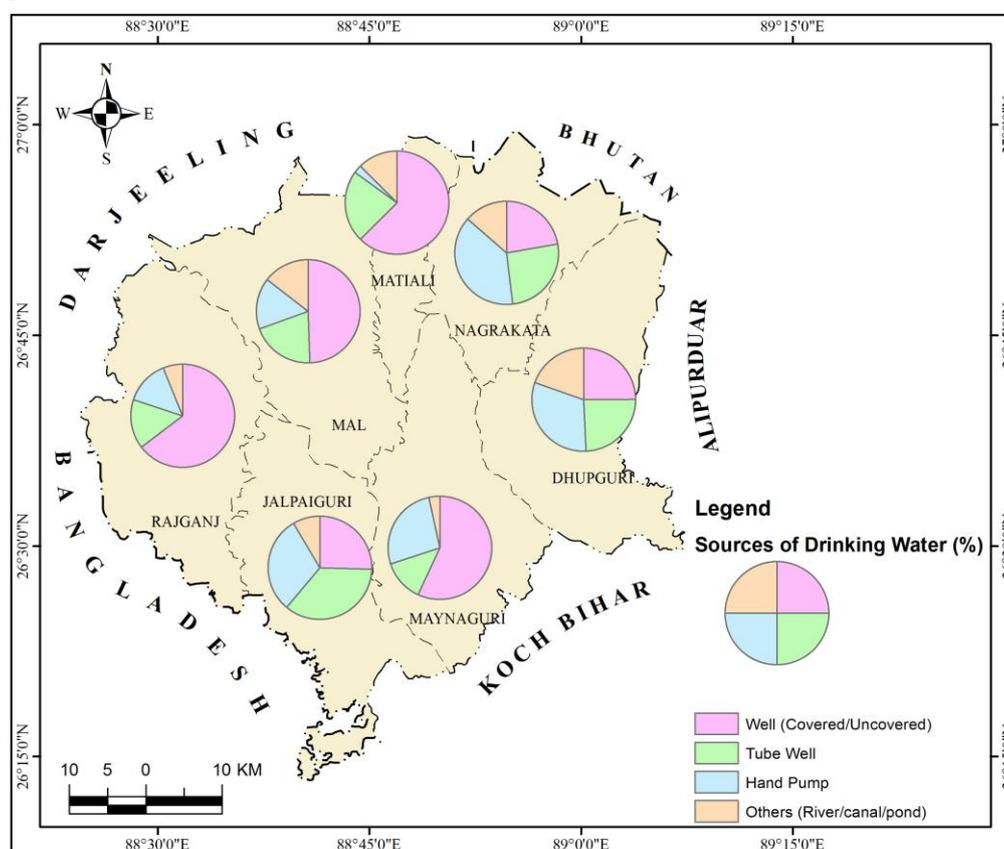


Fig. 7.1: Sources of Drinking Water in Jalpaiguri district

Source- Computed by researcher, 2016

According to the Report of the PHE, there are altogether 9949 ordinary hand pumps available in all the blocks of Jalpaiguri district among which 851 hand pumps needs to be repaired and there are altogether 2808 rig bored hand pumps available in the blocks of the district where 216 hand pumps needs to be repaired. Moreover, 19 numbers of rig bored hand pumps are affected due to the low water level in rural Jalpaiguri district (PHE, Jalpaiguri District, 2016-2017). However, in ordinary hand pumps the water is lifted by atmospheric pressure whereas in rig bored hand pumps the water is lifted through cylinder and it is drawn from the water level between 24 to 28 feet.

It is according to the Government norms, Rural Water Supply Scheme, (RWSS) 2011, that there should be 1 hand pump for 250 persons or 20 households so that every rural person has the facility of safe water for drinking, cooking and other domestic needs throughout the year.

It is evident from Table 7.1 that 82.75% households depend on their privately owned wells for drinking water but since it does not yield pure and filtered water therefore the quality of water varies with the seasons. During rainy season the water becomes muddy and it is hardly suitable for the purpose of drinking. The use of wells is accounted to be highest in Maynaguri block with 90.86% due to the non-availability of piped water supply in the sampled households of the block. Least use of wells is observed in Dhupguri block with 76.08% owing to the use of hand pumps by the households (Fig. 7.1). Further, the wells are cheap to construct and the average annual rainfall is 3000-4000 mm in Jalpaiguri district and it is fairly satisfactory to build wells within the premises of the households.

The consumption of drinking water from the tube wells is 3.50% while 3.26% households in the sampled villages of Jalpaiguri district depend upon their own hand pumps. The use of tube well is well established in all the blocks of Jalpaiguri district. Since the cultivation of food crops is promising in the study area therefore tube well holds an important source for drinking water as well as for the purpose of irrigation. It has been noted that due to the inadequacy of safe drinking water within the premises of the rural households, 10.49% of households have to trudge long distances to fetch drinking water from the government owned hand pumps or tube wells located within the premises of primary schools and primary health centres. The households also fetch drinking water from the river or pond which is untreated water in the study area.

As observed during the survey period 2015-16, that though the presence of tube wells prevents the percolation of contaminating ground water in the sampled villages of the district but the water from tube wells and hand pumps contains iron to an undesirable degree.

However, the PHE department of Jalpaiguri district has tested the quality of rural drinking water supply which includes water samples of the ordinary hand pumps as well as the rigid hand pumps and the water samples of the rural water supply schemes of Jalpaiguri district.

Table 7.2: Water quality tests of the blocks of Jalpaiguri district

C.D. Blocks	Total tests done	Iron Contaminated	Bacteriological Contamination
Rajganj	1293	662	1082
Jalpaiguri	1588	847	1203
Maynaguri	1640	190	790
Dhupguri	1097	445	825
Mal	1434	94	411
Matiali	1445	60	507
Nagrakata	1982	540	722
Total	10479	2838	5540

Source- PHE, Jalpaiguri District, 2017-18

The PHE department has tested the chemical as well as the bacteriological parameters of the water samples of the rural areas of Jalpaiguri district. It has been observed from Table 7.2 that out of the total tests done of the water samples (10479) of all the seven C.D. blocks, 2017-2018, 2328 tests of the water samples are contaminated by iron and 5540 tests of the water samples have accounted for bacteriological contamination in the rural areas of Jalpaiguri district. Thus, availability of rural drinking water needs further improvement in order to access safe drinking water in all segments of the rural people of Jalpaiguri district.

7.3 Solid Waste Disposal

Solid waste connotes the discarded things which have no value to the owner. Physically the waste is not always limited to solids but also it is the liquid matters that are kept in bins. Solid waste in rural areas of Jalpaiguri district includes domestic waste, agricultural waste like crop residues, animal manures, waste generated from the markets and other commercial units, street sweeping and medical wastes. However, agricultural wastes are degradable but it is an issue of concern for the commercial and medical wastes which are non-biodegradable.

It is according to the Government norms, that there should be provision of 3 baskets or containers per rural households for the disposal of solid wastes, Government of India, Swachh Bharat Mission (Gramin). But, Table 7.3 depicts that 76.74% households dump the solid wastes in open space which become a serious problem of environmental pollution and increases the extent of waste production. During the field survey, 2015-16, it has been

observed that the rural households of the sampled villages of Jalpaiguri district are deprived of the provision of baskets or containers for the disposal of solid wastes.

Table 7.3: Solid waste disposal (in percentage)

C.D. Blocks	Open Space	Others (Rivers/ponds)
Rajganj	78.79	21.21
Jalpaiguri	69.49	30.51
Maynaguri	78.98	21.02
Dhupguri	77.51	22.49
Mal	78.00	22.00
Matiali	82.50	17.50
Nagrakata	67.90	32.10
Total	76.74	23.25

Source- Field Survey, 2015-16

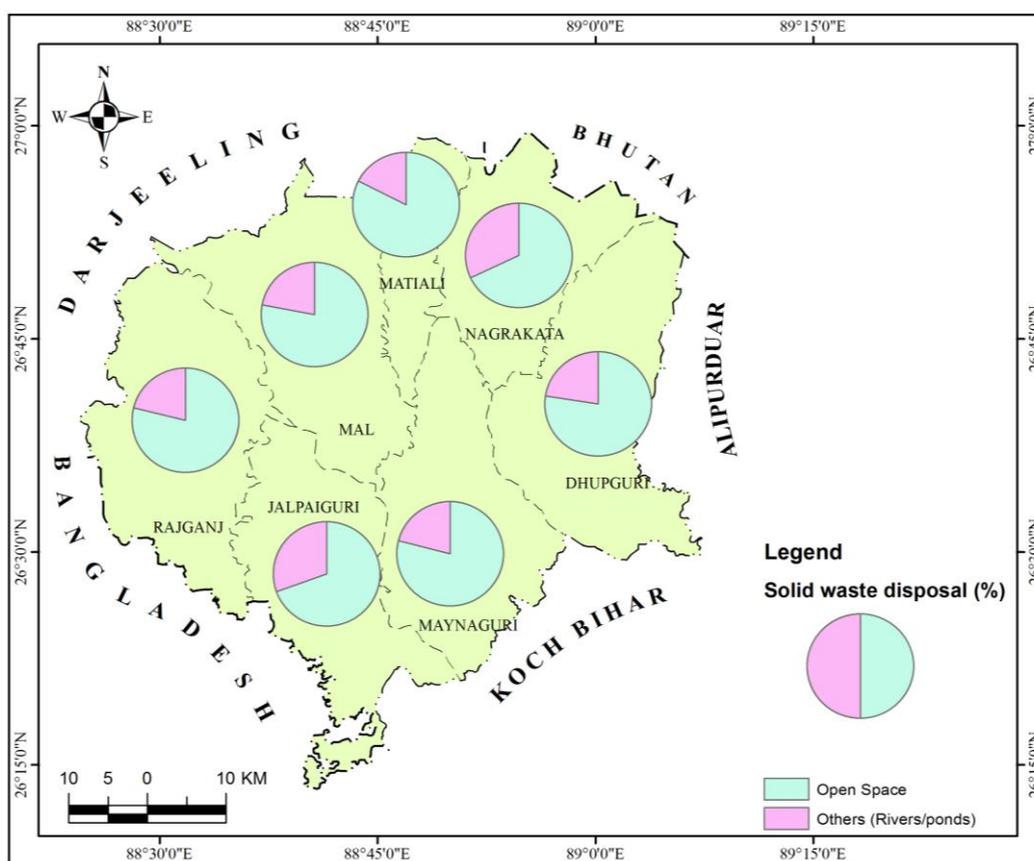


Fig. 7.2: Solid Waste Disposal in Jalpaiguri district

Source- Computed by researcher, 2016

The highest percentage of households disposing the solid wastes in open space is found in Matiali block with 82.50% followed by 78.98% households in Maynaguri block. The prime reasons behind the disposal of solid waste in open spaces is the absence of awareness among the rural population regarding the practice of the appropriate methods of solid waste disposal. Therefore awareness campaigning should be created for the rural masses

in order to impart knowledge regarding the solid waste disposal such as; grinding and discharging the wastes into sewers, sanitary landfills, salvaging and incineration. The non-biodegradable matters are responsible for causing health hazards in the study area as the matters stay for a longer period in the environment. The solid wastes can be managed if it is disposed safely by the process of land application through land filling and burial in the sampled villages of Jalpaiguri district.

Further it has been observed that since there is an absence of community pits, communal bins and domestic pits in the sampled villages of the district, therefore 32.10% households in Nagrakata block followed by 30.51% households in Jalpaiguri block dump their wastes on the rivers or nearby ponds (Fig. 7.2). Therefore for environmental protection there must be the provision of adequate storage facilities for the collection and transportation of solid wastes for the effective implementation of solid waste management system in rural areas of Jalpaiguri district.

7.4 Electricity

Electricity plays a crucial role in the social, infrastructural and economic development of the rural areas. Rural electrification in India is a plan programme which was introduced in the First Five Year Plan and is one of the essential components for the development of different sectors of economy. Therefore, village electrification is treated as Basic Minimum Services under Pradhan Mantra Gramodaya Yojana (PMGY) from the year 2001-02. There is a central assistance to the states for village electrification under MNP (Minimum Needs Programme). Besides, the Indian Government has launched the scheme Deendayal Upadhyaya Gram Jyoti Yojana, 2014, Ministry of Power, Government of India for the provision of the distribution of electricity in the rural households.

The availability of electrification in the sampled villages of Jalpaiguri district will lead to the improvement of economic as well as infrastructural aspects along with the provision of benefits like food security, better health and an improvement in educational sector. Since, Jalpaiguri district has predominant agricultural economy where the pump sets for lifting water are run by electricity; therefore the rural electrification is a promising means of economic well-being in the study area. However, it is according to the Government norms, that there should be 100% coverage of electricity, with a population of 1000 in plains and 500 in tribal and hilly areas, Bharat Nirman, Government of India.

In Jalpaiguri district, the power is generated from the Jaldhaka Hydal Power Project of Darjiling district and then it is supplied from the substation of the West Bengal State Electricity Board. Besides, it is also supplied from the Chukha project of Bhutan (District

Census Handbook, Village and Town Directory, Jalpaiguri, 2011). For domestic purpose the total electric consumption in thousand kilowatts are 1,60,064, again for commercial purpose the total electric consumption is 65,207 thousand kilowatts, for industrial purpose it is 21,147 thousand kilowatts, 7,147 thousand kilowatts for public lighting, the electric consumption is 7,244 for agricultural irrigation and dewatering, again it is 5,487 thousand kilowatts for public water work and sewage pump and for miscellaneous purpose the electric consumption is 39,497 thousand kilowatts (District Census Handbook, Village and Town Directory, Jalpaiguri, 2011).

Table 7.4: Household Electricity (in percentage)

C.D. Blocks	Electrified	Not Electrified
Rajganj	98.46	1.54
Jalpaiguri	91.53	8.47
Maynaguri	96.02	3.98
Dhupguri	97.13	2.87
Mal	98.00	2.00
Matiali	87.50	12.50
Nagrakata	96.30	3.70
Total	96.27	3.73

Source- Field Survey, 2015-16

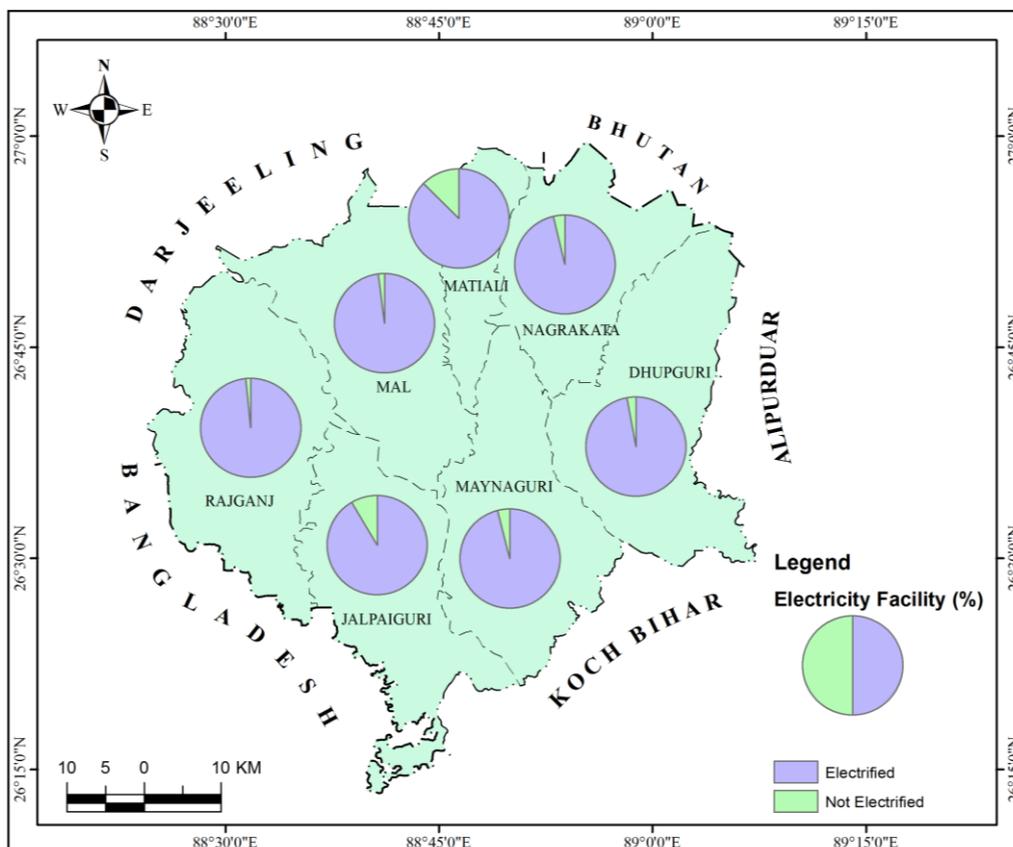


Fig. 7.3: Electricity facility in Jalpaiguri district

Source- Computed by researcher, 2016

Table 7.4 depicts that all the sampled villages of Jalpaiguri district has the facility of domestic electric connections. But during the field study 2015-16, it has been observed that 96.27% households of the sampled villages are electrified. There are 3.73% households in the sampled villages that are yet to get domestic power connections in Jalpaiguri district. However, during the field survey, it has been observed that there is an availability of power supply in 98.46% households of Rajganj block whereas only 87.50% households of Matiali block are electrified (Fig. 7.3). The reasons behind the non-availability of the power supply in the sampled households are the problem of high incidence of poverty among the rural masses. It has been observed during the field visit that the power distribution has been stopped in the rural households due to the non-payment of electric bills at regular intervals.

7.4.1 Load shedding

Transmission losses and erratic voltage has been a major concern in the power sector of the rural areas of Jalpaiguri district for which load shedding or power failure is a common feature of the study area. It is according to Deendayal Upadhyaya Gram Jyoti Yojana, 2014, Ministry of Power, Government of India, that there should be the availability of adequate power supply for 24 hours a day in the rural areas.

Table 7.5: Household Load shedding (in percentage)

C.D. Blocks	Frequent	Infrequent
Rajganj	71.88	28.13
Jalpaiguri	74.07	25.93
Maynaguri	62.72	37.28
Dhupguri	41.38	58.62
Mal	42.86	57.14
Matiali	60.00	40.00
Nagrakata	53.85	46.15
Total	60.69	39.31

Source- Field Survey, 2015-16

However, it has been observed during the field survey 2015-16, that 60.69% households of the sampled villages of the district are facing the trouble of frequent power failure for several days whereas 39.31% households observes infrequent power failure in the study area. Table 7.5 depicts that Jalpaiguri block accounts the highest proportion of households with 74.07% observing frequent power failure. Least has been observed in Dhupguri block which accounts 41.38% of households (Fig. 7.4).

During the field survey 2015-16, the rural population revealed that there is no proper maintenance of the electric lines which ultimately leads to power failure for long hours or even for several days. Moreover, during monsoon period due to heavy downpour there has

been a crisis of power supply and even the existing sub stations are unable to supply the required quantum of energy for domestic and agricultural activities.

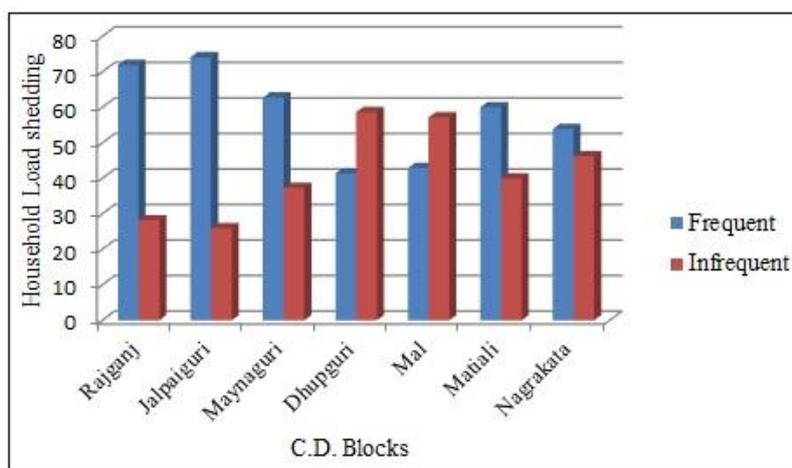


Fig. 7.4: Household Load shedding

Source- Computed by researcher, 2016

Hence the sampled villages of Jalpaiguri district are confronted with the shortage and irregularity of power supply in the domestic, agricultural and transport and communication sectors. Therefore, emphasis should be given on the better distribution of power supply in the sampled villages of Jalpaiguri district.

7.5 Veterinary Facility

Livestock constitute an important component of rural economy. The scenario is same for Jalpaiguri district. For the control and prevention of diseases of the livestock, dispensaries, artificial insemination centres and trained officers are required. It is according to the Government norms, that there should be 1 doctor for 5000 animals, Department of Animal Husbandry, Government of India. But during the field survey, it has been observed that there are no veterinary hospitals or veterinary sub-centres in the sampled villages of the study area.

Table 7.6: Veterinary Doctor (in numbers)

C.D. Blocks	Numbers of Veterinary doctor
Rajganj	3
Jalpaiguri	0
Maynaguri	0
Dhupguri	1
Mal	1
Matiali	0
Nagrakata	0

Source- Field Survey, 2015-16

Hence, as far as veterinary facilities are concerned the provision is inadequate in the study area. During the field survey 2015-16, the rural masses revealed that though there is a complete absence of veterinary dispensaries in their village yet veterinary services are available through the periodic visits of doctors in the sampled villages of the blocks for the protection of livestock.

Table 7.6 represents that veterinary facility is comparatively higher in the sampled villages of Rajganj block with the availability of 3 doctors than in Dhupguri and Mal block where there is a presence of a single doctor in each block. However, no veterinary doctors have been found in Jalpaiguri, Maynaguri, Matiali and Nagrakata blocks of Jalpaiguri district due to the absence of veterinary centres and sub-centres.

7.6 Rural Market

The rural marketing system is associated with the marketing functions and facilities obtained in rural areas for the effective outflow and inflow of agricultural and non-agricultural produce for the usage of the rural people. The markets of the community development blocks of Jalpaiguri district have been classified into regular market and periodic market. Regular market is controlled by normal regulations and is characterized by retail as well as wholesale business. Table 7.7 shows that the rural markets are unevenly distributed in the sampled villages of the district. Only Maynaguri, Dhupguri and Mal blocks have 4 regulated markets whereas there is a complete absence of the regulated market in the sampled villages of Rajganj, Jalpaiguri, Matiali and Nagrakata blocks.

Table 7.7: Rural Market (in numbers)

C.D. Blocks	Regular	Periodic
Rajganj	0	0
Jalpaiguri	0	2
Maynaguri	1	3
Dhupguri	1	3
Mal	2	2
Matiali	0	1
Nagrakata	0	0

Source- Village and Town Directory, Census, 2011

The reasons behind the absence of the regulated market are the inadequate provision of facilities required for the regulated markets such as; concrete sheds and yards, power supply, market link roads, culverts, sewage systems, provision of clean drinking water and sanitation within the market. Hence the existing number of regulated markets is inadequate to serve the marketing facility of the rural population.

Periodic markets or weekly markets in the rural areas of the district locally called as *haats* are comparatively higher than that of the regulated markets. During the course of field survey 2015-16, the respondents revealed that due to the inadequacy of the regulated market the rural masses of the sampled villages unload their farm and non-farm produce particularly at the periodic markets. It is according to the report of Marketing and Research Team (Mart), Ministry of Rural Development (1995), that there should be 1 periodic market for 14 villages. Table 7.7 depicts that there are 2 periodic markets available in Jalpaiguri block, 3 periodic markets available in Maynaguri block, similarly 3 periodic markets in Dhupguri block, 2 periodic markets in Mal block, and an availability of a single periodic market in Matiali block. *Haats* are basically a weekly event and are significant for the village economy where the producers sell their food grains, cash crops, horticulture and agricultural surplus. They are usually held once or twice a week on the roadside.

However, it is observed that there is an urgent need for the reorganization of the entire rural marketing infrastructure and particularly the regulated markets should be organized in the sampled villages of the blocks. It is because periodic market acts as the agencies for satisfying local demand and provides perishable goods to the villagers. But for purchasing valuable goods the rural population depends upon regulated rural market. During the course of field survey 2015-16, the rural population revealed that due to lack of proper regulated marketing facilities, the benefits of the higher prices of the farm productions are usurped by the middlemen and the rural farm producers receive low cost of production for their goods. Therefore adequate numbers of rural markets should be established in all the sampled villages of the blocks of Jalpaiguri district.

It has been observed during the survey 2015-16, that the farmers of the sampled villages do not have the provision of satisfactory storage facilities which results in a considerable wastage of their produce causing an economic loss to the producer.

7.6.1 Accessibility to Market

Inadequate transport facilities in the rural areas largely hamper the movement of the farm and non-farm productions of the villagers to the market. It is according to the recommended norms of National Commission on Agriculture (1976) and National Commission on Farmers (2004) that within a radius of 5 km there should be 1 regulated market. Table 7.8 represents the distance covered by the villagers from their households to the markets. 29.84% households have an easy access to the rural markets covering a distance of 0-3 km in the study area. The highest percentage of households in this category is found in Jalpaiguri block with 45.76% followed by Rajganj block with 44.62%. The reason behind an

easy access of the villagers to the market is the facility of the rural road network which acts as a backbone regarding the easy accessibility of the rural population in the study area.

Table 7.8: Accessibility to Market (in percentage)

C.D. Blocks	0-3 km	3-5 km	>5 km
Rajganj	44.62	50.77	4.62
Jalpaiguri	45.76	28.81	25.42
Maynaguri	21.02	47.73	31.25
Dhupguri	23.92	51.20	24.88
Mal	43.50	45.50	11.00
Matiali	0.00	100.00	0.00
Nagrakata	22.22	43.21	34.57
Total	29.84	48.97	21.18

Source- Field Survey, 2015-16

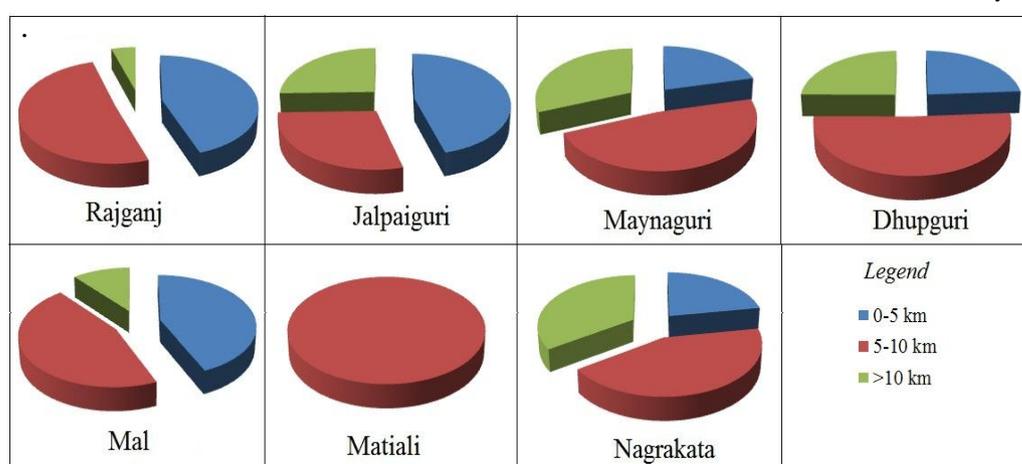


Fig. 7.5: Accessibility to Market in Jalpaiguri district

Source- Computed by researcher, 2016

Moreover, the blocks have a close proximity to the urban areas which improves the marketing efficiency of the villagers reducing the cost of transportation. Besides, the percentage of households having accessibility to market between 3-5 km is 48.97% in the sampled villages of Jalpaiguri district. However, 21.18% households of the sampled villages do not have an easy access to the rural markets as the rural masses travels above 5 km from their households to the rural market. 34.57% households of the sampled villages of Nagrakata block has accessibility to rural market at a distance of above 10 km followed by Maynaguri block with 31.25% owing to the poor road network connectivity (Fig. 7.5).

7.7 Education

Education is the most basic and essential criterion for economic development and social advancement which measures the overall development of an area. Education plays a prominent role in developing the quality of human resources by conveying ideas, thoughts and information and educational institutions acts as an important instrument for conveying

and containing information. According to the norms of RADPFI (Rural Area Development Plan Formulation and Implementation), 2017, there should be 1 primary school for 5000 rural population. However there are 61 government primary schools obtained in the seven blocks of the sampled villages of Jalpaiguri district. 4 primary schools in Rajganj block, 5 primary schools in Jalpaiguri block, 10 primary schools in Maynaguri block, 17 primary schools in Dhupguri block, 15 primary schools in Mal block, 5 primary schools in Matiali block and 5 primary schools in Nagrakata block have been obtained.

7.8 ICDS (Integrated Child Development Scheme)

The ICDS (Integrated Child Development Scheme) is a centrally sponsored scheme by the Ministry of Women and Child Development, Government of India. Through Anganwadi centres the scheme delivers its services with the objective of non-formal pre-school education and provision of supplementary nutrition to the children. According to the norms of RADPFI (Rural Area Development Plan Formulation and Implementation), 2017, there should be 1 Anganwadi centre for 5000 rural population. However there are 79 Anganwadi Centres obtained in the seven blocks of the sampled villages of the district. 4 Anganwadi centres in Rajganj block, 2 Anganwadi centres in Jalpaiguri block, 10 Anganwadi centres in Maynaguri block, 24 Anganwadi centres in Dhupguri block, 26 Anganwadi centres in Mal block, 4 Anganwadi centres in Matiali block and 9 Anganwadi centres in Nagrakata block have been obtained.

7.9 Health Centres

The spatial distribution of medical facilities and their utilization forms an important factor for evaluating the infrastructural provisions in the study area. According to the norms of RADPFI (Rural Area Development Plan Formulation and Implementation), 2017, there should be 1 health centre for 5000 rural population. However from the sampled villages of Jalpaiguri district, 19 Primary Health Sub-Centres (PHSC) has been obtained in the seven blocks of the sampled villages of Jalpaiguri district catering to the needs of the rural people. 1 PHSC in Rajganj block, 3 PHSC in Jalpaiguri block, 3 PHSC Maynaguri block, 7 PHSC in Dhupguri block, 3 PHSC in Mal block, and 1 PHSC in Matiali and 1 PHSC in Nagrakata block has been obtained in the study area.

7.10 Banking Facilities

'Banks are the vital financial institutions of any economy. Their role in economic development is very crucial as banks act as repositories of the community's savings and as purveyors of credit' (Rao, 1984). It is according to the norms of RBI, 2017, that there should be 1 bank branch for 5000 rural population in unbanked rural areas. Besides, according to the

norms of All Indian Rural Credit Review Committee there should be 1 agricultural credit society for 3000 rural population.

Table 7.9 represents that, the banking sector of the rural areas of Jalpaiguri district is not satisfactory. According to the field survey 2015-2016, there are 2 mini banks and 2 ultra-small branches of the banks have been accounted in the study area. In order to provide financial assistance to the rural working population 1 mini bank of Central Bank of India has been observed in the sample village of Maynaguri block. In Dhupguri block 1 ultra-small branch of Kshatriya Grameen Bank, 1 Indian Overseas Bank and 1 mini bank of Punjab National Bank have been observed in the sample villages of the block. However the rural population of the sampled villages revealed that the staff is inadequate in the rural outlets of the commercial banks in the study area.

Table 7.9: Banking Facilities (in numbers)

C.D. Blocks	Numbers of Bank*	Agricultural credit society**
Rajganj	0	0
Jalpaiguri	0	0
Maynaguri	1	3
Dhupguri	3	0
Mal	0	0
Matiali	0	0
Nagrakata	0	0

*Source- *Field Survey, 2015-16*

***Village and Town Directory, Census, 2011*

Further it has been observed that there is an absence of banking facility in the sampled villages of Rajganj, Jalpaiguri, Mal, Matiali and Nagrakata blocks of Jalpaiguri district. The reasons behind the absence is the reluctance of the banking authorities to establish banking facility in the sampled villages due to lack of infrastructural facilities, unawareness of the rural population regarding the banking facilities and the problems of repayment of loans at time by the rural population in the study area. Jalpaiguri being agrarian district, three Agricultural credit societies have been accounted in the study area (Fig. 7.6). For the commercial cropping and the increasing use of agricultural inputs in the farm holding, the agricultural credit is highly required to the rural masses of the sampled villages. The farmers revealed that the credit societies saved the villagers from falling into the clutches of the private money lenders charging high rates of interest whereas borrowing from the agricultural credit societies the borrowers pay low interest charges.

However, Table 7.9 depicts that the number of agricultural credit societies available in the study area is inadequate to cater the needs of the rural population and therefore adequate numbers of agricultural credit societies should be established in all the sampled villages of Jalpaiguri district.

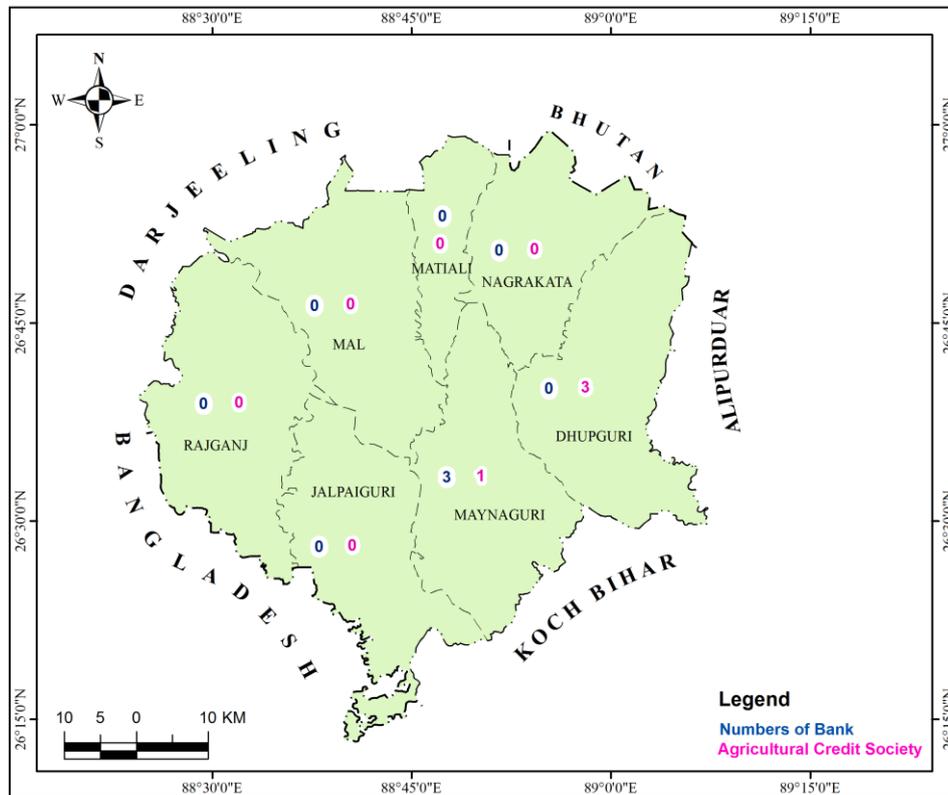


Fig. 7.6: Banking Facilities in Jalpaiguri district

Source- Computed by researcher, 2016

7.11 Rural Communication System

Good and efficient provision of communication system in the rural areas is an important indicator of the infrastructural development. According to the norms of the Ministry of Communication and Information Technology, Government of India, Department of Posts, 2011, there should be the availability of 1 post office for 3000 rural population. The postal facilities along with internet services and circulation of newspaper have been taking into account under rural communication system.

Table 7.10 reveals that there are only 4 sub-post offices obtained in the sampled villages which are inadequate in the study area. However the villagers revealed during the course of field survey 2015-16, that the delivery of letters, sale of stamps, money orders and Savings Bank facilities are available in the sub-post offices of Maynaguri, Dhupguri and Jalpaiguri blocks. As far as infrastructural provisions are concerned letter boxes should be

available and the postal services should be regulated as a daily service to all the villagers in the study area.

Table 7.10: Rural Communication System (in numbers)

C.D. Blocks	Post Office	Internet service centres	Circulation of Newspaper
Rajganj	0	0	2
Jalpaiguri	2	0	2
Maynaguri	1	2	6
Dhupguri	1	1	5
Mal	0	2	10
Matiali	0	0	3
Nagrakata	0	0	3

Source- Village and Town Directory, Census, 2011

Internet service is another indicator of communication development. There are 5 internet service centres or internet cafes, out of which 2 centres have been observed at the sampled villages of Maynaguri block, 1 centre at the sampled village of Dhupguri block and 2 centres has been found at the sampled villages of Mal block (Fig. 7.7).

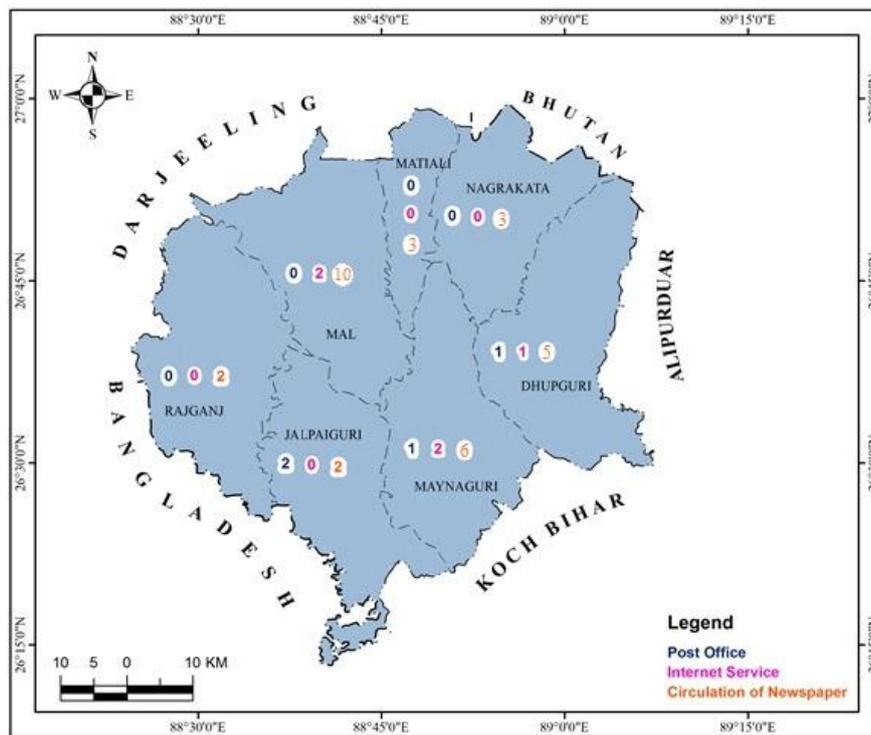


Fig. 7.7: Rural Communication System of Jalpaiguri district

Source- Computed by researcher, 2016

In terms of newspaper, the growth of circulation of newspaper indicates progress in mass communication and development in infrastructural facilities. The circulation of newspaper has been observed in each of the blocks of Jalpaiguri district.

The communication development is restricted to the sampled villages of the blocks which are in close proximity to urban areas. However, the communication facilities in terms

of the sub-post office and internet service centres have not percolated in the northern part of Jalpaiguri district which involves the sampled villages of Matiali and Nagrakata block. It is due to the fact that Matiali block is located at a distance of 60 km and Nagrakata block is 82 km away from the district headquarters. Hence, this part of the study area needs greater attention regarding the dispersal of communication facilities.

7.12 Commercial Establishments

The economy of the rural areas of Jalpaiguri district is predominantly based on agriculture and allied activities and at the same time, various non-agricultural activities also plays a vital role in providing the opportunities of employment and incomes to the growing labour force of both farming and non-farming households. Though the non-agricultural operations have a positive impact upon the progress of infrastructural development as it strengthens the establishments of tea industries, rice mills, pottery units and the number of shops in the sampled villages of the district yet it has been observed during field study 2015-2016 that the access to infrastructure is limited in the sampled villages of Jalpaiguri district.

Table 7.11: Commercial Establishments (in numbers)

C.D. Blocks	Tea factories	Rice mill	Pottery unit	Others	Number of owned shops
Rajganj	0	0	0	0	9
Jalpaiguri	0	2	1	0	4
Maynaguri	1	5	4	1	21
Dhupguri	1	3	4	2	19
Mal	2	17	4	0	22
Matiali	0	1	1	0	4
Nagrakata	0	7	0	0	8
Total	4	35	14	3	87

Source- Field Survey, 2015-16

While analyzing the number of the commercial establishments available in the sampled villages of the blocks, it has been observed that there are 4 tea factories in Maynaguri, Dhupguri and Mal blocks of Jalpaiguri district due to the fact that besides agriculture, tea trade supports the economy of Jalpaiguri district on a large scale. In addition to these, manufacturing of bamboo products and wool knitting unit have been observed in Maynaguri and Dhupguri blocks of Jalpaiguri district. Since paddy occupies a leading position in the study area there are 35 rice mills in the sampled villages of the blocks. Table 7.11 depicts that 17 rice mills are in Mal block, 7 rice mills in Nagrakata block and 5 rice mills in Maynaguri block.

In terms of pottery unit, there are 14 clay pottery units observed in the sampled villages of Jalpaiguri district. Furthermore, Jalpaiguri district has a rich reserve of forest

resources which gives an impetus to the villagers to open saw mills. Thus there are 3 saw mills in the sampled villages of Maynaguri and Dhupguri blocks of Jalpaiguri district.

In addition to these, a total number of 87 shops are recorded in the sampled villages of the district. The highest number of owned shops has been found in Mal block with 22 shops followed by Maynaguri block. Grocery, medicine, tailoring and confectionery shops have been recorded during the field survey, 2015-2016. However, the number of village industries obtained in the sampled villages of Jalpaiguri district is inadequate to serve the infrastructural development of the study area and therefore special attention should be made regarding the quantitative expansion of the village industries.

7.13 Rural Transport

‘Transportation is a measure of the relations between areas and is therefore an essential aspect of geography. It works as a catalyst in bringing about agricultural as well as rural industrial development’ (Gaur, 1985). An efficient rural transportation is significant in the rural areas for the utilization of resources and for the movement of goods as well as passengers. The road network is the base of spatial interaction in the rural areas and it acts as an important factor in terms of accessibility to any region. Owing to this fact road network in the rural areas has always been considered crucial by the development planners.

‘Rural connectivity is the key component of rural development and poverty alleviation in India’ (Mukundan, 2009). Rural transport efficiently linking all villages is the backbone on which the infrastructural development of a rural area is built. Rural road network is the most significant mode of transport as it provides accessibility to the rural population towards various facility centres. In order to provide all-weather roads accessibility to all villages in India, a rural road programme called Pradhan Mantra Gram Sadak Yojana (PMGSY), a centrally sponsored scheme was initiated in December 2000.

However in Jalpaiguri district, the blocks are served by both National Highways and State Highways. The highways that are connected to the blocks of Jalpaiguri district are; Rajganj block is connected to NH-31 and SH-12-A, Jalpaiguri block is linked with SH-12-A, Maynaguri block is connected to NH-31 and SH-12-A, Dhupguri block is linked with NH-31 and NH-31c, Mal block is connected to NH-31 and SH-12, Matiali block is connected to NH-31 and Nagrakata block is linked with NH-31 and SH-12-A.

However, according to the data in District Statistical Handbook, 2012, the total surfaced road length (km) of each block of Jalpaiguri district has been calculated and it is evident from Table 7.12 that the total surfaced road length is significantly low in comparison to the area (km²) of each block of Jalpaiguri district. The surfaced road length in the rural

areas of Jalpaiguri district is maintained by the P.W.D, Zilla Parishad, Gram Panchayat & Panchayat Samiti and PMGSY.

Table 7.12: Block wise Length of Roads

C.D. Blocks	Rural area km ² *	Total Surfaced road length (km)**	Road Density in km/ km ² **	Population/km of road length**
Rajganj	614.82	378.92	0.616	503
Jalpaiguri	500.65	397.66	0.794	658
Maynaguri	530.60	398.85	0.752	730
Dhupguri	565.10	398.95	0.706	953
Mal	545.90	394.79	0.723	698
Matiali	204.90	223.17	1.089	459
Nagrakata	397.48	184.78	0.465	689

Source- *District Statistical Handbook, 2012

**Calculated by author

In rural Jalpaiguri district, 524.4 km surfaced road length are maintained by the PWD, 811.17 km surfaced road length are maintained by the Zilla Parishad, 651.97 km surfaced road length are maintained by the Gram Panchayat and Panchayat Samiti and 389.94 km surfaced road length are maintained by the PMGSY. In order to analyze the infrastructural development in the rural areas, road transport is one of the significant development parameter.

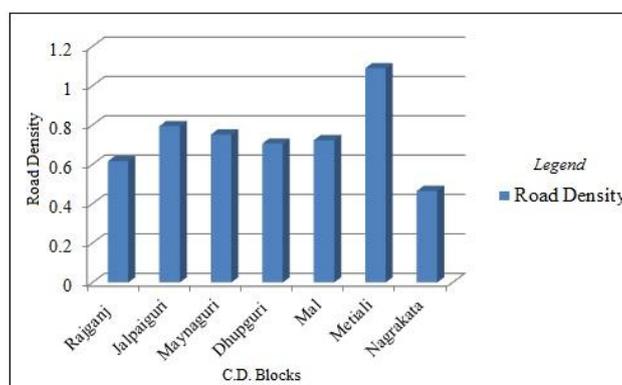


Fig. 7.8: Road Density in km/ km²

Source- Computed by researcher, 2016

Therefore, road density in km/km² and the population served/km road length has been calculated for each block of Jalpaiguri district and it reveals the block-wise variations in rural Jalpaiguri district.

The development of road density of an area is associated with the nature of topography and the development of the provisions of socio-economic amenities in an area. As per the Associated Chamber of Commerce and Industry (ASSOCHAM), 2011-12, all India road density is 1.48 km/km². Thus, on the basis of the report, all the blocks of Jalpaiguri district belong to low road density as the road density of the blocks of the district ranges between 0.46 to 1.08 km/km² (Fig. 7.8).

Therefore, as far as road density is concerned, construction of surfaced roads and adequate repairing facilities at regular intervals is necessary for an easy accessibility in the rural areas of Jalpaiguri district. Further, the availability of surfaced roads is essential for the rural population commuting to urban areas and utilizing various modes of transport facilities. Moreover, it has been observed that the total length of unsurfaced road is 2045.32 km in rural Jalpaiguri district. The fair weather roads or the unsurfaced roads become miserable and muddy during the monsoon period due to heavy downpour. Hence, the fair weather roads should be converted into all-weather roads in order to promote the level of rural development. Though PMGSY has upgraded the existing surfaced roads in the rural areas yet the data clearly implies that the road density of the rural areas of Jalpaiguri district is lagging in terms of the all India road density, 2011-12. Therefore there should be substantial efforts of the Government authorities in developing the transport infrastructure in the rural areas of Jalpaiguri district.

Table 7.13 reveals the population pressure/km road length in rural Jalpaiguri district. The blocks has been categorized into low, moderate and high category in order to determine the inter-block variations in terms of the population served by per km road length in rural areas of Jalpaiguri district.

Table 7.13: Population/km of road length of rural Jalpaiguri district

Category	Population/km of road length	Name of the Blocks
Low	400-600	Rajganj, Matiali
Moderate	600-800	Jalpaiguri, Mal, Maynaguri, Nagrakata
High	Above 800	Dhupguri

Source- Calculated by Author

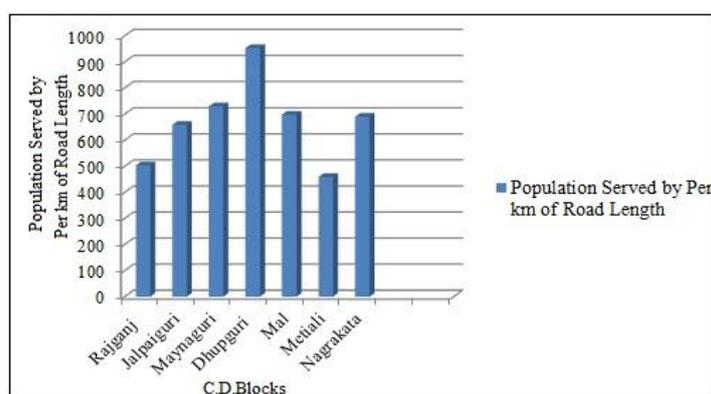


Fig. 7.9: Population/km of road length

Source- Computed by researcher, 2016

The high concentration of population or the pressure of population/km road length has been observed in the eastern part of the district consisting of Dhupguri block whereas the low population/km of road length is observed in Rajganj and Matiali blocks. The higher the road

density, the lesser is the population pressure/km road length in an area. However, Jalpaiguri, Mal, Maynaguri and Nagrakata blocks belongs to moderate category in terms of the population served by per km road length in Jalpaiguri district (Fig.7.9).

7.13.1 Access to Metaled Roads

Development of rural transport particularly connectivity to rural areas provides an impetus to the infrastructural development of the country. Good metalled road network is the pre-requisite for the transport facilities of an area. PMGSY has promoted the connectivity of the rural areas by the construction of all-weather roads in India and Jalpaiguri district is no exception. During the field survey 2015-2016, the percentage of households with close access to metalled roads has been observed.

Table 7.14: Close access to metaled roads (in percentage)

C.D. Blocks	0-3 km	>3 km
Rajganj	86.15	13.85
Jalpaiguri	77.97	22.03
Maynaguri	80.56	19.44
Dhupguri	81.82	18.18
Mal	81.00	19.00
Matiali	57.50	42.50
Nagrakata	92.59	7.41
Total	81.29	18.71

Source- Field Survey, 2015-16

It is evident from Table 7.14 that 81.29% households have accessibility to metalled roads below 3 km from their household premises. It has been observed that there are 18.71% households having accessibility to metalled roads at a distance above 3 km in the study area. However, according to the norms of PMGSY all habitations in a village with population 500 inhabitants should have accessibility to all-weather roads in plain areas.

The highest percentage of households having accessibility to metalled roads below 3 km has been observed in Nagrakata block with 92.59% followed by Rajganj block with 86.15% ensuring the fact that these metalled roads connect the villages with the district roads which are further connected to the state highways. Besides, the metalled roads provide an easy accessibility by way of connecting them with the primary schools, primary health centres, Anganwadi centres, sub-post offices, markets and different facility centres. On the other hand, it has been found that 42.50% households have their accessibility to metalled road at a distance above 3 km in Matiali block followed by Jalpaiguri block with 22.03% households. Though the unmetalled road connect the households with the nearest all-weather

motorable road yet larger distance to metalled roads in the rural areas greatly hamper the mode of transport for short and medium distances.

The ease with which a person can travel from one place to another is an essential aspect of economic and infrastructural development. It has been observed during the course of field survey 2015-16, that though under the programme of road construction, PMGSY roads are constructed yet the sampled villages of the study area face great inconveniences during monsoon period. This is due to the fact that the unmetalled roads remain unconnected to the metalled road network due to water-logging problems. Therefore there is an urgent need for the construction of surfaced roads and maintenance of the rural roads by periodical repairs in the sampled villages of Jalpaiguri district.

7.13.2 Distance to Bus Stops

Among the different modes of transport facilities in the rural areas of Jalpaiguri district, bus transport facility holds an important place for the rural masses due to its affordable transport cost. Table 7.15 reveals the distance covered by the rural masses from their dwelling houses to bus stops in the sampled villages of Jalpaiguri district. So far the distance to bus stops below 3 km is concerned; it has been observed that 22.65% households have the highest facility of bus transport, where Rajganj block accounts the highest percentage of households with 50.76% followed by Mal block, ensuring an easy accessibility of the rural masses to the urban service centres.

Table 7.15: Distance to bus stops (in percentage)

C.D. Blocks	0-3 km	3-5 km	>5 km
Rajganj	50.76	30.77	18.46
Jalpaiguri	11.86	27.12	61.02
Maynaguri	18.75	47.16	34.09
Dhupguri	19.62	51.67	28.71
Mal	28.00	46.50	25.50
Matiali	0.00	52.50	47.50
Nagrakata	22.22	38.27	39.51
Total	22.65	44.82	32.53

Source- Field Survey, 2015-16

Moreover, Rajganj block lies in close proximity to the urban areas and it is served by NH-31 and SH-12-A in Jalpaiguri district. But it has been observed that, 44.82% households travel 3-5 km for the bus transport facility. Further, 32.53% households are situated at a distance of more than 5 km from their nearest bus stops. The larger distance to bus stops or the lack of terminating bus routes close to the household is due to the kutchra roads or the unmetalled rural roads which hampers the transport facility in the study area (Fig. 7.10).

During the field survey 2015-16, the rural masses revealed that they do not have an easy access to bus transport as the distance to bus stops from their household premises are significantly long and therefore motorcycles, vans or rickshaws became the main mode of transport in the sampled villages of Jalpaiguri district. As far as the distance to bus stops from the rural households is concerned, it should be reduced which will facilitate the rural population to prefer buses as a major means of conveyance.

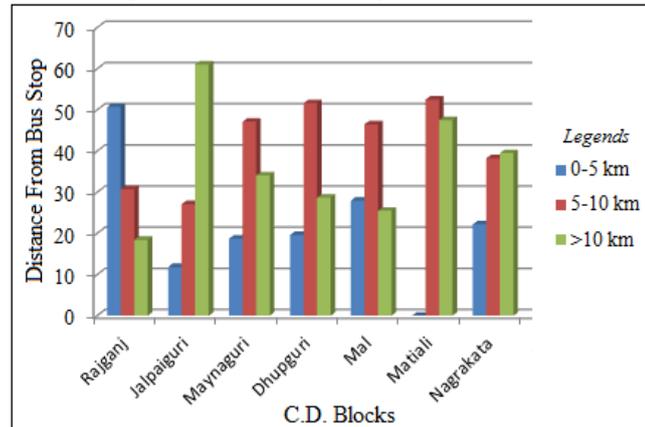


Fig. 7.10: Distance to bus stops (Source- Computed by researcher, 2016)

7.14 Recreational Provision

According to the norms of RADPFI (Rural Area Development Plan Formulation and Implementation), 2017, there should be 1 recreational centre for 5000 rural population. According to the data from the government source, there are 20 sports club or recreation centre available in the sampled villages of Jalpaiguri district, Village Directory, Census, 2011. It has been observed that Mal block has the facility of recreational provision with 6 sports club similarly followed by Dhupguri block, with 6 numbers of sports club in the sampled villages of the block.

During the field survey 2015-16, the rural masses revealed that sporting activities sustain the leisure needs of the rural population where football is the most popular game and kabaddi is generally practiced during evening by the rural youths of the sampled villages. 2 sports club has been observed in the sampled villages of Jalpaiguri and similarly 2 sports club in Nagrakata blocks, 3 sports club has been observed in Matiali block and 1 sports club has been obtained in Maynaguri block (Village and Town Directory, Census, 2011). Further, fairs provide another source of recreational facility in the sampled villages of the study area. However regarding the strengthening of infrastructural facilities, the facilities of modern sports and games should be promoted in the study area along with the provision of libraries in order to create awareness among the rural population.

The sustainability of the provision of infrastructure which encompasses drinking water, health care, education, banking, recreation and communication facilities improve the quality of human life. But it has been observed that the provision of infrastructural facilities varies from the recommended standards of the government norms and guidelines in the rural areas of Jalpaiguri district. Hence provision of adequate basic infrastructural facilities is necessary in each and every inhabited village of Jalpaiguri district. On the basis of the norms obtained from government sources it has been observed from Table 7.16 that the availability of the numbers of primary schools, Anganwadi centres and the recreational facilities in terms of sports club are adequate to meet the requirement of the rural population. However, Jalpaiguri district lacks an easy access to the facility of safe drinking water supply. The villagers have to trudge long distances to fetch drinking water due to the inadequacy of hand pumps. Further, lack of healthcare facilities along with inadequate facilities of post offices contribute to poor infrastructure of the study area. Facilities of banking and agricultural credit societies which are important infrastructural facilities in a rural setting are found to be inadequate to meet the requirement of the rural population. Thus, to remove the infrastructural inadequacies it is necessary to formulate strategies to fulfill the requirements of the rural population.

Table 7.16: Infrastructural Facilities Available on the basis of Standard Norms in Jalpaiguri District, (2015-2016)

Norms obtained from the Government Sources	C.D. Blocks	Total Population of the sampled villages of the block*	Infrastructural Facilities (in numbers)**	Adequate/ Inadequate
One hand pump for 250 persons/20 households, Rural Water Supply Scheme, 2011	Rajganj	5876	2	Inadequate
	Jalpaiguri	4270	2	Inadequate
	Maynaguri	12135	7	Inadequate
	Dhupguri	17705	7	Inadequate
	Mal	15435	6	Inadequate
	Matiali	1954	0	Inadequate
	Nagrakata	5587	3	Inadequate
One Bank branch for 5000 rural population in unbanked rural areas, RBI, 2017	Rajganj	5876	0	Inadequate
	Jalpaiguri	4270	0	Inadequate
	Maynaguri	12135	1	Inadequate
	Dhupguri	17705	3	Inadequate
	Mal	15435	0	Inadequate
	Matiali	1954	0	Inadequate
	Nagrakata	5587	0	Inadequate
One Agricultural Credit Society for 3000 rural population, All Indian Rural Credit Review Committee	Rajganj	5876	0	Inadequate
	Jalpaiguri	4270	0	Inadequate
	Maynaguri	12135	3	Inadequate
	Dhupguri	17705	0	Inadequate
	Mal	15435	0	Inadequate
	Matiali	1954	0	Inadequate
	Nagrakata	5587	0	Inadequate

One Post office for 3000 population, Ministry of Communication and Information Technology, Department of Posts, 2011	Rajganj	5876	0	Inadequate
	Jalpaiguri	4270	2	Adequate
	Maynaguri	12135	1	Inadequate
	Dhupguri	17705	1	Inadequate
	Mal	15435	0	Inadequate
	Matiali	1954	0	Inadequate
	Nagrakata	5587	0	Inadequate
One Primary School for 5000 Population, RADPFI, 2017	Rajganj	5876	4	Adequate
	Jalpaiguri	4270	5	Adequate
	Maynaguri	12135	10	Adequate
	Dhupguri	17705	17	Adequate
	Mal	15435	15	Adequate
	Matiali	1954	5	Adequate
	Nagrakata	5587	5	Adequate
One Health Centre for 5000 Population, RADPFI, 2017	Rajganj	5876	1	Inadequate
	Jalpaiguri	4270	3	Adequate
	Maynaguri	12135	3	Adequate
	Dhupguri	17705	7	Adequate
	Mal	15435	3	Inadequate
	Matiali	1954	1	Adequate
	Nagrakata	5587	1	Inadequate
One Anganwadi Centre for 5000 Population, RADPFI, 2017	Rajganj	5876	4	Adequate
	Jalpaiguri	4270	2	Adequate
	Maynaguri	12135	10	Adequate
	Dhupguri	17705	24	Adequate
	Mal	15435	26	Adequate
	Matiali	1954	4	Adequate
	Nagrakata	5587	9	Adequate
One Recreational Centre for 5000 rural population, RADPFI, 2017	Rajganj	5876	0	Inadequate
	Jalpaiguri	4270	2	Adequate
	Maynaguri	12135	1	Adequate
	Dhupguri	17705	6	Adequate
	Mal	15435	6	Adequate
	Matiali	1954	3	Adequate
	Nagrakata	5587	2	Adequate

Source- *Census of India, 2011

**Village and Town Directory, Census, 2011 and Field Survey, 2015-16

7.15 Level of infrastructural development

Infrastructural facilities play a catalytic role in the process of rural development. Considerable disparity has been noticed in the infrastructural development across the development blocks of Jalpaiguri district. The extent of disparities has been analysed by classifying the blocks into high, moderate and low level of infrastructural development. Z-score and composite score technique has been applied for identifying the level of development based on the infrastructural scores.

For the analysis of the data the following thirteen variables which determine the level of infrastructural development have been taken into account: percentage of household having hand pump as drinking water facility per 20 households (X_1), Percentage of households with electricity (X_2), Number of veterinary doctors per 5000 animals (X_3), Number of regular market per 10,000 of population (X_4), Number of periodic market per 10,000 of population

(X₅), Number of primary school per 5000 of population (X₆), Number of primary health sub-centres per 5000 of population (X₇), Number of Anganwadi centres per 5000 of population (X₈), Number of banking facility per 5000 of population (X₉), Number of agricultural credit society per 3000 of population (X₁₀), Number of post office per 3000 of population (X₁₁), Number of recreational provision per 5000 of population (X₁₂) and Rural road density km/km² (X₁₃). Besides, for analyzing the development scenario in the study area as a whole all the indicators are taken collectively, and the values of the composite standard score of variables group have been divided into high, medium and low category which clearly depicts the disparities in the level of infrastructural development in the different blocks of Jalpaiguri district. Table 7.17 depicts the z-score values of the infrastructural development in the blocks of Jalpaiguri district.

Table 7.17: z-score of Infrastructural Development in the blocks of Jalpaiguri district

C.D. Blocks	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	Composite scores
Rajganj	0.61	0.86	2.55	0.00	0.00	-0.74	-0.84	1.30	-0.54	0.00	0.00	0.00	0.61	0.38
Jalpaiguri	0.67	-0.86	0.00	0.00	4.68	0.03	1.76	2.47	-0.54	0.00	1.40	2.34	0.79	1.27
Maynaguri	0.79	0.25	0.00	0.82	2.47	-0.51	-0.47	0.71	0.69	0.74	0.24	0.41	0.75	0.69
Dhupguri	0.67	0.53	0.28	0.56	1.69	-0.30	0.26	0.06	2.01	0.00	0.17	1.69	0.70	0.83
Mal	0.60	0.75	0.32	1.29	1.29	-0.28	-0.72	0.83	-0.54	0.00	0.00	1.94	0.72	0.62
Matiali	0.00	-1.86	0.00	0.00	5.1	2.21	0.83	2.72	-0.54	0.00	0.00	7.67	1.08	1.72
Nagrakata	0.74	0.32	0.00	0.00	0.00	-0.40	-0.80	0.58	-0.54	0.00	0.00	1.79	0.46	0.21

Source- Calculated by Author

Table 7.18: Level of Infrastructural Development

Category	Z score range	Name of the Blocks
Low	<0.5	Rajganj, Nagrakata
Moderate	0.5 - 1	Maynaguri, Dhupguri, Mal
High	>1	Jalpaiguri, Matiali

Source- Calculated by Author

Table 7.18 depicts that the high level of infrastructural development based on composite standard scores is confined to two contiguous blocks of Jalpaiguri (1.27), and Matiali (1.72) in Jalpaiguri district. An effective rural transportation is necessary in the rural areas for the utilization of resources and for the movability of goods and passengers. Jalpaiguri block is connected to SH-12-A and Matiali block is linked with NH-31 in Jalpaiguri district. The main variables which appear to have influenced the high level of infrastructural development include drinking water facilities, percentage of electrified households, number of veterinary doctors, number of regular markets, number of primary schools, number of primary health sub-centres, number of Anganwadi centres, number of commercial banks and agricultural credit societies, the number of post offices and the

recreational facilities are satisfactory in these blocks contributing to better infrastructural facilities.

However, Maynaguri (0.69), Dhupguri (0.83) and Mal (0.62) blocks displays moderate level of infrastructural development. Availability of banking outlets, numbers of regular and periodic markets along with the number post offices are poor and inadequate in these blocks. Rajganj (0.38) and Nagrakata (0.21) blocks fall in the lowest category in terms of infrastructural development. The variables have negative scores in terms of households with drinking water facilities, electrified households, marketing structure, number of primary schools, health care facilities, banking facilities and the recreational facilities. The blocks lack an easy access to safe drinking water supply. Most of the villagers fetch drinking water from the river or pond or the canal which is untreated water in the study area. Further, lack of veterinary facilities along with inadequate rural communication facilities and recreation facilities contribute to poor infrastructure in these blocks. Commercial banking facility and agricultural credit societies which are important infrastructural facilities in a rural area are inadequate in these blocks of Jalpaiguri district.

Hence, there is a need to promote rural infrastructural development, as it is an important aspect of the process of rural development and therefore development strategies should be formulated in order to accelerate the pace of infrastructural development and to reduce the disparities in the provision of infrastructural facilities in the rural areas of Jalpaiguri district.

7.16 Composite Level of Rural Development

Disparities in the level of development and the formulation of appropriate strategies for a balanced development of a region have always been a significant research problem for the planners, researchers and social thinkers across the country. After the analysis of the demographic, social, economic and infrastructural dimensions of rural development, an attempt has been made to analyze the disparities in the level of overall development amongst the seven Community Development Blocks of Jalpaiguri district.

The analysis of the level of rural development in the previous sections highlighted the fact that by itself each aspect may not have only one dimension of development over different blocks. Some blocks displays high level of social development whereas the other blocks are developed in economic terms while infrastructural development exhibits different results. Therefore for the spatial pattern of the level of development in terms of demographic, social, economic and infrastructural aspects in the rural areas of Jalpaiguri district all the indicators

have been taken collectively and the composite level of rural development have been calculated by combining the data of the thirty five indices.

Z-score technique has been used for the analysis and the summed up z-scores were then divided by the number of variables in order to derive the composite scores of rural development (Table 7.19). The blocks have been categorized into three classes of high, medium and low level of composite rural development.

Table 7.19: Z-Score of the Level of Rural Development

C.D. Blocks	Scores of Demographic Development	Scores of Social Development	Scores of Economic Development	Scores of Infrastructural Development	Composite level of rural development
Rajganj	-0.91	-0.02	0.60	0.38	0.01
Jalpaiguri	0.36	0.45	-0.22	1.27	0.46
Maynaguri	0.78	-0.34	-0.04	0.69	0.27
Dhupguri	0.64	0.27	-0.01	0.83	0.43
Mal	0.02	-0.30	0.12	0.62	0.11
Matiali	-0.49	0.43	-0.26	1.72	0.35
Nagrakata	-0.40	-0.49	-0.19	0.21	-0.21

Source- Calculated by Author

Table 7.20: Composite Level of Rural Development

Category	Z score range	Name of the Blocks
Low	<0	Nagrakata
Moderate	0 – 0.25	Rajganj, Mal
High	>0.25	Jalpaiguri, Maynaguri, Dhupguri, Matiali

Source- Calculated by Author

The above analysis shows inter-block disparities in the level of composite rural development. On the basis of the aggregate score, Table 7.20 depicts that the high level of development is confined in four blocks namely Jalpaiguri (0.46), Maynaguri (0.27) Dhupguri (0.43) and Matiali (0.35) blocks of Jalpaiguri district. These blocks consists of socio-cultural and infrastructural amenities like adequate number of primary schools with respect to total population, middle schools, primary health sub-centres, pucca housing along with sanitation facilities, adequate drinking water facilities, postal facilities, banking and credit facilities, transportation facilities and recreational provisions with respect to total population. Besides, the blocks are developed in terms of literacy rate and sex ratio. The blocks also display development with respect to economy; in terms of the proportion of households with commercial farming activities, crop cultivation and the proportion of earning population. Thus, the blocks located in the northern, southern and eastern part of Jalpaiguri district are developed in terms of demographic, social, economic and infrastructural sectors.

In the moderate category of development two blocks fall with the composite score range of 0 – 0.25 namely, Rajganj (0.01) and Mal (0.11) blocks. These blocks exhibit middle category in composite level of rural development in terms of infrastructural facilities, social and economic provisions.

It has been observed that the western, north-western and north-eastern part of the study area exhibits moderate and low level of development. Nagrakata (-0.21) block falls in the lowest category in terms of composite rural development. The composite score calculated after combining the indices place the block in the low development category in terms of demographic, social and infrastructural aspects. The analysis of the level of rural development exhibits great spatial variations. It has been observed that the social and the infrastructural provisions are unevenly distributed in the study area and the reasons behind this fact are the varying topography, uneven distribution of population, gender disparities in terms of literacy rate, traditional occupational structure and the poor means of transport and communication facilities. Hence, developmental strategies in the blocks are an essential need to mitigate the disparities in the level of development and expedite the pace of rural development. Hence, the hypothesis as mentioned in the introduction chapter '*Infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration*' has been validated and according to the norms obtained from government sources it has been concluded that apart from the primary schools, Anganwadi centres and the recreational facilities the infrastructural facilities in terms of drinking water, banking facilities, agricultural credit societies, post offices and health centres are inadequate to meet the requirement of the large scale rural population.

7.17 Conclusion

The development of physical as well as social infrastructure plays an important role in accelerating the process of socio-cultural, economic and human development. However it has been observed during the field survey that there is an acute shortage of water supply in the sampled villages of Jalpaiguri district. 82.75% of the rural households have to depend on their private wells owing to the absence of PHE tap water supply in the study area. In regards to the disposal of solid waste, 76.74% households dump the waste production in open space due to the absence of community pits and bins in the study area. Further, it is discouraging to observe that, 3.73% households in the sampled villages are yet to get power connections in Jalpaiguri district. Besides, it has been noticed that the veterinary services for the protection of animal husbandry is inadequate in the study area owing to the complete absence of

livestock dispensaries in the sampled villages. Moreover, with respect to market there is an inadequacy of the regulated marketing facilities in the study area.

Again, the banking infrastructure is unsatisfactory in the sampled villages of the district as only 2 mini banks and 2 ultra-small branches of the banks have been obtained. Apart from these the study area needs greater attention regarding the dispersal of communication facilities in terms of post offices and internet services. In terms of rural establishments, since paddy occupies a leading position in the cropping pattern, there are 35 rice mills observed in the sampled villages of the study area. In addition to these, it has been observed that the major means of conveyance in the rural areas are bicycles or motorcycles but most rural households preferred bus services for commuting to urban areas.

It can be concluded that in the absence of a balanced distribution of infrastructure the social and economic sector of the study area get restrained. In terms of composite rural development Jalpaiguri, Maynaguri, Dhupguri and Matiali blocks of Jalpaiguri district falls in the high category of development, whereas Rajganj and Mal blocks exhibits moderate level of rural development and Nagrakata block displays low level of composite rural development in terms of demographic, social, economic and infrastructural aspects. Hence, there is a need to promote rural infrastructural development, as it is not only a key component of the process of rural development but also an important factor in ensuring the reduction of the vulnerability of the rural poor.

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Rural Development Programmes and Policies

8.1 Introduction

Rural development connotes an overall positive change in the quality of life of the rural masses. Eradication of poverty has been the principal theme of the rural development programmes in India. The primary objective of the programmes is to support the families living below poverty line in the rural areas, so that they could cross the line of poverty by creating supplementary employment opportunities on a larger scale. Similarly a number of anti-poverty programmes have been implemented in West Bengal and Jalpaiguri district is of no exception.

In order to raise the livelihood condition of the rural people, Panchayats and Rural Development Department, Government of West Bengal is assigned with the responsibility of formulating policies in terms of the implementation of various rural development programmes including the poverty alleviation programmes in the rural areas of the state. *The programmes are designed to assist the rural people in raising their living standard and in reducing the regional disparities in development* (Golahit, 2010). It seeks to ensure the basic needs of the rural people which are related to nutrition, health, housing, elementary education and adult education, sanitation, water supply and electrification. The programmes also involves in providing social assistance by the transfer of cash to the aged, the widow and the disabled persons in order to promote their economic development and social justice. To augment the livelihood income of the rural masses wage employment schemes and self-employment schemes have been implemented in the study area. Cash credit have been disbursed to the Self-Help Groups and provision of hundred days job guarantee programme (Mahatma Gandhi National Rural Employment Guarantee Scheme) have been promoted for the rural masses in order to intensify their social security. Rural development programmes target the weaker sections of the society in the rural areas so that they may not be deprived from the benefits of socio-economic development. Likewise, programmes have been implemented regarding the security of food grains for the vulnerable sections of the society.

An attempt has been made in the present study to assess the impact of the rural development programmes upon the rural masses and the participation of the rural people in the schemes implemented in the sampled villages of Jalpaiguri district.

8.2 Rural Housing

One of the essential components of rural life which needs an attention is the state of rural housing. Any approach of rural development must include the condition of dwellings in

which the rural population lives. Hence to provide housing assistance in the rural areas the Centre and the State Government has introduced housing schemes for the construction of new houses and improvement of houses which are in miserable condition.

8.2.1 Indira Awas Yojana (IAY)

It is a centrally sponsored scheme which aims to provide the construction of dwelling houses to the target group of Scheduled Castes (SC) and Scheduled Tribes (ST) people, free bonded labourers and also non-SC/ST families who are living below poverty line in the rural areas. IAY is funded by both the Centre and the State Governments where the assistance of the scheme are shared between the Centre and the state government on the basis of 75:25 ratios. The financial aid provided for the construction of new house is Rs. 25,000 in plain areas and Rs. 27,500 for the hilly areas. However, noticing the necessity of the up gradation of kutcha houses in the rural areas Rs. 12,500 is allowed for the up gradation of unusable kutcha house per beneficiary under the scheme.

Table 8.1: Indira Awas Yojana, after first revision of Rural Housing Scheme

C.D.Blocks	Houseless	Having Kutcha House	Total House to be Constructed	Target Fixed by Block	Registered Beneficiaries
Rajganj	7868	31553	39421	2325	3988
Jalpaiguri	8010	29897	37907	2290	3279
Maynaguri	3844	33450	37294	2164	2228
Dhupguri	9427	32775	42202	3883	4766
Mal	11065	25821	36886	3075	4572
Matiali	3551	6790	10341	1387	1564
Nagrakata	4706	5780	10486	1649	1682
Total	48471	166066	214537	16773	22079

Source- Rural Household Survey, working data 2015-16

Table 8.1 reveals that in Jalpaiguri district under Indira Awas Yojana altogether 2,14,537 houses needs to be constructed for the houseless and kutcha houses of the rural masses. IAY assistance is provided to those beneficiaries whose name has been registered in the study area after the Rural Household Survey 2015-16, Government of West Bengal. In Jalpaiguri district under IAY, 22079 beneficiaries have been registered for the construction of new houses and a total of 16773 households have been targeted for the provision of financial assistance under IAY by each of the seven Community Development Blocks of the district. However, IAY has been re-designed into Pradhan Mantri Gramin Awaas Yojana, 2016. According to the scheme the minimum size of the house should be 25 mt² along with a cooking space. The financial aid for the beneficiaries is Rs. 70,000 to Rs. 1.20 lakh in plain and from Rs. 75,000 to Rs 1.30 lakh in hilly states, Ministry of Rural Development, Government of India.

8.2.2 Gitanjali scheme and Amar Bari scheme

The purpose of these schemes is to provide housing assistance to the economically vulnerable sections of the society who have no pucca houses of their own. The major emphasis is given to the BPL (Below Poverty Line) households and the households whose family income is Rs. 6000 per month and less. However, according to the guidelines of the scheme, the dwelling house will be constructed on the land owned by the beneficiary household. The area of these dwelling houses will be 215 square feet and the financial assistance is Rs. 70,000 for the plains whereas it is Rs. 75,000 for the hilly areas and the coastal areas. In Jalpaiguri district, these schemes are implemented by the Forest Department within the forest villages of the study area.

8.2.3 Housing Beneficiaries

According to the field survey 2015-2016, it has been found that the major schemes that have been implemented by the Department of Housing under the Government of West Bengal for providing shelter to the rural poor are the Indira Awas Yojana, Gitanjali scheme and Amar Bari scheme. Indira Awas Yojana has been one of the most significant rural housing schemes and during the survey it has been observed that 30 households in Dhupguri block are the beneficiaries of the Indira Awas Yojana followed by Maynaguri block with 27 households and Mal block with 22 households whereas the least has been obtained in Matiali block with 2 households.

However none of the household is the IAY beneficiary in the sampled villages of Nagrakata block. It is due to the fact that more than 90.00% households of the sampled villages of the block have built their dwelling unit without any assistance of the rural housing schemes. The highest share of beneficiary households under Gitanjali scheme has been observed in Dhupguri block with 5 households and the lowest has been found in Mal block with 3 households.

Further, it has been obtained that 6 households are the beneficiaries under Amar Bari scheme in Dhupguri block but none of the households in Rajganj, Jalpaiguri and Maynaguri blocks are the beneficiaries of the Amar Bari scheme as they are the IAY beneficiaries. Table 8.2 discloses that 171 households are not the beneficiaries of any rural housing schemes in Mal block followed by 168 households in Dhupguri block (Fig. 8.1). It has been noted that 701 households of the sampled villages of Jalpaiguri district have constructed their houses by themselves without the assistance of any rural housing programmes.

Table 8.2: Block-wise Housing Beneficiaries

C.D. Blocks	Indira Awas Yojana	Gitanjali scheme	Amar Bari scheme	Without assistance
Rajganj	12	0	0	53
Jalpaiguri	9	0	0	50
Maynaguri	27	0	0	149
Dhupguri	30	5	6	168
Mal	22	3	4	171
Matiali	2	2	3	33
Nagrakata	0	3	1	77
Total	102	13	14	701

Source- Field Survey, 2015-16

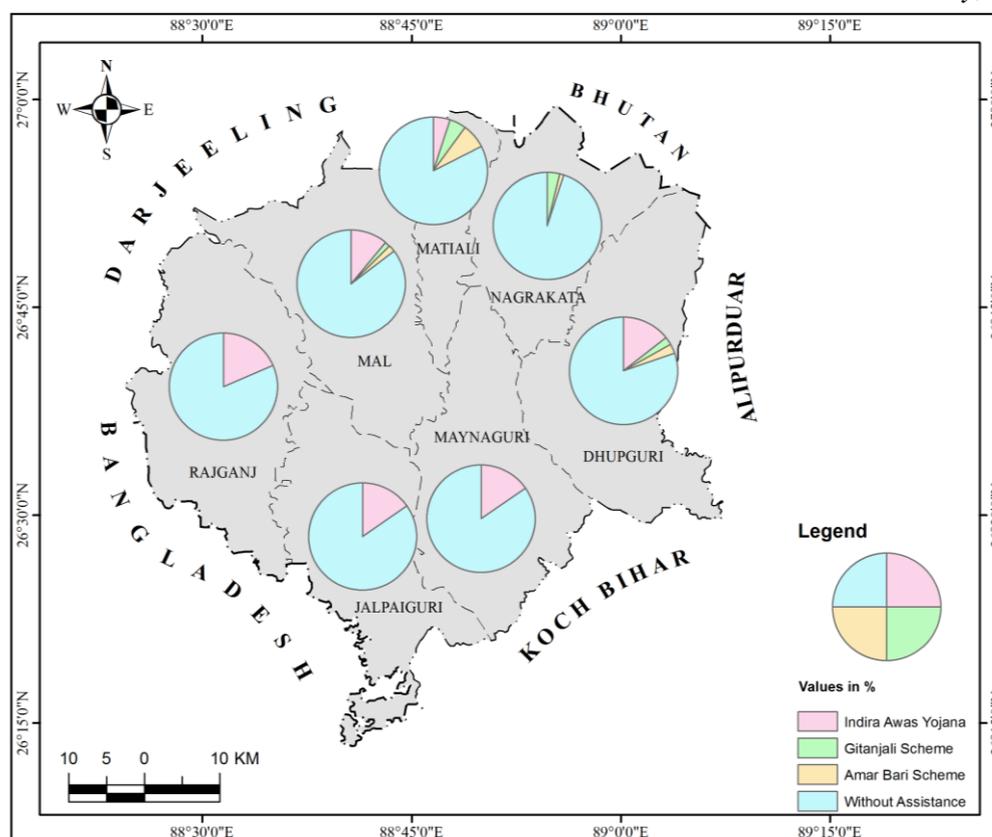


Fig. 8.1: Housing Beneficiaries of Jalpaiguri district

Source- Computed by researcher, 2016

However, during the field survey 2015-16, the respondents revealed that the proportion of houses having kutcha roof type is considerably low as compared to the roof build with GCI sheets and the reason behind this is attributed to the Rural Housing schemes which provided assistance for the up gradation of dwelling unit which were in bad condition. Hence, an evaluation of the rural housing schemes shows that these schemes have definitely helped the rural poor to acquire new pucca dwelling units in the sampled villages of Jalpaiguri district.

8.3 Schemes for Food Security

Since independence the Centre and the State Government has framed a number of policies and programmes to assure availability of food grains to all sections of the society and particularly the vulnerable sections of the society. Ensuring food security for the large population of India has always been one of the major concerns of the Government. The prime objective of the government is to provide food grains, the basic requisite of the poor and underprivileged families at a very subsidized rate.

Table 8.3: Food Security Beneficiaries

C.D. Blocks	Antyodaya Anna Yojana (%)	Rajya Khadya Suraksha Yojana (%)	Not Benefited Household (%)
Rajganj	12.30	6.15	81.53
Jalpaiguri	11.86	8.47	79.66
Maynaguri	17.04	3.98	78.97
Dhupguri	10.47	11.00	78.57
Mal	15.00	4.00	81.00
Matiali	17.14	2.50	80.00
Nagrakata	11.11	1.23	87.65
Total	6.50	13.50	80.00

Source- Field Survey, 2015-16

8.3.1 Antyodaya Anna Yojana (AAY)

It was initiated in December, 2000 for providing food security to the most destitute families included under the targeted Public Distribution System (PDS) within the state. According to the guidelines of the scheme, the selected households are given Antyodaya ration card issued by the assigned authority. Under this scheme the economically weaker households are benefited in getting the quantity of 35 kg food grains particularly rice and wheat at the rate of Rs. 2 per kg for wheat and Rs. 3 per kg for rice per family per month. From Table 8.3, it has been observed that 17.14% sampled households in Matiali block have been availing this scheme followed by Maynaguri block with 17.04% and Mal block with 15.00%. However the respondents revealed during the course of field survey 2015-16, that this scheme has immensely benefited the rural masses through the provision of food grains at a highly subsidized rate.

8.3.2 Rajya Khadya Suraksha Yojana (RKSY)

It is also known as Khadya sathi Scheme was initiated by the Government of West Bengal on January 27, 2016. Government has introduced this scheme of providing food grains with the purpose of helping the poor and the deprived families. The main objective of the scheme is to provide rice and wheat to the selected families who are below poverty line at

a rate of Rs. 2 per kg. The scheme seeks to provide 2 kg per head rice and 3 kg per head wheat with a limit of 35 kgs per household per month. Table 8.3 depicts that, Dhupguri block has the highest percentage of RKSY beneficiaries with 11.00% followed by Jalpaiguri block with 8.47% and Rajganj block with 6.15%. However it is evident from Table 8.3 that, 87.65% households in Nagrakata block are not the beneficiaries of AAY and RKSY food security schemes followed by 81.53% in Rajganj block and 81.00% in Mal block (Fig. 8.2). It is due to the fact that the sampled households are non-eligible to avail these food security schemes owing to their higher monthly income.

Thus food security for the rural poor is one of the most important human development aspects as it is associated with the socio-economic development of the rural masses. It is a solution of alleviating poverty, distress and undernourishment of the poor families.

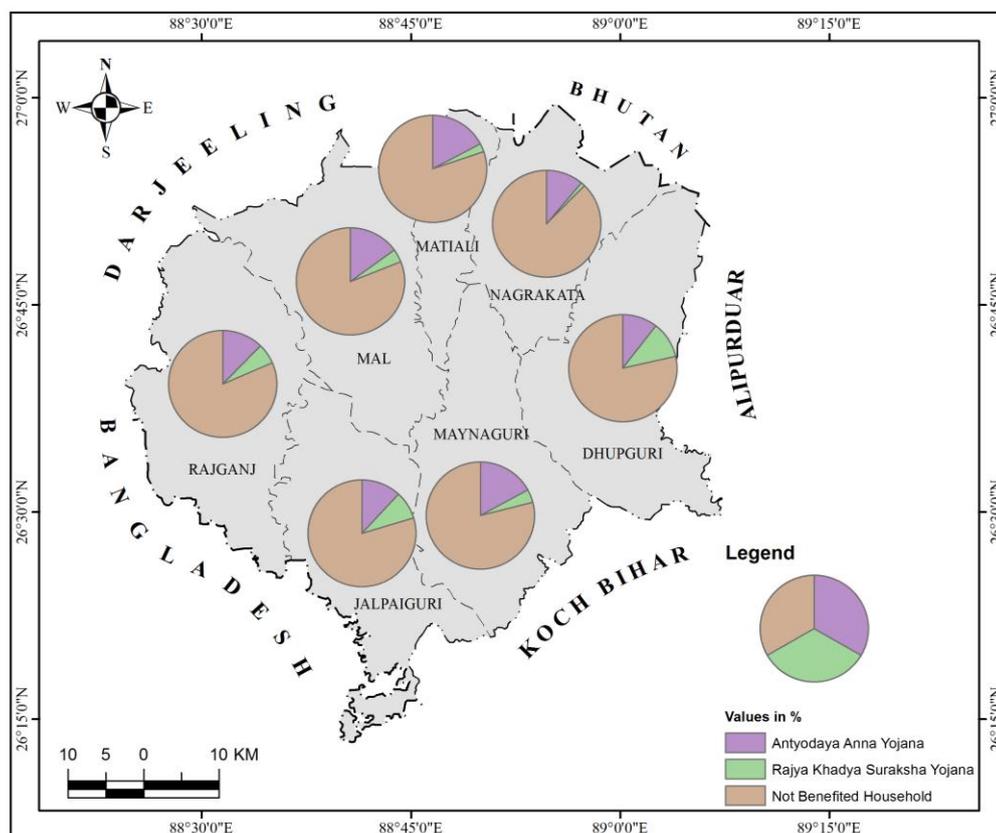


Fig. 8.2: Food Security Beneficiaries of Jalpaiguri district

Source- Computed by researcher, 2016

8.4 National Social Assistance Programme (NSAP)

National Social Assistance Programme (NSAP) is a centrally sponsored scheme and has been introduced on August 15, 1995 in order to provide social assistance for the reduction of poverty and basic minimum services. This programme is considered as a major step towards achieving the Directive Principles of Article 41 of the Constitution of India which

instructs the state to provide government assistance to the people in case of old age, physical disability and illness, unemployment, death of primary bread earner, and other deplorable cases within the limit of state's economic capabilities and development.

National Widow Grants Scheme (NWGS), National Old Age Pension Scheme (NOAP), National Handicap Aid Programme (NHAP) are the components of the National Social Assistance Programme. The programme aimed at providing social assistance and empowerment to the vulnerable and underprivileged sections of the society for their well-being and development. The NSAP Schemes are mainly implemented by the Social Welfare Departments in the states but in West Bengal it is implemented by the Department of Rural Development. Table 8.4 discloses the numbers of beneficiaries under National Social Assistance Programme in the sampled villages of Jalpaiguri district.

8.4.1 National Widow Grants Scheme (NWGS)

It was initiated by the Government of India on February 2009 to provide economic assistance to the widow in order to support her family. According to the guidelines of the scheme, the financial aid is provided to the widow with age group between 40-79 years living in below poverty line families, and has lost the primary bread earner of the household.

Table 8.4: Beneficiaries of National Social Assistance Programme

C.D. Blocks	NWGS(nos.)	NOAP(nos.)	NHAP(nos.)
Rajganj	7	11	2
Jalpaiguri	7	10	2
Maynaguri	16	28	2
Dhupguri	16	29	2
Mal	13	21	2
Matiali	2	6	0
Nagrakata	8	17	0
Total	69	122	10

Source- Field Survey, 2015-16

All the eligible beneficiaries are financially assisted with Rs. 600 per month, where Rs. 300 is the Central Assistance and Rs. 300 is the grant of the Government of West Bengal. During the field survey, 2015-16, a total of 69 beneficiaries have been obtained in the sampled villages of Jalpaiguri district.

8.4.2 National Old Age Pension Scheme (NOAP)

The scheme aims at providing financial assistance to those persons who are at the age of 60 years or above and are underprivileged in terms of having no source of earning and they are deprived of financial support from any family members or other sources. The amount is Rs. 400 per month per beneficiary which is disbursed by the Panchayat and Rural Development Department, Government of West Bengal under old age pension scheme.

However, if the age of the person is 80 years and above then the person is financially assisted with Rs. 1000 per month. During the field survey, 2015-16, it has been observed that there are altogether 122 beneficiaries of National Old Age Pension Scheme in the sampled villages of Jalpaiguri district (Fig. 8.3).

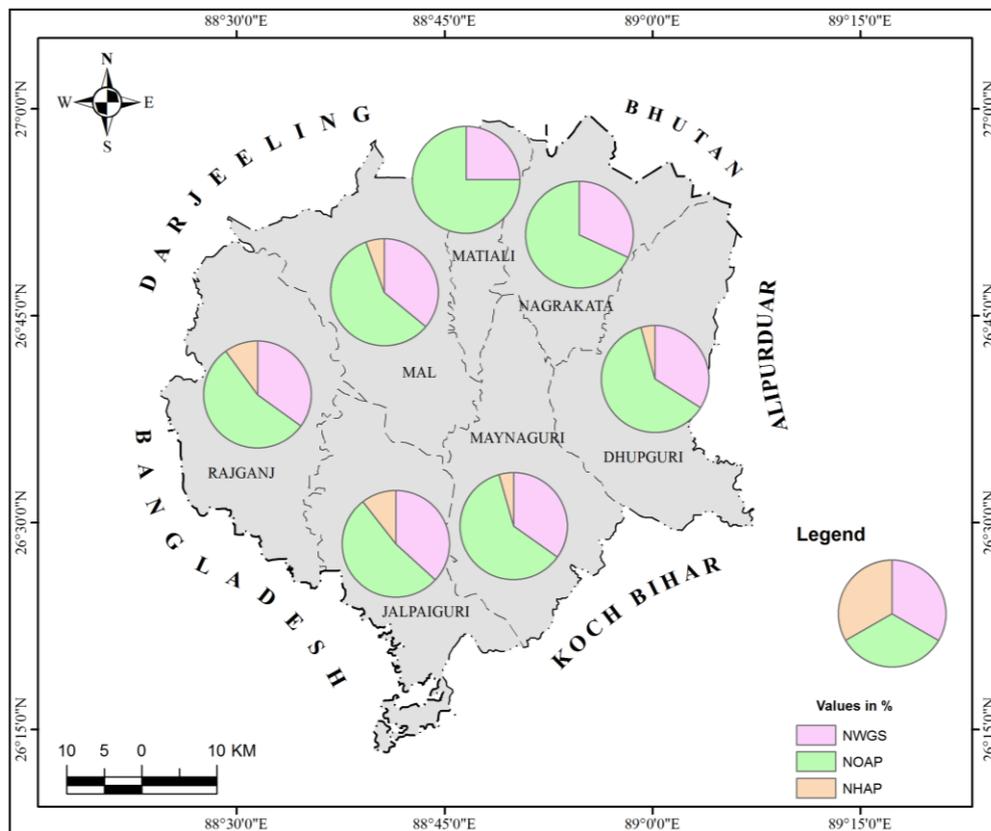


Fig. 8.3: Beneficiaries of NSAP in Jalpaiguri district

Source- Computed by researcher, 2016

8.4.3 National Handicap Aid Programme (NHAP)

It provides a financial assistance under Indira Gandhi National Disability Pension Scheme (IGNDPS) to the physically handicapped persons who are living below poverty line and endure severe disability or multiple disabilities (either with more than one disability or at least 40 percent incapability in each kind of disability), between the age group of 18 to 79 years. The economic assistance has been given to the identified handicapped persons with Rs. 600 per month through Panchayat and Rural Development Department, Government of West Bengal. However the Centre and the State Government of India share the costs of the scheme on a basis of 50:50 ratios. The number of beneficiaries obtained from the sampled villages of Jalpaiguri district is 10 during the course of field survey, 2015-16.

However, it has been observed, that the beneficiaries faced no problem in receiving payments and the regularity of the distribution of the economic assistance as per the

provisions of the scheme has been found to be satisfactory as was reported by the beneficiaries.

8.5 Schemes for Scholarship

The Centre and the State Government over a period of time has formulated policies and strategies for providing financial assistance to the meritorious students who are pursuing studies at various post-matric levels and are living in below poverty line families of the country. Similarly, Government of West Bengal has initiated scholarship schemes so that the higher studies of the students may not be hindered due to their extreme poverty.

Various schemes like, Merit-Cum-Means Scholarship Scheme was introduced in the year 2006-07 in order to provide financial assistance all over the state to the meritorious students of the economically weaker families. This is a post Madhyamik Scholarship also known as Swami Vivekananda Scholarship scheme where the financial assistance is Rs. 750 per month for the students in 10+2 course. For the Under Graduate (UG) students an amount is Rs. 750 to 1500 per month whereas for the Post Graduate students an amount is Rs. 1200-1500 per month is disbursed.

However, for the eligibility of this scholarship scheme the students must have secured at least 75% marks in Madhyamik and Higher Secondary examination and at least 55% in UG Honours course from any recognized university. This economic assistance is only for the students, whose annual family income is Rs. 2,50,000 or less. Post-Matric scholarship is granted by the Government of West Bengal as Minority Development Financial Corporation for the minority students who want to continue their study from class XI to higher studies. The scholarship is disbursed only to the citizens of the state. Post-Matric scholarship is awarded for one time in a year only to the students who have passed and secured at least 50% marks in the last Board examination. According to the scheme, the financial assistance is only for the students, whose annual family income is Rs. 2 lac or less.

8.5.1 Kanyashree Prakalpa

It is a conditional cash transfer scheme which aims to strengthen the socio-economic status of the girl child of the economically weaker families of West Bengal. It has been introduced by the Department of Women Development and Social Welfare, Government of West Bengal (DWD&SW). It is not only a tool of financial facilities but also a medium of empowerment for the adolescent girls. Under this programme annual scholarship of Rs. 750 and one time grant of Rs. 25,000 is provided to the girl child. The primary objective of Kanyashree Prakalpa is to ensure the retention of girls in school and diminish the early marriages of the girls till their legal age of 18.

Table 8.5: Beneficiaries of Kanyashree Prakalpa

C.D. Blocks	Scholarships	
	Rs. 750	Rs. 25000
Rajganj	11	4
Jalpaiguri	17	6
Maynaguri	34	10
Dhupguri	41	11
Mal	26	9
Matiali	5	0
Nagrakata	13	2
Total	147	42

Source- Field Survey, 2015-16

The annual scholarship is disbursed to the unmarried girl's between the age of 13 to 18 years who are enrolled in classes VIII to XII either in government regular or open school or they are enrolled in vocational or technical education course. Similarly, the one-time grant is also disbursed to the unmarried girls who are enrolled in government regular or open school/college or continuing vocational/technical education or other kinds of sports activities. But the State Government have conditioned that both the benefits under the scheme will be granted to those girls who belong to the families with annual family income of Rs. 1,20,000 or less.

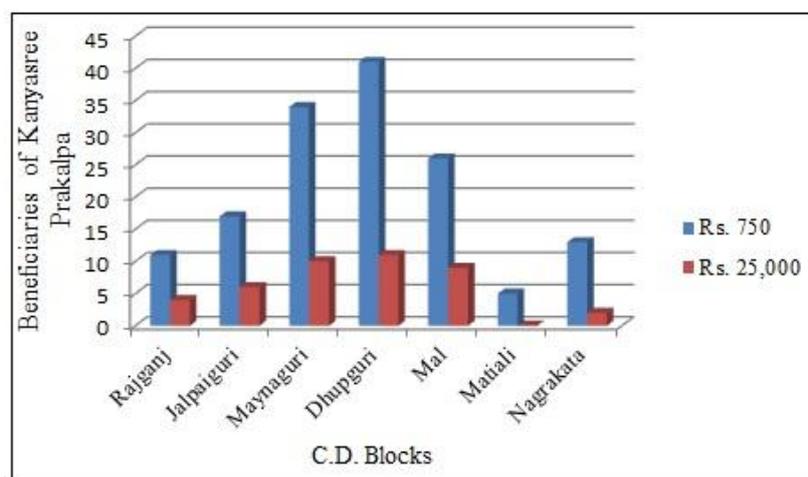


Fig. 8.4: Beneficiaries of Kanyashree Prakalpa in Jalpaiguri district

Source- Computed by researcher, 2016

During the field survey 2015-16, it has been observed that the distribution of scholarships in the sampled villages of Jalpaiguri district has followed the pattern of the guidelines of Kanyashree Prakalpa. There are more than 70% girls in almost all the blocks of Jalpaiguri district who received the annual scholarship of Rs. 750. During the field survey 2015-16, it has been observed that, altogether 147 numbers of girls are the recipients of this

annual scholarship and Table 8.5 reveals that the estimated number of beneficiaries obtained for one time grant of Rs. 25,000 is 42 in the sampled villages of the district (Fig. 8.4).

As viewed during the field survey 2015-16, involvement of the beneficiaries facilitates positive performance of Kanyashree Prakalpa in the sampled villages of Jalpaiguri district. It has been observed during the course of survey that, the higher participation of the girls under the scheme reduces the practice of early marriage of the girls and encourages the girls in continuing their higher studies in the study area. The scheme has the provision of disbursing an amount to the girls at the age of 18 enrolled either in an educational institution or pursuing vocational education thereby reducing the early marriage of girls and early pregnancies, ensuring an improvement of maternal health and child health of the state. Moreover, it has been observed that the scheme facilitates in increasing the level of awareness in terms of education and health among the adolescent girls of the rural areas.

8.6 BPL Household

Since independence, there has been an introduction of a number of poverty alleviation programmes by the Government of India in order to eliminate poverty and unemployment from the country. The Integrated Rural Development Programme (IRDP) had been one of the most important anti-poverty programmes in India introduced on 1978-79 and on the basis of the annual income of the rural households the beneficiaries were identified for IRDP assistance. Under the IRDP guidelines, a register for all the BPL families were maintained at the village level and under the IRDP assistance, priority was given only the poorest of the poor from that list. But despite the introduction of the number of programmes, the problem of unemployment and poverty lies within the villages. Hence, adequate investment in human development has been considered to be essential in order to improve the quality of life of the weaker sections of the society so that they may participate in the growth process.

A detailed household survey was conducted in Jalpaiguri district of West Bengal after 1st revision as per Rural Household Survey, 2005, Working Data, 2016-17 by the Socio-Economic and Caste Census (SECC). The Government of India, coordinated by the Ministry of Rural Development has introduced Socio-Economic and Caste Census, 2011, for the identification of BPL (Below Poverty Line) families all over the country both in rural and in urban areas.

There are three steps followed for the enumeration of the BPL families. Firstly, the families who own certain particular types of assets are removed from the BPL list. Secondly, families who are houseless, manual garbage cleaners, primitive tribal groups and legally released bonded labourers are included in the BPL list. Thirdly, after the identification of the

households, deprivation scores have been given on the basis of specific criteria, particularly the households with one room along with kutcha walls and kutcha roof. However, responsibility of conducting the survey for the identification of the BPL household lies within the State Government in this regard.

Suresh Tendulkar was an economist, prepared a formula in order to measure the poverty line of India in 2004-05 on the basis of NSSO data. The planning commission of India had followed the Tendulkar committee report on national poverty line. According to the committee report the poverty line for the country was Rs. 27 in rural areas and Rs. 33 in urban areas, 2009-10, where the monthly per capita consumption expenditure had been Rs. 816 in rural areas and Rs. 1000 in urban areas. In India a person spending less than the amount stated by the committee, was considered as poor.

However in order to examine the methodology adopted by the Tendulkar committee, more precisely and empirically, another expert group was arranged under C. Rangarajan in the year 2012. According to C. Rangarajan, former chairperson of Prime Minister's Economic Advisory Council, the poverty line for the country is Rs. 32 in rural areas and Rs. 47 in urban areas, 2011-12, where the monthly per capita consumption expenditure is Rs. 972 in rural areas and Rs. 1407 in urban areas and a person spending less than the reported amount is considered as poor. Further, according to the committee report, a household is considered as poor when it is incapable of saving any surplus income.

Table 8.6: Block- wise BPL Households

C.D. Blocks	Number of BPL household	Percentage of BPL household*
Rajganj	41879	51.04
Jalpaiguri	38011	51.37
Maynaguri	37236	48.68
Dhupguri	36754	40.24
Mal	39376	61.23
Matiali	9270	36.71
Nagrakata	9613	35.24
Total	212139	43.24

*Source- SECC, 2016-17 and *Percentage Computed by Author*

Rangarajan committee assessed the national level of poverty line on the basis of expenses of a person related to adequate nourishment, clothing, education, health, and expenses in non-food items. In order to measure the level of nourishment the committee calculated that 2155 kcal

is required per person per day in the rural areas and 2090 kcal is required per person per day in urban areas, which is differentiated in terms of age and gender.

Following the above poverty line Table 8.6 describes that there are altogether 21,2139 households who are living below poverty line constituting 43.24% of the total household in the rural areas of Jalpaiguri district. The distribution of BPL household among the blocks shows that Mal block has the highest proportion of BPL households with 61.23% followed by Jalpaiguri block with 51.37% and Rajganj block at 51.04% whereas Nagrakata block with 35.24% has the least proportion of BPL households in the 7 Community Development Blocks of Jalpaiguri district.

Table 8.7: Numbers of BPL Households

C.D. Blocks	Numbers of BPL household of the sampled villages	Percentage of BPL household to total households
Rajganj	0	0.00
Jalpaiguri	2	3.39
Maynaguri	5	2.82
Dhupguri	5	2.39
Mal	1	0.50
Matiali	2	5.00
Nagrakata	0	0.00
Total	15	1.81

Source- Field Survey, 2015-16

Table 8.7 depicts that there are 15 households living below poverty line, constituting 1.81% of the total household in the sampled villages of Jalpaiguri district. During the course of field survey it has been observed that Matiali block has the highest proportion of BPL households with 5.00% followed by Jalpaiguri block with 3.39% and Maynaguri block at 2.82% to the total sampled households whereas none of the BPL households has been observed in Rajganj and Nagrakata blocks in the sampled villages of the district. The households living below poverty line belong to the unskilled labourers or the casual agricultural labourers who sustain their livelihood on daily wage earnings and they are either houseless or living in kutchha houses in the study area. Hence, the policies of the State Government require a more focused technique to reduce the BPL households of the district in order to raise them above the poverty line.

8.7 Wage Employment Schemes

In order to develop the rural areas and improve the living conditions of the rural people Government of India has initiated several programmes in the post-independence period. Under wage employment scheme Mahatma Gandhi National Rural Employment

Guarantee Scheme (MGNREGS) has been taken into consideration with the objective of assessing the working of MGNREGS in terms of employment generation among the rural masses.

8.7.1 Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS):

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) was introduced to strengthen the living conditions and economic development in the rural areas of the nation. The scheme is fundamentally a rural safety net in terms of socio-economic welfare of the rural masses. The scheme provide at least one hundred days of guaranteed wage employment in a financial year to every rural household whose adult members are willing to do unskilled manual work. It has been observed by the researchers and academicians that the scheme NREGS has created additional opportunity of employment in the rural areas and it is a progressive measure to eradicate poverty in India.

The National Rural Employment Guarantee Act (NREGA) has been introduced on 7th September, 2005 which enables the rural population with the legal right to demand work. In West Bengal, careful attention has been given to the NREGS by the Panchayati Raj institution and Rural Development Department, Government of West Bengal. At the grass root level panchayats act as the implementing agency of the scheme. NREGS provides a legal guarantee of employment and income generation to adult members of any rural household who are willing to do unskilled work at the minimum wages provided by the scheme for one hundred days in every financial year. The main economic policies of the scheme are the provision of work and the creation of assets in the rural areas in a sustainable manner.

NREGA came into existence on 2nd February, 2006, and initially the Act was implemented by the government in 200 districts over the country in its first phase. Later, in the second phase, 130 additional districts were covered and brought under the Act with effect from 01.04.2007 to cover a total of 330 districts. The Act further extended and covered the remaining 266 districts on 28th September, 2007 and NREGA came into effect from 1st April, 2008. The National Rural Employment Guarantee Scheme (NREGS) was renamed as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) on October 2, 2009. In West Bengal, National Rural employment Guarantee scheme became effective on February 2006. In its first phase 10 districts had been covered namely; South 24 Pargana, Bankura, Birbhum, Uttar Dinajpur, Dakshin Dinajpur, Jalpaiguri, Malda, West Medinipur, Murshidabad and Purulia districts. In its second phase 7 districts were included under the scheme namely; Koch Bihar, Nadia, Bardhaman, East Medinipur, North 24 Pargana, Hoogly and Darjeeling districts. In the third phase Howrah district was covered under the scheme.

Hence in Jalpaiguri district, NREGS was enforced on 2nd February, 2006, with an objective of enhancing the employment opportunities of the rural people and thereby synthesizing the rural development scenario of the district.

Main Features of NREGS

The following are the main features of the scheme (NREGS):

- i. All adult members of a rural household (BPL and APL) who have completed 18 years of age are eligible and may apply for registration under this scheme to the Local Gram Panchayat.
- ii. *The Gram Panchayat will issue a job card free of cost. The job card should bear the photographs of all the members of the rural household who are willing to do unskilled work under NREGS (Das, 2016).*
- iii. The job card should be issued for employment within 15 days after the application and it is the mandate of the scheme that one household should have one job card.
- iv. The adult members may submit a written application for the choice of time and duration for the work.
- v. The job card holders should get the employment within 15 days of application or from the date when work is requested by the job card holders.
- vi. *The card holders have the right to get unemployment allowance in cash if the employment is not provided within 15 days of submitting the application (Das, 2016).*
- vii. *Work should be provided within 5 km radius of the village and the card holders has the right to get 10% extra wage if the employment is provided beyond 5 km radius of the village (Das, 2016).*
- viii. Disbursement of wages under the scheme will be made either on a weekly basis or within two weeks after the work was done.
- ix. The wages for the card holders are to be credited directly to the individual's bank or post office account.
- x. The Government of India bears 100 percent of the wage cost of the skilled and unskilled labourers and 75 percent of the material cost of the programme.
- xi. At least (1/3rd) of the work should be provided to the women who have registered themselves for employment under the scheme.
- xii. Facilities of shade, drinking water, first aid should be provided on the work site.
- xiii. Implementation of the scheme involves functions and duties of a large number of organizations from the village to the national level. They are Gram Sabha (GS), Three-tier Panchayati Raj Institutions (PRIs), the Gram Panchayat (GP), Zilla

Parishad, District Programme Coordinator (DPC), State Government, Ministry of Rural Development and some of the other departments like line departments, convergence departments, Self-Help Groups (SHGs), etc.

- xiv. The gram panchayat plays a key role in the implementation of the scheme in the village and the employment is generated in the rural areas through the implementation of various projects under different sectors recommended by the Gram Sabha.
- xv. Plantation works under social forestry including afforestation on barren land, land development works in order to make them cultivable, water conservation, water harvesting, minor irrigation works, flood control and protection works, renovation of ponds and tanks, drainage in water logged area, earth works on the road, etc. are the major types of work under the scheme.
- xvi. In order to make the scheme clear and transparent, social audits are conducted to scrutinize the accounts and records related to the scheme.

Thus, NREGS provides a guaranteed employment generation which in turn helps the rural mass in increasing their purchasing power in the rural areas. Moreover, it also helps the women who have been registered for the work and helps the rural households from poverty and hunger (Das, 2016).

The selection of beneficiaries under the scheme depends upon that desirable person who demands work. As per guidelines it has been observed in the sampled villages of Jalpaiguri district that, the adult member of the rural household has applied for employment on account of the willingness to do unskilled or semi-skilled works under the scheme.

Table 8.8: Numbers of Households in terms of Registration under NREGS

C.D. Blocks	Numbers of HHs Registered and Applied for Employment	Numbers of HHs Registered but not Applied for Employment	Numbers of HHs not Registered
Rajganj	30	9	26
Jalpaiguri	39	5	15
Maynaguri	111	21	44
Dhupguri	144	24	41
Mal	111	31	58
Matiali	24	6	10
Nagrakata	30	9	26
Total	489	105	220

Source- Field Survey, 2015-16

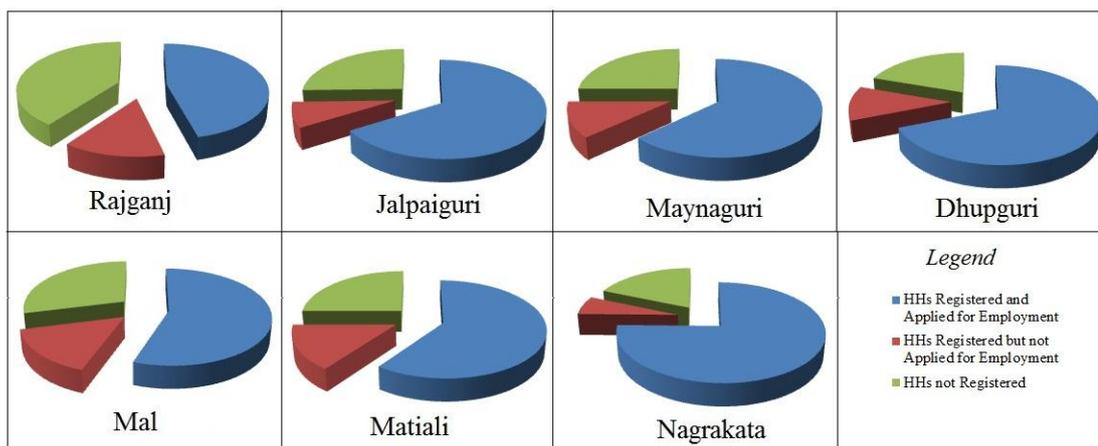


Fig. 8.5: Registration under NREGS

Source- Computed by researcher, 2016

During the field survey 2015-16, it has been found that 489 sampled households of Jalpaiguri district have registered and applied for employment under NREGS where Dhupguri block has the highest number of households with 144 followed by Mal and Maynaguri blocks. However there are altogether 105 households who have registered but not applied for employment. The highest number of household has been obtained in Mal block with 31 followed by Dhupguri block with 24 and Maynaguri block with 21 households. It has been observed during the grass root level survey 2015-16, that in spite of getting registered under the scheme the households did not apply for the employment due to their past experience of irregularity in getting the wages under NREGS (Fig. 8.5). Likewise, irregularity in getting employment and low wage rate is another reason for which the households did not apply for employment.

Table 8.8 depicts the fact that 220 households have not registered themselves for employment under NREGS where Mal block constitutes the largest number of households with 58 followed by Maynaguri block with 44 households and Dhupguri block with 41 households. The reasons for not registering themselves under the scheme for the job card are either the households are engaged in service sector or they are involved in business activities for which they did not participate in the scheme.

According to the features of NREGS, the Gram Panchayats after the verification will issue a job card to the members of the household within fifteen days of application for employment (Das, 2016). Following the guidelines it has been observed that, 53 sampled households obtained their job card within 15 days in the study area. Table 8.9 furnishes that the highest number of households has been obtained in Dhupguri block with 15 followed by

Mal block with 14 households but none of the households in Matiali block obtained their job card following the norm of the scheme.

Table 8.9: Time taken by the Number of Households to Obtain Job Card

C.D. Blocks	15 Days	15-30 Days	>1 Month
Rajganj	4	11	24
Jalpaiguri	4	6	34
Maynaguri	13	26	93
Dhupguri	15	34	119
Mal	14	44	84
Matiali	0	0	30
Nagrakata	3	9	27
Total	53	130	411

Source- Field Survey, 2015-16

There are 130 sampled households of the district who revealed that they obtained their job cards between 15-30 days. 411 households of the sampled villages of the district accepted that they faced problem in making their job card and have obtained after a period of one month where Dhupguri block has the highest number of household with 119 followed by Maynaguri block with 93 households. During the field survey 2015-16, regarding the problem of obtaining job card the respondents revealed that, the beneficiaries who have registered through *panchayat Pradhan* or village headman got their card easily whereas those who were without the assistance of the village headman faced problems in obtaining their job card.

In spite of the norm that NREGS provide hundred days of employment to rural people in every financial year in order to enhance their economic status along with the development of rural areas, but Table 8.10 depicts that the distribution of mandays under NREGS in the sampled villages of Jalpaiguri district is very uneven.

Table 8.10: Distribution of Mandays under NREGS

C.D. Blocks	1-7 Days	7-14 Days	14-21 Days	21-28 Days	100 Days
Rajganj	5	8	12	5	0
Jalpaiguri	0	16	10	13	0
Maynaguri	17	47	41	6	0
Dhupguri	7	62	52	12	11
Mal	16	73	22	0	0
Matiali	0	16	4	4	0
Nagrakata	6	41	9	5	0
Total	51	263	150	45	11

Source- Field Survey, 2015-16

During the field survey 2015-16, it has been observed that 51 households have worked under the scheme only for 7 days whereas; 263 households have worked under

NREGS only between 7-14 days in concerned financial year. It is 150 households who got the work for 14-21 days and 45 households got the work for 21-28 days. However, it has been observed that only 11 household has worked for 100 days under NREGS in Dhupguri block whereas none of the sampled households of Rajganj, Jalpaiguri, Maynaguri, Mal, Matiali and Nagrakata blocks got 100 days of work in concerned financial year (Fig. 8.6). Thus from the field survey, 2015-16 it has been observed that the scheme is not providing the expected livelihood security as employment is not provided for hundred days to the rural people which depicts a great drawback of the scheme.

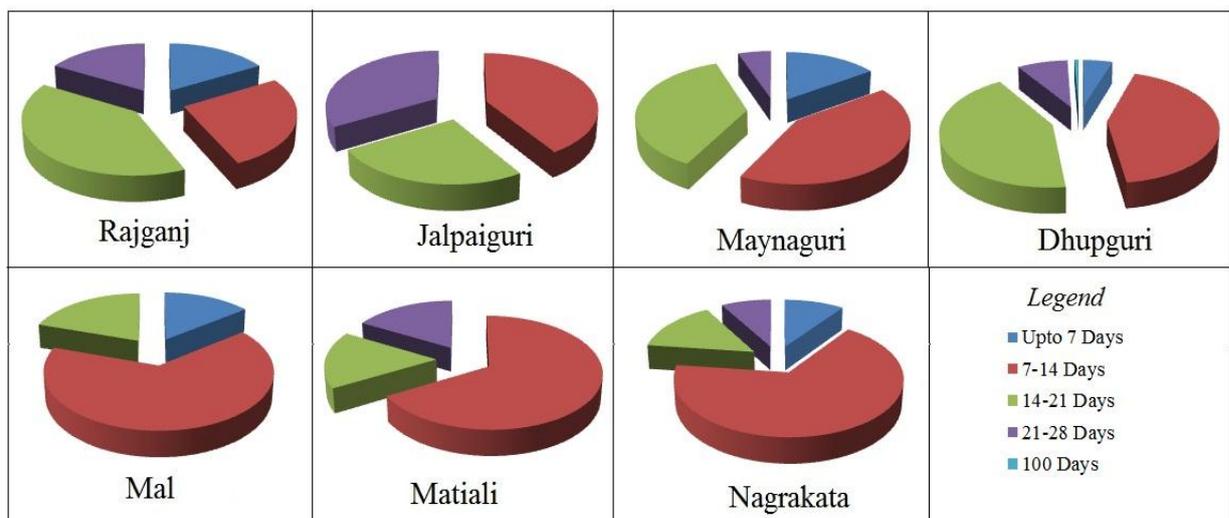


Fig. 8.6: Distribution of Mandays under NREGS

Source- Computed by researcher, 2016

For the poor rural households wage is one of the essential sources of income. Therefore timely payment of wages has been mandated in the scheme as it provides a supplementary source of income to the rural households without the discrimination of wages between men and women.

However, Table 8.11 shows that the duration of wage payment under NREGS is very irregular. The structure of the frequency of wage payments exhibits a great spatial variation and unevenness in the study area. 353 sampled households revealed that they received their wages after 3 months where the highest number of households has been obtained in Dhupguri block with 96 followed by Mal block with 83 households. Likewise, 51 households revealed that they obtained their wages within a period of 2-3 months. 74 households revealed during the field survey 2015-16 that they received their wages between 1-2 months and only 42 households revealed that they received their wages within 1 month under NREGS. But none of the households in Mal, Matiali and Nagrakata blocks obtained their wages within 1 month.

Thus, owing to the insufficiency of the technical hands, delayed payment of wages has been a major drawback of NREGS because it not only reduces the households in creating the durable assets but also reduces the willingness of the rural masses in applying for the employment under the scheme.

Table 8.11: Duration of Wage Payment under NREGS

C.D. Blocks	1Month	1-2 Months	2-3 Months	>3 Months
Rajganj	3	5	9	13
Jalpaiguri	5	9	6	19
Maynaguri	17	15	9	70
Dhupguri	17	16	15	96
Mal	0	20	8	83
Matiali	0	0	4	20
Nagrakata	0	9	0	52
Total	42	74	51	353

Source-Field Survey, 2015-16

Since, NREGS is a demand driven programme therefore it has been observed that 62.65% of the total sampled households of Jalpaiguri district have demanded their work under the scheme. But it has been observed that the beneficiaries are not getting their employment when required as the decisive role of the village headman play a major role in this regard. Hence, the authority should scrutinize and make a review of the scheme in terms of the provisions and implementation of the scheme in order to make the objectives of NREGS more successful for the rural masses in the study area.

8.8 Self Help Groups (SHG)

Self-Help Group is an informal organization and it is a bank linkage programme which was introduced for strengthening economic security through greater financial aid by promoting the deposits and credit services. It was initiated by NABARD (National Bank for Agriculture and Rural Development) in the year 1992. This SHG-bank linkage programme was started as a project, which aimed at helping the poor especially women so that they get an easy access to the financial facilities in terms of saving and credit services under the formal credit institutions. The Self-Help Group may be defined as a small group of members particularly the women who have joined together to obtain socio-economic benefits based on mutual support and collective decision making. The primary objective of SHG is the socio-economic empowerment through the promotion of economic activities and an emphasis on poverty alleviation thereby improving the quality of lives of rural poor particularly women.

To ameliorate the lives of the rural underprivileged persons, the Centre and the state governments has framed and implemented a number of programmes across the country.

SGSY (Swarnajayanti Gram Swarojgar Yojana) had been introduced over the country on 1st April, 1999 in order to provide additional employment opportunities and income generation among the rural masses. In Jalpaiguri district, SHG was started in the year 1999 under SGSY (Swarnajayanti Gram Swarojgar Yojana) and the groups were formed under the close supervision of the bank officials. However, *the Government of India has re-designed SGSY and introduced National Rural Livelihood Mission (NRLM) under the Ministry of Rural Development in June 2011*(Das, 2018) in order to reduce poverty and generate self-employment among the rural people. Further, in West Bengal NRLM has been introduced by the state government as Anandadhara on 17th May 2012. One of the significant objectives of the scheme is to improve the livelihood condition of the rural people. It ensures that at least one women member of each vulnerable and economically distressed household is brought under the self-help group in order to enhance their level of income.

Main Features of Self-Help Groups (SHG)

The following are the main features of the Self-Help Groups (SHG):

1. According to the guidelines, a SHG could have 20 members but not less than 5 members.
2. *The members of SHG are expected to have uniform socio-economic characteristics and are introduced into the group on the basis of self-selection* (Das, 2018).
3. *The SHG members make a common fund by contributing their small savings* (Das, 2018) and these funds are used for the loans which is generally small and for short period.
4. *The savings of the group members are kept in a bank in the name of group* (Das, 2018) and the leader of the group operates the bank account. The group members select their leader by themselves. The deposit that has been kept in the bank is used for giving loans to the group members at the rate of interest decided by the group which varies across the SHGs. The rate of interest is deposited in the bank account and has been utilized by the members of the groups for their benefits.
5. *There must be the formation of clusters of the SHG at the Gram Panchayat level* (Das, 2018).
6. For the proper functioning of the SHG, the members formulate its own norms and laws for the groups.
7. The SHGs should be informal and unregistered.
8. Regularity of weekly meetings of the group members is the crucial factor of SHG.
9. SHG has to be graded by the banks in terms of their loan-absorption capacity.

However, in West Bengal as well as in Jalpaiguri district, the mode of credit linkage for the SHGs is through Cash Credit (CC) account. The members of the group may withdraw any amount within the credit limit which has been fixed by the concerned bank for the CC account as many times as possible. On the basis of the savings of the group the bank fixes the CC limit along with the interest free fund released by the District Rural Development Cell (DRDC) which is Rs. 20,000 in the financial year 2016-17 in the account of the group (Das, 2018).

Table 8.12: Block wise Self-Help Groups

C.D. Blocks	Number of Groups	Total number of Group Members
Rajganj	5	59
Jalpaiguri	5	59
Maynaguri	14	176
Dhupguri	20	260
Mal	14	180
Matiali	3	34
Nagrakata	6	76
Total	67	844

Source- Field Survey, 2015-16

Table 8.12 depicts the total number of groups and the total number of the group members in the sampled villages of Jalpaiguri district. During the field survey 2015-16, it has been found that the members who constitute the self-help groups in the sampled villages of Jalpaiguri district are all women. There are altogether 67 number of groups consisting of 844 group members obtained in the study area. During the grass root level survey it has been observed that, there are several reasons for drawing credit and the members of the groups revealed that they utilizes their credit for generating their income in order to offer a holistic solution to their financial problems. The women members of the group also reported that before joining in the SHGs the women were financially dependent upon the earning members of the household but after joining the SHGs the members of the groups divide their credit amount and make investments separately according to their own choices.

They utilizes their amount in small business like sewing, animal husbandry, poultry farming, vegetable vending, grocery shop, pot making, pickle making, saree business and basket weaving which appears to be the major reasons of drawing loans (Das, 2018). Besides, the amount of credit has also been utilized by the members of the group for personal consumption like education of the students and health care needs. However, it has been observed that owing to their earning strength the women of the SHGs are engaged in various economic and social activities and perform several duties in government and panchayat

programmes in the sampled villages of Jalpaiguri district. They are engaged as cook and supply mid-day meal in primary schools, supervise the rural unskilled works under MGNREGS and even collect electricity bills after receiving training. Thus, Self-help group helps the rural women in providing micro-credit and promotes them to enter into income-generating activities for the purpose of increasing their level of income and asset creation thereby improving their living standards.

The study of the involvement of household under self-help group reveals that 38.19% sampled households of Jalpaiguri district have involved and generated their income from SHG where Maynaguri block has the highest percentage of households with 48.30% followed by Rajganj block with 41.54% and Dhupguri block with 41.15% households (Fig. 8.7).

Table 8.13: Percentage of households in Self-Help Groups

C.D. Blocks	Households Involved	Households Not Involved
Rajganj	41.54	58.46
Jalpaiguri	38.98	61.02
Maynaguri	48.30	51.70
Dhupguri	41.15	58.85
Mal	30.77	69.23
Matiali	10.00	90.00
Nagrakata	33.33	66.67
Total	38.19	61.80

Source- Field Survey, 2015-16

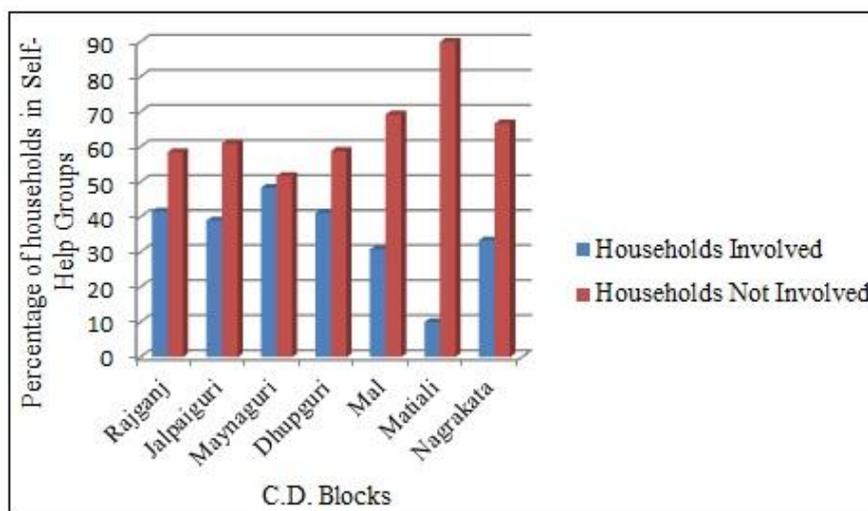


Fig. 8.7: Involvement of households in Self-Help Groups

(Source- Computed by researcher, 2016)

It has been noted from the rural women of the group during the field survey 2015-16, that after availing the loan the level of their income has increased remarkably and they utilize their incomes in the education of their children, for house-building and repairing,

building of toilets, purchase of land and repayment of their earlier debts. However, it has been observed that 61.80% households have not involved themselves in self-help groups where Matiali block constitutes the highest percentage of households with 90.00% followed by Mal block with 69.23% and Nagrakata block at 66.67%. Table 8.13 depicts that the higher incidence of households who are not involved in SHG has been obtained in the northern part of the district where the rural women are occupied in the tea gardens as weekly based wage earners. Hence, awareness among the rural women should be created so that they may participate in the formation of SHG and earn supplementary income for their household.

Table 8.14: Block level Achievement of SHG in the Financial Year 2016-17

C.D. Blocks	Number of SHG	Amount (Lakh)
Rajganj	659	686.74
Jalpaiguri	583	871.85
Maynaguri	822	1201.68
Dhupguri	905	1441.7
Mal	490	729.00
Matiali	142	214.55
Nagrakata	96	171.85

Source- DRDC, 2015-16

According to the annual report of the District Rural Development Cell (DRDC), Jalpaiguri, there are altogether of 3,697 number of self-help groups in the financial year 2015-16 in Jalpaiguri district (Das, 2018). Table 8.14 furnishes that Dhupguri block has the highest number of self-help groups with 905 followed by Maynaguri block with 822 and Rajganj block with 659 self-help groups. Similarly, the amount of cash credit disbursed from the several branches of nationalized commercial banks as well as the cooperative banks is also highest for Dhupguri block with Rs. 1441.7 lakh followed by Maynaguri block with Rs. 1201.68 lakh. However, owing to the engagement of the rural women in the tea gardens as tea garden labourers, the northern part of the district constitutes the lowest number of the formation of self-help groups.

Thus, through Self-Help Groups the women has the ability to access micro-credit with greater efficiency. It encourages them to save and manage their finances more effectively. It also increases the participation of the rural women's contribution to their household income.

8.9 Utilization of Income

The performance of any rural development programme can be assessed from the point of its utilization of inputs. Government of India has taken a number of measures in the rural areas, in order to generate higher incomes of the rural masses and to reduce the number of households living below poverty line. Through rural development programmes the

beneficiaries of the sampled villages of Jalpaiguri district get the provision of earning an additional income through supplementary employment.

Table 8.15: Utilization of Income after Rural Development Programmes

C.D. Blocks	Assets	Livestock	Bank Deposit	Debts	Own Consumption	Others
Rajganj	20.00	16.67	13.33	10.00	40.00	0.00
Jalpaiguri	20.51	15.38	17.95	12.82	23.08	10.26
Maynaguri	18.02	18.92	10.81	8.11	38.74	5.41
Dhupguri	16.67	16.67	9.03	12.50	38.89	6.25
Mal	13.51	23.42	3.60	11.71	47.75	0.00
Matiali	20.83	25.00	16.67	8.33	29.17	0.00
Nagrakata	16.39	19.67	9.84	3.28	45.90	4.92
Total	16.92	19.23	9.61	10.00	40.00	4.23

Source- Field Survey, 2015-16

Income generated rural development schemes ensure socio-economic well-being of the rural masses by the creation of assets in a sustainable manner. Table 8.15 furnishes that 16.92% households utilizes their income in creating productive assets. Likewise, the aforesaid table exhibited that 19.23% household purchase livestock, as animal husbandry is an important mode of investment in the rural areas. It is noteworthy to observe that out of increased income of the beneficiaries 9.61% households deposit their income in the banks and 10.00% households repays their earlier dues. It has been observed from Table 8.15 that 40.00% households utilize their income in the consumption of food grains. Thus food security is an essential use of the earnings outweighing all other uses in the sampled villages

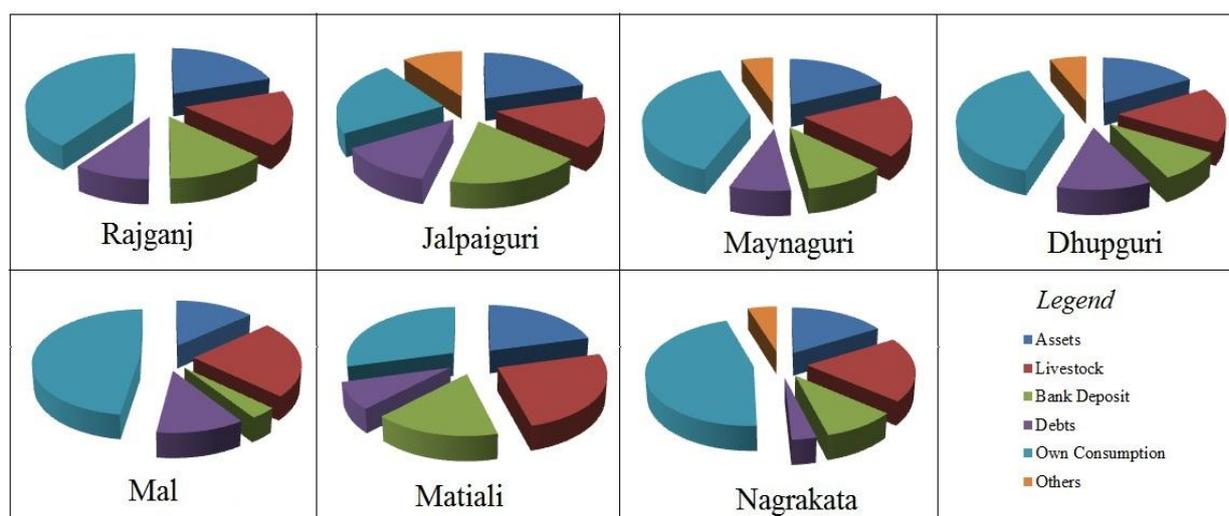


Fig. 8.8: Utilization of Income after Rural Development Programmes

Source- Computed by researcher, 2016

of the district. However, 4.23% households utilize their income in different social issues like expenses on education of their dependents, investments on health care issues and marriage functions in the rural areas (Fig. 8.8).

8.10 Perception of impact on household

An attempt has been made to assess the impact of rural development programmes on the livelihood condition of the rural masses on the basis of their perception.

The estimates in Table 8.16 furnishes that 53.37% households of the rural areas of the district have felt that there has been a significant improvement in their socio-economic condition after participating in the rural development programmes. They are able to use their earning in the creation of assets enhancing their livelihood condition. However, it has been observed that 33.61% sampled households are unaware of the benefits available under the schemes and their socio-economic situation is as same as before the implementation of any rural development schemes.

Table 8.16: Present living Status of the households after Rural Development Programmes

C.D. Blocks	Same	Worse	Better than Past
Rajganj	46.15	4.62	49.23
Jalpaiguri	42.37	22.03	35.59
Maynaguri	29.55	11.36	59.09
Dhupguri	33.97	15.31	50.72
Mal	36.50	17.00	46.50
Matiali	27.50	12.50	60.00
Nagrakata	22.22	0.00	77.78
Total	33.61	12.89	53.37

Source- Field Survey, 2015-16

Any financial assistance received by the beneficiaries is spent either for repaying their earlier debts or for the personal consumption of foods. Again, 12.89% households of the sampled villages of Jalpaiguri district revealed non-improvement of their annual income as they have not benefited from any rural development programmes implemented in the study area. The reasons behind their bad perception regarding the impact of rural development schemes are attributed to the lack of ability of the concerned authorities regarding the proper planning and execution of the schemes and the involvement of the middlemen who have usurped the benefits of the schemes.

8.11 Impact on income generation

An attempt has been made to evaluate the income of the sampled households of Jalpaiguri district who had been financially assisted under the rural development schemes. Increase in income augment the socio-economic status of the rural households and therefore

the annual income of the households have been estimated in order to compare between the pre-assistance and the post-assistance period in the sampled villages of Jalpaiguri district.

8.11.1 Annual Income of the households after Rural Development Programmes

The achievement of the income-generated rural development programmes can be evaluated by noticing the distribution of annual income of the sampled households before and after the assistance of the scheme.

Table 8.17 and 8.18 unfolds that 4.10% households have their annual earnings below Rs. 10,000 during the pre-assistance period which is much below the need of the rural households whereas; it is reduced to 1.93% household during the post-assistance period. Likewise, the data furnishes the fact that the proportion of households have decreased in the income group of Rs. 10,001 to 25000 and Rs. 25,001 to 50,000. The percentage of households before the assistance was 35.54% whereas it has declined to 27.71% after the assistance.

Table 8.17: Pre-Assistance Annual Income

C.D. Blocks	Income range (Rs.)					
	Below 10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0.00	15.38	26.15	35.38	10.77	12.31
Jalpaiguri	8.47	10.17	30.51	22.03	15.25	13.56
Maynaguri	9.66	14.20	19.32	28.41	19.32	9.09
Dhupguri	4.31	16.75	23.44	25.36	19.62	10.53
Mal	1.00	3.50	30.50	22.50	28.00	14.50
Matiali	2.50	2.50	45.00	25.00	10.00	15.00
Nagrakata	0.00	0.00	17.28	49.38	17.28	16.05
Total	4.10	10.12	25.42	28.19	19.88	12.29

Source: Field Survey, 2015-16

Table 8.18: Post-Assistance Annual Income

C.D. Blocks	Income range (Rs.)					
	Below 10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0.00	10.77	18.46	33.85	18.46	18.46
Jalpaiguri	3.39	3.39	22.03	35.59	16.95	18.64
Maynaguri	2.84	7.39	21.59	30.11	29.55	8.52
Dhupguri	2.39	10.05	22.49	33.49	21.05	10.53
Mal	1.00	3.50	22.50	32.00	28.50	12.50
Matiali	5.00	2.50	40.00	27.50	10.00	15.00
Nagrakata	0.00	0.00	9.88	43.21	29.63	17.28
Total	1.93	6.14	21.57	33.25	24.46	12.65

Source: Field Survey, 2015-16

However, it is noteworthy to observe that the highest percentage of households is 33.25% who have their high annual income ranging from Rs. 50,000 to 75,000 in the post-

assistance period, whereas it was 28.19% during the pre-assistance period. It exhibits an increase of 5.06% households experiencing the increase in their level of income. Similarly, there is an increase of 4.58% households falling in the income category of Rs. 75,001-100000. It shows that there is a shift in income position of the sampled households from the pre-assistance period to post-assistance period. Hence, it has been observed that some significant positive changes have come into the economic condition of the rural masses and they are benefited owing to their increased level of income after the implementation of the rural development schemes in the study area. The hypothesis mentioned in the introduction chapter '*There is a significant rise in the level of family income and the per capita income from the pre-assistance period to post-assistance period*' has been tested here.

Considering a bi-variate setup with variables X_1 and X_2 of the form

X_1 : Family income pre-assistance period of a given CD-block

X_2 : Family income post-assistance period of a given CD-block

1. Formulation of the statistical hypothesis The statistical hypothesis can be statistically re-formulated as:-

$H_0: \mu_d=0$

$H_1: \mu_d > 0$

Where, μ_d represents the difference in average family income corresponding to each block for the pre-assistance and post-assistance period. To test such a hypothesis is an appropriate choice would be the Paired t- test for each range of income (in Rs.) namely:

- i. <10,000
- ii. 10,001-25,000
- iii. 25,001-50,000
- iv. 50,001-75,000
- v. 75,001-100000
- vi. >100000

2. Assumptions for statistically testing the Hypothesis:-

- i) All observations are random and independent.
- ii) The normality condition holds.
- iii) The dataset is devoid of outliers.
- iv) The data shows homoscedasticity (equality in variances).

3. The inference from the Paired t- test:-

The corresponding t-statistic, degree of freedom along with the p-value and 95 % confidence interval have been reported for each range of income (in Rs.)

Table 8.19: Observations for Income Ranges (Rs.)

<10,000	t-statistic	2.6493
	Degree of freedom	6
	p value	0.9922
	Confidence interval (95 %)	(0.1821085,∞)
10,001-25,000	t-statistic	2.1112
	Degree of freedom	6
	p value	0.03962
	Confidence interval (95 %)	(0.3751182,∞)
25,001-50,000	t-statistic	1.9987
	Degree of freedom	6
	p value	0.0463
	Confidence interval (95 %)	(0.1269829,∞)
50,001-75,000	t-statistic	-1.7459
	Degree of freedom	6
	p value	0.9343
	Confidence interval (95 %)	(-11.77248,∞)
75,001-100000	t-statistic	-2.2087
	Degree of freedom	6
	p value	0.9654
	Confidence interval (95 percent)	(-10.20453,∞)
>100000	t-statistic	-0.43004
	Degree of freedom	6
	p value	0.6589
	Confidence interval (95 %)	(-2.365131,∞)

Source: calculated by author

As calculated in Table 8.19 the p-value for the range of income (in Rs.) for the classification <10,000 is 0.9922 which is greater than the level of significance ($\alpha=0.05$), therefore we accept the null hypothesis. Thus, there is a significant rise in the level of family income from the pre-assistance period to post-assistance period for this category. Again, for the range of income between Rs. 10,001 to Rs. 25,000 the p-value corresponds to 0.03962 which is lesser than the level of significance ($\alpha= 0.05$), therefore we reject the null hypothesis. Thus, there is no significant rise in the level of family income from the pre-assistance period to post-assistance period for this category.

For the range of income Rs. 25,001 to Rs. 50,000 the p-value corresponds to 0.0463 which is lesser the level of significance ($\alpha= 0.05$), therefore we reject the null hypothesis. Hence it can be observed that in the above ranges of income there is no significant rise in the level of family income from the pre-assistance period to post-assistance period. For the range of income Rs. 50,001 to Rs. 75,000 the p-value is 0.9343 which is greater than the level of significance ($\alpha= 0.05$), therefore we accept the null hypothesis. For the range of income Rs. 75,001 to Rs. 1,00,000 the p-value corresponds to 0.9654 which is greater than the level of

significance ($\alpha= 0.05$), therefore we accept the null hypothesis. For the range of income more than Rs.1,00,000 the p-value corresponds to 0.6589 which is greater than the level of significance ($\alpha= 0.05$), therefore we accept the null hypothesis. Again, it has been observed that in the above ranges of income there is a significant rise in the level of family income from the pre-assistance period to post-assistance period.

Income generation acts as an important indicator for the assessment of the impact of rural development schemes. It has been found that after the assistance of the rural development programmes there is a significant change in different income ranges of the rural masses of Jalpaiguri district. For the annual income range below Rs.10,000 along with annual income range Rs.50,000 to more than Rs.1,00,000 there is a significant rise in the level of family income from the pre-assistance period to post-assistance period. The rural households have drawn their income from different schemes which provide financial assistance for the maintenance of their family members. MGNREGS is the wage employment generating scheme which provides supplementary sources of income to both men and women. For the generation of income and livelihood security 62.65% households have registered and applied for employment under the scheme. In order to empower the rural women economically and to engage them into different occupation, the women participate in self-help groups and avail loan which remarkably increases their level of family income.

Besides, in order to reduce poverty of the rural masses National Widow Grants Scheme (NWGS) provides monthly financial assistance to the widow of the below poverty line household. During the field survey 2015-16, from the sampled villages of Jalpaiguri district a total number of 69 beneficiaries availed this assistance. National Old Age Pension Scheme (NOAP) provides economic support to the aged persons having no source of income and the number of beneficiaries from the sampled villages of Jalpaiguri district under the scheme is 122. Again, National Handicap Aid Programme (NHAP) provides monthly financial assistance to the disabled persons of the below poverty line household and the numbers of beneficiaries from the sampled villages of Jalpaiguri district obtained under this scheme is 10.

However, for the annual income range of Rs.10,000 to Rs. 50,000 there is no significant rise in their level of family income from the pre-assistance period to post-assistance period. It is due to the inadequate supervision of the schemes by the officials. It is observed that the households have not applied for the employment owing to the irregularity in getting the employment and wages under NREGS. Besides, even in Self-Help groups the rural women faced problem regarding the inadequacy of the amount of loan they required to

increase their level of family income through their involvement in different occupation. Hence, proper evaluation of the rural development programmes needs to be conducted in order to remove the disparities in implementation of the programmes.

8.12 Conclusion

It has been observed that there is a significant impact of the rural development schemes upon the livelihood condition of the rural masses. However, there is a wide inter-block variation in terms of the degree of employment and income generation and the work participation in the rural development schemes implemented in the sampled villages of Jalpaiguri district. During the field survey 2015-16, though 53.37% households have experienced the increase in their level of income and a significant improvement in their socio-economic condition after participating in the poverty alleviation programmes yet 12.89% households expressed their dissatisfaction regarding the rural development schemes. The sampled households complained that in certain times the eligible households are deprived from the benefits of the schemes. Hence, in order to execute the rural development schemes properly, adequate monitoring along with simultaneous evaluation needs to be conducted by the concerned officials which would help in removing the variation in the implementation of the schemes.

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CHAPTER-IX

Problems and Suggested Measures

The process of rural development has been a major concern of the Government of India since independence. Although development in the rural areas brings economic benefits yet specific measures and strategies become necessary in order to ensure that the benefits reach the disadvantaged and the weaker sections of the rural areas. Thus the policies of rural development have been designed to improve the economic and social life of the rural masses especially the rural poor. According to Rangarajan committee report, 363 million people i.e. 29.5% population of India lives below poverty line (2011-12).

The term poverty generally implies to a condition of life when there is a lack of accessibility to adequate goods and services required to satisfy the basic needs of life. It is one of the crucial problems in the rural areas of the country and the removal of rural poverty is the prime objective of planning in India. Rural poverty is the outcome of low income and is linked with the inequalities in the distribution of the benefits of economic growth, low levels of productivity, unemployment and underemployment. The strategies of rural development in earlier times put focus in the development of agricultural and allied activities which was the prime source of income and livelihood in the rural areas. But in order to promote the overall process of rural development there is a need to improve the rural non-farm sector which is an integral part of rural development.

Thus the primary objective of the Government of India is to improve the standard of living of the rural masses through rural development policies and strategies. The major problems associated with the underdevelopment of the rural areas are:

- i) The inadequate provision of the social and economic services to the weaker sections of the rural areas;
- ii) Inadequacy of employment opportunities; insufficient provision of necessary and basic amenities in terms of housing, sanitation, electricity, drinking water, health care;
- iii) Inadequate means of transport, market and rural communication facilities;
- iv) Lack of irrigational facilities;
- v) Predominance of livestock holding;
- vi) Lack of access to quality educational facilities and
- vii) Lack of awareness of the rural masses regarding their active participation in the rural development programmes as well as in decision-making developmental activities.

However, emphasis on the process of rural development became more marked and therefore various series of experiments has been carried out by the academicians, social workers, nationals' policy makers for the eradication of rural poverty and unemployment in order to reduce the disparities between rural and urban sector along with the adequate availability of the basic amenities in terms of housing, nutrition, health and education.

Therefore, a comprehensive development strategy needs to be implemented in the rural areas because the nature of rural issues varies from one area to another area. Hence, a single project cannot identify all the problems of a rural area as a whole and so, a proper flow of information is always required for the planning of the rural areas.

Problems of the study area

The present research work pertains to Jalpaiguri district which is situated in the northern part of West Bengal where the total population is 2,381,596 and the total rural population is 1628791 in the seven C.D. blocks of Jalpaiguri district (Census, 2011). The existing infrastructural, social and the economic structure that reflects the process of rural development is uneven in the study area. The findings revealed some acute problems of the study area.

In terms of educational institutions, the number of middle schools, secondary schools and higher secondary schools are inadequate in the sampled villages of Jalpaiguri district. There are only 3 secondary schools and 1 higher secondary school available in the study area. Moreover, illiteracy is a major hindrance to social and economic development and it has been observed that 37.87% males and 40.58% females are illiterate in the study area.

Though the provision of the medical facilities has been one of the major objectives of developmental strategies yet there is a complete absence of primary health centre in the sampled villages of the district. In terms of primary health sub-centre, there are 19 sub-centres available in the study area. Regarding the housing condition of the rural areas it has been observed that 8.55% households have a kutchra roof type housing pattern whereas 66.38% households lives in a kutchra wall type houses which reflects a poor quality and nature of houses in the sampled villages of the study area. During the course of field survey, the findings revealed that out of the total sampled households 60.60% households are deprived of sanitation facilities within their dwelling houses. Thus the facilities available for the cultural and social needs of the rural people are inadequate in the study area.

In terms of agriculture and allied activities it has been observed that there is an absence of cultivated area among 60.48% of the sampled households in the study area and

12.16% are the landless households. They are either employed as unskilled farm workers, or the tea garden labourers depending upon the daily wage earnings. Moreover, the adverse effect of the fragmented holdings which limits the scope of agricultural development has also been noticed in the study area.

The proportion of daily wage earners reflects the socio-economic condition of an area. They are the unskilled and seasonal workers and often suffer from the problem of sustained employment. In the study area 40.25% daily wage earners has been noticed. Again, in terms of income and expenditure of the rural masses which holds an important place in the socio-economic analysis, the findings shows that among the sampled households 49.87% households have the problem of expenditure which is more than their earnings under Rs. 1001-5000 income group. In India, rural indebtedness is the reflection of high incidence of poverty of the rural masses where the private money lenders are the major source of credit supply through high rates of interest. Rural Jalpaiguri district is no exception, where 33.25% households have the burden of debts from different agencies.

In terms of the infrastructural provisions and facilities, unevenness has been observed in the study area. Hand pumps and tube wells are the prime source of drinking water in the study area. But while examining the sources of drinking water it has been found that the facility of drinking water is absent within the premises of 10.49% households in the study area. The households face an acute problem of drinking water as these sampled households have to depend upon the government owned tube wells located in the premises of primary schools or primary health centres. During the course of field survey it has been observed that the households fetch unpurified drinking water from the rivers and ponds due to the scarcity of safe drinking water supply within their premises.

Though the rural electrification holds a significant place in the development strategy yet 3.73% households are living without electricity connection within their dwelling houses and it has been observed that 45.30% households suffers from the problem of frequent power cut within their premises for long hours. Though rural economy largely depend upon animal husbandry yet the findings shows that the veterinary facilities is inadequate in the study area and there is an absence of the provision of veterinary centres or sub-centres in the sampled villages of Rajganj, Jalpaiguri, Maynaguri, Dhupguri, Mal, Matiali and Nagrakata blocks of Jalpaiguri district.

Rural market holds a key position in terms of the infrastructural development of the study area and there is an availability of 4 regulated markets in the sampled villages of Maynaguri, Dhupguri and Mal blocks which is inadequate to cater the needs of the rural

masses in Jalpaiguri district. Further, the banking facilities are inadequately distributed in the study area. There is a lack of ultra-small branches and mini banks in the sampled villages of Rajganj, Jalpaiguri, Mal, Matiali and Nagrakata blocks. In terms of the rural communication facility the postal services are inadequate in the study area. There are only 4 sub-post offices observed in the sampled villages of Jalpaiguri district.

In terms of the wage employment generating schemes, lack of hundred days of wage employment opportunity in a financial year along with delay in wage payment are the major drawbacks of MGNREGS observed in the sampled villages of Jalpaiguri district.

Suggested Measures

The term planning refers to a process by which a society undertakes an improvement in itself and achieves the socio-economic goals, by identifying the problems of an area and making a series of actions to resolve them. The prime objective of the planning process in terms of rural development is the economic and social welfare of the rural masses. In India social and economic welfare is an outstanding goal of the government, social scientists and the planners. Proper planning is an important tool as it helps in modernizing the Indian rural economy and hence grass root level planning is a pre-requisite for the future development of the rural area.

Education: Educational provision is indispensable for the development of a society and therefore lack of educational institutions is certainly an obstruction in the process of rural development. To develop the quality of human resources the most important criteria is the formal education, beginning with elementary education and then continuing to the various forms of higher education. Education is the fundamental characteristic of human population and therefore it is one of the key indicators for the overall development of a country. It helps to create skilled manpower which in turn brings social and economic development and enhances the equitable access to employment opportunity. Hence, every citizen should get the benefit of educational facilities for a better life.

Absence of adequate educational institutions is one of the major hindrances in terms of quality education. In the sampled villages of Jalpaiguri district there exists an inter-block disparities in terms of educational institutions. Absence of secondary schools has been observed in the sampled villages of Jalpaiguri, Maynaguri, Dhupguri, Mal and Nagrakata blocks along with an absence of higher secondary schools in each and every sampled villages of Rajganj, Jalpaiguri, Maynaguri, Dhupguri, Matiali and Nagrakata blocks the study area. Therefore many students are deprived of getting a continuous educational facility beyond

their primary level of education. Thus, the higher educational institutions are inadequate to cater the rural students of the sampled villages of Jalpaiguri district.

It has been observed during the field survey that the quality of the mid-day meals and the management of the mid-day meals are poor in the study area. The schools lack proper storage facility and therefore food materials are kept either in the class rooms or in the corridor. Besides, it has also been observed that the teachers are equipped with heavy work load such as; involvement in mid-day meal programme and other added duties which adversely affect the primary work of teaching and the students get the lower chance of individual attention from the teachers.

Moreover, the problem of illiteracy is acute in the study area and it is the incidence of poverty which is the most significant factor contributing to illiteracy. Besides, the lack of awareness, traditional outlook of the parents and lack of sincere appreciation among parents about the importance of children's education aggravates illiteracy in the study area. Moreover, inadequate educational facilities within the villages, high expenses in study and the family compulsion to engage children for seasonal unskilled manual work on farms as well as domestic works are responsible for the restrictions in their studies. Though the government has launched a number of educational schemes and carried out campaigns to increase the level of literacy yet the problem of illiteracy persists in the study area. Therefore to improve the standard of education some suggestions have been provided below:

- i) Government should provide adequate number of educational institutions especially the provision of secondary schools and higher secondary schools in every inhabited village.
- ii) There should be the provision of funds in order to improve the infrastructure of the schools in terms of roof and floors, lights and fans, necessary furniture along with the basic necessities such as; safe drinking water facility and hygienic sanitation facilities within the school premises.
- iii) Every school should have the provision of separate sanitation facility for the boys and the girls in the study area.
- iv) There should be adequate provision of school equipment's such as; table, chairs, blackboards, chalk and duster.
- v) Provision of grants to the educational institutions is essential for the scholarship of the students living below poverty line.
- vi) Quality teaching is an essential criterion for the improvement of the standard of education, as the interest of the students in the subjects is reflected by the quality of teaching and therefore the teachers should be properly trained.

- vii) In order to reduce the pressure of students upon teachers more teachers should be appointed in the schools so that individual student gets more attention from the teachers. For this special funds should be provided to the educational institutions so that they could appoint temporary teachers especially in the remote villages.
- viii) Further, the students from the rural government schools lack in communicative english, general knowledge and faces the problem of low confidence. Therefore emphasis should be given regarding the improvement of english reading, speaking along with the improvement of general knowledge and confidence level among the students of the study area.
- ix) The class rooms should be well equipped with the provision of maps, globes, charts and the learning materials of science subjects.
- x) The educational institutions should have the provision of libraries so that adequate text books are available to the students.
- xi) The schools should have the provision of computer, internet facility so that the rural students are well acquainted with the modern educational resources.
- xii) Apart from the basic education, the rural schools should organize the extra-curricular activities at regular intervals within the school premises such as; sports, cultural events and exhibitions as these activities improves the knowledge and skills of the rural students.
- xiii) The schools must have the provision of sheltered dining area for the mid-day meals of the rural students.
- xiv) There must be the provision of health checkups and immunization programme in the school premises especially in the remote villages where the health care facility is inadequate.
- xv) However, awareness in terms of education is necessary for the parents regarding the willingness of sending the children to school. Therefore educational awareness camps should be organized in the villages where the level of literacy is comparatively low. Further, joint teacher-guardian meetings are necessary in the rural areas so that the rural parents understand the benefits of sending the children to school.

Education enhances the social position of women as it helps to acquire knowledge, skills and self-confidence which promote the participation of girls in the decision making activities within and outside the family. However, the findings revealed that there exists differences in the level of literacy of the males and females in the study area. It has been observed during the course of field survey that the girls are engaged in household chores and assist the other

members of the house in different domestic works. Since, women empowerment is associated with the level of women education therefore every effort should be made to improve the education of the girls in the rural areas so that they are aware of the benefits of the legal provisions and governmental programmes and policies implemented in the study area. Therefore, ensuring access to quality education and the extension of the number of higher educational institutions is vital for the overall development of the study area.

Health: The improvement in the health status of an individual not only acts as an indicator of the human development but also it is a crucial factor for the social and economic development of an area. The provision of basic medical facilities is one of the major objectives of the Government of India. Though the National Rural Health Mission under the Ministry of Health and Family Welfare, Government of India, aims to provide quality health services in the areas where the health care infrastructure is weak yet it has been observed that the rural population of the sampled villages of Jalpaiguri district is deprived of the adequate medical facilities.

There is an absence of Primary Health Centre in the sampled villages of Jalpaiguri district. In terms of Primary Health Sub-Centre there are only 19 sub centres available in the sampled villages of the district. It has been observed during the field survey that the accessibility to the quality and quantity of the basic medical facilities is less in the rural areas. In order to reduce the problem of basic health care facilities in the rural areas, some suggestions have been given below:

- i) There should be the provision of trained doctors and specialized services in the health care centres as the trained medical practitioners intend to provide services in the private sectors of the urban areas.
- ii) The rural patients are treated by the paramedical staffs due to the absence of doctors. Regular monitoring of the higher officials should be conducted in the health centres as there is a huge problem of staff absenteeism along with the inadequacy of the elementary medicines for common illness.
- iii) There should be the provision of adequate infrastructural facilities in terms of pucca building, water supply, electricity and transport facility. Modern medical facilities should also be made available to the rural patients of the study area. The PHCs and PHSCs are deprived of regular water supply and there is a frequent problem of power failure. Moreover due to the absence of communication facility and referral transport

facility, the rural patients have to trudge long distances for treatments which creates massive problem during the hours of emergency.

- iv) There should be the provision of some basic medical facilities such as; X-Ray unit, pathological laboratory, minor operation theaters, separate child care unit and delivery room for the rural women.
- v) There must be an increase in the number of primary health care centres, skilled health personnel, beds and wards as the existing health centres are inadequate to cater the needs of the growing rural population.
- vi) Further, Government should have the provision of free medical check-ups for the rural people living below poverty line. Moreover, the NGOs should be attached in order to create health awareness among the rural people along with preventive health care services which includes the promotion of nutritional food supply, awareness of hygienic sanitation and provision of essential medicines for the rural population in the study area.

Housing: It is a basic need for a healthy living. Though the Government has the provision of construction of pucca dwelling houses to the rural people living below poverty line yet during the course of field survey it has been observed that 8.55% households lives in kutcha roof type houses whereas 66.38% households lives in a kutcha wall type houses. For the construction of new houses government provided funds under IAY (Indira Awas Yojana) where the beneficiaries are permitted to construct houses in their existing house sites. But still there exists a gap between the requirement of the houses and the assistance provided for construction of houses in the rural areas.

There are certain problems regarding the housing assistance to the rural people of the study area. The prime problem is the selection of genuine beneficiaries. The houses should be provided to the weaker sections of the rural area living in the dilapidated house. Therefore adequate physical supervision of the scheme, evaluation by the authorities and regular monitoring needs to be conducted for the fair implementation of the scheme in the study area. Further, the representatives of the concerned departments should organize campaigns especially in the remote villages in order to make the beneficiaries aware of the opportunities of the scheme along with the active participation in the study area.

Drinking water: Safe and adequate availability of drinking water is indispensable to a healthy living. Being a fundamental need, the supply of clean water by the authorities to its residents should be the primary duty. The poor investment in the infrastructural facilities in

terms of water supply and poor maintenance of hand pumps leads to the scarcity of safe drinking water supply in the sampled villages of Jalpaiguri district. The findings shows that 82.75% households depend upon private wells and 3.26% households depend upon hand pumps within their premises for drinking, cooking and other household needs. During the field study it has been observed that the rural households travel long distances in order to fetch drinking water either from the hand pumps of the school premises or health centres and sometimes from the rivers and ponds.

Hence the rural people are deprived of filtered water facility and the use of contaminated water further aggravates the health problem. Thus, there should be an adequate provision of tube wells and tap water facilities from the PHE department for the regular water supply in the rural areas. Moreover, filtering facilities should be provided for the safe and clean drinking water as the water of the hand pumps contains iron and bacteriological contamination to an unwanted degree. Further, the hand pumps that has been provided by the PHE department needs to be maintained and repaired, hence proper monitoring by the government agencies is essential for the prompt access to safe drinking water. Besides, in order to reduce the chronic scarcity of safe drinking water supply there should be the provision of potable water in the study area.

Sanitation: A sanitary facility acts as a key to the well-being of people. It ensures healthy living and is one of the most important factors for the development of social structure. The field study reveals that the sanitary facility in the sampled villages of Jalpaiguri district is highly inadequate. Though the programme Swachh Bharat Mission aims at universal coverage of the sanitation facility in each and every household yet the field data shows that only 14.21% households have been provided sanitary latrines within their premises. 25.19% households have built their sanitary latrines through self-finance and the remaining 60.60% households are yet to receive assistance for the sanitation facility.

The households revealed certain problems regarding the sanitary facility in the rural areas. The rural people living below poverty line are unable to deposit the amount of finance required for the delivery of sanitary latrine plates and therefore they are deprived of the sanitation facility. Absence of sanitation facility compels the rural people to resort to open defecation which further aggravates the health hazards. Hence, the government authorities should identify the right beneficiaries and reduce the tariff rates for the rural people. Another problem related to sanitary facility is the breakage of sanitary latrine plates. Sometimes

during the rainy season the latrine plates have been broken due to heavy rainfall making the sanitary latrine unusable for the rural masses.

Thus, for the promotion of hygienic health there should be improvements in the provision of sanitation facility in the rural areas. Moreover there is an urgent need to increase the level of awareness among the rural people regarding the health education and hygienic use of sanitary latrines along with the knowledge of proper maintenance. Besides, there should be the provision of public toilets in the rural areas in order to keep the environment clean.

Communication system: Efficient and well developed communication facilities play a dominant role in the development of infrastructural facilities in the rural areas. However it has been observed that the postal facilities are inadequate in the sampled villages of Jalpaiguri district. There are only 4 sub-post offices available in the sampled villages of Jalpaiguri, Maynaguri and Dhupguri blocks whereas there is an absence of postal facilities in the sampled villages of Rajganj, Mal, Matiali and Nagrakata blocks. Hence the inadequacy of post offices hampers the delivery of letters, and money orders. Moreover during the course of field survey the respondents revealed that due to inadequacy of staffs there is a problem of delay in the delivery of letters.

Therefore, the central authority should have the provision of adequate number of post offices in the rural areas. Besides, the branch post master should visit the sub-post offices at regular intervals. The sub-post offices should have the facility of letter boxes along with the regularity in speed postal services in the rural areas of Jalpaiguri district.

Regarding the condition of rural roads in the sampled villages of Jalpaiguri district, the existing un-metalled rural roads should be metalled and should be connected to PMGSY roads for an easy accessibility to schools, market and other facility centres. The un-metalled roads get water-logged during heavy downpour in the rainy season, which greatly hampers the mode of rural transportation. Village panchayat, Zilla Parishad and PWD is responsible for the expansion of rural roads and therefore construction of metalled roads with proper repairing at regular intervals is an urgent need in the rural areas of Jalpaiguri district.

Market: Marketing facilities provide an effective flow of goods and services from one place to another. During the field survey it has been observed that there are only 4 regulated markets facilities in the sampled villages of Maynaguri, Dhupguri and Mal blocks of Jalpaiguri district. Thus, the study area is poorly equipped with the regulated marketing infrastructure. Since periodic markets held once or twice a week in the sampled villages

therefore the rural people have to travel long distances for purchasing their desired valuable goods at a reasonable price from the regulated market.

Moreover, regulated market has the facility of both the retail and the wholesale shops which enhances the marketing structure of the rural areas as it ensures the fair price distribution between the producer and the consumer. Hence there should be an adequate provision of regulated market in every village of Jalpaiguri district. Besides, there should be a marketing committee for the management of regulated markets. Apart from this, there should be the provision of concrete market sheds, standard metric weights and measures, provision of electricity, sewage facility, drinking water facility and sanitary facility for the regulated market.

Electricity: Rural electrification is the key component to rural development. During the course of field survey it has been observed that there is a universal coverage of the distribution of rural electricity in the sampled villages of Jalpaiguri district. But among the rural sampled households of the district 80.36% households are electrified whereas there is an absence of domestic electric connection in 19.64% households. The high incidence of poverty in the rural sampled households is the main reason behind the absence of power connection. Due to non-payment of electric bills at regular intervals the electric supply has been stopped in the households. Hence it is suggested that under Deendayal Upadhyaya Gram Jyoti Yojana, 2014, the concerned officials should select the beneficiaries for free electric connections in the rural areas. Besides, the weaker sections of the rural areas should have the provision of reducing the rural electricity tariffs in the study area.

Banking: Banking facility is one of the crucial dimensions of the infrastructural and economic development of the rural areas. The field survey reveals that there are only 2 mini banks and 2 ultra-small branches of the banks available in the study area. This indicates an inadequacy of banking infrastructure in the sampled villages of Jalpaiguri district. The staffs of these mini banks and ultra-small bank branches are highly inadequate. Therefore it is essential to appoint more staffs into these branches. Further, there should be the provision of an even distribution of bank branches in the sampled villages of Jalpaiguri district. Moreover the officers of the base branch should visit the outlets in order to improve the operational efficiency of the ultra-small branches of the concerned banks.

The field study reveals that 33.26% of the rural households have borrowed money for various purposes in the sampled villages of Jalpaiguri district and it has been observed that the borrowers in the study area have borrowed loans from the friends, neighbors and

especially from the indigenous money lenders. Therefore the rural masses should be aware of the mal practices adopted by the private money lenders exploiting the poor rural masses by charging high rate of interest. Hence it is suggested that the rural households should borrow loans from the banks, various financial institutions and the cooperative societies at a low rate of interest.

Veterinary facility: The livestock in Jalpaiguri district includes cattle, pigs, goats and poultry. Since livestock rearing provides a supplementary source of income to the rural households therefore improvement of livestock is essential in the sampled villages of Jalpaiguri district. In order to improve the distribution of livestock there should be scientific breeding practices in the study area. Besides, adequate nutrition, immunization and artificial insemination method should be practiced in the study area which requires adequate veterinary aid. But it has been observed that there is a complete absence of veterinary hospitals and veterinary sub-centres in the sampled villages of Jalpaiguri district. Hence there should be adequate provision of the veterinary sub centres in each and every village for the improvement of livestock.

Agricultural provision: Agriculture is the prime sector of rural economy therefore improvement in agriculture and allied sector is significant for the level of rural development. Essential agricultural inputs such as; improved seeds, organic manures and chemical fertilizers ensure increased farm production. It has been observed during the field survey that the small and the poor farmers are deprived from the free supply of improved seeds and fertilizers in the study area. Therefore in each and every inhabited village there should be an adequate provision of the supply of improved seeds and chemical fertilizers to the small farmers in order to improve the agricultural economy. Moreover, the cultivators should be informed before the distribution of improved seeds and chemical fertilizers as they are unaware regarding the information of the free supply of seeds. Apart from these since there is an absence of storage facilities for the farm products, there should be the provision of cold storage facility which is an urgent requirement for the rural masses in the sampled villages of Jalpaiguri district.

The finding reveals that 12.16% households in the sampled villages of Jalpaiguri district are landless households. These households are either engaged as unskilled agricultural labourers, tea garden labourers or the daily wage earners. Therefore, provision of land to the poor landless labourers is essential in the study area. However, the state government has the provision of 5 decimal lands to the landless households under *Nijo Griho Nijo Bhumi*

Prakalpa, therefore the concerned officials should identify the beneficiaries for the assistance of land to the landless households. Awareness campaigning is proposed for the poor rural masses in order to impart knowledge regarding the benefits of the government schemes. Apart from these, development of non-farm occupations is suggested in each and every village especially in the remote villages such as, development of cottage and small scale industry, trade and hotel business, activities in transport and communication, in order to improve the level of social and economic development in the study area.

Rural development programmes: The following suggestions are made on the basis of the findings of the research work, regarding the improvement of the performance of the rural development programmes in the sampled villages of Jalpaiguri district.

- i) Effective campaigning should be organized in order to make the rural people aware about the benefits of the rural developmental programmes implemented in the study area.
- ii) The implementing agencies of the rural development programmes and the social assistance programmes should follow the government guidelines regarding the right identification of the beneficiaries. Further, the officials of the financing institutions should be involved for the selection of beneficiaries and for the disbursement of the loans on time.
- iii) For the allotment of the programmes the beneficiaries should be consulted in order to view the needs and requirements of the rural people. Therefore active participation of the rural people is essential for the implementation of the schemes.
- iv) The amount of loan disbursed to the members of the self-help groups is much less than their required amount for generating their income through various small business activities. Therefore adequate amount of loan should be disbursed as per requirement of the group members. Further, delay in obtaining loans is another problem faced by the members of the SHGs.
- v) Adequate training facilities should be provided to the rural women of the self-help groups for the up-gradation of their skills in the study area and suitable marketing facilities should be established for the selling of the products and improving the level of income.
- vi) Though NREGS has the provision of enhancing the livelihood security of the rural masses by guaranteeing 100 days of wage employment to the rural household in a financial year, yet during the course of field survey it has been observed that the rural

households are dissatisfied in a way that there is a lack in the distribution of person-days under NREGS. Further the households revealed that they face the problem of delayed payment of wages. Therefore it is essential to increase the number of person-days and regularity of the wage payments through local banks in the study area. Therefore social audit at regular interval must be conducted in order to scrutinize the accounts and records related to the scheme.

- vii) Rural development programmes lacked coordination and proper implementation, therefore the government officials of the schemes should take more initiatives during the allotment of the schemes. Proper monitoring, physical verification and evaluation of the schemes is suggested for the improvement of the performance level of the schemes.
- viii) During the field survey, the households revealed the dissatisfaction regarding the duties and activities of the village level workers. Therefore NGOs should be attached to identify the problems of the local people and to evaluate the progress of the schemes in order provide holistic solution to the problems of the rural masses.

Thus, in order to remove the disparities in the blocks of Jalpaiguri district in terms of social, economic and infrastructural aspects it is essential to plan more facilities in the study area. A flourishing rural economy would certainly improve the level of rural development. Good and efficient housing structure, sustained occupational facilities, adequate medical and educational facilities enhances the livelihood security of the rural people in the study area. Therefore the government officials should be concerned regarding the monitoring and evaluation of the social, economic and infrastructural provisions rendered in the study area.

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CHAPTER- X

Conclusion

In conclusion, the present research work reveals that the study area, Jalpaiguri district extends between 26°15'47" to 26°59'34" N latitude and 88°23'2" to 89°7'30"E longitude comprising an area of 3044 km². According to Census, 2011, the total population of the district is 2,381,596 in 7 C.D. Blocks, covering 80 Gram Panchayats and 391 inhabited villages. Jalpaiguri district is situated in the northern part of West Bengal and is bordered by Bhutan in the north, Darjeeling district in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar district in the east. The present research work attempts to assess the level of rural development in Jalpaiguri district, West Bengal. The entire research work has been carried out precisely and empirically on a household level survey with the help of a questionnaire for conducting the survey on the sampled villages of the 7 community development blocks of Jalpaiguri district.

Jalpaiguri district is bordered by the hill ranges in the north and piedmont plains in the south and geologically the district consists of a vast amount of alluvial deposits. The drainage network of the district consists of the major rivers like Tista, Jaldhaka, Karatoya, Murti and Diana. The climate of this region is of typical monsoon type and the temperature ranges from 33°C in the summer month to 10°C in the coldest month. The mean annual rainfall for the district ranges between 3000-4000 mm. Though the economy of Jalpaiguri district is essentially agriculture based yet tea industry holds an important source of livelihood in the region. In terms of road transport the main national highway that passes through this district is NH-31 and NH-31c.

In India, the process of rural development assumes greater significance as 68.84 percent (Census, 2011) of its population live in rural areas. Since the prime objective of rural development is the improvement of quality of life of the rural people therefore it is a matter of great concern among the social scientists, planners, academicians and researchers. The process of rural development is comprehensive and it aims at development of all sectors in the rural areas in terms of social, infrastructural and economic sectors. In the rural areas, people living below poverty line with low per capita income are confronted with a number of problems, therefore poverty alleviation and welfare of the rural people has been one of the avowed objectives of rural development.

According to census 2011, the total population distribution of Jalpaiguri district is 2,381,596 and the total rural population is 1628791. The study reveals varying patterns of unevenness where the eastern, south-eastern and southern part of the district is densely

populated due to its level surface and fertile soils covering Dhupguri, Jalpaiguri and Maynaguri blocks of the district whereas the northern part of the district have sparse population distribution covering Matiali and Nagrakata blocks owing to its undulating topography. The percentage of rural population growth rate of the district observes a decadal variation from 2001-11. The findings reveals that there has been a negative impact in the growth rate of rural population during the period 2001-11 in Rajganj block with -32.86%, Jalpaiguri block with -6.81% and in Matiali blocks with -3.29% and the reason behind the decline in the growth rate of population is the emigration of youths in search of better economic life. Moreover, the growth of census towns and the decline of number of inhabited villages in Rajganj block is the possible reason for the negative growth rate of rural population.

Further, the density of rural population of Jalpaiguri district shows a high and a moderate population density according to Census 2011. The average density of rural population per km² for Jalpaiguri district is 483 persons per km². Jalpaiguri, Maynaguri, Mal, Matiali and Dhupguri blocks observes high population density with more than 350 persons per km², while Rajganj and Nagrakata blocks observes a moderate density of rural population with 150-350 persons per km². For assessing the composition of population, sex ratio is an important demographic indicator. The sex ratio of the total rural population of Jalpaiguri district is 954, Census, 2011. Inter-block variations shows that the sex ratio is higher in Dhupguri, Mal, Matiali and Nagrakata blocks of whereas Rajganj, Jalpaiguri and Maynaguri blocks shows a moderate sex ratio.

Literacy plays a key role in the overall development of the rural areas. In 2011, Maynaguri block observes the highest share of male and female literacy rate in the study area. However, the disparity index in terms of literacy rates has been calculated for all the blocks of Jalpaiguri district and the values ranges from 0.12 in Rajganj block to 0.21 in Matiali block and the findings shows that the male literacy rate is higher in all the blocks of Jalpaiguri district as compared to its female counterpart. In terms of occupational structure of Jalpaiguri district the working population has been divided into four categories who are engaged in the diverse segment of economy. The total percentage of cultivators observed in the sampled villages of Jalpaiguri district is 33.36%, agricultural labourers constitutes 33.24%, household industry workers accounts 0.70% and other workers constitutes 33.68%. Population composition by religious group and social group are the important aspects of demographic study. The findings reveal that Jalpaiguri district is a Hindu dominated region which accounts for 81.32%, followed by the Muslim households constituting 14.09% and Christian

households with 4.57%. Besides, the sampled villages of Jalpaiguri district exhibits 48.19% of SC households followed by 24.57% ST households, OBC households constitutes 14.69% and 16.92% households belongs to general category.

In order to identify the inter-block disparities in the level of demographic development among the blocks of Jalpaiguri district, Z-score method has been applied. Further, the results of the standard score of all the indicators are taken collectively, in order to find out the composite standard score of variables. Following the composite index of the variables, the blocks have been divided into high, medium and low category in order to analyze the disparities in the level of demographic development in Jalpaiguri district. The blocks have been categorized into high, medium and low level of demographic development.

The high level of demographic development has been observed in Dhupguri, and Maynaguri blocks of Jalpaiguri district. These blocks have obtained high values in terms of the rural literacy rate in percentage, percentage of agricultural labourers and percentage of cultivators. The blocks with moderate level of development has been observed in Jalpaiguri and Mal blocks. Whereas, the low level of demographic development is confined to three blocks of Rajganj, Matiali and Nagrakata blocks of Jalpaiguri district.

The concept of social structure reflecting rural development emphasizes the improvement of the society on the basis of the social provisions available for the needs of the rural masses in Jalpaiguri district. It highlights the number of educational institutions, level of literacy, health care facilities, housing structure, sanitation facilities and the awareness of women in terms of social development in the sampled villages of Jalpaiguri district.

Education is a pre-requisite for the socio-cultural development of a region and adequate educational institutions are the base of a quality education. It has been observed that there are 61 primary schools followed by 22 middle schools, 3 secondary schools and 1 higher secondary school has been obtained in the sampled villages of the district. Considering the student-teacher ratio of the state 40:1, it has been observed that the ratio for primary school student and teacher is 21:1, for middle school student and teacher the ratio is 36:1, for secondary school student and teacher the ratio is 60:1 and the ratio for Higher Secondary school student and teacher is 57:1 in the rural areas of Jalpaiguri district. As per the ideal student-teacher ratio of the state, low student-teacher ratio has been observed for primary school and middle school in every blocks of Jalpaiguri district whereas the ratio exhibits high for the secondary and higher secondary schools. However, the higher number of students per teacher indicates greater pressure of students per teacher reducing the quality of education at all levels.

In India according to 2011 census, 82.14% is the male literacy rate and 65.46% is the female literacy rate and in terms of the literate and illiterate population of the sampled villages of Jalpaiguri district, 62.13% male literacy rate and 59.42% female literacy rate has been observed which is lower than the national average. Further, the percentage of male illiteracy rate accounts 37.87% whereas the female illiteracy rate accounts 40.58% in the sampled villages of the district. The inadequate educational institutions, domestic work pressure for the girls in particular, compulsion in unskilled farm operations and working as tea garden labourers due to the incidence of poverty are the prime reason behind the rate of illiteracy in the study area.

Higher level of literacy plays a dominant factor in the process of development. In terms of literacy in the study area, it has been observed that 27.23% rural populations of the sampled villages are educated up to primary school. This is due to fact that the poor socio-economic condition restricts the rural population for higher education. Therefore only 5.91% rural populations are graduates and 0.7% population have availed higher studies in the sampled villages of Jalpaiguri district.

Level of literacy of the females is highly significant as it promotes and maintains the social and economic well-being of the entire family. Education creates awareness among the rural women ensuring equitable access to employment opportunity and prepares them to shift their occupational structure from agricultural activities to non-agricultural activities. The higher level of literacy among the rural women enhances the capability to participate in decision-making activities within or outside the family. Education is an important means of empowering women and therefore the higher the level of literacy of the rural women the higher they are engaged in the supplementary sources of income. The hypothesis '*The higher the level of literacy rate among the females the better is the economic growth in the rural households*' is statistically significant as the findings shows that p-value for all the C.D. blocks are lesser than the level of significance ($\alpha= 0.05$), and therefore it is believed that there is an association between the female literacy and the monthly household income of that household.

In terms of health care infrastructure it has been observed that the healthcare services rendered across the sampled villages of the district is inadequate. There is an absence of Primary Health Centre (PHC) in the sampled villages of Jalpaiguri district. However, 19 Primary Health Sub-Centres has been observed in the study area. As per the government norms, the average number of population served per primary health sub-centre is higher than the state average in Rajganj, Mal and Nagrakata blocks of Jalpaiguri district. In Rajganj block

the ratio for health centre and the rural population of the sampled villages is 1:5876, the ratio is again higher for Mal block with 1:5145 and Nagrakata block with 1:5587. Moreover, the sub-centres are functioning in a single room therefore inadequacy of the number of wards, beds and lack of adequate para-medical staffs has been a major problem in the sampled villages of Jalpaiguri district. Hence, adequate health centres and health care facilities are essential in the sampled villages of Jalpaiguri district.

Housing is the basic requirement of the people. The analysis of housing structure reveals the socio-economic aspects of the rural masses of the study area. The finding shows that only 3.01% houses are built with pucca roof type whereas 8.55% of the households have been observed with kutcha roof type in the sampled villages of Jalpaiguri district. This is due to the fact that due to poverty and low income, construction of pucca houses, is beyond the affordability of the rural masses in the study area. Similarly, 66.38% households have been observed with kutcha wall type houses in the study area. The tea garden labourers, daily wage earners, agricultural land less labourers in particular have kutcha houses in the study area.

However, 78.67% households have the roof type build with GCI sheets and 17.22% households have pucca wall type houses in the study area. The reason behind is the impact of the Rural Housing Programmes which provided new pucca houses in the sampled villages of Jalpaiguri district. Besides room density has been calculated in order to measure the level of congestion in the rural houses. However none of households have adequate space as there is more than one person per room reflecting residential congestion in the rural households. Sanitation facilities are one of the important constituent of the hygienic health of the people. It has been observed that 14.21% rural households are benefitted under the Swachh Bharat Mission whereas 60.60% households are deprived of the sanitary facilities within their premises in the sampled villages of Jalpaiguri district. Hence there is an urgent need of the sanitary facilities in the dwelling houses of the rural masses.

In order to identify the inter-block disparities in the level of social development among the blocks of Jalpaiguri district, Z-score method has been applied. The level of social development has been analyzed with the help of thirteen indices. Further, the blocks have been classified into high, medium and low category in order to find out the disparities in the level of social development in Jalpaiguri district.

The findings reveal that the high level of social development based on composite standard scores has been observed in Jalpaiguri, Dhupguri and Matiali, blocks of Jalpaiguri district. The variables which have influenced the high level of social development include the educational institutions, health care facilities, housing structure, medical facilities and

sanitation facilities. Moderate level of social development has been obtained in Rajganj blocks. Availability of educational institutions, numbers of primary health centres along with the number with pucca roof type are moderate in these blocks. Besides, low level of social development has been obtained in Maynaguri, Mal and Nagrakata block in terms of educational facilities, housing structure and sanitation facilities.

The economic structure implies the economic indicators of the society which reflects the process of development in the rural areas. Economic development in the rural areas aims at reduction of poverty of the rural poor and improvement in the level of income of the rural masses. Since the economy of the rural areas of Jalpaiguri district is predominantly agriculture based therefore the cultivated land, the size of land holding pattern, cropping pattern has been studied in the sampled villages of Jalpaiguri district. Moreover, the type of agriculture, consumption of improved seeds and fertilizers, sources of irrigation, category of labourers, sources of income, alternative sources of income, monthly income and expenditure pattern, range of saving and loan has been taken into account in order to analyze the economic structure of the rural masses in Jalpaiguri district.

The finding reveals that the distribution of the percentage of households by the size of cultivated land is uneven in the sampled villages of Jalpaiguri district. It has been observed that 15.42% households have above 3 bigha cultivated land whereas 60.48% households do not have any cultivated land in the study area. The cultivated land is higher in the households of the southern part of the district consisting of the sampled villages of Jalpaiguri and Maynaguri blocks owing to the fertile soils and the good sources of irrigational facilities. The complete absence of cultivated land is higher in the households of the northern part of study area consisting of Mal, Matiali and Nagrakata blocks where Matiali block accounts 80.00% households with the complete absence of cultivated land. Due to the predominance of tea gardens the sampled households have a meager proportion of cultivated land. Moreover, it has been observed that the households are engaged as the tea garden labourers in the northern part of the study area.

It has been observed that 12.16% households in the sampled villages of Jalpaiguri district are the landless households. The reason behind the landlessness is the poor economic condition of the unskilled agricultural labourers, casual tea garden labourers, and the daily wage earners in the study area. Moreover, in Matiali block it has been found that the sampled households are staying in the quarters obtained from the tea gardens and therefore they do not acquire any land. However, it has been observed that 48.19% households acquire land upto 2 bigha in the sampled villages of Jalpaiguri district. The greater prevalence of the smaller

proportion of the land holdings is due to the law of inheritance where the land holding has been divided into shares. Whereas, due to the dominance of farming households the share of land holding is higher in the southern part of the district where above 8 bigha land holding has been observed in 12.50% households of Maynaguri block followed by 11.86% households in Jalpaiguri block.

In terms of the cropping pattern, paddy holds the leading position in the sampled villages of Jalpaiguri district. Owing to the sufficient amount of rainfall and suitable fertile soils, 39.39% households are engaged in the production of paddy in the rural areas of Jalpaiguri district. Apart from the food crop, 11.10% households cultivate Jute which is the principal cash crop of Jalpaiguri district. Besides, 4.72% households are engaged in tea plantation and among the vegetables, 16.50% households cultivate potato whereas 2.64% households cultivate maize, mustard and sugarcane in the sampled villages of Jalpaiguri district. To analyze the variation in the crops cultivated by the proportion of households and the variation in the different blocks of Jalpaiguri district in terms of the number of households by the cropping pattern, ANOVA two way model has been applied. On the basis of the result obtained from ANOVA it has been found that there is a significant variation both in the varieties of crops and in the C.D. blocks of Jalpaiguri district. Since the p value is less than the level of significance which is ($\alpha=0.05$), therefore it is concluded that the rows and the columns are statistically significant and it is believed that there has been a significant variation in the varieties of crops cultivated and in the different C.D. blocks of Jalpaiguri district.

Since agriculture plays a crucial role in the economic development of the study area therefore type of farming practiced in the sampled households has been analyzed in the present work. 26.73% households practiced subsistence type of farming where the households are largely engaged in the cultivation of paddy as their food crops, whereas 54.21% households are engaged in the commercial type of farming in order to earn profit from the cultivation. Apart from the production of paddy the households are largely engaged in the cultivation of jute, potato and sugarcane in the sampled villages of the district.

In order to analyze the economically active and inactive population in the study area, the numbers of earning and dependent population of the sampled households has been studied. It has been observed that the earning population accounts 36.35% and the population is engaged in the production of foodgrains and cash crops along with the participation in various non-farming activities in the study area. However, 63.64% are the dependent population in the study area where 27.67% consists of the juvenile population and 6.63%

consists of the senile population. For the improvement of crop production in the sampled villages of Jalpaiguri district, 20.31% households apply improved seeds in their farming activities. Besides, 25.00% households apply bio-fertilizers or the organic manures in the farm holding whereas 54.68% households are engaged in the consumption of chemical fertilizers in the land holding for a better productivity of the crops in the study area.

In terms of the sources of irrigation in the sampled villages of Jalpaiguri district, tube wells and rivers are the main sources of irrigation followed by wells and canal irrigation. 26.29% households' uses tube well irrigation for their farming operations and 14.37% households uses rivers as the sources of irrigation for the agricultural operations in the sampled villages of Jalpaiguri district. Rearing of livestock provides supplementary sources of economy in the sampled villages of Jalpaiguri district. Cattle include both cows and bulls and it accounts for 45.62% of the total livestock population of Jalpaiguri district followed by poultry with 32.03%, pigs with 2.31% and goats accounted for 20.03% of the total livestock population of Jalpaiguri district.

Since a large number of rural population is employed as labourers therefore the labourers has been categorized on the basis of the working sector as agricultural sector, in construction works or as tea garden labourers. 42.72% constitutes the labourers engaged in the construction works followed by 31.66% agricultural labourers and 25.62% tea garden labourers. Besides, it has been observed during the field survey that the poor landless agricultural labourers survive their livelihood through daily wage earnings in the study area.

The households have been divided into 4 groups on the basis of the different sources of income in the sampled villages of Jalpaiguri district. 38.43% households are the daily wage earners of the study area followed by 26.39% households engaged in agricultural operations. Again, 13.73% households have the sources of income from the service sector whereas 7.11% households are engaged in business activity which involves rice mills, small shops, tailoring business and contractors.

Despite the daily wage earning and the agricultural and allied activities the rural population is engaged in different non-farm operations which account 14.4% households in the study area. The greater involvement of the rural household in non-agricultural activities indicates an improvement in the level of income of the poor rural households of the district. Therefore apart from the traditional agricultural activities the households which are adjoining the municipal areas are benefitted from different non-agricultural activities influencing the level of economic development in the study area. The hypothesis '*Enhancement in generating alternative sources of employment varies in the remote villages and the villages*

adjoining to municipal areas is statistically significant as the findings shows that p-value for all the C.D. blocks corresponds to 0.999 which is greater than the level of significance ($\alpha=0.05$), therefore we accept the null hypothesis and believe that alternative sources of employment in average (per unit) households of the villages adjoining the municipal areas are more than that in the remote villages.

As far as the female workers are concerned, it has been observed that 35.80% women are engaged in agricultural operations apart from their regular household activities. Again, 35.80% females have their sources of income from the service sector which involves the non-formal educational institutions in particular. The females are engaged in Shishu Shiksha Kendras (SSK) and the Anganwadi Centres within or outside the villages. Similarly, 27.51% females are the daily wage earners and 0.89% females are engaged in small business activities in the study area.

The chi-square test for independence of attributes has been applied to know whether the type of work that females does in different economic sectors is influenced by blocks of Jalpaiguri district. it has been observed that the p-value for all the C.D. blocks are lesser than the level of significance ($\alpha=0.05$), therefore we reject the null hypotheses and accept that the different types of occupation in which the females are engaged is significantly influenced by the 7 Community Development Blocks of Jalpaiguri district.

Regarding the distribution of the percentage of household by the different ranges of monthly income in the study area, it has been found that 1.81% households have a monthly income below Rs.1000 in the study area. It has been observed that the households are employed seasonally for five to six months in a year. Again, 13.25% households have a monthly income range between Rs.1001-5000. 34.34% households' monthly income ranges between Rs.5001-10,000. Likewise, 37.11% households' monthly income ranges between Rs.10001-15,000 in the study area. Further, 8.07% household monthly income ranges between Rs.15,001-20,000 and 5.42% household has monthly income above Rs.20,000.

The finding reveals that 14.82% households have a monthly expenditure of Rs.1001-5000 whereas only 13.25% households have the monthly income of Rs.5001-10,000. Similarly 37.11% household has their monthly expenditure between Rs.10,001-15,000, whereas 35.30% households have their monthly income ranges between Rs.15001-20,000. Hence, in terms of monthly expenditure it has been observed that the monthly expenses are higher than the monthly income of the rural households which raises the level of indebtedness in the sampled villages of Jalpaiguri district. Therefore the households are indebted to various agencies for different purposes such as, socio-economic necessities, purchasing of livestock,

agricultural operations and for small business activities in the study area. Moreover, due to higher monthly expenses than the monthly earning, 43.73% households do not get the chance of saving the surplus income in the study area. However, it has been observed during the field survey that the percentage of households engaged in the cultivation of a large farm holding along with the households engaged in trade and hotel business has an annual saving of above Rs.15,000 in the study area.

In order to determine the level of economic development among the blocks and the disparities in the blocks of Jalpaiguri district, Z-score method has been applied. The level of economic development has been analyzed with the help of five variables. Further, the blocks have been divided into high, medium and low category in order to find out the disparities in the level of economic development in Jalpaiguri district.

It has been observed from the analysis that the high level of economic development based on composite standard scores has been obtained in Rajganj block of Jalpaiguri district. The variables which have influenced the high level of economic development include the percentage of households cultivating paddy, percentage of households cultivating jute, percentage of earning population, percentage of households with commercial type of farming and percentage of households using improved seeds. However, moderate level of economic development has been observed in Jalpaiguri, Maynaguri Dhupguri, Mal and Nagrakata blocks where inadequacies in terms of the cultivation of jute and percentage of households engaged in commercial type of agriculture has been observed. Further, Matiali block observes the low level of economic development. The variables have negative scores in terms of cultivation of paddy, jute, commercial type of agriculture along with the use of improved seeds.

Infrastructure plays an important role in the process of rural development. Since the dimensions of infrastructural development in the rural areas is vast therefore, development related to the facilities of water supply, electricity, communication, transport, health, education, veterinary facilities, marketing facilities, banking, and recreational provisions has been studied in the sampled villages of Jalpaiguri district.

The finding reveals that there is shortage of PHE water supply in the sampled villages of Jalpaiguri district. It has been observed that 82.75% households largely depend upon the privately owned wells within their premises for the consumption needs. Further, 3.50% households consume water from the tube wells followed by 3.26% households consuming water from their own hand pumps. However, 10.49% households are deprived of any sources

of drinking water within their household premises and thus, there have been difficulties in travelling long distances for the consumption of drinking water.

In terms of the disposal of solid waste in the rural areas, it has been observed that 76.74% households dump the solid wastes in an open space followed by 23.25% households using ponds or rivers for dumping their wastes due to the absence of any community pits or bins in the sampled villages of the district. Therefore adequate storage facilities for the collection of the solid wastes are essential in order to maintain the hygienic health of the rural masses.

Availability of electricity is an essential component of infrastructural development. It has been observed during the course of field study that 96.27% households of the sampled villages are electrified whereas 3.73% households are deprived of the domestic power connections in the sampled villages of Jalpaiguri district. In terms of the veterinary facilities there has been a complete absence of veterinary centres in the sampled villages of the district. However, periodical visits of 5 doctors have been observed in the sampled villages of Rajganj, Dhupguri and Mal blocks.

Marketing facilities is an important factor in terms of the infrastructural development of the rural areas. 4 regular markets and 11 periodic marketing facilities have been observed in the sampled villages of Jalpaiguri district. Further it has been found that 21.18% households travel beyond 5 km for the marketing facilities in the sampled villages of the district. Hence the structure of marketing facilities is inadequate in the study area and particularly the regulated markets, as according to the government norms there should be 1 regulated market within a radius of 5 km in the rural areas.

Banking facilities are vital for the infrastructural as well as the economic development in the rural areas. Inadequacies have been observed in terms of the banking facilities and the agricultural credit facilities in the study area. The rural population of Jalpaiguri district faces difficulties as there are only 2 mini banks, 2 ultra-small bank branches and 3 agricultural credit societies available for the large rural population in the sampled villages of the district. Besides, the postal facilities and the internet services are inadequate to cater the needs of the rural masses.

In terms of transport facilities it has been observed that the road density of the study area is less than the national average. The road density of the blocks of Jalpaiguri district ranges between 0.46 to 1.08 km/km². Moreover, higher road density decreases the population pressure/km road length in an area. Therefore, construction and maintenance of surface roads are essential in the blocks of Jalpaiguri district. In terms of the close accessibility to metalled

roads it has been observed during the field survey that 18.71% households travel beyond 3 km in order to access the all-weather motorable metalled roads in the study area. However, the recreational facilities with respect to the availability of sports club, there are 20 sports club available in the sampled villages of Jalpaiguri district.

Thus, the hypothesis '*Infrastructural facilities are inadequate to meet the requirement of the large scale rural population concentration*' has been validated and on the basis the standard norms it has been concluded that apart from the primary schools, Anganwadi centres and the recreational facilities the infrastructural facilities in terms of drinking water, banking facilities, agricultural credit societies, post offices and health centres are inadequate to cater the needs of the large scale rural population.

For the analysis of the level of infrastructural development thirteen variables have been taken into account. In order to determine the extent of disparities amongst the blocks, the C.D. blocks of Jalpaiguri district has been categorized into high, moderate and low level of infrastructural development. Z-score and composite standard score technique has been applied for the analysis. The blocks have been categorized on the basis of the composite standard scores which range between 0.5 to above 1.

It has been observed from the analysis that the high level of infrastructural development is confined to Jalpaiguri and Matiali blocks of Jalpaiguri district. The variables which have influenced the high level of infrastructural development include drinking water facilities, percentage of electrified households, number of veterinary doctors, number of primary schools, number of primary health sub-centres, number of regular markets, number of commercial banks and agricultural credit societies and the number of post offices as their composite score is above 1 indicating high level of infrastructural development.

However, Maynaguri, Dhupguri and Mal blocks fall under moderate level of infrastructural development. The low level of infrastructural development has been found in Rajganj and Nagrakata blocks of Jalpaiguri district. The variables have negative scores in terms of drinking water, electrified households, market, banking and the recreation facilities.

In terms of the composite level of rural development an attempt has been made in the research work to analyze the level of disparities in the blocks of Jalpaiguri district. Based on the indices that support the level of overall development, the blocks have been categorized into high, moderate and low level of rural development on the basis of composite scores. Therefore, Z-score and composite score technique has been applied for identifying the composite level of rural development. On the basis of the aggregate score, it has been observed that the high level of development is confined in four blocks namely Jalpaiguri,

Maynaguri, Dhupguri and Matiali blocks of Jalpaiguri district. These blocks consist of the adequate number of socio-cultural and infrastructural amenities with respect to population.

In the moderate level of rural development two blocks namely, Rajganj and Mal blocks fall in this category. These blocks exhibits middle stage of composite level of rural development in terms of infrastructural facilities and social economic provisions. Nagrakata block falls in the lowest category in terms of composite rural development owing to poor level of infrastructural facilities and social provisions. It has been observed that the social and the infrastructural provisions exhibits uneven dimensions in the study area and the reasons behind this fact are the varying topography, uneven distribution of population, gender disparities in terms of literacy rate, traditional occupational structure and the poor means of transport and communication facilities. Hence, suitable developmental policies in the blocks are crucial in order to mitigate the disparities in the level of rural development.

Government of India has formulated several programmes and policies for the overall development of the rural areas. Therefore apart from the analysis of the different dimensions of rural development in terms of social, economic and infrastructural, the present research work covered the rural development programmes and policies implemented in the study area along with the participation of the rural masses in the developmental programmes. Rural housing schemes, food security schemes, schemes for the social assistance, schemes for education and the wage employment schemes and its impact upon the rural masses have been taken into account.

Department of Housing under the state government has implemented Indira Awas Yojana, Gitanjali scheme and Amar Bari housing schemes in order to provide houses for the weaker sections of the rural areas. In the study area it has been observed that 102 numbers of households are the beneficiaries under the financial assistance of Indira Awas Yojana followed by 13 numbers of beneficiary households under the assistance of Gitanjali scheme and 14 numbers of households under the Amar Bari housing schemes. Though a significant percentage of household in the sampled villages of Jalpaiguri district are benefitted by the housing schemes yet it has been found that 701 numbers of households have constructed their houses through self-finance in the sampled villages of Jalpaiguri district where a large number of kutchha houses has been observed. Therefore proper monitoring and execution of the housing schemes are essential in order to identify the beneficiaries of the study area so that the weaker sections are benefitted by the government facilities.

Similarly in order to ensure the availability of adequate food grains at a subsidized rates for the weaker sections of the rural areas, food security schemes has been implemented

which involves Antyodaya Anna Yojana and Rajya Khadya Suraksha Yojana in the study area. The finding reveals that 6.50% households are the beneficiaries under Antyodaya Anna Yojana and 13.50% households are the beneficiaries of Rajya Khadya Suraksha Yojana in the sampled villages of Jalpaiguri district.

In terms of the social assistance programme, the study covered 3 social sector schemes that have been implemented in the study area. Government of India have implemented the social sector schemes in order to provide financial assistance to the families living below poverty line. 69 beneficiaries has been observed under the assistance of National Widow Grants Scheme, followed by 122 beneficiaries under National Old Age Pension Scheme and 10 beneficiaries under National Handicap Aid Programme in the sampled villages of Jalpaiguri district.

The state government has implemented Kanyashree scheme in order to improve the well-being of the girls belonging to financially backward families. During the field survey, 147 beneficiaries have been observed under the annual scholarship followed by 42 beneficiaries under one time grant of Rs. 25,000 in the sampled villages of Jalpaiguri district.

In terms of the wage employment generating schemes, MGNREGS has been covered under the study. The finding reveals that 489 households have registered and applied for employment under NREGS, whereas 105 households have registered but not applied for employment and 220 households have not registered under the scheme in the sampled villages of Jalpaiguri district. The reason behind not registering under the scheme is that the households are engaged in service sector in the study area. However, during the field survey the households revealed that lack of hundred days of employment and irregularity in wage payment are the prime reason for not applying for employment under the scheme. Therefore proper monitoring of the schemes are the primary needs in the study area.

Besides, the distribution of person days under NREGS is very uneven in the study area. 51 numbers of households reveal that they were employed for 7 days. Again, 263 households were employed for 14 days followed by 150 numbers of households employed for 21 days, 45 households employed for 28 days and 11 households reveals that they were employed for 100 days. In terms of the duration of wages received under NREGS, 42 numbers of households reveal that wages has been obtained within a period of 1 month whereas, 74 households reveal that wages has been received between 1 to 2 months followed by 51 numbers of households with the duration of wages between 2 to 3 months and 353 households reveals that wages has been obtained beyond 3 months in the study area.

In terms of the micro-credit facilities for the rural women, self-help groups have been taken into account. The women members are engaged in the self-help groups in order to reduce the economic problem of the rural households by drawing credit and investing it in different small business in the rural areas. During the field survey 67 self-help groups with 844 women members have been observed in the sampled villages of Jalpaiguri district.

However, it has been observed that due to the implementation of the rural development programmes, supplementary sources of income have been generated in the study area. The rural population is benefitted from the financial assistance of the rural development schemes and policies in the study area. During the field survey the households revealed that the additional income has been utilized by the rural population in different sectors where 16.92% households utilize the income in the creation of assets, 19.23% household uses the income for purchasing livestock, 9.61% households deposit their income in the banks, 10.00% households repays their burden of debts and 40.00% households uses the income in the consumption of food grains, while 4.23% households utilize their income in different socio-economic sectors.

Thus, the hypothesis mentioned that '*There is a significant rise in the level of family income and the per capita income from the pre-assistance period to post-assistance period*' we observe that the hypothesis is statistically significant for the annual income range of Rs. <10,000, Rs. 50,001 to Rs. 75,000, Rs. 75,001 to Rs. 1,00,000 and Rs.>1,00,000. The p-value obtained is greater than the level of significance ($\alpha=0.05$), therefore we accept the null hypothesis and believe that there is a significant rise in the level of family income from the pre-assistance period to post-assistance period. However, for the income range between Rs. 10,001 to Rs. 25,000 and Rs. 25,001 to Rs. 50,000 the p-value is lesser than the level of significance ($\alpha= 0.05$), therefore we reject the null hypothesis and believe that there is no significant rise in the level of family income from the pre-assistance period to post-assistance period.

The social and economic well-being of the rural population could be raised by the reduction of poverty in the study area. Therefore, proper management and execution of the rural development schemes is necessary in order to improve the level of income of the rural population in the sampled villages of Jalpaiguri district.

From the above study it has been observed that there are some acute problems of the study area with respect to educational facilities, health care facilities, drinking water facilities, electricity, rural marketing structure, rural communication facilities and the problems related to the rural development schemes. Therefore appropriate suggestions have

been proposed in order to meet the requirements of the rural population in the sampled villages of Jalpaiguri district.

In order to develop the social, economic and infrastructural aspects of the rural areas, mitigation measures have been proposed. It has been observed that the study area is lagging the higher educational institutions, particularly the secondary and the higher secondary school, therefore establishment of schools have been proposed for the expansion of educational facilities in the sampled villages of Jalpaiguri district.

Similarly, it has been observed that the study area lacks primary health centres and the existing primary health sub-centres are inadequate to cater the health care needs of the rural population. Therefore for the provision of specialized health care facilities, adequate numbers of primary health centres and sub-centres has been proposed. Moreover, lack of adequate rooms, trained doctors has been observed in the study area. Primary health sub centres are functioning in a single room and therefore the rural patients lack the basic health care facilities.

Besides, shortage of drinking water facilities has been observed in the study area therefore, adequate number of hand pumps has been proposed in the sampled villages of Jalpaiguri district. In terms of domestic electricity connections in the study area, it has been observed that the rural population of the families below poverty line is unable to pay the electric bills at regular intervals, due to which the power connection has been stopped in the households. Therefore proposals have been made to reduce the electricity tariffs for the weaker sections of the sampled villages of Jalpaiguri district.

Apart from these, the un-metalled roads or the kutchha roads further aggravates the problem of transportation in the study area specifically during the period of monsoon, hence construction and maintenance of metalled roads have been proposed. Further, every road should be connected to PMGSY roads for an easy accessibility to block head-quarters and the urban centres. Further, the rural marketing structure and rural communication facilities should be improved. Since there is an adequacy of the regulated markets therefore organization of marketing committee has been proposed for the improvement of the marketing structure in the sampled villages of Jalpaiguri district.

Proposals have been made in order to increase the postal facilities, so that every village should have the facility of sub-post office in the study area. In addition to this, the banking facilities are inadequate in the study area; therefore establishment of mini-banks or outlets along with agricultural credit society in every village of Jalpaiguri district have been proposed. Moreover, since livestock rearing holds an important place in rural economy

therefore establishment of veterinary centres or sub-centres have been proposed in the study area.

In terms of social provision and wage employment schemes, it is proposed that there should be proper implementation and management of the schemes in the study area with adequate monitoring in order to minimize the discrepancies of the schemes. The authorities should identify the right beneficiaries in terms of the provision of pucca houses along with the sanitation facilities for the weaker sections of the rural areas. However, proposals have been made to reduce the tariffs required for the delivery of the sanitary latrine plates for the weaker sections in the rural areas so that every household have the facility of sanitation within their own household premises.

For the holistic development of the rural areas, awareness campaigning for the rural population has been proposed in the study in order to provide adequate knowledge for the well-being of the rural masses. In addition, NGOs needs to be attached with requisite experience for the sustainable development of the rural areas in terms of the identification of the problems of the rural masses and the provision of appropriate solutions for the overall development in the rural areas.

Hence it is expected that, if the proposed strategies is implemented and executed in a regular manner, then the rural population will be benefitted in terms of the balanced distribution of social, economic and infrastructural facilities reducing the inter-block disparities in the study area. Thus, the findings, the mitigation measures and the broad conclusion that is made in the present research work will definitely aid in framing future planning for the rural areas which will stimulate the process of rural development in Jalpaiguri district.

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Appendix

Appendix- I

a. Distribution of Total Population of Jalpaiguri district, 2011

CD Blocks	Male	Female	Total
Rajganj	193185	180591	373776
Jalpaiguri	166036	157409	323445
Maynaguri	170030	159002	329032
Dhupguri	210571	204283	414854
Mal	151826	147730	299556
Matiali	60109	57431	117540
Nagrakata	64133	63264	127397
Total	1015890	969710	1985600

Source-Census of India, 2011

b. Decadal Growth rate, Density and Sex ratio of Total Population of Jalpaiguri district

C.D. Blocks	Growth rate 2001-2011 (%)	Area (km ²)	Total population	Density	Sex ratio
Rajganj	31.62	614.82	373776	608	934
Jalpaiguri	15.13	500.65	323445	646	948
Maynaguri	16.80	530.60	329032	620	935
Dhupguri	-0.86	464.10	414854	813	970
Mal	12.87	545.90	299556	549	973
Matiali	10.98	204.90	117540	574	955
Nagrakata	9.91	397.48	127397	321	986

Source-Census of India, 2011

c.) Occupational structure of the sampled villages of Jalpaiguri district

C.D. Blocks	Cultivators	Agricultural Labourers	Household Industry Workers	Other Workers	Non Workers
Rajganj	285	396	7	831	4008
Jalpaiguri	365	348	11	646	2158
Maynaguri	1659	1511	45	672	8023
Dhupguri	1507	2082	9	1621	9992
Mal	1284	1104	40	1542	10246
Matiali	38	33	3	243	1169
Nagrakata	610	430	10	426	3394
Total	5748	5904	125	5981	38990

Source-Census of India, 2011

Appendix-II

a) Number of Educational Institutions, Students and Teachers in Jalpaiguri district, 2011

C.D. Blocks	Primary School			Middle School		
	Institutions	Students	Teachers	Institutions	Students	Teachers
Rajganj	164	15443	913	25	3116	76
Jalpaiguri	239	14613	1058	29	2217	87
Maynaguri	209	14396	944	21	1738	54
Dhupguri	194	17741	941	38	5321	89
Mal	160	12541	752	26	2895	62
Matiali	69	4328	291	10	1138	26
Nagrakata	60	7130	289	7	866	10

C.D. Blocks	Secondary School			Higher Secondary School		
	Institutions	Students	Teachers	Institutions	Students	Teachers
Rajganj	7	5475	135	17	24889	484
Jalpaiguri	7	3152	97	23	25804	596
Maynaguri	6	3051	87	23	34363	730
Dhupguri	3	2193	49	25	37767	728
Mal	4	2241	45	13	21407	382
Matiali	1	412	19	6	8350	155
Nagrakata	1	780	12	7	10278	162

Source- U-DISE (Unified District Information for School Education), 2018-19

b.) Number of students in the sampled villages of Jalpaiguri district

C.D. Blocks	Primary school	Middle School	High school	Higher Secondary School
Rajganj	510	0	818	0
Jalpaiguri	325	323	0	0
Maynaguri	830	198	0	0
Dhupguri	1463	835	0	0
Mal	1473	376	0	1078
Matiali	503	346	1627	0
Nagrakata	522	112	0	0

Source- Field Survey, 2015-16

c.) Number of teachers in the sampled villages of Jalpaiguri district

C.D. Blocks	Primary school	Middle School	High school	Higher Secondary School
Rajganj	22	0	15	0
Jalpaiguri	24	12	0	0
Maynaguri	45	6	0	0
Dhupguri	69	20	0	0
Mal	66	13	0	19
Matiali	23	8	26	0
Nagrakata	25	3	0	0

Source- Field Survey, 2015-16

d.) Distance to educational institution (Km)

C.D. Blocks	0-1	1-2	2-3	>3
Rajganj	23	30	10	2
Jalpaiguri	16	15	24	4
Maynaguri	53	61	51	11
Dhupguri	79	102	28	0
Mal	78	86	11	25
Matiali	18	22	0	0
Nagrakata	40	41	0	0

Source- Field survey, 2015-16

e.) Literate and Illiterate Population

C.D. Blocks	Literate		Illiterate	
	Male	Female	Male	Female
Rajganj	103	81	62	54
Jalpaiguri	80	77	46	42

Maynaguri	255	253	157	151
Dhupguri	256	273	146	172
Mal	264	207	173	177
Matiali	63	38	30	29
Nagrakata	103	87	71	69

Source-Field survey, 2015-16

f.) Level of Literates

C.D. Blocks	Primary	Middle	Secondary	Higher Secondary	Graduate	Others
Rajganj	45	47	48	22	18	4
Jalpaiguri	39	55	34	17	12	0
Maynaguri	135	187	108	47	24	7
Dhupguri	130	197	121	42	36	3
Mal	138	187	104	20	21	1
Matiali	39	38	17	7	8	0
Nagrakata	59	58	40	25	8	0
Total	585	769	472	180	127	15

Source- Field survey, 2015-16

g.) Level of Female Literates

C.D. Blocks	Primary	Middle	Secondary	Higher Secondary	Graduate	Others
Rajganj	20	20	24	9	8	0
Jalpaiguri	15	26	18	11	7	0
Maynaguri	65	85	69	18	11	5
Dhupguri	78	101	65	19	9	1
Mal	54	85	50	11	6	1
Matiali	16	17	5	4	4	0
Nagrakata	28	22	21	14	2	0
Total	276	356	252	86	47	7

Source- Field survey, 2015-16

h.)Type of Medicine Taken

C.D. Blocks	Homeopathy	Allopathy	Others
Rajganj	9	50	6
Jalpaiguri	9	44	6
Maynaguri	55	103	18
Dhupguri	48	138	23
Mal	94	86	20
Matiali	1	33	6
Nagrakata	43	18	20

Source- Field survey, 2015-16

i.) Roof Type

C.D. Blocks	GCI sheets	Asbestos	Pucca	Kutchha
Rajganj	51	10	4	0
Jalpaiguri	35	17	5	2
Maynaguri	125	30	1	20
Dhupguri	171	10	8	20
Mal	164	10	6	20
Matiali	36	1	1	2
Nagrakata	71	3	0	7

Source- Field survey, 2015-16

j.) Wall Type

C.D. Blocks	Pucca	Kutchha	GCI sheets	Wooden
Rajganj	30	33	1	1
Jalpaiguri	20	36	3	0
Maynaguri	24	128	18	6
Dhupguri	42	127	29	11
Mal	11	164	8	17
Matiali	6	17	3	14
Nagrakata	10	46	0	25

Source- Field survey, 2015-16

k.) Floor Type

C.D. Blocks	Kutchha	Pucca
Rajganj	32	33
Jalpaiguri	39	20
Maynaguri	140	36
Dhupguri	159	50
Mal	156	44
Matiali	27	13
Nagrakata	67	14

Source- Field survey, 2015-16

l.) Kitchen Type

C.D. Blocks	Separate	Combined	None
Rajganj	53	9	3
Jalpaiguri	44	14	1
Maynaguri	128	21	27
Dhupguri	135	27	47
Mal	134	29	37
Matiali	26	7	7
Nagrakata	55	9	17

Source- Field survey, 2015-16

m.) Sanitation

C.D. Blocks	Within premises	Within premises (Govt. Facilitated)	Without
Rajganj	30	1	34
Jalpaiguri	37	4	18
Maynaguri	48	29	99
Dhupguri	47	31	131
Mal	34	36	130
Matiali	1	5	34
Nagrakata	12	12	57

Source- Field survey, 2015-16

n.) Awareness of Women

C.D. Blocks	Literacy	Family planning	Employment	Decision taking
Rajganj	28	14	19	4
Jalpaiguri	23	9	19	8
Maynaguri	81	24	49	22
Dhupguri	94	31	56	28
Mal	83	30	58	29

Matiali	17	7	11	5
Nagrakata	24	18	33	6

Source- Field survey, 2015-16

Appendix- III

a.) Build-up area (in decimal) (households)

C.D. Blocks	2	2-4	>4	Nil
Rajganj	3	19	43	0
Jalpaiguri	5	22	31	1
Maynaguri	17	47	112	1
Dhupguri	22	64	81	42
Mal	28	77	66	29
Matiali	0	9	8	23
Nagrakata	0	24	56	1

Source- Field survey, 2015-16

b.) Cultivated area (in bigha) (households)

C.D. Blocks	Nil	<1	1-3	>3
Rajganj	33	0	23	9
Jalpaiguri	28	5	11	15
Maynaguri	87	9	37	42
Dhupguri	147	6	38	18
Mal	132	12	30	26
Matiali	32	1	3	4
Nagrakata	43	0	25	13

Source- Field survey, 2015-16

c.) Wasteland (in bigha) (households)

C.D. Blocks	Nil	0-1	1-3	>3
Rajganj	54	9	2	0
Jalpaiguri	40	14	3	2
Maynaguri	118	27	23	8
Dhupguri	165	25	15	4
Mal	170	21	9	0
Matiali	37	2	1	0
Nagrakata	61	14	5	1

Source- Field survey, 2015-16

d.) Size of Land holding (in bigha) (households)

C.D. Blocks	Landless	2	2-4	4-8	>8
Rajganj	0	40	18	4	3
Jalpaiguri	6	28	9	9	7
Maynaguri	0	78	39	37	22
Dhupguri	42	83	60	16	8
Mal	29	111	32	18	10
Matiali	23	10	1	2	4
Nagrakata	1	50	15	11	4

Source- Field survey, 2015-16

e.) Cropping pattern (households)

C.D. Blocks	Paddy	Wheat	Jute	Tea	Potato	Others	None
Rajganj	32	2	17	2	12	2	3
Jalpaiguri	22	0	4	12	15	2	27
Maynaguri	72	0	22	17	38	4	15
Dhupguri	51	0	27	1	30	3	60
Mal	66	0	9	0	14	4	39
Matiali	3	0	1	2	1	3	32
Nagrakata	38	4	0	0	9	1	0
Total	284	6	80	34	119	19	179

Source- Field survey, 2015-16

f.) Earning and Dependent population

C.D. Blocks	Earning	Dependent
Rajganj	133	193
Jalpaiguri	104	174
Maynaguri	296	576
Dhupguri	323	602
Mal	357	558
Matiali	76	107
Nagrakata	114	246

Source- Field survey, 2015-16

g.) Type of Farming (households)

C.D. Blocks	Subsistence	Commercial
Rajganj	16	16
Jalpaiguri	13	18
Maynaguri	26	62
Dhupguri	12	50
Mal	20	48
Matiali	3	5
Nagrakata	18	20

Source- Field survey, 2015-16

h.) Fertilizers (households)

C.D. Blocks	Improved seeds	Bio-fertilizer	Chemical fertilizer
Rajganj	8	5	12
Jalpaiguri	8	7	16
Maynaguri	17	15	56
Dhupguri	12	16	34
Mal	10	16	42
Matiali	0	4	4
Nagrakata	10	17	11

Source- Field survey, 2015-16

i.) Sources of Irrigation in Jalpaiguri District, 2011(households)

C.D. Blocks	Well	Tube Well	River	Canal	Others	None
Rajganj	3	2	0	18	0	9
Jalpaiguri	8	18	4	0	0	1
Maynaguri	11	26	14	11	1	26
Dhupguri	1	24	9	0	5	23

Mal	6	13	12	0	2	34
Matiali	3	2	0	0	3	0
Nagrakata	0	1	8	3	0	26

Source- Field survey, 2015-16

j.) Livestock (in numbers)

C.D. Blocks	Poultry	Cow/Bull	Pig	Goat
Rajganj	17	45	0	21
Jalpaiguri	33	67	0	35
Maynaguri	106	228	0	84
Dhupguri	78	195	11	69
Mal	215	181	19	84
Matiali	59	26	12	31
Nagrakata	74	87	0	40
Total	582	829	42	364

Source- Field survey, 2015-16

k.) Category of Labourers

C.D. Blocks	Agriculture	Construction	Manufacturing
Rajganj	16	42	5
Jalpaiguri	16	25	10
Maynaguri	66	68	34
Dhupguri	61	73	70
Mal	57	86	51
Matiali	2	9	34
Nagrakata	34	37	0
Total	252	340	204

Source- Field survey, 2015-16

l.) Place of Labour work

C.D. Blocks	Within Village	Outside Village	Outside District	Outside State
Rajganj	40	18	4	0
Jalpaiguri	27	10	9	5
Maynaguri	107	37	13	11
Dhupguri	123	44	4	33
Mal	127	53	2	12
Matiali	38	3	0	4
Nagrakata	46	21	1	3
Total	508	186	33	68

Source- Field survey, 2015-16

m.) Wage Earners

C.D. Blocks	Daily Wage	Weekly Based
Rajganj	18	44
Jalpaiguri	23	28
Maynaguri	80	91
Dhupguri	61	143
Mal	85	109
Matiali	10	35
Nagrakata	42	28
Total	319	478

Source- Field survey, 2015-16

n.) Sources of Income by occupational group (households)

C.D. Blocks	agriculture	service	Daily wage	Business
Rajganj	16	11	18	5
Jalpaiguri	18	7	20	8
Maynaguri	62	11	60	11
Dhupguri	50	36	86	8
Mal	48	30	86	15
Matiali	5	12	16	1
Nagrakata	20	7	33	11
Total	219	114	319	56

Source- Field survey, 2015-16

o.) Alternative sources of employment

C.D. Blocks	Other sources of income
Rajganj	15
Jalpaiguri	6
Maynaguri	32
Dhupguri	29
Mal	21
Matiali	6
Nagrakata	10

Source- Field survey, 2015-16

p.) Female Workers

C.D. Blocks	Agriculture	Service	Daily Wage	Business
Rajganj	7	12	11	0
Jalpaiguri	6	10	12	0
Maynaguri	28	15	16	1
Dhupguri	31	26	27	0
Mal	36	36	23	2
Matiali	10	8	4	0
Nagrakata	3	14	0	0
Total	121	121	93	3

Source- Field survey, 2015-16

q.) Annual Household Saving

C.D. Blocks	Nil	0-5000	5001-10,000	10,001-15,000	>15,000
Rajganj	10	34	14	7	0
Jalpaiguri	19	21	12	5	2
Maynaguri	76	59	34	6	1
Dhupguri	93	66	31	15	5
Mal	105	64	23	8	0
Matiali	15	16	4	4	1
Nagrakata	45	22	9	5	0
total	363	282	126	50	9

Source- Field survey, 2015-16

r.) Annual Household Indebtedness

C.D. Blocks	Nil	<10,000	10,001-15,000	15,001-20,000	>20,000
Rajganj	34	2	8	12	9
Jalpaiguri	22	11	11	12	3
Maynaguri	89	11	34	12	30
Dhupguri	149	3	25	14	18
Mal	160	7	10	12	11
Matiali	38	1	0	0	1
Nagrakata	62	0	6	5	8
Total	554	35	94	67	80

Source- Field survey, 2015-16

s.) Purpose of Indebtedness

C.D. Blocks	House Building	Livestock	Vehicles Purpose	Cultivation	Business	Others
Rajganj	8	3	0	7	2	11
Jalpaiguri	11	4	3	7	7	5
Maynaguri	22	4	2	32	16	11
Dhupguri	23	1	1	14	4	17
Mal	19	4	1	1	3	12
Matiali	0	1	0	1	0	0
Nagrakata	8	3	0	2	1	5
Total	91	20	7	64	33	61

Source- Field survey, 2015-16

Appendix- IV**a.) Household Sources of Drinking Water**

C.D. Blocks	Well (covered/uncovered)	Tube Well	Hand Pump	Others (River/canal/pond)
Rajganj	55	3	2	5
Jalpaiguri	49	3	2	5
Maynaguri	159	3	7	6
Dhupguri	159	8	7	35
Mal	160	8	6	26
Matiali	36	1	0	3
Nagrakata	68	3	3	7
Total	686	29	27	87

Source: Field Survey, 2015-16

b.) Household solid waste disposal

C.D. Blocks	Open Space	Others
Rajganj	51	14
Jalpaiguri	41	18
Maynaguri	139	37
Dhupguri	162	47
Mal	156	44
Matiali	33	7
Nagrakata	55	26

Source: Field Survey, 2015-16

c.) Household Electricity

C.D. Blocks	Electrified	Not electrified
Rajganj	64	1
Jalpaiguri	54	5
Maynaguri	169	7
Dhupguri	203	6
Mal	196	4
Matiali	35	5
Nagrakata	78	3
Total	799	31

Source: Field Survey, 2015-16

d.) Household Load shedding

C.D. Blocks	Frequent	Infrequent
Rajganj	18	46
Jalpaiguri	14	40
Maynaguri	63	106
Dhupguri	119	84
Mal	112	84
Matiali	14	21
Nagrakata	36	42
Total	376	423

Source: Field Survey, 2015-16

e.) Household Accessibility to Market (KM)

C.D. Blocks	0-3	3-5	>5
Rajganj	29	33	3
Jalpaiguri	27	17	15
Maynaguri	37	84	55
Dhupguri	50	107	52
Mal	87	91	22
Matiali	0	40	0
Nagrakata	18	35	28
Total	248	407	175

Source: Field Survey, 2015-16

f.) Household Close access to metaled roads

C.D. Blocks	0-3 km	>3 km
Rajganj	56	9
Jalpaiguri	46	13
Maynaguri	145	35
Dhupguri	171	38
Mal	162	38
Matiali	23	17
Nagrakata	75	6
Total	678	156

Source: Field Survey, 2015-16

Appendix- V

a.) Food Security Beneficiaries

C.D. Blocks	Khadya Sathi Prakalpa	Antyodaya Anna Yojana	Not Benefited (Households)
Rajganj	4	8	53
Jalpaiguri	5	7	47
Maynaguri	7	30	139
Dhupguri	23	22	165
Mal	8	30	162
Matiali	6	6	28
Nagrakata	1	9	71

Source: Field Survey, 2015-16

b.) Involvement in self-help groups (household)

C.D. Blocks	Involved	Not Involved Households
Rajganj	27	38
Jalpaiguri	23	36
Maynaguri	85	91
Dhupguri	86	123
Mal	60	135
Matiali	4	36
Nagrakata	27	54

Source: Field Survey, 2015-16

c.) Utilization of income after rural development programmes

C.D. Blocks	Assets	Livestock	Bank Deposit	Debts	Own Consumption	Others
Rajganj	6	5	4	3	12	0
Jalpaiguri	8	6	7	5	9	4
Maynaguri	20	21	12	9	43	6
Dhupguri	24	24	13	18	56	9
Mal	15	26	4	13	53	0
Matiali	5	6	4	2	7	0
Nagrakata	10	12	6	2	28	3

Source: Field Survey, 2015-16

d.) Pre-assistance annual income

C.D. Blocks	Below 10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0	10	17	23	7	8
Jalpaiguri	5	6	18	13	9	8
Maynaguri	17	25	34	50	34	16
Dhupguri	9	35	49	53	41	22
Mal	2	7	61	48	56	29
Matiali	1	1	18	10	4	6
Nagrakata	0	0	14	40	14	13
Total	34	84	211	237	165	102

Source: Field Survey, 2015-16

e.) Post-assistance annual income

C.D. Blocks	Below 10,000	10,001-25000	25,001-50,000	50,001-75,000	75,001-100000	>100000
Rajganj	0	7	12	22	12	12
Jalpaiguri	2	2	13	21	10	11
Maynaguri	5	13	38	53	52	15
Dhupguri	5	21	47	70	44	22
Mal	2	7	45	64	57	25
Matiali	2	1	16	11	4	6
Nagrakata	0	0	8	35	24	14
Total	16	51	179	276	203	105

Source: Field Survey, 2015-16

Appendix- VI

QUESTIONNAIRE

“An Assessment of the Level of Rural Development in Jalpaiguri District, West Bengal”

Household Schedule No:

Date:

General information:

1. Name of the village:
2. Name of the block:
3. Name of the sub-division & district:
4. Distance from the village (in km)
 - a. Block headquarter:
 - b. Metaled road:
 - c. Railway station:
5. Name of the head of the family or respondent's relationship to the head of the family:
6. Religion: Hindu/ Muslim/ Christian/ Buddhist/ others
7. Category: general/ SC/ ST/ OBC
8. Mother tongue: Bengali/ Rajbangsi/ Hindi/ others
9. Information about the household members:

Sl.no.	Name of the family member	age	sex	Marital status *m/unm/ w	occupation	income	Any other information
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

*m- married, unm- unmarried, w- widow

Social infrastructure:

Literacy Profile:

Presence of school in the village:

school	Nos.	Distance from the	No of	No. of	No of students
--------	------	-------------------	-------	--------	----------------

		village	teachers	students	Male/female
Primary					
Middle					
Secondary					
Higher secondary					

10. Type of school building: asbestos/ tin/ wooden/ concrete

11. Presence of toilets within the school: yes/ no

12. Any other educational institution within the village: yes/ no

13. Literacy profile of the household members:

Sl.no	age	sex	Level of literacy	illiterate	primary	8th	10th	12th	UG	PG	Any other
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											

14. Do your family children visit to school: yes/ no

a. Regularly/ rarely

b. If rarely, Why:

c. Mid-day meal: yes/ no

d. Awareness of women: literacy/family planning/employment/decision making

Housing:

15. Housing status: own/ rented/ government facilitated

If rented, amount of money paid for the rent per month:

16. Housing infrastructure: pucca /semi-pucca/ kutcha

17. Number of rooms:

18. Building material of the house:

a. Roof: asbestos/ tin/ wooden/ cement/any other

b. Wall: fence/ wooden/ bricks/ cement/ any other

c. Floor: earthen/ bricks/ cemented

d. Kitchen: separated/ combined with any room/ in open space

19. Sanitary condition:

a. Toilet: yes/no, if yes, own/ government facilitated

b. Bathroom: yes/no, if yes, kutcha/ pucca

c. Latrines: yes/ no, if yes, kutcha/pucca

20. source of drinking water: bore well/ tube well/ domestic tap/ public tap/ hand pump/ pond/ spring/ nullas/ river water

21. Water supply from the Gram Panchayat: regular basis/ irregular basis (please specify)

Duration of water supply (in hours):

22. Solid waste disposed in: open space/ any other

23. Electricity connection: yes/ no

a. Occurrence of load shedding: yes/ no

b. If yes, frequent/ not frequent

Health Infrastructure:

24. Health status: good/ medium/ bad

- a. Medicine used: homeopathy/ allopathic/ any other
- b. Within the village is there any: district hospital/ rural hospital/ block primary health centre/ primary health centre/ sub centre/ homeopathic centre/ welfare centre/ any other department (government/private)
- c. Number of doctors:
- d. Number of beds:
- e. Number of wards:
- f. Any kind of free medical aid: yes/ no
- g. Immunization of the children: yes/no
25. Is there any veterinary dispensary and doctors within the village: yes/no

Banking & Communication:

26. Do you have any banking facilities within the village: yes/ no
Cooperative bank/ commercial bank/ agricultural credit society; if yes, then number:
27. Village roads: metaled/ ummetalled
28. Condition of the village roads: good/ medium/ bad/ very bad
29. Mode of transport: cycle/ van/ rickshaw/ bus/ railway/ any other
30. Is there any post office/ telegraph office within the village: yes/no
31. Flow of newspaper: yes/no
32. Internet facilities within village: yes/no
33. Market within the village: yes/ no
 - a. Market shed in the village: yes/ no
 - b. Regular market/ periodic market
34. Shops within the village: yes/ no
If yes, Grocer/ clothing/ utensils/ electric goods/ medicine/ tailoring/ building materials/ furniture/ others
35. Any kind of industrial establishment within the village: yes/ no
 - a. Small scale/ medium scale
 - b. No. of family members engaged:
36. Any other establishments within the village: yes/ no
Rice mill/ oil press/ potteries/ furniture working/ other
37. Do you have any recreation centre in your village: yes/ no

Occupation & Income:

38. No. of earning population in the family:
39. No. of dependent population in the family:
40. What are the sources of income for your family?
 - a. Agriculture
 - b. Wage earner
 - c. Livestock
 - d. Plantation
 - e. Business (please specify)
 - f. Labour: agricultural/ non agricultural
 - g. Any kind of job: government job/ private job
 - h. any other: (Please specify)
41. size of land holdings: in bigha
42. total build up area: in decimal
43. Occupation, if agriculture, Do your family have any cultivated land: yes/ no
 - a. If yes, net area cultivated: (Katha/ Bigha)
 - b. Name of the crops cultivated:
 - c. No. of cultivators in your family:
 - d. waste land area: (Katha/ Bigha)
44. Agricultural Crops used: subsistence/ commercial
 - a. Income from agricultural produce:
45. Which sources and means of irrigation are you using:

- a. Open dug well/ deep tube well/ shallow tube well/ river irrigation/ canal / tank
 - b. Net irrigated area:
46. Irrigation particulars
- a. Use of improved seeds/ bio fertilizers/ chemical fertilizers
 - b. any kind of government facilities regarding irrigation and agricultural products: yes/ no
If yes, (Please specify):
47. Occupation, labour in your household: yes/ no
- a. If yes, agricultural/ non-agricultural/others
 - b. No. of agricultural labour in your family:
 - c. No. of non-agricultural labour/others in your family:
 - d. Mode of practice: regular/ seasonal
 - e. Place of practice: within the village/ outside the village/outside district/outside state
 - f. On the basis of: daily wage/ weekly wage
 - g. Amount in rupees:
48. Occupation, animal husbandry: yes/ no
- a. Name and number of livestock owned:
49. Occupation, Business: yes/ no
- a. if yes, (Please specify):
 - b. Within village/ outside village:
 - c. Income in rupees:
50. Occupation, If job: government job/ private job
- a. Permanent/ contractual
 - b. No. of members in your family:
 - c. Within the village/ outside the village:
 - d. Income in rupees:
51. Do your family get any alternative sources of employment: yes/ no
- a. If yes, what kind of work (please specify):
 - b. Within the village/ outside the village
 - c. no. of family member employed:
 - d. no. of days worked:
 - e. Income in rupees:
52. Total no. of female workers in your family:
- a. Sources of work:
 - b. Within village/ outside village
 - c. Income, daily/ monthly:
 - d. Income in rupees:
53. Assets present in the household: TV/ refrigerator/ two wheeler/ any other
54. Indebtedness: yes/ no
- a. If yes, from whom:
 - b. Amount, cash/ kind:
 - c. Reason for debt:
 - d. Duration and year:
 - e. Rate of interest:
 - f. Amount utilized:
55. Expenditure per month in rupees:
- a. On education:
 - b. Health/ medical:
 - c. Food items:
 - d. Fuel:
 - e. Clothing:
 - f. Electricity:
 - g. Housing materials (on buying):
 - h. Transport (private/public):
 - i. Mobile:
 - j. On socials (marriage, religious work):

- k. Others:
- 56. Total monthly income of your family from different sources: in rupees:
- 57. Total annual income of your family from different sources: in rupees:
- 58. Total monthly expenditure of your family from different sources: in rupees:
- 59. Total annual expenditure of your family from different sources: in rupees:
- 60. Level of poverty of your family: APL/ BPL

Rural Development Schemes:

- 61. Name of the housing scheme:
 - a. Benefitted/ not benefitted:
 - b. Impact(good/ medium/ bad/very bad):
- 62. Name of the food security scheme:
 - a. Benefitted/ not benefitted:
 - b. Impact(good/ medium/ bad/very bad):
- 63. Name of the National Social Assistance Programme:
 - a. Number of beneficiaries in the family:
- 64. Number of beneficiaries of kanyashree prakalpa:
- 65. Wage employment schemes
 - a. Registered and applied for employment in NREGA: yes/no
 - b. Registered but not applied for employment NREGA:
 - c. Household not registered :
 - d. Time taken to obtain job card:
 - e. Distribution of person days under NREGA:
 - f. Duration of wage payment:
 - g. No. of family member engaged in self-help group:
 - h. Income in rupees:
 - i. Whether you have been benefited by the rural development scheme: yes/ no
 - j. Pre-assistance monthly income level of your family:
 - k. Post-assistance monthly income level of your family:
 - l. Utilization of income:

Problems:

- 66. Major problems of your household regarding:
 - a. Education:
 - b. Child labour:
 - c. Unemployment in your family:
 - d. Drinking water:
 - e. Health:
 - f. Sanitation:
 - g. Electricity:
 - h. Transport:
 - i. Drainage:
 - j. Any other problem (please specify):
- 67. What kind of improvements would you like to see in your village regarding:
Social infrastructure/ rural civic amenities/ Economic facilities/ others

Plates of the Rural areas of Jalpaiguri district



Plate 1. Room for Mid-day Meal scheme,
Vill:Kajaldighi, Maynaguri



Plate 2. Madhyamik Siksha Kendra,
Vill:Tuklimari, Dhupguri



Plate 3. Sishu Siksha Kendra, Vill:Chanadipa,
Dhupguri



Plate 4. Madhyamik Siksha Kendra, Vill:Porba
Baragharia, Maynaguri



Plate 5. Primary Health Centre, Vill:Gosaihat,
Dhupguri



Plate 6. Primary Health Sub-Centre,
Vill:Tuklimari, Dhupguri

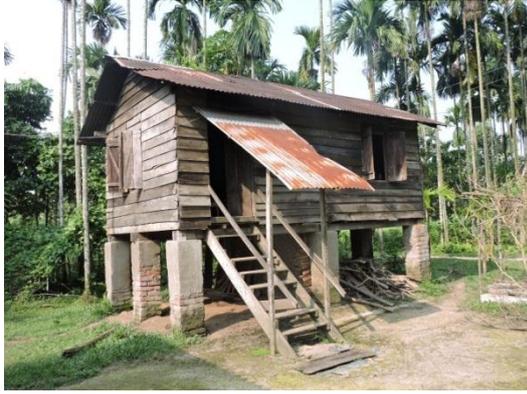


Plate 7. Semi Pucca house, Vill:Gosaihat Forest, Dhupguri



Plate 8. Kutcha house, Vill:Ellenburi T.G., Mal



Plate 9. Kutcha roof type house, Vill:Hridaypur, Nagrakata



Plate 10. Two storey kutcha house, Vill:Hridaypur, Nagrakata



Plate 11. Sishu Siksha Kendra, Vill:Basusuba, Mal



Plate 12. Junior High School, Vill:Jalapara, Dhupguri



Plate 13. Sanitary facility under Swachh Bharat Mission, Vill:Toonbari T.G., Mal



Plate 14. Primary school with broken roof, Vill:Hridaypur, Nagrakata



Plate 15. Students having Mid-day meal, Vill:Gadheganj, Rajganj



Plate 16. Poor condition of toilet, Vill:Chhoaphali, Matiali



Plate 17. Home based bakery, Vill:Purba Sisubari, Maynaguri



Plate 18. Daily wage earners, Vill:Bamantari, Dhupguri



Plate 19 Tea garden female workers, Vill:Engo
T.G., Matiali



Plate 20 Tea garden labourers, Vill:Kalagaity,
Mal



Plate 21. Daily wage earners, Vill: Maria Kamala
Pukhari, Jalpaiguri



Plate 22. Agricultural labourers, Vill:Chapgar,
Maynaguri



Plate 23. Subsistence type vegetable cultivation,
Vill:Tuklimari, Dhupguri



Plate 24. Sugarcane cultivation, Vill:Gourgram,
Maynaguri



Plate 25. Ultra-bank small branch,
Vill:Tuklimari, Dhupguri



Plate 26. Uncovered well, Vill:Kajaldighi,
Maynaguri



Plate 27. Tube well as source of drinking water,
Vill:Gosaihat Chhit, Dhupguri



Plate 28. Women trudge long distance for
drinking water, Vill:Saogaon, Mal



Plate 29. Rice mill, Vill:Shakati, Jalpaiguri



Plate 30. Regular market shed, Vill:Chapgar,
Maynaguri



Plate 31. Periodic market, Vill:Tuklimari, Dhupguri



Plate 32. Tota Para tea estate, Vill:Totapara T.G., Dhupguri



Plate 33. Ultra-small bank branch, Vill:Bamantari, Dhupguri



Plate 34. Homeopathy Hall, Vill:Basusuba, Mal



Plate 35. Unmetalled Village Road, Vill:Badlagacch, Rajganj



Plate 36. Village Canal, Vill:Kajaldighi, Maynaguri



Plate 37. Pipe water as source of drinking water,
Vill:Engo T.G., Mal



Plate 38. Muddy pond as source of drinking water, Vill:Gopalganj, Maynaguri



Plate 39. Saw mill, Vill:Bamantari, Dhupguri



Plate 40. Women making puffed rice,
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Plate 41. Unpurified source of drinking water,
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Plate 43. NREGS workers in earth works, Vill:Shakati, Jalpaiguri



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Plate 45. Self-help group members in Anganwadi centres, Vill:Chanadipa, Dhupguri



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Plate 47. House under Gitanjali Scheme, Vill:Gosaihat Forest, Dhupguri



Plate 48. Self-help group members, Vill:Paschim Batabari, Matiali

List of Publications:

1. Das, R., (2018): Spatial variation in the levels of infrastructural development in rural Jalpaiguri District, West Bengal, *Hill Geographer*, Vol. xxxiv, No. 2, pp. 125-132
2. Das, R., and Lama, I.L. (2014): Inequalities in Literacy: An Inter-Block study of Jalpaiguri Sadar and Mal Sub-Division of Jalpaiguri District, *Geographical Thoughts*, Vol. XII, pp. 90-95



Short Communication

Spatial variation in the levels of infrastructural development in rural Jalpaiguri District, West Bengal

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Abstract

Infrastructure plays a crucial role in accelerating the process of country's economic development as well as in the progress of balanced regional development. Since independence, the government of India is making efforts through successive plans to improve the levels of infrastructural development. But due to variations in economic, technological and institutional factors, spatial variations in the levels of infrastructural development continue to exist. The present paper analyzes inter block disparity in the levels of infrastructural development with the help of 'Z-Score' and 'Composite Standard Score' in Jalpaiguri district of West Bengal. The paper also examines the relationship of infrastructural development with selected variables. All the blocks have been categorized into different levels of infrastructural development based on Composite Standard Score.

Keywords: Infrastructure, rural, Z-score, composite standard score, correlation matrix

Introduction

Infrastructural development is a multi-dimensional process (Chakraborty, 2009). It is significant because it promotes economic integration at inter and intra-regional levels and also reduces regional disparity in terms of socio-economic development (Patra, 2010). Infrastructural facilities are necessary to improve the sustainability of the provision of basic needs such as drinking water, electricity, communication, transport, health and education which act as a catalyst to both social and economic growth. According to 2011 Census, a little over 68 percent of India's population lives in some 6.4 lakh villages. An identical proportion of the population (68.39%) in Jalpaiguri district is also rural in its population composition. Since economic and social well-being is intrinsically linked with basic infrastructural development, provision of basic infrastructural

facilities for the large section of the rural population has been a major challenge (Tiwari and Nayak, 2013).

Infrastructure is essential not only for the development of an area but is a good indicator of development of an area. Rural development has always been one of the major concerns for development of the country (Raul, 2003). Hence it is necessary to accelerate investment in rural infrastructure to generate additional employment through new economic opportunities, asset creation and enhance credit absorption in order to improve the quality of life of the rural poor.

To promote basic infrastructure in the rural areas, Government of India has launched a number of infrastructural development programmes in the country and in Jalpaiguri district of West Bengal. However, there exists significant disparity in infrastructural provision across development blocks of Jalpaiguri district.

The study area

The study pertains to Jalpaiguri district which extends between 26°15'47" to 26°59'34" N latitude and 88°23'2" to 89°7'30"E longitude comprising an area of 3044km². According to Census, 2011, the total population of the district is 2,381,596 in 7 C.D. Blocks, 80 Gram Panchayats and 391 inhabited villages (Fig.1). Jalpaiguri district is situated in the northern part of West Bengal and is bordered by Bhutan in the north, Darjeeling district in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar district in the east. The district is drained by south and south-east flowing rivers of which Mahananda, Tista and Jaldhaka are noteworthy. The area is composed of coal, dolomite and enormous deposits of sand and gravel. With the exception of the hilly northern fringe, the whole of the district is covered by alluvial deposits. It is bounded by the Himalayan hill ranges in the North and the piedmont plains in the south, which gradually grade into the alluvial plains further south.

Objectives

The paper aims at analyzing (i) the spatial structure of the C.D. Blocks of Jalpaiguri district in terms of infrastructural development based on the selected variables,

(ii) To classify the blocks in terms of the levels of infrastructural development based on composite z-score and

(iii) To find out the relationship between infrastructural development and the selected variables.

Database and methodology

The study is solely based on secondary sources of data and the block is chosen as the unit of study. The data has been collected from Census of India (2011), and District Statistical Handbook (2011-12) of Jalpaiguri district. Since the purpose is to measure the levels of infrastructural development and to identify the inter block disparities, variables which initiate, promote and accelerate the process of infrastructural development have been given priority in selection (Table-1). Z-score method that transforms individual raw data into standard score has been applied for identifying level of development.

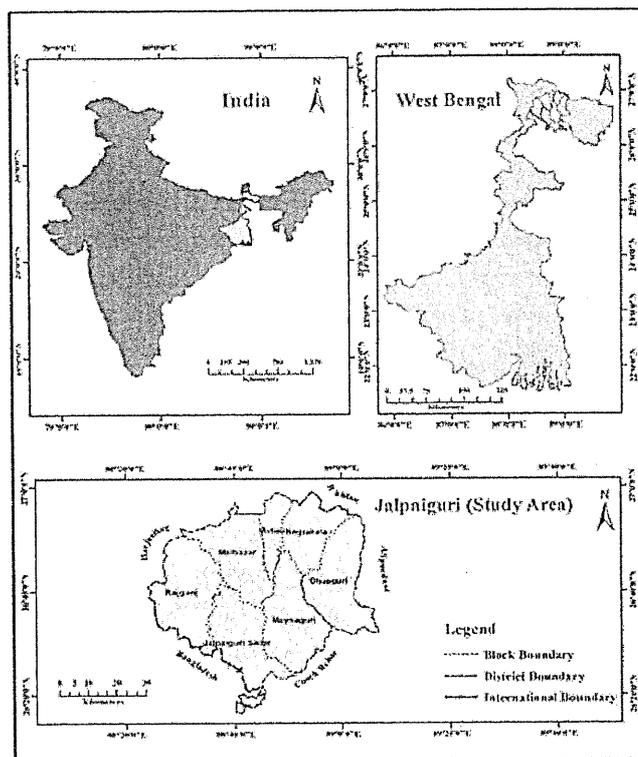


Fig.1 The study area

Table 1 Selected variables/indicators of agricultural development

variables	Indicators
X_1	Length of roads in kms / lakh of population
X_2	Length of roads in kms / 1000 km ² area
X_3	Percentage of Mouzas having drinking water facility
X_4	Percentage of Mouzas having electrification
X_5	Number of Primary School / lakh of population
X_6	Number of Middle School / lakh of population
X_7	Number of High School / lakh of population
X_8	Number of Rural Hospital / lakh of population
X_9	Number of Hospital beds / 10,000 of population
X_{10}	Number of Primary Health Centre / lakh of population
X_{11}	Fertilizer stores / 10,000 hectare
X_{12}	Seeds stores / 10,000 hectare
X_{13}	Number of commercial bank / lakh of population
X_{14}	Number of Gramin bank / lakh of population
X_{15}	Number of cooperative societies / lakh of population

In the first step, the raw data for each variable which determines the areal variations in the level of development has been converted into z-score. The z-score technique is computed from the following equation:

$$z = \frac{(x - \bar{X})}{SD}$$

Where Z is the standard score, X is original values of the score, \bar{X} is the mean of variables, and SD is the standard deviation of variables. Higher value of z-score indicates high level of development.

In the second step, the z-scores of all the variables have been aggregated block wise. The summed up z-scores were then divided by the number of variables to derive the degree of infrastructural development. The average composite standard score for each unit of the study area is expressed as:

$$CSS = \frac{\sum z_{ij}}{N}$$

CSS denotes composite standard scores, $\sum z_{ij}$ indicates the sum of z scores of indicators j in the block i, and N is the number of variables.

Besides, correlation matrix is also worked out to examine the relationship between dependent (infrastructural development) and independent (variables influencing infrastructural development) variables. Their relationship has been examined using Karl Pearson's Coefficient of Correlation. Further, Students t-test was applied to find out the significance of the determinants at 1 percent and 5 percent level.

Levels of infrastructural development

Considerable disparity is noticed in the infrastructural development across development blocks of Jalpaiguri district (Fig.2). The extent of disparities is analysed by classifying the blocks into high, moderate and low level of infrastructural development.

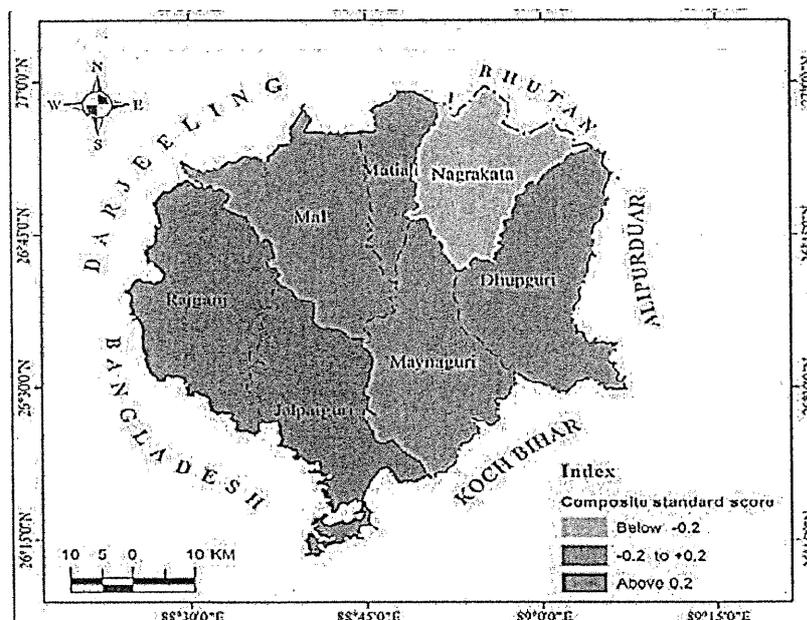


Fig. 2 Levels of infrastructural development in Jalpaiguri district

Table 2: z-score of infrastructural development in the blocks of Jalpaiguri district

Variables	Rajganj	Jalpaiguri	Maynaguri	Dhupguri	Mal	Matiali	Nagrakata
X ₁	0.012	1.46	0.32	0.39	0.98	1.54	1.12
X ₂	-0.64	1.79	0.70	0.31	-0.85	-1.42	0.21
X ₃	0.54	1.26	-1.15	0.45	0.08	0.59	-1.79
X ₄	0.94	0.94	-2.17	0.19	0.57	-0.29	-0.18
X ₅	1.16	1.49	0.29	-1.00	-0.61	0.04	-1.39
X ₆	-0.12	-1.00	-0.25	-1.21	1.11	1.78	-0.28
X ₇	1.58	1.10	0.45	-0.72	-0.57	-0.39	-1.44
X ₈	0.82	0.32	0.17	-1.03	-1.03	-1.03	1.75
X ₉	-1.00	-0.81	-1.32	1.33	0.12	0.38	1.30
X ₁₀	-0.05	0.83	1.27	-1.45	-1.37	0.97	0.08
X ₁₁	-1.59	-0.02	0.59	1.55	0.51	0.13	-1.18
X ₁₂	-0.28	0.66	1.16	1.05	0.12	-0.96	-1.75
X ₁₃	0.48	2.26	-0.76	-0.64	-0.49	-0.48	-0.37
X ₁₄	1.73	1.22	-0.20	-0.70	-0.08	-0.83	-1.12
X ₁₅	1.68	1.22	0.04	-0.16	-0.88	-1.10	-0.78

Source: computed by author based on District Statistical Handbook, Jalpaiguri, 2011-12

Table 3: Block wise values of composite standard score of variables (2011-12)

Name of the Blocks	Composite standard score
Rajganj	0.350
Jalpaiguri	0.848
Maynaguri	-0.057
Dhupguri	-0.109
Mal	-0.159
Matiali	-0.071
Nagrakata	-0.336

Source: District Statistical Handbook, Jalpaiguri, 2011-12

Table 4: Levels of infrastructural development in Jalpaiguri District

Category	Range	Name of the Block
High	Above 0.2	Jalpaiguri, Rajganj
Medium	-0.2 to +0.2	Maynaguri, Dhupguri, Mal, Matiali
low	Below -0.2	Nagrakata

High

High level of infrastructural development based on composite standard scores (Table-3) is confined to two contiguous blocks of Jalpaiguri (0.84), and Rajganj (0.35) located in the western part of the district bordering Bangladesh (Fig. 20). Jalpaiguri block has registered high values in eight of the 15 variables selected in measuring the standard scores. These are: length of roads in kms /lakh of population, length of roads in kms /1000 km²area, percentage of *mouzas* having

drinking water facility, number of high school /lakh of population, number of commercial bank /lakh of population, number of *Gramin* bank /lakh of population and number of cooperative societies /lakh of population while Rajganj block has an edge in four variables.

These two blocks are in close proximity to urban areas of the district. An effective rural transportation is of great importance in the rural area for the utilization of resources and for the mobility of goods as well as passengers. Rajganj block is connected by NH-31 and SH-12-A whereas Jalpaiguri block is linked with the latter in Jalpaiguri district. The Public Health Engineering Department (PHED) of Jalpaiguri district has been able to supply drinking water to most households in these two blocks. It is evident from table 2 that availability and accessibility of the educational institutions and medical units are also satisfactory in these blocks contributing to better infrastructural facility.

Moderate

As many as four blocks namely Maynaguri (-0.057), Dhupguri (-0.109), Mal (-0.159) and Matiali (-0.071) which form a contiguous stretch in the central part of the district display moderate level of infrastructural development. The main variables which appear to have influenced the moderate development include educational institutions, medical units and banking. Though rural drinking water supply has been initiated, there is little to suggest that it has been adequate to influence the score in these four blocks. Availability of power supply and power connections is poor and banking facility is inadequate. A major reason for these blocks score poorly is lack of road facility which has a cascading effect on many other infrastructure developments (Mondal and Bhaduri, 2013).

Low

The performance (-0.336) of Nagrakata block located in the northeastern part is the lowest. Most of the variables have negative scores. Though the block is better off in terms of tea industry it is backward as far as power supply is concerned. The block even lacks an easy access to safe drinking water supply. Most of the villagers have to trudge long distances to fetch drinking water from the river or muddy pond or the canal which is often unpurified (Nandi and Saha, 2011). Further, lack of healthcare facilities along with inadequate educational institutions contribute to poor infrastructure of the block. *Gramin* (Rural) banks and commercial banks which are important infrastructural facilities in a rural setting are scarce.

Relationship

For the measure of relationship between infrastructural development as dependent/Y variable and a number of other selected variables as independent variables (i.e., $X_1 \dots X_{12}$) in Jalpaiguri district, Karl Pearson's correlation coefficient technique has been applied. It has been observed that the 'r' value for infrastructural development (Y) and number of commercial bank/lakh of population (X_{13}) in Jalpaiguri district is 0.939. A very strong positive correlation at 99% level of significance exists between infrastructural development and number of commercial bank/lakh of population in Jalpaiguri district. On the other hand the r value of the dependent variable and the other selected independent variables such as number of middle school/lakh of population (X_6), number of hospital beds/10,000 population (X_9), and fertilizer stores/10,000 hectare (X_{11}) are -0.366, -0.610, -0.492 and -0.181 respectively.

Table-5 Matrix of correlation coefficients

Variables	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
Y	1															
X1	0.106	1														
X2	0.53	0.021	1													
X3	0.702	0.169	-0.005	1												
X4	0.47	0.175	-0.07	0.642	1											
X5	0.895*	-0.048	0.285	0.601	0.225	1										
X6	-0.366	0.382	-0.828**	0.008	-0.082	-0.101	1									
X7	0.823**	-0.335	0.256	0.531	0.209	0.955*	-0.208	1								
X8	0.119	-0.124	0.364	-0.519	-0.014	0.095	-0.381	0.133	1							
X9	-0.61	0.274	-0.241	-0.22	0.163	-0.851**	0.014	-0.873**	-0.13	1						
X10	0.331	0.27	0.247	-0.109	-0.476	0.531	0.112	0.586	0.349	-0.551	1					
X11	-0.181	0.034	0.145	0.196	-0.293	-0.276	-0.098	-0.291	-0.79**	0.21	-0.297	1				
X12	0.354	-0.41	0.487	0.344	-0.187	0.326	-0.468	0.413	-0.443	-0.431	-0.102	0.682	1			
X13	0.939*	0.307	0.579	0.58	0.58	0.74	-0.38	0.627	0.286	-0.413	0.281	-0.306	0.123	1		
X14	0.837**	-0.302	0.248	0.56	0.499	-0.868**	-0.255	0.929*	0.21	-0.739	0.127	-0.403	0.302	0.725	1	
X15	0.817**	-0.441	0.465	0.432	0.37	0.794**	-0.567	0.889*	0.374	-0.641	0.182	-0.373	0.364	0.705	0.915*	1

Source: Computed and compiled by the author. * significant at 0.01 level. ** significant at 0.05 level, X=Independent Variable, Y=Dependent Variable

The correlation matrix (Table-5) reveals that three of the fifteen variables (X₇, X₁₄, and X₁₅) are positively correlated with the infrastructural development at 0.05 percent level of significance. Infrastructural development is positively correlated with road network, drinking water facility, electrification, presence of primary schools and high schools, facilities of medical institutions, *gramin* and commercial banking facility and presence of cooperative societies. Provision of safe and clean drinking water has emerged as a major challenge in the rural areas (Prabhuswamy, 2014) and village electrification is the basic minimum services. Availability and accessibility to educational and medical facilities also play a key role in the socio-economic development of an area. Hence access to adequate basic facilities would enhance the infrastructural development of the rural Jalpaiguri district.

Conclusion

The study reveals that majority of the blocks come under the medium and low category of infrastructural development and the high level of infrastructural development has been restricted only to western part of Jalpaiguri district. The blocks which are moderately developed score poorly due largely to poor rural transportation, inadequate medical and the educational facilities. In the absence of a balanced distribution of infrastructure the social and economic sector of the district gets restrained (Ashokvardhan and Vachhani, 2011).

Hence, there is a need to promote rural infrastructural development, as it is not only a key component of rural development but also an important factor in ensuring the reduction of the vulnerability of the rural poor. Besides, development strategy should be formulated keeping those variables in mind whose contribution in accelerating the pace of infrastructural development is crucial.

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Inequalities in Literacy: An Inter-Block Study of Jalpaiguri Sadar and Mal Sub-Division of Jalpaiguri District

Rituparna Das* and Dr. Indira Lepcha (nee) Lama**

Abstract

Literacy is one of the basic determinants of socio-economic development attained by a human group. Higher literacy rate brings social change, cultural advancement and economic development. The present paper attempts to study the current scenario of literacy rate in Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district and the changes that occur during the last decade. For this work, data has been obtained from the secondary sources and analysed with reference to z-score. The paper suggests that enhancement of literacy shall reduce the disparities in socio-economic development in the blocks of Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district.

Keywords: Literacy rate, Infrastructure, Inequalities, Decadal changes.

Introduction

Proportion of literate population of a country is an important indicator of the socio-economic development. Higher literacy rate brings social change, cultural advancement and economic development by breaking through the social barriers and superstitions. In reverse, socio-cultural and economic constraints severely affect the expansion of mass literacy. Education plays a dominant role in influencing the quality of human resources (Siddique and Nasser, 2004). Literacy is also very essential for eradicating poverty and mental isolation for cultivating peaceful and friendly international relations and for permitting the free plays of demographic processes (Chandna, 1986). In India, literacy rate denotes the percentage of population, with age above seven years, who is able to read and write and have the ability to understand any language (Census of India). India has recorded literacy rate 74.04 percent wherein male 82.14 percent and female 65.46 percent during 2011.

Several research studies have been conducted on the literacy and the spatial distribution of literacy rate in India. Some of the relevant works concerned with the study are presented by Bhende and Kanitkar (2002) who recognized literacy as one of the important indicator of socio-economic

development. Chandna (2006) observed that literacy is essential for eradicating poverty and mental isolation. Another group of scholars like Srinivasan, Kumar (1999), Joshi (2000), and Siddique (2005) have also attempted to present their work on literacy and educational level.

The study area

The study area, Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district, extends between 26°15'47" to 26°59'34" N latitude and 88°23'2" to 89°7'30" E longitude comprising an area of 3044.00 sq. km. It is situated in the northern part of West Bengal and is bordered by Bhutan and Darjeeling district in the north, Darjeeling hills in the west and north-west, Koch Bihar and Bangladesh in the south and Alipurduar and Koch Bihar district in the east. The area is drained by south and south-east flowing rivers of which Mahananda, Tista and Jaldhaka are noteworthy. The study area is composed of coal, dolomite and enormous deposits of sand and gravel. With the exception of the hilly northern fringe, the whole of the district is covered by alluvial deposits.

At present, the total population of the study area is 2,381,596, with 7 C.D. Blocks, 80 Gram Panchayats and 391 inhabited villages. (Census, 2011).

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Objectives.

The objectives of the present study are as follows:

1. To analyze the spatial distribution of literacy rate,
2. To study the variations of literacy rate across the blocks and
3. To make a block wise comparative study in the differences of male and female literacy rate.

Database and Methodology

The present study is exclusively based on secondary sources of data and the block is chosen as the unit of study. Standard statistical techniques have been used to analyse the secondary information obtained from Census of India (2001 and 2011), and District Statistical Handbook (2012) of Jalpaiguri district. Since the purpose of analysis is to measure the levels of literacy in the study area and to identify the inequalities among the blocks, while selecting the variables, emphasis has been laid to pick up those variables which initiate, promote and accelerate the levels of literacy. For this, z-score method has been applied and in this method the individual raw data is transformed into standard score or z-score.

In the first step, the raw data for each variable which determines the aerial variations in the levels of literacy has been converted into z-score. The z-score technique is computed from the following equation:

$$z = \frac{x - \bar{x}}{SD}$$

Z is the standard score, X is original values of the score, \bar{x} is the mean of variables, and SD is the standard deviation of variables. The higher value of z-score indicates high level of literacy while lower value reveals the low level of literacy in the study area.

In the second step, the z-scores of all the variables have been aggregated block wise. The summed up z-scores were then divided by the number of variables so that the inequalities in the levels of literacy among the block may be obtained. The composite standard score for each unit of the study area is expressed as:

$$CSS = \Sigma z_{ij} / N$$

CSS denotes composite standard scores, z_{ij} indicates the sum of z scores of indicators j in the block i, and N is the number of variables. Thus, discussion is based on the results obtained by the composite standard score method.

Literacy in Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district

Literacy is one of the important indicators of development. In the present analysis of literacy, eight main variables are taken and these indicators were summed up to get precise analysis of literacy in the study area.

Table 1: Indicators of Literacy

Symbol	Indicators
X ₁	Literacy rate in percentage
X ₂	Number of Primary School / lakh of population
X ₃	Number of Middle School / lakh of population
X ₄	Number of High School / lakh of population
X ₅	Number of Higher Secondary School / lakh of population
X ₆	Number of college / lakh of population
X ₇	Percentage of Male Literate
X ₈	Percentage of Female Literate

The mean composite z-score of literacy show that over +0.4 mean composite standard score are categorized under the high level of literacy in which two blocks are found, Jalpaiguri (0.583) and Maynaguri (0.758), and they are concentrated in the southern part of the study area. These blocks contribute the highest share of male and female literates in the study area. Moreover, Jalpaiguri Sadar block is the district headquarter of Jalpaiguri district and have a number of primary, middle, high schools and colleges. The blocks with higher concentration of educational facilities reflect the availability of better infrastructural facilities and forces of urbanization in the study area.

Table 2: Block wise values of Composite Standard Score of Variables (2011-12)

Name of the Blocks	Composite standard score
RAJGANJ	-0.021
JALPAIGURI	0.583
MAYNAGURI	0.758
DHUPGURI	0.358
MAL	-0.261
MATIALI	-0.552
NAGRAKATA	-0.862

Source: computed by author based on District Statistical Handbook, Jalpaiguri, 2012

Medium category that ranges between (-0.4 to +0.4) mean composite z-score of literacy incorporates in north-western, western and eastern part of the study area. They are Dhupguri (0.358), Mal (-0.261) and Rajganj (-0.021). The main variables which appear to have influenced the medium level of

Table 3: Levels of Literacy in Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district

Category	Range	Name of the Block
High	Above +0.4	Jalpaiguri, Maynaguri
Medium	-0.4 to +0.4	Rajganj, Mal, Dhupguri
Low	Below -0.4	Matiali, Nagrakata

Source: computed by author.

this dimension in the study area, include the number of middle, high and higher secondary schools (Table 3).

Low level of literacy that is below (-0.4) mean composite z-score is basically observed in Matiali and Nagrakata block. Lack of adequate educational institutions, low percentage of literacy rate makes the area to fall in the low category in terms of education. Thus the least share of literacy is confined in the northern part of the study area because in terms of female literacy again the northern part receives the lowest share.

Differences in Male-Female Literacy Rate

Male literacy rate in the study area has always been higher than the female literacy rate. In order to minimize the inequality between the two sexes and also to empower women, it is necessary to bring the difference between male and female literacy to the minimum level. Among the various blocks in the study area, Maynaguri block has the highest share of literacy rate (75.63), while Nagrakata block accounts the least share (61.27). In terms of male literacy, again

Table 4: Regional Profile of Population and Literacy Rate, 2011

Blocks	Total Population	Literacy Rate	Male Literacy Rate	Female Literacy Rate
RAJGANJ	373776	72.08	78.52	65.18
JALPAIGURI	323445	73.81	80.52	66.73
MAYNAGURI	329032	75.63	81.98	68.84
DHUPGURI	414854	69.57	77.56	61.36
MAL	299556	66.31	74.23	58.17
MATIALI	117540	66.98	76.76	56.71
NAGRAKATA	127397	61.27	70.51	51.93

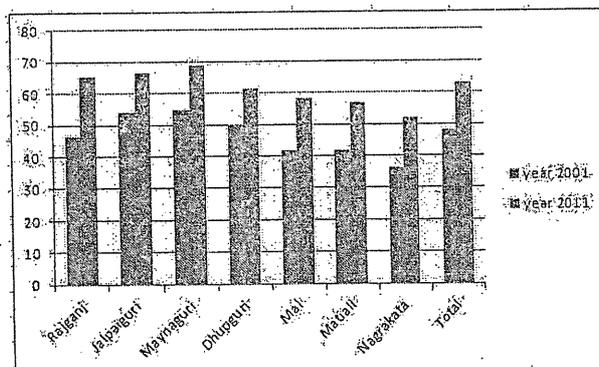
Source: District Statistical Handbook, Jalpaiguri, 2012

Table 5: Decadal Variation of the Percentage of Literacy by Male and Female in Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district

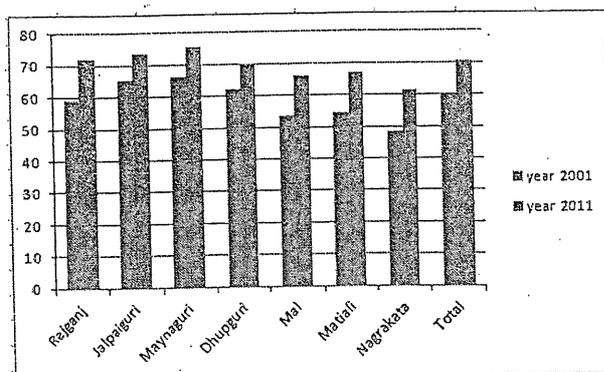
Blocks	Total Literacy Rate		Male Literacy Rate		Female Literacy Rate	
	2001	2011	2001	2011	2001	2011
Sadar sub-division						
Rajganj	59.10	72.08	70.50	78.52	46.50	65.18
Jalpaiguri	65.30	73.81	75.80	80.52	54.00	66.73
Maynaguri	66.20	75.63	76.70	81.98	54.90	68.84
Dhupguri	62.20	69.57	73.50	77.56	49.60	61.36
Mal sub-division						
Mal	53.50	66.31	64.80	74.23	41.80	58.17
Matiali	54.40	66.98	67.10	76.76	41.60	56.71
Nagrakata	48.50	61.27	60.20	70.51	36.40	51.93
Total	60.18	70.55	71.27	77.93	48.12	62.83

Source: computed by author based on District Statistical Handbook, Jalpaiguri, 2012

Total Literacy Rate



Male Literacy Rate



Female Literacy Rate

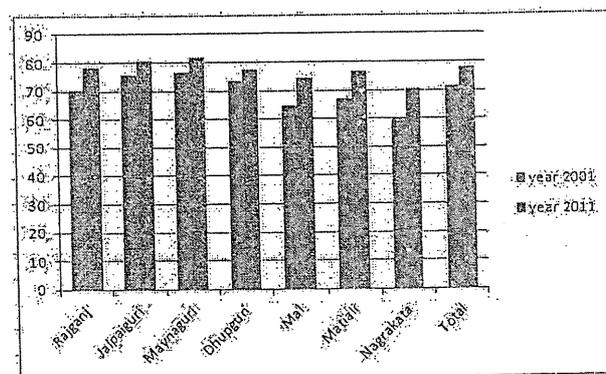


Fig. 1

Maynaguri block contributes the highest share (81.98), followed by Jalpaiguri block (80.52). The ratio of the share of literates to the share of total population basically gives us an idea about the contribution of a region to the literate population of the study area. In terms of female literacy, again Nagrakata block receives the lowest share (51.93) and Maynaguri block the highest share (68.84). The reason for the lowest share is less number of educational institutions especially the number of higher educational institutions per lakh of population. The difference in male and female literacy rates in 2011 is 15.10% (Table 5) as compare to 23.15 % of 2001. The difference has come down over the decades by 8.05%. The maximum difference is seen in Matiali block (20.08) where 76.76% is the male literacy rate and 56.71% is the female literacy rate while the minimum difference is seen in Maynaguri block with the value of 13.14% (Table 4).

The development of human resource is essential for the development of society and resources. Literacy is the most important factor in achieving rapid development as it provides a qualitative base to human resource. The literacy rate for Jalpaiguri Sadar and Mal sub-division has increased by 10.37% during 2001-2011 (Fig.1). Male literacy rate has increased by about 6.66% and female literacy rate by 14.71% over the period 2001-2011. The literacy rate in 2001 varied between a minimum of 48.50% in Nagrakata block to a maximum of 66.20% in the Maynaguri block. Among the males as well as females also, these regions accounted for the minimum and maximum values for this ratio. The minimum values are 60.20 for the males and 36.40 for the females, whereas, the maximum values are 76.70 for the males and 54.90 for the females. In 2011, the region that contributes to the least share of literacy rate in all the categories is Nagrakata block (61.27, 70.51, 51.93 respectively among total, male and female literacy rate) whereas Maynaguri block again contributes the highest share of literacy rate in all the categories (75.63, 81.98, 68.84 respectively among total, male and female literacy rate). The maximum absolute change during the period 2001-2011 is seen in the Rajganj block (12.98%), since this

block have more number of urban areas and have favourable presence of infrastructures and higher educational institutions therefore among the females too, the maximum difference is observed in Rajganj block with 18.68%. But for the males it is observed in Nagrakata block with 10.31%. Thus, there exists a sharp decadal variation of the percentage of male and female literacy rate in Jalpaiguri Sadar and Mal sub-division of Jalpaiguri district.

Conclusion

The present study shows that large share of the literates with respect to total population is observed in those areas which are well developed in terms of educational facilities, and similarly in infrastructural facilities. Whereas least share of literates are found in those regions which are backward in economical and infrastructural parameters. In a nutshell, the levels of development of an area depends on the efforts of raising their literacy which may diminish the disparities in the study area. It is observed that the higher educational institutions are very uneven in the study area and the female literacy rate is substantially low. Hence, the women must be given top priority in the matter of education. For making education for all a success, there is a need of taking firm steps with people's participation and we have to concentrate on implementation of various education programmes. Thus, if we put more stress on education and educational facilities with proper implementation, it will reduce the inequalities in the levels of literacy in the study area.

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