

Growth and Diversification

Aspects of Rural Development

A.K. Dasgupta Centre for Planning and Development
(A Centre Sponsored by the Planning Commission, Govt. of India)
Visva-Bharati, Santiniketan, West Bengal



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**Dedicated to
the Memory of
Prof. Amiya Kumar Dasgupta**

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Introduction

Pranab Kumar Chattopadhyay

The Indian economy is facing with multidimensional problem in the process of economic development under the aegis of her five year plans. Since 1991 there is a process of overturning the old order of inward looking, self-reliant economy and transition towards out-ward oriented economy, exploring the opportunities of foreign trade and investment through the set of new policy package. It is hoped that the dawning of the new era in India's economy will promote greater efficiency, growth and definitely a considerable impact on her problems of deep rooted poverty. Under this new system Neo-liberalization has replaced the state as an agent of economic change and it is thought that if the reforms are pursued properly they will cure all economic ailments including poverty in India. But after 24 years of experience of the liberalization the extent of poverty reduction still remain in dispute. There are controversies surrounding it and there are also evidences from both sides for and against. Since the Eleventh Five Year plan, that emphasized the need for 'inclusive growth' has made a major shift in the development strategy in enhancing the well-being of Indian common people. It is found that the private sector does not provide an escape route for the problems faced by many at the micro-level. The essays in this volume contained the micro-level studies by different researchers in different fields and different parts of the country and showed how the development processes are at work under the changing nature of India's political economy.

The author Kaberi Pal in her paper "Institutional Delivery, Maternal Mortality and Child Health: A Study of Purulia District in West Bengal" studied on health which is regarded as one of the most important factors of development. It reflects overall (social, economic and cultural) picture of our society. Better health of people enhances capabilities towards resources mobilization,

income generation and GDP enhancement. This paper is an attempt to analyze the institutional delivery, maternal mortality and child health in the district of Purulia. Purulia is the most backward district of West Bengal in respect of two parameters namely—lack of enough employment and extremely low level of female literacy. The block level scenario of health explores the presence of intra-district disparity at a considerable magnitude.

Mamatha K in her paper “Towards Birth, Risking Death: Medicine and Treatment during Pregnancy and Childbirth in Colonial Malabar” discussed on how gender and health were linked by colonial administrators. The low status of women and their poor health being used to legitimize their own authority and attempted intervention on their behalf. State sponsored medical facilities had first been provided to treat prostitutes for venereal diseases in ‘lock’ hospitals. The concern here was not towards the diseased women, but it stemmed from the imperialist design to prevent the spread of syphilis and gonorrhoea among British soldiers. This study is a humble attempt to record the voice of a marginalized or discarded group in the society. This study looks into certain practices and beliefs of people and the role of certain groups in the society closely associated with treatment connected with pregnancy and childbirth. In the eye of modern society, the system of folk treatment was considered as uncultured and unscientific, especially those practices associated with pregnancy and delivery. The folk tradition of medicine was practiced by tribal families. Now, with the development of medical science, almost all utilize the services of hospitals and specialized gynecologists for medical aid and treatment during pregnancy and delivery.

Somnath Mukherjee and Pranab Kumar Chattopadhyay in their paper “Inter-regional discrepancy in agricultural development creates massive economic disparity in West Bengal” examined the spatial disparity of agricultural development in a primarily agro based state like West Bengal in India. More than ten factors have been taken into account like cropping intensity (CI), Irrigation facility, consumption of fertilizer, infrastructural applications etc. All these factors have been statistically examined by principal component analysis (PCA) method. Results exhibit that presence and absence of principal components like contribution or input towards production, technological advancement, favourable geographical condition etc have been the source of spatial disparity in agricultural development in West Bengal.

Subhashree Sanyal in her paper “Primary Education in North East India: Exploring the Status and Challenges” investigated about the concept of human development which is complex and multidimensional. Human development index [HDI] is extensively used to measure the standard of living of a country however the effectiveness and indicativeness of it can

really be contested. The North East Region has been rich in both human and natural resources both of which have not been adequately tapped. There has also been systematic investigation in the social sector taking into consideration the various schemes and programmes. A number of central institutions have been set up both under Ministry of Health and Human Resource Development and all the states in the region have been granted Central Universities along with a number of Centres for Excellence for ensuring a quality higher education for this region. Since this region is lagging behind in the context of some core human development components like education, health, employment etc. attempts are being made through public and private sector partnership for ensuring sustainable human development of this region.

Urbi Ghosh in her paper “Nirmal Bharat Abhiyan (erstwhile Total Sanitation Campaign) programme status report reflecting its impact of last three years in total rural areas of Siliguri Sub-division under Darjeeling district” evaluated Nirmal Bharat Abhiyan (NBA) erstwhile Total Sanitation Campaign (TSC) programme is conducted by the District Water and Sanitation Cell of Siliguri Mahakuma Parishad for the rural areas under subdivision of Siliguri of Darjiling district. The cell covers all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa) considered rural areas of the subdivision. Study of last three years (2010-11, 2011-12 and 2012-13) shows each block section wise (Individual Household Latrines (IHHL), School Toilet, Integrated Child Development Services (ICDS) toilet and Sanitary Complex) in its specific condition including gap between target and achievement. Though communication programmes (Information, Education and Communication or IEC) are practiced by the respective cell for implementing the programme here engaging both government and non-government agencies but targets are not reached following several difficulties.

In the article “Media exposure during Early Childhood years: The Role of Parents” based on the study carried out by Divya Vaishnava in Delhi NCR and aimed to explore the adverse impact of media on early childhood years. This study also explored the connection between the children and their content watch on TV and the increase in their aggressive behavior. It found a positive correlation between the exposure to the unsuitable content and the behavioral problems in children. This study also focused on finding suitable alternatives for children’s entertainment and information needs. The paper discussed the concept of media exposure in early childhood years, findings and the recommendations for parents. It also highlighted the lack of creative pursuits in children and parents encouraging their children to use ipads, tablets to learn new concepts and not reading to learn things.

The researcher aims to generate awareness about the harmful effects of media exposure, to impart media education to parents and care givers and to let them explore options suitable for younger children.

Amit Banerjee in his paper “Agrarian Reforms: Need for a second Green Revolution” discussed relationship between ownership of land and the person’s status in the social system. Landless suffer not only from an economic disadvantage, but also face a concomitant social disadvantage. It is not possible to provide land to all landless persons but that cannot be an alibi for not undertaking a programme for the redistribution of agricultural land. Agrarian reform therefore requires, inter alia, the reduction of the larger holdings and distribution of the excess land according to social and economic considerations.

Municipal governments in India have encountered increasing demographic and social pressure in recent years. In this context, Indian policy makers face a very difficult task of addressing two conflicting objectives - one relates to serving city population’s needs for basic services and the other one relates to infrastructural needs for making cities ‘world class’ as desired by the international business interests. Consequently, government has responded to these challenges through adoption of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in December 2005. Over the last seven years the Mission has provided substantial central assistances to cities and towns mainly for infrastructure development and housing the poor. However, on the basis of available secondary data, a closer examination of characteristics and implementations of this flagship urban development program reveals quite a disturbing picture having important implications for regional and spatial disparities. Distribution of JNNURM has been found to be concentrated in comparatively stronger states and larger cities of these states. Therefore, the paper argues that conscious and combined efforts by the government towards improving overall capacity of the ULBs along with greater involvement of the citizens have the potentiality to ensure equitable and sustainable urban growth through the flagship program. This is the focus of the article “Tracing the Restructuring of Urban Governance and Finance in India: The Case of JNNURM” by Soumyadip Chattopadhyay and Durgesh M Tewari.

Harasankar Adhikari in his paper “Encashment of People’s Ignorance As Alternative Earning : A Dangerous Deal” highlighted on the public health care system in West Bengal particularly the district of Murshidabad which is located at the Indo-Bangladesh boarder. Population of the district is dominated by minority(Muslim) and backward community. The poor socio-economic condition and the high rate of unemployment in the area have

pushed the people to different parts of the country as unskilled and semiskilled low paying workers. He studied how this has changed their attitude and living standards.

“A study on Grassroot Women Leaders in Development” by Thapliyal Mishra Nivedita explains women participation in development and their suggestions for improvement. Now this has been identified as essential strategies for development policies and welfare for the societies. The involvement of women in Uttarakhand has played an important role not only in addressing the development issues at micro level but also at macro level. An attempt has been made in this study to understand the level of involvement of grassroot women leaders, both formal and informal, in development of their areas (village, block and district) and their association in planning, designing, implementation of the plans, schemes and projects for their respective areas. The study covers the Kumaon and Garhwal regions of Uttarakhand state. With the help of both secondary and primary data study shows that the women from Garhwal and Kumaon region have been participating and initiating development programme without being the core beneficiaries. This explains how they help to educate the children, spreads health awareness and generates awareness for environment protection etc.

Partha Mukherjee and P.P.Sengupta in their paper “Importance of Agriculture and Rural Development in India” presents the problems and solutions and models by which agriculture and rural development move towards sustainable environment and growth. Today, every sector of the Indian economy is attuning itself to the changing economic environment. Now, India is suffering from chronic poverty. To reduce the broader dimension of poverty, we need to focus on rural development, particularly agricultural development, employment, health, education and nutrition. It is known that agricultural growth is important in India as around 70 percent of total population still depend on this sector. The crux of this paper is to examine agricultural and rural development program implementation in India. Agrarian reform though desirable, but there are lots of impediments to implement it. There is a reciprocity between agrarian reform and democratic development seems almost self-evident. The paper examines various strategies adopted in the implementation of rural development policies and programmes. The result of the analysis reveals that the Indian Government adopt bottom-up rural development approach, which emphasizes involvement of the rural people in the implementation of rural development programmes.

“Constraints of Farm Women in Rice based Farming System: An Empirical Assessment” by S K Nath and Sarthak Chowdhury is an empirical research

and it indicates that among the socio-psychological, technical, financial, input supply and marketing problems, least knowledge on various banking schemes was found to be the most crucial problem followed by non-participation in various government sponsored demonstration programmes. All the constraints were negatively correlated with adoption of various technologies in rice farming. Technical and marketing constraints were highly significantly related with the non-adoption of technologies in rice farming. Our planners should keep an eye to the solution of the problems of farm women while formulating programmes for increasing the rice production.

Madhurima Kundu, D.S. Kushwaha and Prof. Pranab Kumar Chattopadhyay in their paper “SHGs and Women Empowerment: A Village Study” discussed on the women empowerment through promotion of Self Help Group [SHG]. The paper reflects the benefits enjoyed by the women after their involvement in SHGs.

Labour surplus economies and India used to enjoy comparative advantage naturally in agri-exports for their of low level of input costs coupled with diverse agro-climatic conditions. With the introduction of economic liberalization in 1991 and as soon as the WTO came into the picture in mid-1990s, Indian agriculture was exposed to many policy reforms rendering far reaching implications for agricultural sector in general and agricultural exports in particular. In this paper, The author has made an attempt to capture the changes which Indian agricultural exports experienced during the reform era in respect of trend, diversification and competitiveness. The researcher observed that though total agricultural export had increased over the period 1990-91 to 2008-09 due to the export growth of rice, spice, meat and meat products, sugar etc, Theil entropy measure(1967) of diversification showed that there was a steady fall in export diversification particularly over the period 2003-04—2007-08. The Revealed Comparative Advantage(RCA) as proposed by Balassa(1965) and the output elasticity of exports measured by fitting regression equations following OLS technique suggest that India enjoys comparative advantage in the world market for its agri-exports but at the commodity level significant variations over time are observed. Tushar Das in his article “Diversification and Competitiveness of Indian Agricultural Exports During Liberalized Regime” has meaningfully captured this scenario of Indian agriculture.

“Rural Infrastructure Opportunities: Entitlement to Development” by Sashi Sekhar Biswal revealed that infrastructural opportunities produce and strengthen human capability and safety net for the better standard of living (Quality of life).The rural infrastructure opportunities are likely to put positive

influence on large section of people of the country in terms of economic growth and declined deprived condition of them. Despite being the main stay of country's development the sad and gloomy face of the ruralites in India speak a lot about their lower level of health, illiteracy, poor shelter, acute poverty, lower per capita income and unemployment. Their marginalization may be attributed to 'lack of infrastructure opportunities'. Infrastructure (Physical & Social) is a most important ingredient and has composite functions in the mechanism of development. This paper aims at focusing and highlighting basic rural infrastructural opportunities in terms of Road connectivity, Water, Telecommunication, Electrification, Education and Health as entitlement to development and human progress.

"Fish based Integrated Farming System – A New Approach to Farming in the Red Lateritic Zone of Birbhum District, West Bengal" by Prabuddha Ray, Subrata Mandal, Krishna Mitra and Dulal Chandra Manna discussed about the farmers/gardeners who are motivated to change the shape, style, design of the land so that it could be developed into integrated farming system that utilizes the waste of one component as a resource for the other and sets up a network of nutrient flow. The diversification that comes from integrating crops, vegetables, livestock, trees and fish imparts stability in production, efficiency in resource use and conservation of the environment. In integrated farming, wastes of one enterprise become inputs to another and thus optimize the use of resources and minimize pollution.

"Applied General Equilibrium Analysis of Food Security in India: A CGE modelling approach" by Koushik Das examined that food security is not only the responsibility of the national government but the right of the common people of the nation. In order to keep track of the issue Indian government has decided bulk procurement of basic food crops like paddy, wheat and coarse serial and distribute them to the downtrodden people at a very nominal price. In this paper he applied Computable General Equilibrium (CGE) modelling based on India's Social Accounting Matrix (SAM) to study the impacts of trade liberalization and food subsidy policies on the macroeconomic variables. He established that, subsidy policy in basic food crops like, paddy, wheat and coarse cereals along with some reallocation of budgetary expenditures in other developmental activities will certainly reduce food insecurity, destitution and hunger among the targeted population. This will increase overall social welfare as in the whole process of food transfer mechanism, upper tier of the urban and rural population will have to sacrifice less than the welfare gain enjoyed by the targeted rural and urban population.

Supravat Bagli in his article “A Study of Food Security in India” shows how Food security refers to the sustainable assurance of minimum amount of nutritious food required for living with dignity. A system of food security has four dimensions availability of food items, accessibility to food items, utilisation of food and stability of the availability. This study explores the growth of availability of several food items in between the situations before and during the liberalisation era in India. In this connection he investigates the growth of the land under food grains production. He has estimated the growth of per capita consumption expenditure during the period 1961-2010 and studied the nature of the change of the per capita calorie in different phases of liberalisation. Utilisation of food is closely connected with the status of health and hygiene of the people. In this step he has examined the rate of change of the health status, particularly access to safe drinking water, access to improved sanitation facility, of the Indian households. It is noted that ability to utilize food has grown at a commendable rate in the era of strong globalization. Finally, the results of this study suggest some policy prescriptions for a stable food security system in the long run.

Sanjay Prasad took up the case of water scarcity within the Kurseong Integrated Water Management Project in Kurseong municipality. In Part I, after introducing Kurseong and the structure of the overall project, he use a PESTLE (Political, Economic, Socio-Cultural, Technological, Legislative, and Environmental) framework for analysing the situation in Kurseong at this phase and setting forth the recommendations. In addition to the PESTLE analysis, in Part II he included detailed summaries of notes on and experiences with different aspects of on-site visit to Kurseong. Finally, in Part III, he suggested tools for both understanding and implementation on the path forward. The purpose of the report is to synthesise diverse forms of information gathered from formal education, other integrated water management projects, and on-site experiences into an interdisciplinary perspective on the current situation and way forward for sustainable water systems in Kurseong. This is the basic focus of his paper “A Pestle Approach to Integrated Water Management System in Kurseong Town of Darjeeling District”.

“Influence of the Socio-Personal Traits of the Vegetable Growers on their Knowledge Index regarding the Judicious Use of Pesticides in Brinjal Cultivation” by Sarthak Chowdhury and Prabuddha Ray investigates the plant protection technologies in order to minimize crop loss. It shows how farmers aggressively adopted self-defeating practices like increasing either dosage or frequency of pesticide application, regardless of its effects on environment, health and socio-economic conditions of the community.

“Participation of Elementary School Activities of Tribal Children in India” by Harinam Singh examined Education as a means of advancement of capacity, well-being and opportunity of the communities. This paper highlights the literacy rate of India for the period of 1951 to 2011. It attempts to examine the low literacy level and education among tribal children in India. It discusses the role of government, institutions, programmes and linkages between education and development. It also examines the need for special focus on tribal education. Marked improvements in access and to some extent in quality of primary education in tribal areas have occurred due to government and non-government initiatives. However, the number of out-of-school children continues to be several millions. This is mainly because of the lack of interest and parental motivation, inability to understand the medium of instruction, teacher absenteeism and attitude, opportunity cost of time spent in school. Education of ST children is considered important, not only because of the Constitutional obligation but also as a crucial input for the total development of tribal communities. The paper made an attempt to analyze the problems in the field of Tribal children education and suggest measures for the development of education among Tribals in India.

Sisir Gurung in his paper “Growth of Information Technology In Rural Area” discussed and explained about technology which displayed in its achievements than words can actually express. Technology is by far the most dominating subject of the present universe, from a small pin to a gigantic complex rocket science, technology takes its lead. Life has completely changed its pace after it has embraced technology than it was before without Information Technology. It is like a new dawn in the era of human civilization. Information technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data. Urban areas were very fast influenced by technology compared to rural areas of different parts of the world. Urban area always had those people who took interest in using the Information Technology products, they had money to spend in these luxury and they had time and motive to use it because technology was there to make their life easier. In the late 80's when technology was in its infancy it took a lot of time to gain the trust of the common people because technology was alien to people. People were afraid to use technology products because they thought machine couldn't be trusted, after all it had not brain and feelings. Gaining the trust of people was the biggest challenge the early technology pioneers faced. But gradually as people tried to use some of those simpler, cheaper, less complex instruments and tools like the use of abacus by the Chinese, the compass by the navigators and printing press for circulating newspaper

and thus technology slowly entered the sacred territory of human beings. Human civilization had completely changed its dimension after embracing technology in their lives. Life itself became much easier and faster with technology at its disposal. Many villages changed into town and towns into cities and cities into fast moving metropolitan settlements.

U.S Nayak, S.K Mohanty, S.K Nath and G. Shial in their paper “ Impact of BGREI Programme on the Adoption of Improved Rice Production Technology in Coastal Districts of Odisha” aimed at assessing the impacts of Bringing Green Revolution to Eastern India (BGREI) programme on the adoption of improved rice production technology as conducted in Bhadrak and Balasore districts of Odisha during 2013-14. The findings of the investigation revealed that the programme had a positive impact on the participating farmers in terms of knowledge gain, attitudinal change and technology adoption. Majority of the participating farmers gained full knowledge on improved variety; line transplanting and proper seed rate and around half of the respondents had adequate knowledge on tillage, irrigation and water management. In crop protection technology, around 50 % farmers had either full or partial knowledge on seed treatment practice and on other protection technologies. BGREI programme had little impact as far as knowledge gain is concerned. There has been a perceptible change in the attitude of the participating farmers towards different improved production technology due to BGREI programme.

“Krishi Vigyan Kendras (KVKs) in the context of Agricultural Research and Extension System – An Assessment” by Sarthak Chowdhury and Prabuddha Ray highlighted how agricultural research and extension in India transforms itself into a more diversified farming systems approach from its present simplistic accent on yield enhancement by increasing some limited inputs. Farmers are required to adopt a wider range of inputs and practices to develop skills in their more efficient use. So, the task of KVKs will become more challenging in the wake of post WTO era, which demands a system of market led research and extension with specific focus on diversification, post harvest management and export orientation. Presently, more than 600 KVKs are established in the country. KVKs have the mandate of promoting technology application through on-farm trials, demonstrations and training. These activities are implemented by a multi-disciplinary team. Performance of KVKs varies widely. The effective reach of KVKs in most cases is marginal mainly due to its inadequate linkages with other development agencies. Staff shortage, limited operational funding. A narrow mandate has also led to sub-optimal utilization of KVKs. KVKs can do better if its technical expertise is linked to the facilitation support and reach of the DoA/ATMA.

According to UNICEF, 30,000 babies are born HIV positive each year in India. Children are our future. We need to protect our future from HIV/AIDS. HIV/AIDS causes a complete deficiency to the immunity system and damages the whole system. It leads to disability. So, it is extremely essential to prevent our children from this disease. If we do not take initiative and start working to reduce the lack of awareness, our future will become disabled. HIV positive mothers should be thoroughly informed to prevent the transmission of HIV to their infants during pregnancy, labour, delivery and breast feeding. For people infected and affected by the epidemic. HIV, is not only a medical experience but also a social and emotional experience that profoundly affects their lives and their futures. For children who are the most vulnerable group, it is important to respond to the development programmes arranged by different organizations to prevent social, economic and emotional consequences of the disease on children, their families, and communities that support them. Children who have HIV in their family may be stigmatized and discriminated socially. Many children lose their parents due to HIV at young age and become orphans. Some people including the children become care giver of their HIV affected family members; they suffer from equal stigma and discrimination by the society. The paper by Gargee Basu “Infants and HIV/AIDS” explained this relationship between Infant and HIV/AIDS and its impact on children

“Groundwater Quality in West Bengal: Challenges for Drinking Water Security” by Pulak Kumar Patra highlighted on clean drinking water which is a basic human need. In the six decades since independence, India including West Bengal has witnessed phenomenal development of water resources and has been successful to meet the demand of water for many diverse uses. Supply of drinking water has been acknowledged as the first priority of the Government. Though, initially, the emphasis was on development of surface water resources, with growing population and increasing water demand, the utilisation of groundwater has increased since 1970s. Now, the reliance of drinking water supply in the State is mainly on ground water, which meets more than 80 and 50 percent of drinking water needs in rural and urban areas respectively. However, the ever-increasing exploitation of ground water has caused deterioration of water quality, specially the enrichment of arsenic and fluoride in the ground water from the geological sources. Consumption of arsenic and fluoride poisoned water has a great health risk and has become a catastrophe in West Bengal. To aggravate the situation, groundwater arsenic and fluoride menace has entered the food chain through irrigation practice. Besides, the ground water in coastal districts is saline in nature and not potable. Due to the contamination of ground water, the overall availability of water is being affected to a great

extent. Over the years, there have been many efforts and huge investments to mitigate the arsenic and fluoride problems. But the problem persists. This paper critically analyses these activities and remedial measures and suggests that more emphasis is needed on harnessing the surface water for long-term solution of the problem.

“Socio-economic Condition of Rural people of Alooabari, Darjeeling: A Case Study” by Sunny Rawat investigates the extensive land use in agriculture and forestry, large open space of undeveloped land. For understanding the rural livelihood pattern, he emphasized the need of the study of people, place and environment in rural areas with special reference to its society, economy, politics and culture.

The author Aditya Subba in his paper “Present Scenario and Future Prospect of Eco Tourism- A Case Study of Ramdhura, Kalimpong” analyzed the concept of ecotourism, which is *travel to natural areas that conserves the environment and improves the well-being of local people*. The paper investigates ecotourism as a solution to environmental preservation. When it is carefully thought out and regulated.

The International Labour Organization (ILO) estimates that out of approximately 175 million migrants around the world, half of them are workers or labourers. The author shows a strong linkage between the intensity of rural-urban labour migration and the standard of living of the people in the rural areas of the hills. One of the important factor is absence of economic opportunities in the rural areas. Migration from the village towards the town is rapidly increasing in Darjeeling. The poor socio-economic status of the villagers and hardship of livelihood in the surrounding rural areas have always compelled the villagers to migrate to the town. This paper by Ashish Chhetri emphasizes mostly on the factors that regulates rural to urban migration in Darjeeling, Trends and Patterns of labour migration and its impact on the socio-economic development of Darjeeling town as well as the surrounding rural areas.

1

Institutional Delivery, Maternal Mortality and Child Health: A Study of Purulia District in West-Bengal

Kaberi Pal

Health is regarded as one of the most important factors of development. It reflects overall (social, economic and cultural) picture of our society. Better health of people enhances capabilities towards resources mobilization, income generation and GDP enhancement that unitedly invite development. But women in the field of health are characterized by gender inequality. This inequality is further aggravated when associated with such factors as poverty, illiteracy, rural background, lower caste, widowhood, desertion, disability, single marital status or childlessness (Ghatak, 2005). A recent study suggests that in 2000 about 70 per cent of non-pregnant and 75 percent of pregnant women aged 15-49 years were anemic in terms of iron-deficiency¹(Mason, *et al.*, 2005). It may be noted that, while the disparities in the human development at national level and state level have been well focused, there have been relatively fewer analysis of disparities in regard to the individual components of human development (such as health) at the micro level. This paper is an attempt to study the institutional delivery, maternal mortality and child health in the district of Purulia. Maternal Mortality Ratio(MMR)² of Purulia is 107 in the period of 2011-2012 where as the state maternal mortality ratio is 141 as on 2010. The Infant Mortality Rate³ of the district is 30 (2011-2012) where as the state Infant Mortality Rate is 31 as on 2010. In the next section we discuss about the study area. Section III gives a brief literature on the issue at hand and also indicates the objective of the study. In section IV we discuss about the data source and methodology. Section V discuss about the data analysis. Finally, in section VI, we make concluding observations

II. Area of Study

Purulia is my study area. The District is 330 Km. away from Kolkata with population density 468. This western most district of West Bengal is bounded by Midnapore, Bankura and Burdwan district of West Bengal and Dhanbad, Bokaro, Ranchi, West Singbhum, East Singbhum district of Jharkhand . The district headquarter is situated at Purulia town having three administrative sub-divisions viz. Sadar East, Sadar West and Raghunathpur. It comprises of **20 blocks, 170 GPs** and supporting of population of 2973055 (as on April, 2012), harboring **tribal population 19%, 3 Municipalities** (Purulia, Raghunathpur and Jhalda), **8 non-municipal towns, 2683 Mouzas, 2468 inhabited villages** and **1911 gram-sansads**. Out of **2468 villages 994** villages are backward in respect of two parameters namely—lack of enough employment and extremely low level of female literacy. There are **171 tribal villages** and 168 villages are hard to reach.



Map of Purulia

Location of Block



West-Bengal in India



Purulia in West-Bengal

III. Brief survey of Literature and Objective of the study

There exist quite a few studies on health and nutrition. Ghatak (2005) has found a mixed picture of the health status of women and children in West Bengal. In certain respect West Bengal has done well but in certain others it lags behind a fairly large number of major states in India.

Mishra (2012) analyzed the disparity in human development at a micro level i.e. a block level in the district of Purulia. In this study it is found that all the blocks suffer from the inadequate health and medical facilities and as whole, the district is highly neglected in the development of essential health and medical facilities for a long span of time. The resident of entire district depends on either Purulia town or on distant Asansol for treatment.

Jose and Navaneetham (2008) analyzed levels of women's malnutrition in India during the period 1998 – 1999 to 2005- 2006 based on the National Family Health Survey (NFHS). They have found that during the period of their study, though the economy witnessed higher growth and a reasonable pace of reduction in poverty, malnutrition especially iron-deficiency anaemia has increased among the women from disadvantaged social and economic group. The chronic energy deficiency (CED) and Anemia are two very important indicators of women's malnutrition. In state-wise analysis they have found that the eastern states, mainly Bihar, Jharkhand, Orissa and West Bengal have emerged as the repository of women's malnutrition in India. Thirty percent of women suffering from CED and anemia together live in these states. Thus the authors have raised some very pertinent questions. 'Do these higher levels of women's malnutrition suggest that norms and discriminatory practices against women are more rigid and intense in these states? Or alternatively, do they relate to the levels of poverty and of human development? Or, do they simply reflect the food habits of the region and the lack of adequate nutritive components in them?'

The increase in malnutrition among the women in India, whether it is due to failure of market or of the state or due to gender inequality or because of changing food habit does not augur well for various reason.

Husain (2011), critically analyzed the success of the intervention strategies under the scheme of National Rural Health Mission (NRHM) which was introduced as a flagship scheme to address the need of the rural population through an architectural correction of the health system. In this paper Husain has analyzed the provisioning of health services to households through accredited social health activists, strengthening rural public health facilities, enhancing capacity of panchayats to control and manage provisioning of health services and positioning of effective health management information.

Objective

The main objective of this study is to examine the institutional delivery, maternal mortality and child health in the district of Purulia.

IV. Source of Data and Methodology

The present study is based on both primary and secondary data. The data have been collected from the Census of India, District statistical Handbook, published by Bureau of Applied Economics and Statistics, Govt. of West Bengal, West Bengal Human development Report, published by Govt. of

West Bengal, National Family Health Survey, District Health & Family Welfare Samity, different hospitals and from different journals, magazine etc. In this study 20 blocks of Purulia have been taken as the study area with each block being considered as one unit.

V. Data Analysis

Medical facility of Purulia district is provided through a network of **76 Health Institutions** comprising of one District Hospital (Deben Mahato District Hospital), one Sub-Divisional Hospital (Rghunathpur Sub-Divisional Hospital), one Institute for Mental Care (situated at Purulia town), **5 Rural Hospitals** (situated at Hura, Manbazar I, Balarampur, Jhalda II and Neturia), **15 Block Primary Health Centres**, **53 Primary Health Centres**, and **Super imposed upon 485 Sub-Centres**.

Location of DH, SDH, RH, BPHC



Table 1: Health and Medical facilities for Municipality in the Purulia districts:

Municipality	Hospitals	Rural hospitals	Block primary health centers	Primary health centers	Sub-Centers
Jhalda (M)	-	-	-	-	1
Purulia (M)	2	-	-	-	12
Raghunathpur (M)	1	-	-	-	1

Source: District Statistical Hand Book, Purulia, 2010&2011

Table 1 shows the medical facility in municipality area in the district of Purulia. There are three hospitals in the district of Purulia. Out of three hospitals two are situated at Purulia (M) and another is situated at Raghunathpur (M). There is one sub-center at Jhalda (M) and another twelve sub-centers at Purulia (M). There is also one sub-center at Raghunathpur (M).

From the Table 2 it is clearly found that number of delivery at sub-centre has decreased. The number of delivery at PHC has increased at almost all the PHC except some PHC – Koreng, Ajyodha, Bagda and Jamtoria. In case of delivery at BPHC, number of delivery has increased at almost all the BPHC except Shirkabad at Arsha block, Kustaur at Purulia-II block and Joypur. On the other hand there found a mixed picture in case of RH delivery—number of delivery has increased at Manbazar (Manbazar-I), Hura (Hura) and Kotshila (Jhalda-II) and the number of delivery has decreased at Banshgarh (Balaram) and Harmadi (Neturia). The number of delivery at DH and SDH has increased. On the other hand there found a mixed picture in case of Private institution. From the table it is clear that the overall institutional delivery of district Purulia has increased.

Table 3 shows a comparison between urban institutional delivery and rural institutional from April 2007 to 2nd Qtr -2012-2013. Table 3 a indicate 42.43% urban institutional delivery and 56.53% rural institutional delivery during the period of April 2007 to March 2008. Table-3b indicate 40.53% urban institutional delivery and 59.47% rural institutional during the period of April 2008 to March 2009. From the table-3c it is noted that rural delivery increased 18.1% whereas urban delivery increased 8.2% up to April to March 2010-11 and Rural delivery increased 12.6% and urban delivery increased 12.2% up to April to March 2011-2012. PHCs conducted 19 normal deliveries up to April 2010 – March 2011.

Table-4 shows immunization from 2009-2010 up to 2012-2013 (2nd Qtr). In 2009-2010, fully immunization was 89.6% but in 2010-2011 it was decreased (89%). In 2011-12 it increased (95.3%) and up to 2012-13 (2nd Qtr) it

Table 2: DH/SDH/RH/BPHC/PHC/SC wise institutional delivery status of Purulia:

Sl.No	Blocks/District	BPHC/PHC/SC	Name of DH/SDH/SGH/ RHBPHC/PHC/SC	2006-2007	2007-2008	2008-2009
1.	Baghmundi	BPHC PHC	Pathardi Tunturi Koreng Ajodhya	767 0 0 0	850 14 81 30	864 49 69 13
2.	Hura	SC RH PHC	Hura Ladhurka Kharipirah	798 126 17	741 203 12	904 222 18
3.	Puncha	BPHC PHC	Puncha Nowagarh Bagda	419 10 0	319 36 4	488 37 1
4.	Para	BPHC	Para Nadiha	704 11	691 81	823 94
5.	Kashipur	BPHC PHC	Kolloli Talajuri Kroshjuri	658 109 23	695 66 22	943 77 40
6.	Jhalda-II	RH	Kotshila	446	676	1161
7.	Neturia	RH	Harmadi	929	787	756
8.	Balarampur	RH SC	Banshgarh	1763	1789 9	1775 2
9.	Joypur	BPHC	Joypur	642	657	652
10.	Jhalda-I	BPHC	Jhalda	1219	1162	1236
11.	Bandwan	BPHC PHC SC	Bandwan Chirudih	771 139 0	753 317 21	796 285 6

(Contd.)

Sl.No	Blocks/District	BPHC/PHC/SC	Name of DH/SDH/SGH/ RHBPHC/PHC/SC	2006-2007	2007-2008	2008-2009
12.	Barabazar	BPHC PHC	Barabazar Sindri Bamundiha	787 40 0	854 109 16	1101 145 52
		SC		4	4	0
13.	Manbazar-I	RH	Manbazar	1613	1617	1812
			Pairachali	0	10	14
14.	Manbazar-II	BPHC PHC	Bari Jamtoria	321 0	529 1	638 0
			Basantapur	12	35	47
15.	Santuri	BPHC PHC	Muradih Santuri	247 17	283 10	362 82
16.	Raghunathpur-II	BPHC	Banda	628	580	689
17.	Purulia-II	BPHC PHC	Kustaur Hutmura	475 165	539 158	499 213
18.	Purulia-I	BPHC	Chakoltor	433	516	573
19.	Arsha	BPHC	Shirkabad Arsha	438 7	472 37	451 84
20.	Purulia district	DH SDH Other pvt	Purulia Sadar Hospital RN/SDH Adra Rly.Hospital Sanjeevani NH Roy Maternity Singhania NH Leprosy Mission Maa Kalyani NH	8533 2715 33 189 302 617 13 19	8292 2573 52 219 327 615 0 39	8589 2600 36 250 217 513 1 110
Total				27155	27910	30389

Source: District Health & Family Welfare Samity, Purulia

Table 3a: Comparative status of Institutional delivery of District of Purulia

Table 3a: Institutional delivery status of district of Purulia (April 2007-March 2008)

Total urban institutional delivery				Total rural institutional delivery					
S.N	Name of the institution	Total institutional delivery of district	Total institutional delivery of the unit	%	S.N	Name of the institution	Total institutional delivery of district	Total institutional delivery of the unit	%
1.	District Hospital	27910	8294	29.72	1.	Sub-Centre	27910	39	0.14
2.	RN SDH		2573	9.22	2.	PHC		1242	4.45
3.	Other Govt Hospital		52	0.19	3.	BPHC		8900	31.89
4.	Non Govt Hospital		1200	4.30	4.	RH		5610	20.10
	Total	27910	12119	42.43		Total	27910	15791	56.58

Table 3b: Institutional delivery status of district of Purulia (April 2008-March 2009)

Total urban institutional delivery				Total rural institutional delivery					
S.N	Name of the institution	Total institutional delivery of district	Total institutional delivery of the unit	%	S.N	Name of the institution	Total institutional delivery of district	Total institutional delivery of the unit	%
1	District Hospital	30389	8589	28.26	1	Sub-Centre	30389	8	0.03
2	RN SDH		2600	8.56	2	PHC		1542	5.07
3	Other Govt Hospital		36	0.12	3	BPHC		10115	33.29
4	Non Govt Hospital		1091	3.59	4	RH		6408	21.09
	Total	30389	12316	40.53		Total	30389	18073	59.47

Table 3c: Institutional Delivery status of Purulia district [20762 (74 %) Up to 2 Qtr – 2012-13]

Type	2009-10(April to March)	2010-11(April to March)	Increased (%)	2010-11(April to March)	2011-12(April to March)	Increased (%)
Institute Delivery						
Rural	20682	24430	18.1	24430	27490	12.6
Urban	12670	13707	8.2	13707	15372	12.2

Table 4: Immunization of the district of Purulia.

Reporting Period	Measles			Fully Immunized		
	Target	Achievement	(%)	Target	Achievement	(%)
2009-10	59341	54969	92.63	59341	53168	89.6
2010-11	60232	54500	90.5	60232	53583	89
2011-12	56480	54680	96.8	56480	53803	95.3
2012-13(upto 2 nd Qtr)	56295	30058	53.4	56295	29524	52
Reporting Period	Antenatal Care Registration			Tetanus Toxoid for Pregnant Women		
	Target	Achievement	(%)	Target	Achievement	(%)
2009-10	65275	66546	101.9	65275	56807	87
2010-11	66255	71458	108	66255	62480	94.3
2011-12	62130	68666	111	62130	61201	98.5
2012-13(upto 2 nd Qtr)	61924	29656	47.9	61924	26344	42.5

Source: District Health & Family Welfare Samity, Purulia

Table 5: Maternal and Child health of the district of purulia
Maternal Death Reported vs Audited, (Apr'08-Mar'09)

Name of Block/ DH/SDH/RH/BPHC/PHC/SC	No. of live births	Estimated maternal death	Total no. maternal death reported	MMR	Total no. of maternal death audited
Banda	1471	4	5	339.9	4
Bandwan	1716	4	4	233.1	3
Bansgarh	2730	7	5	183.2	3
Barabazar	2502	6	1	40	4
Bari	1226	3	1	81.6	0
Chakaltore	2142	5	4	186.7	5
Harmadh	1510	4	4	264.9	5
Hura	2126	5	3	141.1	1
Jhaldia	2455	6	3	122.2	4
Joypur	2505	6	6	239.5	5
Kolloli	2076	5	2	96.3	4
Kotshila	2983	7	11	368.8	13
Kustaur	2509	6	6	239.1	1
Manbazar	2907	7	4	137.6	5
Muradi	947	2	0	0	3
Para	2926	7	2	68.4	4
Pathardih	2210	6	6	271.5	0
Puncha	1650	4	5	303	5
Raghunathpur	703	2	5	711.2	4
Sirkabad	2761	7	5	181.1	4
PP-unit of sadar	8189	20	12	146.5	0
R N Pur SDH	2521	6	0	0	0
Other centre	1097	3	1	91.2	0
Total	53862	132	95	176.4	77

Source: District Health & Family Welfare Samity, Purulia

achieved 52% of target. In case of anti natal care registration it achieved 101.9% of target, in 2010-2011 it achieved 108% of target, in 2011-12 it achieved 111% of target and up to 2012-13(up to 2nd Qrt 2012-13) it achieved 47.9% of target. In case of Tetanus Toxoid for Pregnant Women, in 2009-2010 it achieved 87%, in 2010-2011 it achieved 94.3%, in 2011-12 it achieved 98.5% and in 2012-2013 (2nd Qrt) it achieved 42.5% of target.

Table-5 indicate the maternal and child health of the district during the period of April 2008 – March 2009. From the table it is noted that MMR (Maternal Mortality Ratio) of the district is 176.4. The highest MMR (711.2) is found in Raghunathpur and the lowest MMR is found in Raghunathpur SDH (0) and Muradi (0). Table indicate the fact that the maternal health of Kotshila is very alarming.

Table -6 shows the Number of births and deaths in different Hospitals and Health Centers in the district of Purulia. From the table it is noted that total number of deaths is highest (17678) in 2005, and total number of deaths is lowest (1059) in 2004. It is clearly found that the number of death by the age group of above 5 years is greater than the age group of up to 5 years.

Table 6: Number of Births and Deaths in different Hospitals and Health Centers in the district of Purulia

Year	Total deliveries performed	Number of deaths by age group		
		Up to 5 years	Above 5 years	Total
2004	54212	405	654	1059
2005	55815	2057	15621	17678
2006	57896	2041	4880	6921
2007	55466	696	8029	8725
2008	54661	994	8523	9517
2009	54745	561	5219	5780
2010	43070	783	4176	4959
2011	37333	578	2682	3260

Source: District Statistical Hand Book, Purulia ,2010&2011 combined.

VI. Concluding observations

This paper is an attempt to study the institutional delivery, maternal mortality and child health in the district of Purulia. In case of institutional delivery, number of delivery at sub-centre has decreased. The number of delivery at BPHC and PHC has almost increased except some cases. On the other hand there found a mixed picture in case of RH delivery—number of delivery has increased at Manbazar (Manbazar-I), Hura (Hura) and Kotshila (Jhalda-

II) and the number of delivery has decreased at Banshgarh (Balaram) and Harmadi (Neturia). The number of delivery at DH and SDH has increased. On the other hand there found a mixed picture in case of Private institution. This study clearly reveals the fact that overall institutional delivery has increased. On the other hand we found a mixed picture in case of maternal health of women. The highest MMR (711.2) is found in Raghunathpur and the lowest MMR is found in Raghunathpur SDH (0) and Muradi (0). The study indicates the fact that the maternal health of Kotshila is very alarming. The study makes a comparison between urban and rural institutional delivery and it is found that rural delivery increased 18.1% whereas urban delivery increased 8.2% up to April to March 2010-11 and Rural delivery increased 12.6% and urban delivery increased 12.2% up to April to March 2011-2012. In case of immunization in 2011-12 it increased (95.3%) and up to 2012-13 (2nd Qtr) it achieved 52% of target. In case of anti natal care registration it achieved 101.9% of target, in 2010-2011 it achieved 108% of target, in 2011-12 it achieved 111% of target and up to 2012-13 (up to 2nd Qtr 2012-13) it achieved 47.9% of target. In case of Tetanus Toxoid for Pregnant Women, in 2009-2010 it achieved 87%, in 2010-2011 it achieved 94.3%, in 2011-12 it achieved 98.5% and in 2012-2013 (2nd Qtr) it achieved 42.5% of target.

Note

¹See Mason, et al (2005), pp-59-162

³**Maternal Mortality Ratio (MMR)** is the ratio of the number of maternal death during a given time period per 100,000 live births during the same time-period. A maternal death refers to a female death from any cause related to or aggravated by pregnancy or its management (excluding accidental incidental causes) during pregnancy and child birth or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy. The MMR can be calculated by dividing recorded (or estimated) number of maternal deaths by total recorded (or estimated) number of live births in the same period and multiplying by 100,000.

Infant Mortality Rate. Probability of dying between birth and exactly one year of age expressed per 1,000 live births.

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2

Towards Birth, Risking Death Medicine and Treatment during Pregnancy and Childbirth in Colonial Malabar

Mamatha K.

“The test of any civilization is the measure of consideration and care which it gives to its weaker members”.

In any community, mother and children constitute a primary group. Together they constitute nearly 59% of the total population of the developing countries. By virtue of their numbers, mothers and children are the major consumers of health services, in different forms. Mothers and children not only constitute a large group, but they are also a “vulnerable” or special-risk group. The risk is connected with child-bearing in the case to women; and growth, development and survival in the case of infants and children¹.

Gender and health were linked by colonial administrators and the low status of women and their poor health were being used to legitimize their own authority and to attempt intervention on their behalf. State sponsored medical facilities had first been provided to treat prostitutes for venereal diseases in ‘lock’ hospitals. The concern here was not towards the diseased women, but it stemmed from the imperialist design to prevent the spread of syphilis and gonorrhoea among British soldiers².

Colonial health reports since the mid-19th century recorded alarmingly high rate of maternal and infant mortality in the Malabar district of Madras Presidency. This was attributed to the practice of early marriage, the inferior status of women in society and tradition-bound health habits. This article

¹Park K., *Preventive and Social Medicine*, Banarsidas Bhanot, Jabalpur, p. 360.

²Mridula Ramanna, ‘Control and Resistance: The Working of the Contagious Diseases Acts’, *Economic And Political Weekly*, Vol. XXXV, 1, 2000, pp.1470-76.

examines the different aspects related to the traditional health habits around pregnancy and childbirth in colonial Malabar as well as the British intervention in women's health care in Malabar. This study is a humble attempt to record the voice of a marginalized or discarded group in the society. This study looks into certain practices and beliefs of a people and the role of a certain groups in the society closely associated with treatment connected with pregnancy and childbirth.

In the eye of modern society, the system of folk treatment was considered as uncultured and unscientific, especially those practices associated with pregnancy and delivery. The folk tradition of medicine was practiced by tribal families. Now, with the development of medical science, almost all utilize the services of hospitals and specialized gynecologists for medical aid and treatment during pregnancy and delivery. Now traditional midwives and their system of treatment have almost disappeared in maternal and infant care scenario. In spite of the advancement in healthcare, maternal mortality has not yet decreased to satisfactory levels, owing to various factors. The aim of this work is to record the medical practices and treatment that the midwives performed and the change which had occurred during colonial period.

India had her own traditions in obstetrics and midwifery. In Ayurveda, obstetrics is called *Prasoothika Sastram* and the branch that deals with obstetrics and pediatrics is called *Kaumara Brityam*. A specialized section *Kaumara Brityam* is seen in *Kasyapa Samhita*. In the *Kasyapa Samhita*, the childbirth is given special prominence which includes treatment of pregnant lady, treatment of the neonates etc. In the *Atharva Veda*, treatment through sacrifices, chanting *mantras*, etc. were prescribed³.

Traditional obstetrics treatment of Malabar was mainly divided as *Garbha Raksha Chikitsa*⁴, *Prasava Raksha*⁵ *Chikitsa* and *Bala Vaidyam*⁶. The delivery has been act, which sustains generation, so great importance is attached to *Garbha Raksha Chikitsa*. In the treatment during the pregnancy period, the traditional medical treatment and magical treatment are followed.

³Krishnankutty Varier N. V., *Ayurveda Charitram*, Calicut, 1993, p. 264-265.

⁴*Garbha Raksha Chikilsa* means treatment during the period from the beginning pregnancy up to the delivery time.

⁵*Prasava Raksha*⁴ *Chikilsa* means treatment during the post delivery period.

⁶*Bala Vaidyam* means Paediatrics also is the part of midwifery. In a traditional method also new born baby had attended with great care. Immediately after the child birth the wastes inside the mouth and nose of the baby will be sucked by midwife. Sometimes, the sole of the baby will be slowly beaten for making it cry.

In the Malabar region it has been believed that the ghee received as *Nivedya* from *Poonkudil Mana*, would ensure a safe delivery⁷.

The different forms of food and specialized diet were prescribed for a pregnant lady. The tablet of *Mahadhanvanthara* is prescribed for protection of pregnancy. *Kurundotti Kashayam* (Sida potion) is recommended from the first month of pregnancy up to delivery. By using *Venkuzhal*, ⁸heart beat of the foetus could be detected and studied. Special treatment was prescribed for each month of pregnancy.

In Malabar, during colonial days, certain Hindu communities had obstetrics and midwifery as their traditional occupation. For higher caste or *Savarnas*, it was the *Vilakitala Nairs*, who were engaged in the occupation. The communities of *Mannan* and *Velan* also had this occupation, apart from the work as washermen. *Mannan* and *Velans* had medical treatment also as their profession. In Malabar district among the Muslims, women of *Ossan*⁹ section were engaged in traditional obstetrics¹⁰. *Peretuppu*¹¹ is a completely extinct traditional folk stream of midwifery, which is distinct from that of the ‘care during pregnancy’ practiced by elderly women in the family. In the area of Payyannur, traditional women from Malaya community acted as midwives. There are many midwives in Payyannur who have attended more than a thousand deliveries. These midwives knew certain medicines such as *Menthonni* (*Gloriosa superba*); known as *lamgali prayogam*, produce surprising results by smoothening complicated deliveries. Such folk knowledge in obstetrics is now on the verge of extinction¹².

⁷Interview with Devan Namboodiri, P., age 50, Traditional Ayurveda physician and priest, *Poonkudil Mana*, Manjeri, interview on, 15- 04- 2012.

⁸Nellikutt Haneefa, Thejas Aazhavattam, November 16th, 2008. *Venkuzhal* means a kind of bamboo pipe from this heart beats of the foetus can be understood. Heartbeat can be heard by placing one end of the pipe over the tummy and other end on ears of the midwife.

⁹In the area of Nilambur, the midwives among the Muslims were known as *Dazhimar*. They also belong to *Ossan* community and in the treatment of post child birth treatment; they have been a live presence in the society for centuries.

¹⁰The word ‘obstetrics’ means, “The branch of medicine and surgery that deals with pregnancy, childbirth and care of the mother”. Obstetrics is different from gynecology. Gynecology means “the branch of medicine concerned with the diagnosis and treatment of diseases and disorders that affect the reproductive organs of the female body”. Midwifery denotes “training to assist women at child birth and to provide care and advice to women before and after child birth”. Even though, these three terms are related and go together, obstetrics and midwifery are closely associated. Sometimes they are used as synonymous. Both the obstetrics and midwifery are part of gynecology.

¹¹Treatment at the time of delivery is called *Peredupu*. Till recently large houses had separate room for delivery and post delivery period. Among the Hindus, when midwives enter the labour room, the relatives of the women would offer oblation to gods.

¹²Unnikrishnan E., *Materia Medica of the Local Health Traditions of Payyannur*, Discussion Paper No. 80, Centre for Developmental Studies, Thiruvananthapuram, p. 18.

Traditional midwives had their own treatment for premature delivery and for care of premature baby. If the delivery was before time, great care would be taken to keep the neonate alive and nurturing it. For this complication, water plants like duck weed were brought and hydrated. Then it would be dried. Premature baby would be laid on a cotton cloth. The body up to the chest would be covered with dried water weed. Then two bottles filled with hot water would be placed on the either side of the premature baby. The parts of the body that was not covered with the dried weed would be covered with woollen cloth. This would continue up to the normal date of delivery. Always the baby will be covered with woollen cloth. It will not be bathed during this period¹³.

The duties of midwives could extend from cutting the umbilical cord, washing puerperal garments, burying the placenta, to living with the parturient mother and giving her and the infant regular massages and warm fomentations. The traditional midwives claim that, they were proficient in their occupation and seldom were there any danger, or death connected with childbirth. However, Colonial statistics show that death in delivery and prenatal death were more during the olden time compared with modern times. These midwives are among those who are marginalized and neglected in two ways first as a woman and second as belonging to the *Dalit* community.¹⁴

Balavaidyas of Malabar were mostly folk practitioners from *peruvannan* community. They are mostly consulted for treating ailments of children such as bronchitis, epilepsy, etc. One of the main components of the medicines used by these healers is medicated ghee prepared with rare and powerful medicinal plants. It is this branch of traditional medicine that makes maximum use of materials of animal origin such as: mothers' milk, eggs of red ant, ant lion, earthworm etc. some of the unique medicinal plants used by these traditional pediatricians are pachlaperumal (*Malaxis rheedi*), paramullu (*Lepidagathi keralensis*), chethi (*Ixora coccinia*) etc¹⁵.

The British measures to combat various diseases prevalent in Colonial South India through the establishment of hospitals and dispensaries and the provision of medical relief through various schemes did reduce the rate of epidemic disease mortality. Compared to urban areas of colonial South India, the existing medical facilities in rural areas were extremely inadequate and the vast majority of rural population had no opportunity of coming into contact with 'qualified' Western medical practitioner.¹⁶ Compared to any other

¹³Dilshad Babu, *Traditional Midwifery and Obstetrics in Malappuram District*, Unpublished MA Dissertation, Manjeri, 2009, p. 31.

¹⁴Ibid., p. 81.

¹⁵Unnikrishnan E., Op.cit, p. 18.

¹⁶Gayathri, Ph D Dissertation, Pondicherry University, p. 167.

regions of Madras Presidency, Malabar district had highest number of medical practitioners either indigenous or western.

Table 1: Extent of Medical Relief in Colonial South India¹⁷

District	All kinds of practitioners	Indigenous practitioners
Anantpur	108	83
North Arcot	884	104
South Arcot	707	99
Bellary	273	28
Chittor	255	91
Chingelpet	874	82
Coimbatore	1342	86
Cuddapah	321	92
Ganjam	2305	61
Godavari	627	167
Guntur	790	282
South Canara	591	165
Kistna	832	116
Kurnool	318	69
Madura	1133	183
Malabar	3990	502
Nallore	794	51
Nilgiris	96	8
Ramnad	1231	59
Salem	1098	105
Tanjore	2260	94
Tinnevelly	2138	208
Trichinopoly	530	68
Vizagapatam	555	122
Agency	81	-
Madras corporation	1368	1076
Total	25,523	3,995

The idea of ‘modernity’ and critique to eastern culture was developed by western medical knowledge and education. Deviations of identities were sometimes forced by ‘political power’ of Colonial Raj or ‘cultural superiority’¹⁸ of European administrators. The Colonial culture and ideology tried to filter the group of elite class and ‘washed’ their ‘mind’ and identities. Education could not change the circumstances connected with pregnancy and childbirth. Tanjore had the second place in male literacy and 7th place in the female literacy. However it had the highest number of maternal death in Madras Presidency. In the similar way, Malabar which stood 4th in male literacy and had 3rd place in female literacy, however had 2nd highest numbers of maternal mortality in the Madras Presidency.

¹⁷Report on the Committee of Indigenous Systems of Medicine.

¹⁸Panikkar K. N., Colonialism, Culture and Resistance, Oxford, New Delhi, 2007, p. 76.

Table 2: Rank of Male and Female Literacy in the Presidency of Madras¹⁹

District	Rank of literacy	
	Males	Females
Madras	1	1
Tanjore	2	7
Tinnevelly	3	4
Malabar	4	3
Nilgiris	5	2

The Malabar native women had highly preferred and showed great interest in the western form of midwifery during some complimentary cases even during an early stage of its introduction in India. However, British administrators were not much interested to improve this because of the lack of concern and 'lack of finance'. The popularity of western health care has been showed in the following table.

Table 3: Number of Labour Cases Attended in Malabar District²⁰

Year	No. of Cases Attended
1888-1889	37
1889-1890	54
1891-1892	74
1892-1893	116
1893-1894	215
1894-1895	345

In 1906, government civil hospitals under local bodies started to train for the work of midwifery, which in many places was very highly appreciated by their fellow countrywomen. But provincial government would not do anything in this direction, on its own²¹.

Since training in western midwifery was expensive, an alternative strategy was suggested, of co-opting the existing indigenous midwives into the modern system. An experimental programme was in fact started in 1913 to give training to the indigenous midwives at the Hospital for Women and Children, but was suspended the next year after training one. The programme continued, however, under the Taluk Boards for some more time by tiths and

¹⁹Census of India, 1901, Vol. XV, Madras, Part. I, p. 75

²⁰Malabar Gazette, 1888-1894, Regional Archives, Kozhikode.

²¹Government of Madras, Annual Returns on Civil Hospitals and Dispensaries, 1906.

starts. But only 11 dhais underwent training in Malabar till the taluk board gave up the programme, in 1914, for the 'lack of finance'.

The attempt was repeated in 1921, this time to train 'dhais' under the District Health Scheme. The District Boards were directed, in 1926, to train native 'dhais' at the district at taluk headquarter hospitals and to bear half the cost for their registration and training²². Further, the government offered an additional subsidy of Rs.100 to such medical men who engaged and maintained a qualified midwife for affording maternity relief. This initiative failed to make much headway in Malabar for lack of finance with the local bodies and the apathy of the indigenous midwives. Of course, a small number of dhais did undergo training, but they preferred to work either in the government hospitals or independently. No rural practitioner could appoint a midwife, till the suspension of the Subsidized Rural Medical Relief Scheme, as they found it impossible to find suitable hands.

Table 4: A comparative table of 4 years of Infant Mortality in the Malabar District²³

Year	Infant Mortality From Birth Per Mille	Deaths From Childbirth
1921-1922	141.79	233
1922-1923	149.08	360
1923-1924	136.37	331
1924-1925	179.5	250

Even by 1929, Malabar had only 40 midwives who had their training in modern practices of midwifery, and only 1.6% of births received any kind of medical attention either by doctors or by trained midwives.

It is only after 1930s, that the nursing of newborn baby and the mother received great attention. With it, the death in delivery decreased considerably. Death at the time of delivery was caused by bleeding, toxæmia etc. The effective treatment at the time of delivery, before and after it began to lessen the death rate of young mothers.

The number of midwives, however, increased to 106 in 1937. Though the government introduced a scheme for maternity and child welfare centers in 1938, it could not make much progress in Malabar, consequent on war and the subsequent famine. The number of dhais who received training itself increased only marginally, to 137 in 1947.

²²GO. No.1067, Local Self Government, Public Health, 9. 1. 1926, T.N.A.

²³Malabar Gazette, 1921-1924, Regional Archives, Kozhikode.

In the area of Malabar, community response towards midwifery was different from one to another because lower castes preferred western form of midwifery much than higher caste people. Namboodiris mainly preferred indigenous Vayataati. Just as in western education, in the field of maternity also Thiya women were highest in number, in dependence on western health care. Next came the Nayars, Musalmans, Cherumis etc.²⁴ The religion of midwife women however was also considered important for the local people to avail their services. Traditional Muslim Women did not prefer midwives belonging to Christian community.²⁵ Vayataati generally was a lower caste Hindu or poor Muslim woman.

The demand for trained midwives came from urban district hospitals and dispensaries, factories and plantations, not from individual families. Many families preferred the old system, which sometimes found institutional support. ²⁶‘Hospital- Centered’ pregnancy, Maternity and Childbirth care system not only got medicalized but also was commercialized. The British used Maternity and Childbirth as a ‘centre’ to attain their politico-cultural goal. Mothers’ body became a ‘site’ for their commercial activities.

The Baby Welcome Centre which started in January 1925 did very useful work in the field of child healthcare. The special midwifery attached to the centre gave advice to the expectant mothers and at times attended them during confinement. In cases of itch, enema and other skin infections, ointments were applied to children.²⁷The colonialist began to run classes in “mothercraft” and babies entered into competitions for “most healthy” baby.²⁸

British administrative reports pointed that infant mortality was very high in the Presidency of Madras ²⁹and mentioned that the main cause of infant mortality was improper, untrained and unscientific care of children by mother. Nevertheless, the real fact is that those belonging to poor families could not afford to live in sanitary dwellings³⁰ and mother and child had severe shortage of nutrition. However, this condition was not only in India but also in England in the earlier periods. What the British administration did was to

²⁴*Malabar Gazette.*, No.2165, Local and Municipal 1889, Sept. 23.

²⁵*Ibid.*, Ponnani is a large town almost exclusively inhabited by Musalmans and apparently they refused to avail themselves of the proffered help. The midwife was a native Christian.

²⁶Geraldine Forbes., *Women in Colonial India Essays on Politics, Medicine and Historiography*, Chronicle Books, New Delhi , 2005, p. 106.

²⁷*Malabar Gazette.*, Palghat Municipality, 1926.

²⁸Cecilia Van Hollen., p.51.

²⁹*Annual Medical Report, Madras Government Lying in Hospital*, 1878.

³⁰Native News Paper Report, *Nasakti* ., Madras, 1925, Jan, 2.

consider and treat the human body as a commodity and “bodies were being counted and categorized, they were being disciplined, discussed upon and dissected”.³¹ Many travelers’ and medical men’s accounts in the 19th century and early 20th centuries suggested that the birthing process was no less hazardous in India that it was in England. Little was actually known about prenatal and postnatal care. In fact, 26% of children died in England in 1868 before the age of five. Undoubtedly, in most part of the world in the nineteenth century, child delivery was a hazardous process and was painful until the discovery of chloroform in 1847³².

The colonial records attributed the high infant mortality rates to the lack of stamina in mothers, their poor nourishment causing their inability to bear healthy offspring, and the hard work that they did during pregnancy³³. Whereas traditional medical practitioners had been suggesting some form of work and nutritious food habits during the period of pregnancy for safe delivery.

In the absence of correct statistics, it is not possible to have an idea about the rate of dangers and loss of life during pregnancy and childbirth during the period when the village medicine and midwives were engaged in obstetrics and midwifery. It is a most welcome factor that people are now using all the facilities offered by modern science and technology. However, this does not minimize the service of these women, who through the ages, were engaged in this profession and they were an integral part of the culture of an age.

During a period when science and technology have not developed, death during and due to pregnancy and delivery and prenatal death might have been greater than today. But we do not have correct statistics with regard to it. But in spite of all the developments in gynecology and all the use of sophisticated technological devices deaths connected with pregnancy and child birth are continuing. Statistics of 21th century shows evidence to it. The information regarding infant mortality and death in maternity in Malappuram district shows that such deaths have increased over the years in the recent past. The following table shows the alarming statistics.

³¹Arnold David., *Colonizing the Body: State Medicine and Epidemic Diseases in Nineteenth Century India*, University of California Press, 1993, p.9.

³²Sujata Mukherjee., ‘Imperialism, Medicine and Women’s Health in Nineteenth Century India’ in Arun Bandopadhyay, *Science and Society in India 1750- 2000*, Manohar, 2010, p.103.

³³Mridula Ramanna, ‘Women’s Health in Colonial Bombay, 1850-1920’, in Kirit K. Shan (Ed.) *History and Gender some Explorations*, Rawat Publicatons, New Delhi, 2000, p.163.

Table 5: Maternal Death and Infant Mortality in Malappuram District (1998 to 2008 - 09)³⁴

Year	Maternal Death	Infant Death
1998 - 1999	21	691
1999 - 2000	26	534
2000 - 2001	35	604
2001 - 2002	25	591
2002 - 2003	28	638
2003 - 2004	26	571
2004 - 2005	22	652
2005 - 2006	30	538
2006 - 2007	31	588
2007 - 2008	36	627
2008 - 2009	34	673

The statistical report of 1998, reports that five maternal mortality cases in every thousand maternity cases in India³⁵ Park K., Op cit., p. 388., but UK reports of 1980 only three mortality cases among every 10,000 maternity cases. This highlights the apathy, ignorance and inefficiency of the masses, education and the administrators of India towards Maternal and infant care, which in spite of the sophistication of medical sciences and care, continues a high rate of maternal and infant mortality.

Conclusion

To sum up, traditional medical system as well as modern health care played a pivotal role in the development of women's health in colonial Malabar. The problems affecting the health of mother and child are multi-factorial. Despite current efforts, the health of the mother and child still constitutes one of the most serious health problems affecting the community particularly in the developing countries like India. The basis of the folk medicine is faith and has a close, spiritual relationship between man and nature. In this system of medicine, materials attained from nature were used either altered or unaltered, as medicine. The second one is biomedicine based on the theories and principles of scientific ideas through experiments.

The improved awareness through education, socio-economic circumstances, changed the view of Malabar women and they started to prefer western healthcare in the nineteenth century. Nevertheless, as a result, traditional

³⁴District Municipality Section, Statistics Section, Manjeri.

³⁵Park K., Op cit., p. 388.

medicine and health care during pregnancy and childbirth started to disappear. Though progress of science, education and modernity has been achieved in a large scale, maternal and infant mortality is still one of the unsolved 'questions' in the 'public space' of Malabar.

Maternity and child care were traditionally designed and provided in the form of vertical programs with "standard" technical content based on models from a few developed countries. Applied in different socioeconomic situations, such vertical programmes have been unable to provide more than minimum coverage because of their cost, and they have scarcely been of a kind to solve the priority problems of the majority of mothers and children.

3

A Commentary on Health Insecurity in Bolpur-Sriniketan Community Development Block, Birbhum, West Bengal¹

Soumyajit Chakraborty

Introduction

One of the key objectives of Indian government is to improve the health of individuals, especially of those belonging to socially and economically disadvantaged groups in the country. The government, many a times in its policy statements has embraced the objective of promoting health to the poor and disadvantaged population. The government's action like signing the Alma Ata Declaration of 1978 shows goodwill for emphasizing 'Health for all'. In its National Health Policy Statement (1983) also, the government has stated that "The highest priority would...require to be devoted to efforts at launching special programmes for the improvement of maternal and child health, with a special focus on the less privileged sections of society" [Lok Sabha Secretariat 1985:45]. The concern for improving the health status especially among the socio-economically backward section has several aspects. Some of these are: first, economic performance and overall social well-being is translated from the health status; secondly, irrespective of contribution towards economic growth, the 'good' health can be an 'end in itself'; and thirdly, further impoverishment of poor via out-of-pocket health expenditures may affect the economy as a whole.

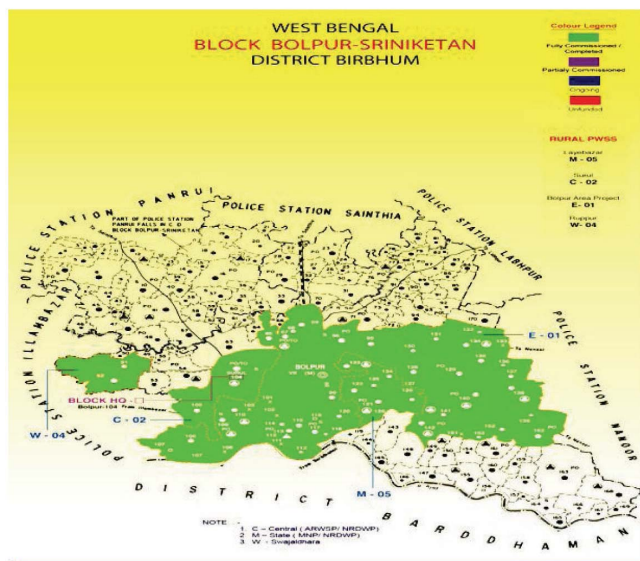
¹I am grateful to Prof. Pranab Kumar Chattopadhyay, Professor Chair of A. K. Dasgupta Centre for Planning and Development, Department of Economics & Politics, Visva-Bharati. I also acknowledge the communicative efforts and cooperation of Mr. Daya Shankar Kuswaha on behalf of the Centre. I give my heartiest thanks to the energetic field enumerators Mr. Tapas Kumar Sutrardhar, Mr. Somdeb Chakraborty, Mr. Sibasish Bhowmick and Ms. Sampriiti Pal, for their sincere work and suggestions during this study.

²M. Phil. Research Scholar, Institute of Development Studies Kolkata (IDSK), University of Calcutta.

A number of studies have pointed to the 'urban bias' and/or 'elite capture' in public spending on healthcare services. If we give a look at the National Health Accounts (NHA India) 2004-05, we see that the nature of health financing in India largely depends on private (and out-of-pocket) expenditures as it accounts for almost eighty per cent of the total, while near about twenty per cent is financed by the government(s) and a mere two per cent is financed by the external flows to the country. Furthermore, the NHA India also reported that in that financial year (2004-05), the per capita public expenditure for health was Rupees 242 while the per capita private expenditure remained Rupees 959. Comparing other countries' distribution of public-private health expenditures, it is seen that India bears one of the highest percentages in the world for private health financing. NHA India study also revealed that the situation of West Bengal was more vulnerable compared to national average. For the same financial year in West Bengal, per capita public and private health expenditure was Rupees 173 and Rupees 1086 respectively. It has been observed in many studies that rural indebtedness follows, in a large extent, from such private nature of healthcare expenditures. In past the Government of India (GOI) has taken numbers of initiative(s) for insuring health of the people but in terms of implementation and coverage, these programmes did not work 'well'. Recently in 2008, the Ministry of Labour and Employment has launched a new health insurance scheme called Rashtriya Swasthya Bima Yojana (RSBY). There are social as well as business motives present in this scheme as it embraces for public-private-partnership, to insure the health. As per GOI data, West Bengal has implemented the RSBY scheme across almost 78 per cent of its total area of coverage. This paper aims to provide an assessment of the incidence such as 'ignorance in rural healthcare'.

Study Area for this Paper

The Human Development Report of West Bengal 2004 assigns the district of Birbhum with a Human Development Index (HDI) value of 0.47 which means this district ranks fourteenth among all the districts of West Bengal; while the Health Index assigns a value of 0.53 to Birbhum which gives the rank at fifteenth; and the Per Capita Income estimation says that Birbhum has almost the least per capita income as it ranks seventeenth (Human Development Report 2004: West Bengal). Birbhum comprises three subdivisions, among which Bolpur is one. Under this subdivision there are four Community Development Blocks viz. Bolpur- Sriniketan, Illambazar, Labpur and Nanoor. Our study area would be the first one i.e. Bolpur-Sriniketan block.



Map Source: Public Health Engineering Department, Government of West Bengal ³

This block has nine Gram Panchayats; among which we have random sampled and selected Bahiri-Panchshowa, Kankalitala, Kasba, Ruppur and Sian-Muluk for the study purpose. Within these five Gram Panchayats, we have chosen twelve villages – Araji Muluk, Bahiri, Bisheghata, Gobindapur, Gopalnagar, Jadupur, Kasba, Kesradihi, Panchshowa, Sitapur, Surul and Tatarpur.

The study has been guided by the formed questionnaire, which is mainly based upon National Family Health Survey (NFHS) of India, West Bengal District Level Household Survey (WBDLHS), and some other standard verified questionnaires; with three hundred and seventy four (374) households living in these Panchayats, among which two hundred and sixteen (216) households have been found to have at least one case of reported illness and three hundred and six (306) persons are found to be patients. Apart from the household survey(s), this study includes one focused group discussion, interviews with two Quack doctors and two medical shops.

Analysis from the Study:

The analysis has four sections. First, we discuss about the availability of different type(s) of healthcare providers and households' utilization of the

³ (www.wbphed.gov.in) Retrieved from http://www.wbphed.gov.in/applications/Map_Mnt/uploads/1-BOLPU.jpg

available health facilities. The second section discusses the incidence of the households' Out-of-Pocket healthcare expenditures – which again has two issues: one, expenditures for outpatient visits and two, expenditures for hospitalizations. Thirdly, we document the focused group discussion which was conducted at Kasba. And finally, we give a note from the interviews.

A. Availability of Different type(s) of Healthcare Providers and Households' Utilisation of the Available Health Facilities

Gathering all the available information, the questionnaire kept eleven healthcare providers in consideration viz. Rural Health Care Provider (RHCP)/Quack, Sub-centre/Primary Health Care (PHC), Block-PHC/Rural Hospital, Sub-divisional Hospital/District Hospital, Other government hospital, Private non-allopathic doctor, Private allopathic qualified doctor, Private hospital, Medicine shop, and Others. Among all these health service providers available in the Bolpur- Sriniketan block, 39 per cent of the sampled population prefer quack for their treatment in first time. But when they feel the necessity to consult the health service provider for second time, then around 11 per cent of them go back once again to the quacks. It is to be noted here that among 306 reported illnesses, 113 are such which have at least one case (for the same illness) of a second visit to any healthcare provider. Notable share of patients admitted (households per se) that often they prefer to visit quacks for their easy availability and for getting cheaper treatment. But when the patients don't get any relief from the service of quacks, they go to some other facility for the treatment (see Table 1 and Figure 1).

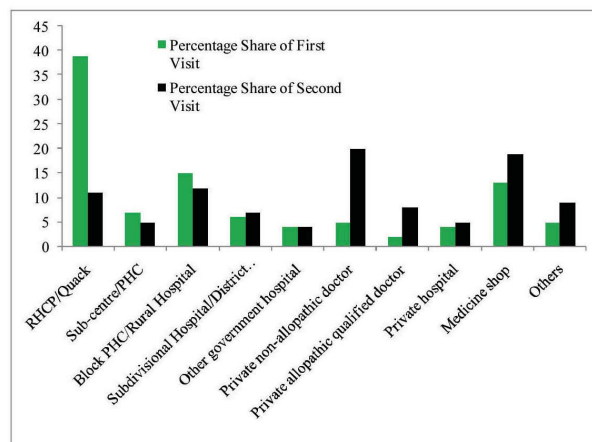


Fig. 1: Variation (by Percentage Share) in Choices of households for First and Second Visit(s) [Recall period 6 months]

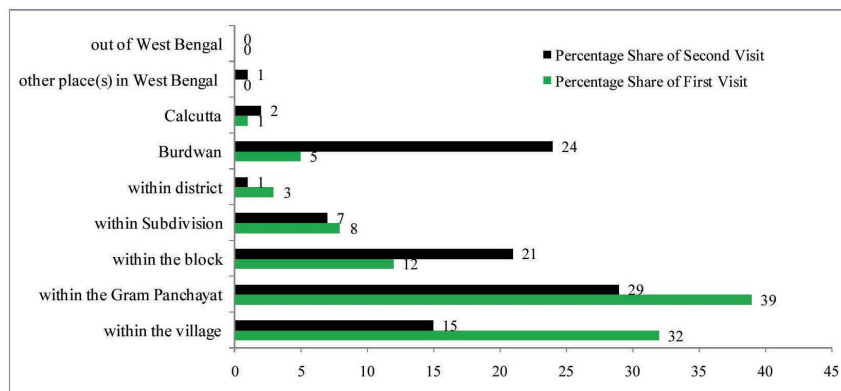
Source: Primary data collected from household survey

Table 1: Percentage Share of First and Second Visit(s) to Different Healthcare Providers for Reported Illness [Recall period 6 months]

Healthcare Providers	Percentage Share of First Visit	Percentage Share of Second Visit
RHCP/Quack	39	11
Sub-centre/PHC	7	5
Block PHC/Rural Hospital	15	12
Sub-divisional Hospital/District Hospital	6	7
Other government hospital	4	4
Private non-allopathic doctor	5	20
Private allopathic qualified doctor	2	8
Private hospital	4	5
Medicine shop	13	19
Others	5	9

Source: Primary data collected from household survey

Regarding the location(s) of the healthcare providers, the questionnaire suggested nine alternatives viz. within the village, within the Gram Panchayat, within the block, within Subdivision, within district, Burdwan, Calcutta, other place(s) in West Bengal and, out of West Bengal. Here also, we found a variation between first and second visit. There is a tendency to search for healing in Burdwan and/or Calcutta at the time of second visit (see Figure 2).

**Fig. 2:** Variation (by Percentage Share) in Location Choices of households for First and Second Visit(s) for Reported Illness [Recall period 6 months]

Source: Primary data collected from household survey

From the figure it is seen that percentage share of choosing healthcare providers in Burdwan district rises almost five times in case of second visit from the previous one, while the same comes down almost half from its previous visit in case of choosing the provider in village. According to the households surveyed, the importance of seeing the doctors of Burdwan town is felt at their second thought; otherwise they take it as usual health hazards of daily lives. If we give a thicker look at the location choices according to (a) within the block, and (b) outside the block; then it is found that in case of second visit, those ill patients of households who preferred to see healthcare provider within the block; tend to move outside the block in the second visit (see Table 2).

Table 2: Variation in Location Choices in terms of Block facilities of households for First and Second Visit(s) for Reported Illness [Recall period 6 months]

Sequence of Visit(s)	Total Number of the Patients	Percentage Share of Treated <i>within</i> the Block	Percentage Share of Treated <i>outside</i> the Block
First Visit	306	83	17
Second Visit	113	65	35

Source: Primary data collected from household survey

The study suggests that there must be some serious problem in local healthcare provision(s) as the first hand analysis finds out the tendency of choosing healthcare providers outside the villages and gram panchayats, even outside the block. This indicates the vulnerable condition of healthcare situation on its supply-side front. The backbone of any development starts from how healthy the environment for development is, and there it lacks the big-push.

B. Households' Out-of-Pocket Healthcare Expenditures

This section consists of two broad issues: one, expenditures for outpatient visits and two, expenditures for hospitalizations. The analysis has been done with variation in total expenditures as well as some component-wise expenditure(s) across different gender, demographic, occupational and social groups; for both issues.

B.1.1. Variation across Gender: outpatient visits

For the total cost of outpatient visits, almost equal share of expenditure is borne by female (57 per cent) and male (43 per cent) patients. Again in cases of both medical and non-medical expenditures, share of cost borne by female patient is higher than that borne by the male counterpart.

Specifically, 58 per cent female patients spend on non-medical while 42 per cent male counterpart spends on the same. The corresponding figures for the medical expenditure are 53 and 47 per cent. Further breakdown of medical expenditure in account of doctors' fees and cost of medicine also shows that female patients are likely to spend higher (52 per cent) than male (48 per cent) do so (see Table 3).

Table 3: Variation (by Percentage Share) of Outpatient Healthcare Expenditures across Gender Groups for Reported Illness [Recall period 6 months]

Types of Cost	Female Patients	Male Patients
Total Cost of Outpatient Visit	57	43
Medical Cost	53	47
Non-medical Cost	58	42
Doctors' Fees + Medicine Cost	52	48

Source: Primary data collected from household survey

B.1.2. Variation across Gender: hospitalizations

For the total cost of hospitalization, female (55 per cent) are found to borne greater share of expenditure than that borne by male (45 per cent). Again in cases of both medical and non-medical expenditure, share of cost borne by female is higher than that borne by the male counterpart. Specifically, 53 per cent female spends on non-medical while 47 per cent male spends on the same. The corresponding figures for the medical expenditure are 57 and 43 per cent. Further breakdown of medical expenditure on account of doctors' fees and cost of medicine also shows that female are likely to spend comparatively higher (61 per cent) than female (39 per cent) do so (see Figure 3).

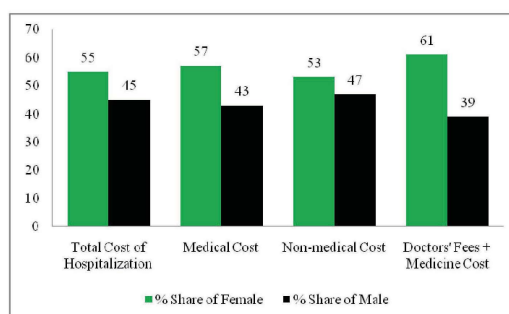


Fig. 3: Variation (by Percentage Share) of Hospitalization Expenditures across Gender Groups for Reported Illness [Recall period 12 months]

Source: Primary data collected from household survey

B.2.1. Variation across Demographic groups: outpatient visits

It has been found that share of outpatient visit expenditure for children (21 per cent) and older (11 per cent) people are relatively less compared to that of young (36 per cent) and middle-aged (32 per cent) people. The similar fashion continues for expenditures on account of medical and non-medical as well as for doctors' fees & cost medicine (see Table 4).

Table 4: Variation (by Percentage Share) of Outpatient Healthcare Expenditures across Demographic Groups for Reported Illness [Recall period 6 months]

Types of Cost	d"12 Yrs.	13-39 Yrs.	40-59 Yrs.	e"60 Yrs.
Total Cost of Outpatient Visit	21	36	32	11
Medical Cost	11	33	41	15
Non-medical Cost	20	39	33	8
Doctors' Fees + Medicine Cost	18	35	37	10

Source: Primary data collected from household survey

B.2.2. Variation across Demographic groups: hospitalizations

It has been found that share of hospitalization expenditure for children (8 per cent) is the least and young (48 per cent) is the highest; while older (21 per cent) and middle-aged (23 per cent) people spend more or less same (see Figure 4).

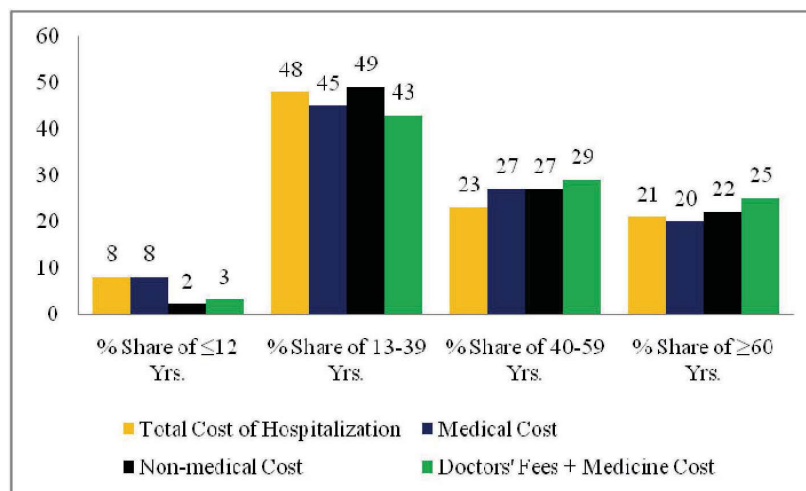


Fig. 4: Variation (by Percentage Share) of Hospitalization Expenditures across Demographic Groups for Reported Illness [Recall period 12 months]

Source: Primary data collected from household survey

B.3.1. Variation across Socio-religious groups: outpatient visits

The study finds out that while the Scheduled Caste (SC) people have a greater share (48 per cent) of outpatient visit expenditure; Scheduled Tribe (ST) have 22 per cent, Muslim people have that of 12 per cent and Others do have a share of 18 per cent. Similarly, the study for expenditures on account of medical and non-medical as well as for doctors' fees & cost medicine etc. also sees an identical experience (see Table 5).

Table 5: Variation (by Percentage Share) of Outpatient Healthcare Expenditures across Socio-Religious Groups for Reported Illness [Recall period 6 months]

Types of Cost	Muslim	ST	SC	Others
Total Cost of Outpatient Visit	12	22	48	18
Medical Cost	7	21	54	18
Non-medical Cost	14	25	44	17
Doctors' Fees + Medicine Cost	9	23	53	15

Source: Primary data collected from household survey

B.3.2. Variation across Socio-religious groups: hospitalizations

The study finds out that while the SC people have a greater share (33 per cent) of hospitalization expenditure; Muslim people have 28 per cent, ST community has a mere 9 per cent and others of 30 per cent (see Figure 5).

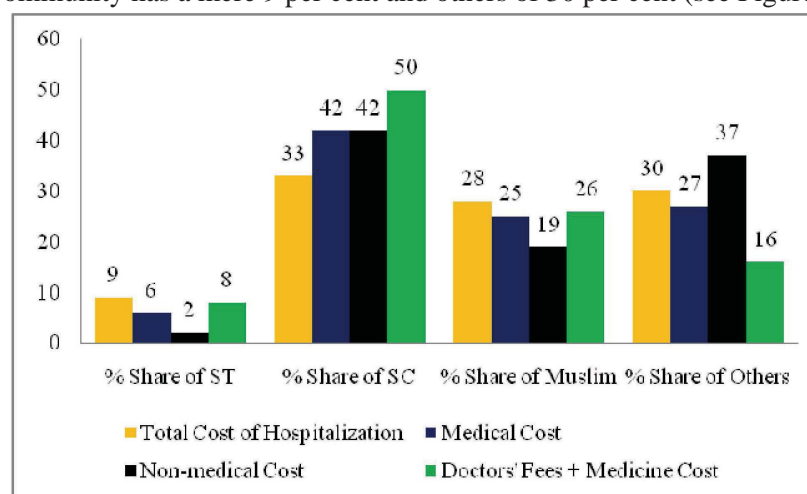


Fig. 5: Variation (by Percentage Share) of Hospitalization Expenditures across Socio-Religious Groups for Reported Illness [Recall period 12 months]

Source: Primary data collected from household survey

B.4.1. Variation across Occupational groups: outpatient visits

Broadly we have divided the different types of occupations in to eight groups, out of which only eight occupational groups have been found to spend money on outpatient visit healthcare, these are – Hospital/ICDS worker, self-employed Farmer, Labourer – Agriculture/ Construction/ Brick Kiln, Service-holder, Odd jobs/ Day Labourer, Self Help Group (SHG) worker, Small trader, Student/ Housewife/ Unemployed. Among these groups, the share of total outpatient expenditure is found to be highest (49 per cent) for Student/ Housewife/ Unemployed people. Again, it is found that the service-holders possess one-fourth of the total expenditures due to Doctor's fees plus medicines (see Table 6).

B.4.2. Variation across Occupational groups: hospitalizations

Among different occupational groups, the self-employed farmers possess the highest share (52 per cent) of hospitalization expenditure while the group of Labourer - Agriculture/ Construction/ Brick Kiln/ Fishery has a share of 3 per cent and group of Odd jobs/ Day Labourer has a expenditure share of 16 per cent. On the contrary, the group of hospital/ICDS worker has the lowest share (1 per cent) of hospitalization expenditure (see Figure 6).

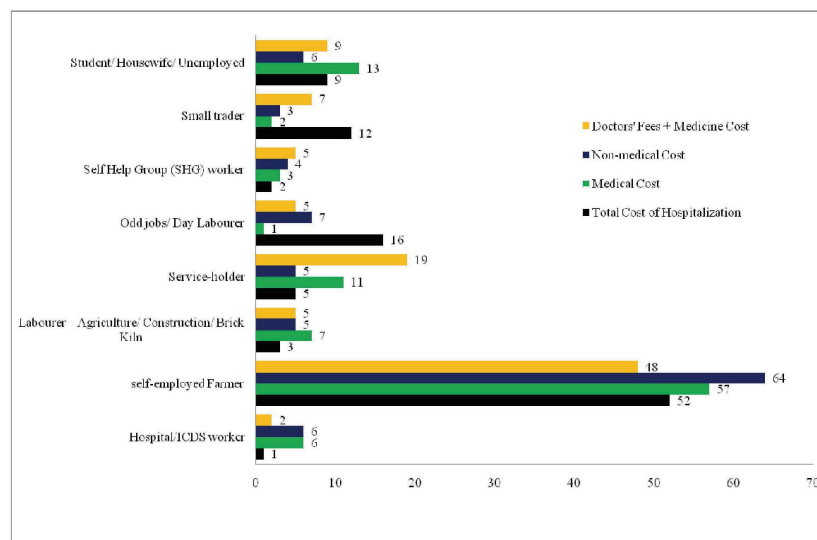


Fig. 6: Variation (by Percentage Share) of Hospitalization Expenditures across Occupational Groups for Reported Illness

[Recall period 12 months]

Source: Primary data collected from household survey

Table 6: Variation (by Percentage Share) of Outpatient Healthcare Expenditures across Occupational Groups for Reported Illness [Recall period 6 months]

Types of Cost	Hospital/I CDS worker	Self-employed Farmer	Labourer – Agriculture/ Construction/ Brick Kiln	Service- holder	Odd jobs/ Day Labourer	Self Help Group (SHG) worker	Small trader	Student/ Housewife/ Unemployed
Total Cost of Outpatient Visit	1	6	19	10	13	2	1	49
Medical Cost	0	9	14	13	11	0	1	51
Non-medical Cost	0	7	17	18	11	1	0	46
Doctors' Fees + Medicine Cost	0	4	14	25	17	0	0	40

Source: Primary data collected from household survey

B.5. Variation for Different Types of Illness: outpatient visits

The share of expenditure on account of ‘acute’ illnesses is found to be much higher (69 per cent) than that of ‘chronic’ one (31 per cent). Even the similar kinds of share in expenditure on account of medical and non-medical costs are seen (see Table 7).

Table 7: Variation (by Percentage Share) of Outpatient Healthcare Expenditures for Different Types of Illness [Recall period 6 months]

Types of Cost	Acute disease	Chronic Disease
Total Cost of Outpatient Visit	69	31
Medical Cost	61	39
Non-medical Cost	58	42
Doctors’ Fees + Medicine Cost	64	36

Source: Primary data collected from household survey

B.6.1. Variation for Different Types of Healthcare Providers: outpatient visits

According to the available healthcare providers, we have classified those in to ten heads – RHCP/Quack, Subcentre/PHC, Block PHC/Rural Hospital, Sub-Divisional Hospital/District Hospital, other government hospital, Private non-allopathic doctor, Private qualified allopathic doctor, Private hospital, Medicine Shop, and others. Our analysis shows that there is a strong tendency for people to spend on RHCP/Quack as the highest share of outpatient expenditure (45 per cent) is assigned to it. The least share of total outpatient expenditure is seen for private hospitals and other government hospital. People also have considerable degree of spending in Sub-Divisional Hospital/ District Hospital (26 per cent) and in medicine shop (22 per cent) for non-medical cost (see Table 8).

B.6.2. Variation for Different Types of Healthcare Providers: hospitalizations

In case of hospitalization, it is found that people spend more (34 per cent) in other government hospitals rather than private hospitals (23 per cent) (see Figure 7).

4. Analysis from the Focus Group Discussion:

The Focus Group Discussion has been incorporated within the field-survey schedule for Kasba Gram Panchayat, especially for the people of Mohula, Mohula Majhipara, and Bisheghata. The Focus Group Discussion (FGD) is

Table 8: Variation (by Percentage Share) of Outpatient Healthcare Expenditures for Different Types of Healthcare Providers [Recall period 6 months]

Types of Cost	RHCP/ Quack	Subcentre/ PHC	Block PHC/ Rural Hospital	Sub-Divisional/ Hospital/ District Hospital	Other government hospital	Private non-allo- pathic doctor	Private qualified allopathic doctor	Private hospital	Medicine Shop	Others
Total Cost of Outpatient Visit	45	8	10	4	1	3	3	0	11	15
Medical Cost	39	7	10	6	2	2	4	1	15	14
Non-medical Cost	17	7	7	26	2	2	4	1	22	12
Doctors' Fees + Medicine Cost	37	7	4	2	2	5	5	1	11	26

Source: Primary data collected from household survey

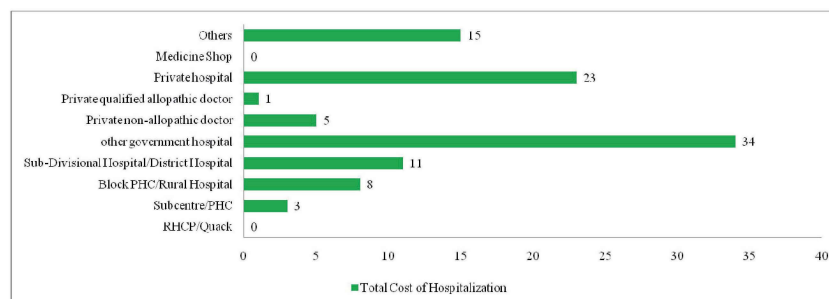


Fig. 7: Variation (by Percentage Share) of Hospitalization Expenditures for Different Types of Healthcare Providers

[Recall period 12 months]

Source: Primary data collected from household survey

an important part of this assessment because the individual household surveys have given us various responses. But we want to assess some common or general understanding from possible ways of informants/respondents. For this very purpose we have organised the FGD. This FGD is very much of a ‘guided’ nature as we have limited time. The guided broad objectives are to understand the following aspects from the group –

1. Meaning of ‘illnesses’ according to the group,
2. Consideration for visiting health service and/or exercising medical facilities,
3. Preference in visiting health facilities for households in case(s) of multiple illnesses across members,
4. Concept of family planning and preference for child of any particular sex,
5. Decision-making power of the household in reproductive matters,
6. Sharing responsibilities between male and female counterparts of households in seeking health-services,
7. Perceived quality assessment of health facilities, and
8. Perception on sterilization in family planning.

Nature of the group and respondents:

The group is exclusively formed by *male* members of different households. The distribution of eleven members of the group are as follows: one married member under age 25, three unmarried members under age 25, three married members within the age group from 25 to 50; and 4 married members over age 50.

Details of Discussion according to defined Objectives:***1. Meaning of 'illness'***

According to the group, an illness is the counter-wave of a 'normal' life. The 'normal' life is such defined which always provides power/energy to work for. And if there lacks the power/energy for working, it is 'illness'. A member, named Uttam Tudu (*name changed*) in the group emphasised on the notion of 'mentality shock' as a symptom for illness. The term 'mentality shock' is perhaps used in a sense when they do not feel fit mentally to work and thus it indicates that such a shock let them aware in well advance that they might have an illness.

2. Consideration for visiting health service and/or exercising medical facilities

The village community has some in-built traditional healing capacity for some specific kinds of illnesses such as use of *Thankuni* leaf, *Dalim* (pomegranate) leaf and buds of *Peyara*(guava) for diarrhea, mustard oil for cold and cough as agreed by Bablu Soren, Hazarilal Besra, Bijoy Hemrom etc. (*names changed*) But if fever takes place, everyone prefers to visit a doctor, mainly a quack. And in cases of black stool, eyes' problems they take no risk, hence straight go to hospital(s) in Sian. Sometimes once/twice in a week some Bachelor of Medicine and Bachelor of Surgery (MBBS) doctors give a seat to some local dispensaries in Bolpur town and it is also an option for them to see the doctors. But we have recognised a general preference for accessing health service to quack as this service is available near at home. The very reason behind such is that often quacks do not charge any fees for outpatient service and even if charge, the health service comes first in priority for local people and money comes later. Again, they visit the patient in house also in some emergency cases. On the contrary, MBBS doctors charge fees.

3. Preference in visiting health facilities for households in case(s) of multiple illnesses across members

In the case of multiple illnesses in the family, the child/children is/are given the first preference for visiting the health facilities and secondly the head of the household – the father of the child/children and afterwards the mother is taken for the treatment. So, the village inherits a peculiar tendency for the treatment preference, biased against the women. Few from the group such as Pradip Murmu, Thakurpada Bagdi (*names changed*) give a reason that if the head of the household falls sick, then they have to remain empty stomach; that is why the household head is given the preference for treatment just after the child/children.

4. Concept of family planning and preference for child of any particular sex

There is some moderate degree of consideration for the number of children in the family. Some governmental advertisements are playing a good role to make them aware about the small family. Now-a-days the villagers do not go for more children, they do moderate family planning, but if more than one female child; there is a strong preference for the male child in almost each and every household of the village. The group gives the underlying logic that a female birth always make them worried for the marriage of her which needs enough monetary investment (for the dowry). But on the contrary, a male birth brings a ray of hope to them because it implies some monetary injection in the household (i.e. the reverse dowry). Some of the members of the group admit that their sons do not look after them when they become older, while daughters do. In spite of this admission though, they strongly prefer for the male child/children because of a fear for abolition of descendent in the families.

5. Decision-making power of the household in reproductive matters

The group responded in a consensus that even if the reproductive decisions are taken by both female and male in a household, but the basic problem of a patriarchal society still remains there which always overlooks the decisions/wishes of female. That is why even if the female does not want to give birth of more than 'sufficient' children; the societal complexities hold back the decisions regarding the reproductive matters.

6. Sharing responsibilities between male and female counterparts of households in seeking health-service

According to the group, when the issue of seeking the health-service comes in, generally females are being taken to the health provider(s) by the grandmother, social workers (Accredited social health activist: ASHA women), relatives, local people; and sometimes also by the household head if time is available. But in the opposite consideration, the illness of the household head is always accompanied by the female counterpart of the household.

7. Perceived quality assessment of health facilities

The common understanding of the group is that the health-facility in the village is a real headache for the people. The Primary Health Centre (PHC) does not work properly as they do not have the proper infrastructure at all. Even if the PHC can do some useful basic treatment, then also it does not possess any positive work culture! The doctors in PHC sometimes charge

a fee if the patient comes after the outdoor timing. Only few of illnesses like cold and cough, fever, acidity, diarrhoea etc. can be treated in the PHC. The provision for medical test(s) is completely nil in the PHC and the villagers have to depend fully on private diagnostic centres and/or the government hospitals. Another serious thing has been highlighted by the group that the PHC does not provide the proper medicines for respective diseases. All complex illnesses like appendices, stone in gall bladder and kidney, gastric ulcer, tumour etc. are cautiously bypassed by the PHC and these cases are referred to either private nursing-home or to government hospital in Calcutta. In case(s) of pregnancy, sometimes the PHC does not want to handle a little complexity also! Some of the households have gotten the reimbursement under the scheme of *Janani Surakhsha Yojana* and some of them also have the RSBY Card.

8. Perception on sterilisation in family planning

The concept regarding the sterilisation is a sheer folly as the group thinks that this process makes a male unproductive in labour-field and it sucks up the energy to work. So, the sterilisation is often done to females only. There is a clear lack in clarity about the sterilisation among the group members. Some members within the group reported that some cases have proved that the process of sterilisation is a foolish one because some births have taken place from the womb of the sterilised women. However, all agreed that this process of sterilisation reduces the power to work and leads to health insecurity.

We can say that the group was very cooperative to share its view(s) regarding the objectives mentioned throughout. But it has been seen that in most of the conversation(s), some of the group members were remained quiet. The focus group discussion has taken about forty-five minutes to wrap up and to get a common understanding (though partly) about the health issues in the Kasba Gram Panchayat.

A note from the interviews with Quack doctors and medical shops

Quacks are the most dominating health service providers in rural areas of the Bolpur-Sriniketan block as most of the inhabitants do rely on them. Between the two quacks interviewed (one in Panchshowa and another in Sitapur), one of the providers is able to provide services like injection, bandage, pregnancy test, measurement of blood pressure, stitch, helping in delivery. Though as a quack it is illegal to deal with pregnancy related issues, they are forced to do that because of the local demand. Another quack surveyed provides all the services mentioned above except helping in the delivery. Usually they provide few “normal” medicines to patients. Both the quacks

are aware of the possible reasons for breathing trouble and stomach pain. And they treat the patients likewise. In case of any emergency, quacks usually consult among them and if the situation goes beyond control they don't hesitate to refer the patient to the hospital.

Medical shops are another important health service provider in the Bolpur-Sriniketan block. Two medical shops were surveyed: one in Bahiri and another in Surul. Both the shops have informed that most of the patients come to the shops without any prescription and they ask the shop owner to prescribe the medicine, mentioning only the symptoms of the disease. Both the medical shops remain open almost fourteen to fifteen hours regularly, except one day a week. Sometimes shops' owners are not able to provide all the required medicines to the customers in that case they refer the customer Bolpur town in order to get the medicine.

Concluding remarks

This study shows that there is a higher degree of variation(s) in each and every respect of healthcare expenditure across gender, demographic, occupational and socio-religious groups, be it the case for outpatient visits or that of hospitalization. Some key points we can mention at the last: in both cases of outpatient-visit and hospitalization-related expenditure, it is found that female have a greater share in expenditure than that of male. Expenditure for young people is found to be much higher in both cases of hospitalization and outpatient visit. While the group of Student/ Housewife/ Unemployed people has a greater share of outpatient-visit expenditure, the group of self-employed farmers possesses the highest share in case of hospitalization expenditure. SC community is found to have higher share of expenditure in both outpatient-visit and expenditure for hospitalization. The most alarming finding is that the excessive dependence on RHCP/quack which indicates the idleness or inactivity of government healthcare facilities. Few cases found to face problem(s) in claiming for RSBY Card and with time the situation becomes more vulnerable.

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4

Inter-District Discrepancy in Agricultural Growth and Economic Development in West Bengal, India

Somnath Mukherjee

Introduction

In West Bengal cultivation is the major economic activity. It constitutes 22% of the State Gross Domestic Product (GDP) of the state and it is the mainstay of 70% State's population. Among foods, rice is the main food crop in this part of India. Beside this other crops are pulses, oil seeds, potato, wheat etc. In India, West Bengal always emerges as the most developed agro based State but it faces un-uniform inter district agricultural production. This in turn creates imbalance in economy. 'The degree of agricultural development varies from region to region or district to district due to spatial variation of geo-physical setup, climatic condition, infrastructural provision, input uses, farming practice, farmer's attitude and agricultural mechanization' (Dandekar, 1964). This research has been examined the degree of inter-regional disparity in terms of agricultural development with the aid of different factors and statistical procedure and highlighted some measures towards sustainable development of this primary and important economic sector in West Bengal.

Database and Methodology

Out of nineteen districts of West Bengal eighteen districts have been taken into consideration. District Kolkata is not included in the study. The research further considers the regional scheme produced by National Sample Survey. Based on secondary datasets this study also gets help from Statistical Abstract of West Bengal and District Statistical Handbook of the districts considered etc.

Following factors (F_1 to F_{11}) have been taken to examine the district wise agricultural development and its disparity in West Bengal –

F ₁	Cropping Intensity (CI) (%)
F ₂	Irrigation (%)
F ₃	Cultivable area to total area (%)
F ₄	Production rate of food grain (Kg. / Hectare)
F ₅	Use of fertilizer in Kg. / Hectare Gross Cropped Area
F ₆	Availability of Cold Storage / Thousand Hectares of Net Sown Area
F ₇	Technological Input / Thousand Hectares of Net Sown Area
F ₈	Protective Measures / Thousand Hectares of Net Sown Area
F ₉	Net Area Sown / agricultural worker
F ₁₀	Availability of Primary Agricultural Co-operative Credit Society / Thousand Hectare of Net Sown Area
F ₁₁	Availability of Regulated Agricultural Markets / Thousand Hectare of Net Sown Area

Discussions

Significant correlations have been found among the selected factors. The correlation among selected factors (F₁ to F₁₁) has been exhibited in a correlation matrix in table-1. On the other hand, table-2 exhibits that first four components in the first phase of solution have an Eigen value over 1 and they account for 81.406% of the observed variation in the process of agricultural development in West Bengal.

Table 1: Correlation Matrix

Factors	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈	F ₉	F ₁₀	F ₁₁
F ₁	1.000										
F ₂	0.307	1.000									
F ₃	0.375	0.102	1.000								
F ₄	0.122	0.721	0.322	1.000							
F ₅	0.110	-0.159	-0.273	-0.084	1.000						
F ₆	0.368	0.495	-0.057	0.338	0.300	1.000					
F ₇	0.439	0.475	-0.028	0.536	0.333	0.711	1.000				
F ₈	0.548	0.691	-0.016	0.564	0.182	0.616	0.744	1.000			
F ₉	-0.199	-0.48	-0.377	-0.659	0.065	-0.240	-0.362	-0.147	1.000		
F ₁₀	0.341	0.287	-0.005	0.371	0.541	0.328	0.589	0.359	-0.406	1.000	
F ₁₁	0.319	-0.105	-0.069	-0.361	0.28	0.483	0.229	0.153	0.164	0.042	1.000

Source: Compiled by the Author

Table 2: Eigen Value and Percentage Variance

Principal Component	Eigen Value	Variance (%)	Cumulative (%)
Component-I	3.632	33.014	33.014
Component-II	1.873	17.027	50.041
Component-III	1.852	16.834	66.876
Component-IV	1.598	14.530	81.406

Source: Compiled by the Author

Table-3 reveals that factors like F_2 , F_8 , F_4 , F_7 and F_6 have component loading of 0.895, 0.845, 0.799, 0.721 and 0.666 respectively on Component-I. This highlights that first component is a combination of these five *technological or infrastructural amenities*. This component on its own way explain about 33% variation and is found to be highly correlated with the selected factors of agricultural development in West Bengal.

Table 3: Rotated Component Loading

Factors	Component-I	Component-II	Component-III	Component-IV
F_1		0.563		0.572
F_2	0.895			
F_3				0.928
F_4	0.799	-0.405		
F_5			0.858	
F_6	0.666	0.542		
F_7	0.721		0.454	
F_8	0.845			
F_9	-0.562	0.307		-0.484
F_{10}			0.846	
F_{11}		0.888		

Source: Compiled by the Author

Component-II contributes about 17% variation and this one is grouped into a factor of *marketing facilities*. This component is based on last factor (F_{11}) i.e. no. of regulated agricultural markets / thousand hectare of Net Sown Area and Net Area Sown / agricultural worker (F_9), have the component loading of 0.888 and 0.307 respectively.

Component-III on the other hand consists of factors like Consumption of fertilizer in Kg. / Hectare Gross Cropped Area (F_5) and No. of Primary Agricultural Co-operative Credit Society / Thousand Hectare of Net Sown Area (F_{10}). These factors have the highest component loading of 0.858 and 0.846. This component explains 16% of the total variance and is identified

as *contribution or input towards agricultural production*. Finally for Component-IV, factors like cultivable area to total area (F_3) and cropping intensity (F_1) have the highest loading of 0.928 and 0.571 respectively. This phase of principal component is accounted only 14% of the total variance and can be termed as *universal agricultural condition*.

All four principal components of selected 18 districts are now aggregated and are found in Table-4.

Here in this table, each principal component by its own way reveals the differentiation in agricultural development among selected districts. It is found that districts like Hooghly (5.380) and Howrah (2.190) of South Bengal have registered highest total scores and naturally clubbed into the most agriculturally developed districts compare to other districts of West Bengal. Availability of favourable geographical condition with better amenities of infrastructure help these districts to be more developed in cultivation sector. On the other hand, lowest score is observed at drought prone and most economically backward Puruliya district with total Component score of -2.963 (Figure-1 & 2).

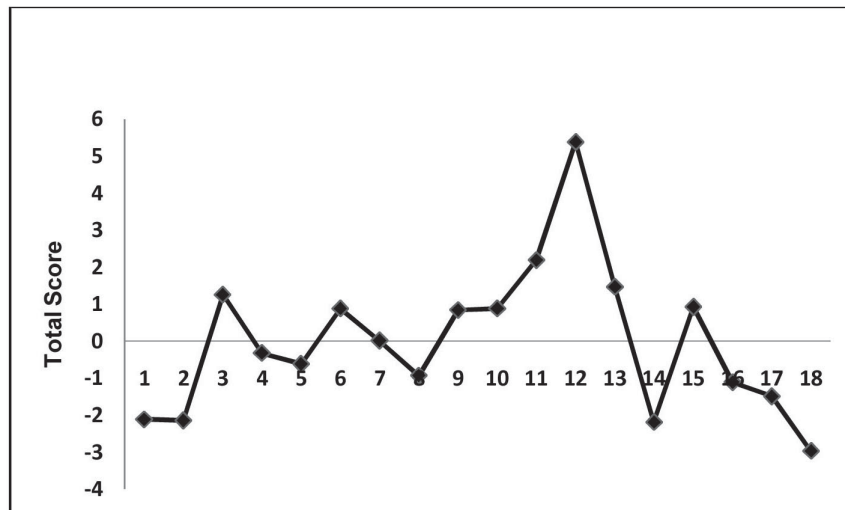


Fig. 1: Total Component Score by Selected Districts of West Bengal

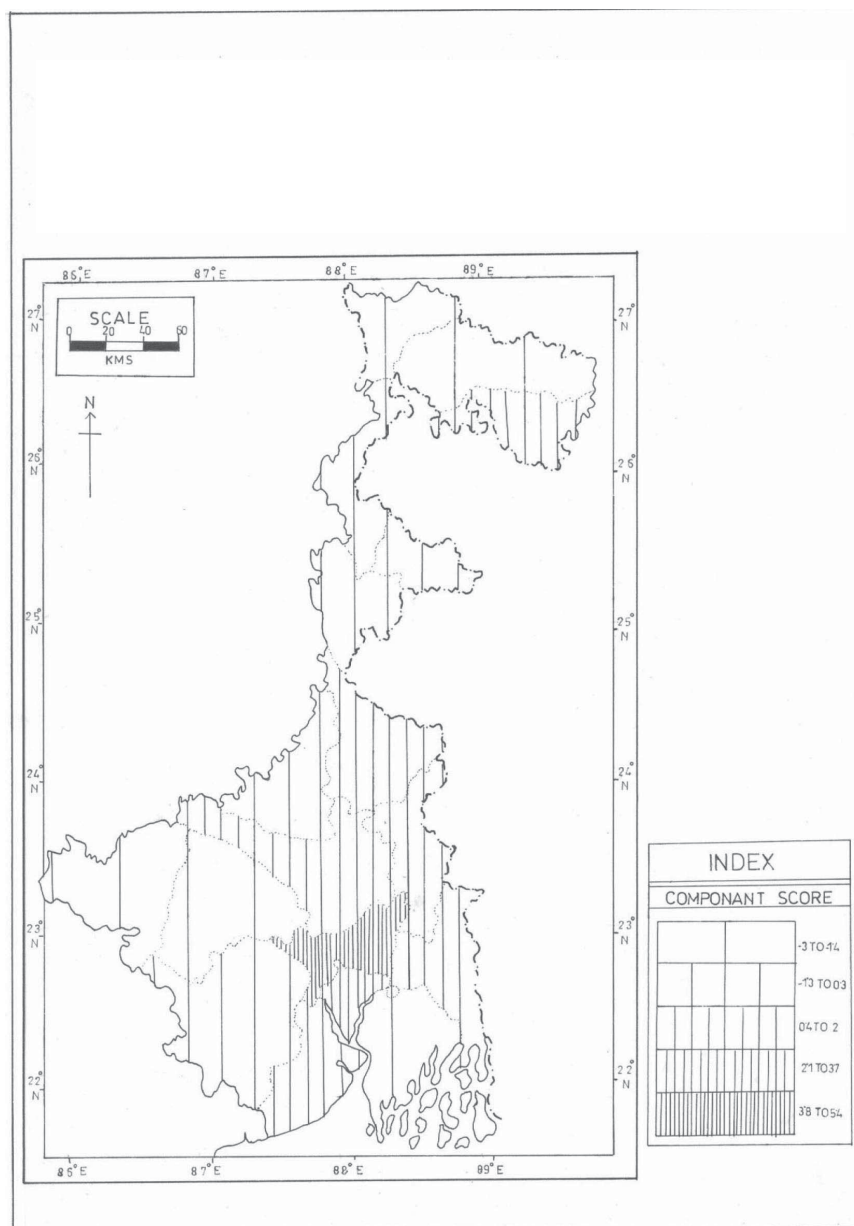


Fig. 2: Inter District Discrepancy in Agricultural Growth in West Bengal

Table 4: District wise Component Score

Sl. No.	Part of W.B.	District	C-I	C-II	C-III	C-IV	Total
1.	North Bengal	Darjeeling	-1.664	1.368	0.013	-1.831	-2.114
2.		Jalpaiguri	-1.043	0.909	-0.928	-1.079	-2.141
3.	South Bengal	Cooch Bihar	-1.216	1.782	-0.312	1.004	1.258
4.		North Dinajpur	-0.681	-0.203	-0.798	1.365	-0.318
5.		South Dinajpur	-0.591	-0.456	-0.383	0.816	-0.614
6.		Murshidabad	0.354	0.199	-0.649	0.982	0.886
7.		Maldah	0.044	-0.559	-0.317	0.848	0.016
8.		Birbhum	0.399	-0.644	-0.682	0.001	-0.927
9.	Bardhaman	1.361	-0.145	0.104	-0.481	0.839	
10.	Nadia	0.358	0.143	-0.774	1.158	0.885	
11.	Howrah	-0.500	-0.215	2.899	0.007	2.19	
12.	Hooghly	2.150	2.334	0.802	0.094	5.380	
13.	North 24 Parganas	0.641	0.145	0.614	0.069	1.469	
14.	South 24 Parganas	-0.100	-0.674	0.287	-1.695	-2.182	
15.	East Midnapore	-0.625	-1.123	1.784	0.894	0.930	
16.	West Midnapore	0.525	-0.765	-0.498	-0.368	-1.106	
17.	Bankura	1.402	-0.881	-0.746	-1.263	-1.489	
18.	Puruliya	-0.813	-1.214	-0.415	-0.520	-2.963	

Source: Compiled by the Author

Besides, overall positive Component score have been observed in North 24 Parganas (1.469), Cooch Bihar (1.258), East Midnapore (0.930) Murshidabad (0.886), Nadia (0.885), Bardhaman (0.839) etc. Districts of the Himalayan foot zone of North Bengal i.e. Darjeeling (-2.114) and Jalpaiguri (-2.141) are naturally not favourable for any agricultural development. Hence it seems that favourable geophysical condition and better infrastructural and technological facilities have been created the imbalances in agricultural and economic development among the districts of West Bengal.

Conclusion

Inter-regional disparity of agricultural development in the State West Bengal has been vividly revealed in this study. Unfavourable geographical condition (low fertile soil, minimum rainfall etc), Low income level of cultivators, absence of own agricultural land, presence of overridden credits, insufficient minor irrigation facilities from government concern, low technological applications etc may detrimental to agricultural growth in the districts like Puruliya, western and southern parts of Bankura, Darjeeling, Jalpaiguri etc. In these underdeveloped districts following measures may be taken for overall improvement of economy and cultivation sector –

As most number of cultivators is facing severe economic underdevelopment, it needs to extend all possible financial help to them. It may be in the form of simplifying the system of sanction of loan to deserving poor farmers as the existing system affords opportunity to some motivated village level cunning brokers to collect money from the beneficiaries showing gestures in drawing the loan from banks and thus they incur less payment of sanctioned loan taking advantage of their illiteracy and ignorance. This malpractice, sometimes connivance of bank employees too can easily be overcome if such farmers are favoured with bank account in the same loan sanctioned banks and loan amount is transferred in their respective account to make it more viable to them. Beside this, extension of better minor irrigation facilities in the rainfed districts like Puruliya is the prime requirement for basic agricultural growth. Government must ensure proper utility of lift irrigation devices and to introduce more such system to irrigate upper land for production of multi crops round the years. Government also must produce a fresh BPL (Below Poverty Line) list in every district and according to the list primary plans and policies should be developed. Government initially should develop the basic human resources by provision of education to both male and female children, electricity, food, water, and cultivable land. Supplement of special seeds (HYV) which could grow in the inhospitable situation and impart training programs to local cultivators to encourage

cultivation by innovative way for high production should be implemented on a regular basis.

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5

Primary Education in North East India: Exploring the Status and Challenges

Subhashree Sanyal

Background

Education in its broadest sense of development is the most critical input for empowering people with skills and knowledge. It plays a major role in improving economic opportunities for people and enhancing their quality of life by building capabilities, enhancing skill levels and providing more productive employment. As a basic right, education is an intrinsic good in itself, leading to broadened individual capacities and freedoms. The importance of education can hardly be over emphasized since a large gamut of social issues and reforms are linked with it. Evidences show that the reduction of fertility, morbidity and mortality rates, the empowerment of women, the improvement in the quality of the working population and the promotion of genuine democracy are largely assisted by progress in education.

Being a signatory to the historic declaration of Education for All (EFA) in both Jomtien [1990] and Dakar [2000], India is committed to achieving “total education” across the country. In order to meet these goals, India has initiated the Sarva Shiksha Abhiyaan in the year 2000-2001. Simultaneously, the Government in accordance with its constitutional mandate, taken several initiatives in the form of enabling policies, legislations and interventions to spread literacy, promote educational development and bridge gender disparities. In order to achieve this goal, apart from commitment given to the National Policies for Education [NPE], several projects and programmes have been launched in the country during the 1980s and 1990s-namely Andhra Pradesh Primary Education Project [APPEP], Bihar Education

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Project [BEP], Lok Jumbish, Shiksha Karmi Projects, District Primary Education Programme (DPEP).

One significant feature of these projects was they never completely covered all the states, infact the DPEP completely left out all the North Eastern Projects except 9 districts of Assam. Therefore till 2000-01 no efforts have been made in the form of projects and programmes were made to achieve Universal Education in North-Eastern States. It may be noted that due to its distance and also difficult terrains, total coverage for education was never provided until the launching of Sarva Shiksha Abhiyaan [SSA] in 2002-03. SSA for the first time made a serious attempt to universalize free and compulsory education across the country specially the North Eastern States of India.

Education Scenario in India since Independence at a glance

- The enrolment in primary classes (Class I-V) was 97.4 million in 1990-91 which rose to 113.8 million in 2000-01 and further to 135.5 million in 2007-08. The enrolment in middle/upper primary classes (class VI-VIII) was 34.0 million in 1990-91 which increased to 42.8 million in 2000-01 and then to 57.2 million in 2007-08.
- The Gross Enrolment Ratio (GER) at the primary level was 83.8 in 1990-91 and it increased to 95.7 in 2000-01 and to 113.97 in 2007-08. For the middle/upper primary level, the GER was 66.7 in 1990-91 which declined to 58.6 in 2000-01 and then gradually increased to 78.1 in 2007-08.
- The Net Enrolment Rate (NER) for primary grade, which is the proportion of students of official school age of 6-10 years enrolled in Grades I-V to the population of children of age group 6-10 years, is the indicator for primary enrolment. NER figures are available from District Information System on Education (DISE). As per DISE 2009-10, there has been a 13.75% increase in national NER between 2005-06 and 2009-10: from 84.53% in 2005-06 to 98.28% in 2009-10.
- Gender Parity Index (GPI) in enrolment at primary and secondary levels is the ratio of the number of female students enrolled at primary and secondary levels in public and private schools to the number of male students. A GPI of 1 indicates parity between the sexes or no gender disparity. A GPI that varies between 0 and 1 typically means a disparity in favour of males whereas a GPI greater than 1

indicates a disparity in favour of females. The female-male ratio in education has been steadily improving over the years. In primary education, the GPI has gone up from 0.76 in 1990-91 to 0.94 in 2006-07 and in secondary education the increase is from 0.60 in 1990-91 to 0.82 in 2006-07.

- About 14% of population in the age-group 5-29 years had not entered the education system at all, while another 34% were found to have been enrolled at some time but currently not attending any educational institution. In rural areas, the proportion of never enrolled was 15.8%, while in urban areas it was much lower – 8%. Again, about 18% of females and 10% of males of age 5-29 years were never enrolled.
- The three most frequently given reasons for non-enrolment were a) parents not interested in education of their children (33.2%), b) financial constraints (21%) and c) education not considered necessary (21.8%). For urban males ‘financial constraints’ was most commonly given as the reason for non-enrolment (37.7%) while for both urban females and rural males, ‘financial constraints’ was the second most commonly reported reason. Among rural females, only 16.2% reported that they did not enroll for financial reasons. For all population categories except urban males, ‘parents not interested’ was the most common reason.
- More than 90% of rural and urban households had a school with primary classes within 1 km in 2007-08. However, only 61.6% of rural households, compared to 82.5% of urban households, had a school within a km providing middle level classes.
- The net enrolment rate at primary level was 84.53% in 2005-06 which increased to 98.28% in 2009-10.
- The drop-out rate at the elementary level (Class I-VIII) was 59.1% in 1990-91 which came down to 43.7% in 2007-08.
- The survival rate at primary level up to Grade V was 67% in 2004-05 which has gradually increased to 70% in 2005-06, 73% in 2006-07, 76% in 2008-09 and 76% in 2009-10. It was 72% in 2007-08.
- The adult (Age 15 and above) literacy rate in India was 48.2% in 1991 which increased to 61.0% in 2001 and further to 66.0% in 2007-

08.

- The number of teachers in primary schools was 16.16 lakh (11.43 lakh men and 4.73 lakh women) in 1990-91 which rose to 21.84 lakh (13.26 lakh men and 8.58 lakh women) in 2005-06 and further to 23.15 lakh (12.88 lakh men and 10.27 lakh women) in 2007-08.
- The percentage of trained teachers in primary schools was 86% in 2005-06 and it increased to 90% in 2007-08. It was 87% for upper primary schools in 2005-06 and rose to 91% in 2007-08. The percentage of trained teachers in high schools was 89% in 2005-06 and it remained 89% in 2007-08. For senior secondary schools, the percentage of trained teachers was 90% in 2005-06 and it rose by 3 percentage points to 93% in 2007-08.
- The pupil (student) teacher ratio was 43 for primary schools, 37 for upper primary schools and 31 for secondary/senior secondary schools in 1990-91. This ratio stood at 46, 34 and 33 in 2005-06 and 47, 35 and 35 in 2007-08 for primary schools, upper primary schools and secondary/ senior secondary schools respectively.

The percentage of schools (all schools) having girls' toilet was 50.55% in 2007-08, 53.60% in 2008-09 and 58.82% in 2009-10. The schools with functional girls' toilet were 74.64% in 2009-10.

Landmark Educational Initiatives since Independence: At A Glance

1948	The First Education Commission was constituted chaired by Dr S Radhakrishnan, known as the 'Radhakrishnan Commission' which stressed on autonomous status of universities and pointed out 'democracy depends for its very life on high standard of general, vocational and professional education'.
1964	Second Education Commission known as the 'Kothari Commission' was appointed in July 1964 to establish well designed, balanced, integrated and adequate system of national education capable of making the powerful contribution to national life.
1968	Based on the recommendations of the Kothari Commission, the National Policy on Education (NPE) was adopted, which led to the considerable expansion of education facilities all over the country. In rural habitations, schooling facilities were developed within a radius of one kilo meter but these did not get translated into detailed structure of implementation.
1975	Integrated Child Development Services Scheme (ICDS) was launched to ensure a holistic development of children up to the age of 6 making provision for their free pre-school training and education

Contd.

Landmark Educational Initiatives since Independence: At A Glance

1976	42nd Constitutional Amendment to change education from being a State subject to concurrent
1986	The National Policy on Education was adopted again in response to the non-implementation of 1968 educational policy, which emphasized on elimination of disparities, equal access to every Indian of requisite merit, enhancement in support to research and inter-disciplinary research promotion.
1987	Operation Blackboard was launched aimed at improving the school environment and enhancing retention and learning achievement of children by providing minimum essential facilities like large rooms that are usable in all weather conditions, necessary toys and games material, blackboards, maps, charts and other learning material in all primary schools.
1988	The National Literacy Mission, set up in May 1988, aims to attain a sustainable threshold level of 75% literacy by 2007 by imparting functional literacy to non-literates in the age group of 15-35 years.
1992	Revised NPE and Programme of Action (POA) were adopted based on recommendation of Acharya Ramamurti Commission aimed at improving access to education, reducing drop outs and improving learning achievements for all children between 6-14 years of age.
1993	73rd and 74th Constitutional Amendments laid down responsibility on local self-government bodies or <i>Panchayats</i> for the overall development of local area, incorporating the issue of education.
1994	District Primary Education Programme (DPEP) was initiated as a centrally sponsored scheme funded by the World Bank and other foreign agencies, which emphasized on Universalisation of Elementary Education through developmental management, a participatory process, and capacity building at all levels.
1995	National Programme for Nutritional Support to Primary Education (1995), presently well-known as 'Mid Day Meal scheme' was launched with central assistance with an aim to provide boost to the universalisation of primary education by increasing enrolment, retention and attendance and simultaneously to give an impetus to the nutritional status of students in primary classes.
1997	Saikia Commission recommended that a primary school should be established within a distance of 1 to 1.5 km from every catchment of 250 and an upper primary school within 3 km of every catchment of 500 households.
2001	Sarva Sikhsha Abhiyan (SSA) introduced with an aim to provide effective and quality elementary education to all children in the age group 6-14 by 2010 with a special priority on girls, SC/ST children and children with special needs.
2002	Right to Education was incorporated in the constitution under Article 21A, which was inserted through the 86th Amendment (of 2002), making 'provision for free and compulsory education to all children of the age 6-14 years' a fundamental right.
2009	The Right of Children for Free and Compulsory Education Act or The Right to Education Act (RTE) has been enacted to ensure free education to more than 92 lakh out of school children aged 6-14 in India.

Source: Authors Adaptation

Education in North East India

The 15th official census in India was calculated in the year 2011. In a country like India, literacy is the main foundation for social and economic growth. When the British rule ended in India in the year 1947 the literacy rate was just 12%. Over the years, India has changed socially, economically, and globally. After the 2011 census, literacy rate India 2011 was found to be 74.04%. Compared to the adult literacy rate here the youth literacy rate is about 9% higher. Though this seems like a very great accomplishment, it is still a matter of concern that still so many people in India cannot even read and write. The numbers of children who do not get education especially in the rural areas are still high. Though the government has made a law that every child under the age of 14 should get free education, the problem of illiteracy is still at large.

Now, if we consider female literacy rate in India, then it is lower than the male literacy rate as many parents do not allow their female children to go to schools. They get married off at a young age instead. Though child marriage has been lowered to very low levels, it still happens. Many families, especially in rural areas believe that having a male child is better than having a baby girl. So the male child gets all the benefits. Today, the female literacy levels according to the Literacy Rate 2011 census are 65.46% where the male literacy rate is over 80%. The literacy rate in India has always been a matter of concern but many NGO initiatives and government ads, campaigns and programs are being held to spread awareness amongst people about the importance of literacy. Also the government has made strict rules for female equality rights. India literacy rate has shown significant rise in the past 10 years (Census, 2011)

Similarly if we look at the North Eastern States, there have been disparities in attainment of education across different states.

Literacy Ratio of the States

The following table represents the literacy status of the seven states as well as India in total, male and female ratio as per the 2011 census.

Assam: Literacy rate in Assam has seen upward trend and is 73.18 percent as per 2011 population census. Of that, male literacy stands at 78.81 percent while female literacy is at 67.27 percent. In 2001, literacy rate in Assam stood at 63.25 percent of which male and female were 75.23 percent and 51.85 percent literate respectively. If we compare the previous census of 2001, the total number of literates was 14,015,354 which has gone up to

19,507,017. Average Literacy rate in Assam for Urban regions was 88.88 percent in which males were 91.84% literate while female literacy stood at 85.71%. In rural areas of Assam, literacy rate for males and female stood at 76.51 % and 64.09 %. Average literacy rate in Assam for rural areas was 70.44 percent. The total number of male literates as per the 2011 census is 10,756,937 whereas female was 8750,080.

Arunachal Pradesh: Literacy rate in Arunachal Pradesh has seen upward trend and is 66.95 percent as per 2011 population census. Of that, male literacy stands at 73.69 percent while female literacy is at 59.57 percent. In 2001, literacy rate in Arunachal Pradesh stood at 54.34 percent of which male and female were 65.43 percent and 40.23 percent literate respectively. In actual numbers, total literates in Arunachal Pradesh stands at 789,943 of which males were 454,532 and females were 335,411. Average Literacy rate in Arunachal Pradesh for Urban regions was 84.57 percent in which males were 89.45% literate while female literacy stood at 79.04%. Total literates in urban region of Arunachal Pradesh were 232,838. In rural areas of Arunachal Pradesh, literacy rate for males and female stood at 68.79 % and 53.78 %. Average literacy rate in Arunachal Pradesh for rural areas was 61.59 percent. Total literates in rural areas were 557,105.

Meghalaya: Literacy rate in Meghalaya has seen upward trend and is 75.48 percent as per 2011 population census. Of that, male literacy stands at 77.17 percent while female literacy is at 73.78 percent. In 2001, literacy rate in Meghalaya stood at 62.56 percent of which male and female were 71.18 percent and 50.43 percent literate respectively. In actual numbers, total literates in Meghalaya stands at 1,817,761 of which males were 934,091 and females were 883,670. Average Literacy rate in Meghalaya for Urban regions was 91.33 percent in which males were 93.17% literate while female literacy stood at 89.49%. Total literates in urban region of Meghalaya were 471,956. In rural areas of Meghalaya, literacy rate for males and female stood at 72.83 % and 69.45 %. Average literacy rate in Meghalaya for rural areas was 71.15 percent. Total literates in rural areas were 1,345,805. Total number of literates has gone up from 1,157,875 in 2001 to 1,817,761 in 2011.

Mizoram: Literacy rate in Mizoram has seen upward trend and is 91.58 percent as per 2011 population census. Of that, male literacy stands at 93.72 percent while female literacy is at 89.40 percent. In 2001, literacy rate in Mizoram stood at 88.80 percent of which male and female were 92.53 percent and 86.75 percent literate respectively. In actual numbers, total literates in Mizoram stands at 847,592 of which males were 438,949 and females were 408,643. Average Literacy rate in Mizoram for Urban

Literacy Rates of North Eastern States [2011] in percentage

Issues/States	Assam	Meghalaya	Mizoram	Nagaland	Manipur	Tripura	Arunachal Pradesh	Sikkim	India
Overall Literacy	73.18	75.48	91.58	80.11	79.85	87.75	66.95	82.20	74.04
Male Literacy	78.17	82.40	93.72	83.29	86.49	92.18	73.69	87.29	82.14
Female Literacy	67.27	64.36	89.40	76.69	73.17	83.15	59.57	76.43	65.46

Source: Authors adoption from Census 2011

regions was 98.10 percent in which males were 98.67% literate while female literacy stood at 97.54%. Total literates in urban region of Mizoram were 478,920. In rural areas of Mizoram, literacy rate for males and female stood at 88.35 % and 80.04 %. Average literacy rate in Mizoram for rural areas was 84.31 percent. Total literates in rural areas were 368,672. The numbers of literate people have gone up from 661,445 in 2001 to 847,592 in 2011.

Manipur: Literacy rate in Manipur has seen upward trend and is 79.85 percent as per 2011 population census. Of that, male literacy stands at 86.49 percent while female literacy is at 73.17 percent. In 2001, literacy rate in Manipur stood at 70.53 percent of which male and female were 80.33 percent and 61.46 percent literate respectively. In actual numbers, total literates in Manipur stands at 1,891,196 of which males were 1,026,733 and females were 864,463. Average Literacy rate in Manipur for Urban regions was 85.98 percent in which males were 92.05% literate while female literacy stood at 80.21%. Total literates in urban region of Manipur were 622,315. In rural areas of Manipur, literacy rate for males and female stood at 84.14 % and 69.95 %. Average literacy rate in Manipur for rural areas was 77.15 percent. Total literates in rural areas were 1,268,881. The total literacy has gone up from 1,310,534 in 2001 to 1,891,196.

Nagaland: Literacy rate in Nagaland has seen upward trend and is 80.11 percent as per 2011 population census. Of that, male literacy stands at 83.29 percent while female literacy is at 76.69 percent. In 2001, literacy rate in Nagaland stood at 66.59 percent of which male and female were 76.04 percent and 56.87 percent literate respectively. In actual numbers, total literates in Nagaland stands at 1,357,579 of which males were 731,796 and females were 625,783. Average Literacy rate in Nagaland for Urban regions was 90.21 percent in which males were 92.11% literate while female literacy stood at 88.10%. Total literates in urban region of Nagaland were 452,780. In rural areas of Nagaland, literacy rate for males and female stood at 79.49 % and 72.01 %. Average literacy rate in Nagaland for rural areas was 75.86 percent. Total literates in rural areas were 904,799. The total number of literates has gone up from 1,132,323 in 2001 to 1,357,579 in 2011.

Tripura: Literacy rate in Tripura has seen upward trend and is 87.75 percent as per 2011 population census. Of that, male literacy stands at 92.18 percent while female literacy is at 83.15 percent. In 2001, literacy rate in Tripura stood at 73.19 percent of which male and female were 82.42 percent and 64.33 percent literate respectively. In actual numbers, total literates in Tripura stands at 2,831,742 of which males were 1,515,973 and females were

1,315,769. Average Literacy rate in Tripura for Urban regions was 93.61 percent in which males were 95.80% literate while female literacy stood at 91.38%. Total literates in urban region of Tripura were 815,720. In rural areas of Tripura, literacy rate for males and female stood at 90.86 % and 80.06 %. Average literacy rate in Tripura for rural areas was 85.58 percent. Total literates in rural areas were 2,016,022.

Sikkim: Literacy rate in Sikkim has seen upward trend and is 82.20 percent as per 2011 population census. Of that, male literacy stands at 87.29 percent while female literacy is at 76.43 percent. In 2001, literacy rate in Sikkim stood at 68.81 percent of which male and female were 77.38 percent and 59.63 percent literate respectively. In actual numbers, total literates in Sikkim stands at 449,294 of which males were 253,364 and females were 195,930. Average Literacy rate in Sikkim for Urban regions was 89.26 percent in which males were 92.94% literate while female literacy stood at 85.19%. Total literates in urban region of Sikkim were 122,896. In rural areas of Sikkim, literacy rate for males and female stood at 85.42 % and 73.42 %. Average literacy rate in Sikkim for rural areas was 79.82 percent. Total literates in rural areas were 326,398.

The above statistical features provide the key to the situation of education in North East India. Over the last decade there have been enormous improvements in the education sector but as far as ensuring quality education in North-Eastern India is concerned, it has always been one of the biggest challenges for the Government. Issues like high dropout rates, low-levels of learning achievement and low participation of girls as well as factors like inadequate school infrastructure, high teacher absenteeism, large-scale teacher vacancies, poor quality of education, poorly functioning schools, and inadequate equipment – still remain the matter of concern in rural literacy scenario. Apart from household income/wealth, caste and gender continue to determine access to education. The poor, girls, and members of scheduled castes and tribes still face formidable barriers in acquiring basic education. It has been widely acknowledge that the socio-economic conditions in rural India have constrained the process of primary education and the social inequalities of caste, class and gender have been identified as the major causes of educational deprivation among children in India. To quote Jean Dreze, “educational disparities, which contribute a great deal to the persistence of massive inequalities in Indian society, also largely derive from more fundamental inequalities such as those of class, caste and gender”.²

²Dreze (2003)

A large proportion of children from the economically poor and socially disadvantaged groups and girls, especially in rural areas, are either denied access or are failing to complete even five years of basic education. However in recent years, the situation has improved for female schooling, especially in the younger age-groups; but the discrepancies between rural and urban areas continue to be large and the educational situation of scheduled castes and tribes lags considerably behind the rest of the population. Weak teacher motivations, their apathy towards teaching and high teacher truancy plague the educational system. Teacher availability in rural areas continues to be low. Teachers posted to rural and remote areas usually apply for transfers and in general their willingness to be posted in such areas is rather low. This leads to severe imbalances in the distribution of school resources between rural and urban areas and adds to the low teacher-pupil ratios generally observed within the school system

Factors affecting the growth of Education

Currently a plethora of educational initiatives may be underway in this part of the country to ensure the access to primary education for every child, but issues of equity and quality still remain the areas of concern.

Education quality provided by rural primary schools – The schools in rural areas of North Eastern India suffer from infrastructure and human resource deficiencies. Often the topography of rural areas becomes a major deterrent factor and accounts for low attendance of teachers. This discourages parents to send their children specially girls to school. Further lack of teachers and teacher absenteeism create excess burden on the existing few leading to poor quality of service delivery in rural areas. There is prevalence of several single teacher schools which results in excess burden. Generally teachers refuse to teach in rural areas and those that do are usually under-qualified therefore impacting the teaching quality.

High drop-out rates especially among girls- Despite of serious efforts by Government, Civil Societies to integrate the entire population into the Indian education system, large numbers of boys and girls are still without schooling. Frequent absenteeism and irregularity of school teachers since several of them do not stay in the same village as the school Parents' apathy and indifference towards education do not provide enough motivation for their children to attend school. Taboo about girl child education still exists specially in non-tribal states like Tripura and Assam thereby leading to huge dropout rate among girls. Lack of proper sanitation facilities in schools is another reason discouraging especially adolescent girls from

attending schools

Inadequate school infrastructure- Basic infrastructural components like school building and child friendly classroom, blackboard, teaching learning materials, toilet especially for girls and water facilities etc. are not available. Insufficient and inadequate number of classrooms per school to accommodate all the standards in different rooms and hence system of having multiple standards in the same room at the same time. This hampers the quality teaching and essential learning and reduces the retention of students in school.

Apart from this, getting children to formal educational institutions, ensuring their attendance and continuation until completion of the cycle and adequate quality of education offered, providing non-formal basic education to out-of-school children and young adults, adult literacy and continuing education to the illiterate, dropout and neo-literates etc. – still appears to be a daunting challenge, keeping in view the size of target population and limitation on resources – be it financial, human, institutional or organizational.

Children in rural and urban areas continue to be deprived of quality education owing to factors like lack of competent and committed teachers, lack of textbooks or teaching-learning materials, and so on. As a large number of teachers refuse to teach in rural areas, so lack of committed and qualified teachers in rural schools has been instrumental in hampering the quality of primary education; on the other hand, due to lack of proper motivation and encouragement from parents as well as from school teachers, rural children sometimes lose their interest towards pursuing schooling. Besides that, most of the rural schools suffer from non-existent of basic infrastructural facilities like proper classroom buildings, availability of drinking water, electricity-facility etc. Due to lack of adequate school infrastructure and committed teachers, the rural schools fail to create proper learning atmosphere for rural children which ultimately encourages school drop-outs and poor attendance rate among students. On the other hand, some surveys conducted on rural education reveal that teachers of rural schools receive low income in comparison to their urban counterpart, which often compel them to get involved into additional income-generating activities, ignoring their principal responsibility i.e. teaching.

Education Schemes presently implemented

Sarva Shiksha Abhiyan (SSA)

As a national flagship programme, Sarva Shiksha Abhiyan (SSA) was

launched in 2001 and currently under operation in all districts of the country with an aim to provide useful and relevant elementary education for all children in the age group of 6-14 by 2010. The goals of SSA include: (i) All 6-14 age children in school/EGS (Education Guarantee Scheme) centre/Bridge Course by 2005. (ii) Bridge all gender and social category gaps at primary stage by 2007 and at elementary education level by 2010. (iii) Universal retention by 2010. (iv) Focus on elementary education of satisfactory quality with emphasis on education for life. Sarva Shiksha Abhiyan (SSA) which has been a major flagship programme of the present UPA Government addresses the needs of 195 million children in the age group of 6-14 years. Another recent development is the proposal to tag on early childhood education to the SSA programme. (The Economic Times, 3 September 2007)

Education Guarantee Scheme (EGS) and Alternative and Innovative Education (AIE)

As one of the core component of Sarva Shiksha Abhiyan (SSA) Education Guarantee Scheme and Alternative and Innovative Education (EGS and AIE) was initiated is to bring out-of school children in the fold of Elementary Education. The scheme ensures that child-wise planning is undertaken for each out-of-school children and targets the inaccessible habitation where there is no formal school within the radius of one km and at least 15-25 children of 6-14 years age group who are not going to school are available. Alternative Education interventions has been designed for the most deprived children e.g., child labour, street children, migrating children, working children, children living in difficult circumstances. Special focus has also been given to cover adolescent girls under EGS and AIE centres.

Mid-Day Meal Scheme

With the aim of enhancing enrolment, retention and attendance and simultaneously improving nutritional levels among children, the National Programme of Nutritional Support to Primary Education (NP-NSPE), now familiar as "Mid-Day Meal" was launched as a Centrally Sponsored Scheme on 15th August 1995, initially in 2408 blocks, which is now covering all the blocks of the country, catering to the nutritional needs of children at primary level of government, government aided and local body schools, as well as of the children studying in EGS and AIE centres. Central Assistance under the scheme consisted of free supply of food grains @ 100 grams per child per school day, and subsidy for transportation of food grains up to a maximum of Rs 50 per quintal. The objectives of the mid day meal scheme are : (i)

Improving the nutritional status of children in classes I-V in Government, Local Body and Government aided schools, and EGS and AIE centres. (ii) Encouraging poor children, belonging to disadvantaged sections, to attend school more regularly and help them concentrate on classroom activities. (iii) Providing nutritional support to children of primary stage in drought affected areas during summer vacation.

About 12 crore children studying at the primary stage in over 9.50 lakh Government and government-aided schools including EGS and AIE Centres are being covered under the Mid- Day Meal Programme. The norms under the scheme have been revised in September, 2006 to upgrade the nutrition norms. In the year 2007-08, provision has been made in the Union Budget to extend the scheme to the upper primary level in educationally backward blocks in the country (Department of Elementary Education and Literacy). In addition to the recurring assistance, funds for construction of 94,500 kitchen sheds and kitchen devices for 2.60 lakh schools have been sanctioned in 2006-07. It is proposed to extend the programme to upper primary stage in 3247 Educationally Backward Blocks (EBB) from 2007-08.

Jan Shikshan Sansthan

The objective of the Jan Shikshan Sansthan (JSS) is educational, vocational and occupational development of the socio-economically backward and educationally disadvantaged groups of urban/rural population particularly neo-literates, semi-literates, SCs, STs, women and girls, slum dwellers, migrant workers, etc. At present, there are 172 JSSs in the country. Jan Shikshan Sansthans run a number of vocational programmes with varying duration of different skills. More than 250 types of courses and activities are offered by these institutions.

District Primary Education Programme

District Primary Education Programme (DPEP) was launched in 1994 as a Centrally-Sponsored Scheme. The ultimate aim was to revitalise the primary education system and to achieve the objective of universalisation of primary education. Presently DPEP is in operation in nine States covering 123 districts. DPEP at its peak was operational in 273 districts in 18 States. However, with the progressive closure of the programme, it now exists only in 123 districts.

Mahila Samakhya Scheme

With an aim to translate the goals enshrined in the NPE into a concrete programme for the education and empowerment of women in rural areas particularly those from socially and economically marginalized groups, the Mahila Samakhya Scheme was introduced in 1989, acknowledging the core essence of education in empowering women as well as in establishing gender equality. The Mahila Sanghas through various programmes and awareness campaigns have brought about a change in the outlook of rural women and the effects can now be seen in various facets of life at home within the family, the community and at the block and panchayat levels. The programme has also focused on awareness of the need to educate the children, especially girls, to give the equal status and opportunities which has resulted in a direct impact on enrolment and retention of girls in schools. The Mahila Samakhya Scheme is currently being implemented in nine States viz., Andhra Pradesh, Assam, Bihar, Jharkhand, Karnataka, Kerala, Gujarat, Uttar Pradesh and Uttarakhand spread over 83 districts and covering more than 21,000 villages.

Prarambhik Shiksha Kosh (PSK)

A two per cent Education Cess was levied on all major Central taxes through the Finance (No. 2) Act, 2004, to help finance Government's commitment to quality basic education. In order to receive the proceeds of this Education Cess, the creation of a dedicated, non-lapsable fund called Prarambhik Shiksha Kosh (PSK) in the Public Account was approved by Government in October 2005. The fund available in the PSK is being utilized exclusively for Sarva Shiksha Abhiyan (SSA) and National Programme for Nutritional Support of Primary Education (MDM Scheme). The levy of education cess is a concrete step towards providing assured funding for elementary education.

National Programme for Education of Girls at Elementary Level (NPEGEL)

As one of the integral part of Sarva Shiksha Abhiyan (SSA), NPEGEL provides additional components for education of girls from less privileged section of the society at the elementary level. The Scheme is being implemented in Educationally Backward Blocks (EBBs) where the level of rural female literacy is less than the national average and the gender gap exists above the national average, as well as in blocks of districts that have at least 5 per cent SC/ST population and where SC/ST female literacy is below 10 percent based on 1991 census.

Kasturba Gandhi Balika Vidyalaya

Under the scheme of Kasturba Gandhi Balika Vidyalaya, 750 residential schools are being set up in difficult areas with boarding facilities at elementary level for girls belonging predominantly to the SC, ST, OBC and minorities.

This scheme has been exclusively designed for those identified Educationally Backward Blocks (EBBs) where the rural female literacy is below the national average and gender gap in literacy is more than the national average, as per census data 2001.

A host of major initiatives by the government, and the mobilization of external resources for primary education, had a deep impact on the status of primary education in India. The Government of India, as part of its Constitutional commitment, has initiated a number of programs to achieve the goal of universalisation of elementary education in a time bound manner. Some of the major initiatives have been the Operation Blackboard (1986), Non formal Education Scheme (1986), the Shiksha Karmi Project (1987), Mahila Samakya (1989), Lok Jumbish (1992), the District Primary Education Programme (1994), the Mid Day Meal scheme (1995) and the Sarva Siksha Abhiyan (2001) and the most recently introduced The Right of Children to Free and Compulsory Education Act or The Right to Education Act (RTE), which has come into force from April 1, 2010 ensuring free education to more than 92 lakh out of school children aged 6 - 14 in India.³ Village education committees, parent-teacher and mother-teacher associations have become active across the country. Legislative moves to bring elementary education under Panchayati Raj Institutions (local self-governments) have given further impetus to community mobilization at the grassroots level.

Way Forward

The goal of universal primary education remains a challenge to achieve even after six decades of independence. Universalisation of elementary education thus, poses a formidable challenge to India: the numbers of children dropping out, not attending school regularly and never enrolled are immense. Quality of education is poor, teachers are inadequately trained and have lack of motivation. The priority concerns for the country remain particularly with improving the quality of education and making education effective, enjoyable and relevant to the children. Also, a major concern is to improve the skills and motivation of teachers, promoting the participation of

³Hazra (2010)

communities in the running of schools and enrolling/retaining girls/working children of urban poor and children with special needs in schools. Also, in India, a large universe of working children exists such as the street children, neglected and destitute children, children of sex workers and children practicing as sex workers. Many of these have been targeted through non-formal initiatives but never mainstreamed. Also, along with access and retention, the quality of education provided to them is questionable. Quality is what makes education valuable. The latest ASER report made it clear that substantial improvements are needed to address critical inadequacies in learning - a vital aspect of educational quality.⁴ Yet quality is also key to retention, as poor levels of learning are well-known to push children out of school.⁵

Since independence, the Government has taken active initiatives in promoting decentralised planning but it seems to be inadequate in the sphere rural education. In most of the states this idea has not penetrated fully at the grassroots level. One of the reasons behind the failure to achieve the goal of universalisation of Elementary Education is that the plans which are formulated at higher levels i.e. national or state levels were quite indifferent about the grassroots dynamics and realities of rural education. On the other hand, cross-country evidences indicate that the formulation of educational policy has not been done properly due to lack of democratic values and influence of powerful elites in administration and very often the policy-implementation process suffers from inefficient policy-administration, corruption, lack of political will and commitment. The rigid ideas of bureaucracy sometimes also hampers in policy implementation process. In States like Assam and Tripura there is high dropout rate, essential steps are needed towards this direction.

The policy makers should recognize the vicious cycle of illiteracy and inadequacy of education with poverty, one reinforcing the other, both as causes and effects. Therefore addressing the basic social barriers would help increasing enrolment and retention in schools. The role of civil society is essential for community participation; so their involvement should be sought for promoting awareness amongst parents of dropout children especially in rural areas of North East India.

Regularizing and monitoring of teachers attendance is a must requirement along with incentives like quality mid-day meals for ensuring students regular

⁴Pratham (2011)

⁵Probe Team and Centre for Development Economics (1999)

attendance to school. Infrastructure –mainly road and transport facilities are major barriers in this part of the country, the state governments along with the Centre should take essential steps towards development of proper roads in rural and urban areas.

All the strategies, adopted by India for educating its entire population can be put into place if it is boosted by a strong political will of the country and the linkages of the education system with the community, the functioning of the institutions and other stakeholders is strengthened. With the policy largely taking into account the needs of the disadvantaged groups and the girls; India seems to be pretty strong on the political will. Considering the community readiness for education, its participation/mobilisation is not a problem. With the powers now being transferred to the PRIs, their participation will be attained in a much stronger way. Mere establishment of schools and hiring of teachers will not lead to an improvement in education if teachers remain absent as happens in many parts of the country, especially in rural areas. The participation of the local bodies (panchayats/local bodies), will therefore, help to monitor schools in a much better way.

In order to ensure quality education, steps should be taken towards regular recruitments for filling up vacancies, developing a “student friendly curriculum” and emphasis on writing skills rather than on rote learning. To offer an appropriate learning environment, suitable arrangements for separate toilet facilities for girls, availability of drinking water, electricity-facilities etc are needed within the school. Drinking water is a major problem in North East India; therefore steps can be taken towards ensuring the same to encourage more and more admission in schools. Effective appraisal is mandatory for every scheme implemented towards ensuring Universal Education, hence appropriate measures should be taken regarding creating a monitoring web - where monitoring ranges from teachers performance, utility of funds, transparency and many other important aspects.

Though the state of education in North East India has significantly improved but the situation needs improvement especially in the Non-Tribal dominated regions. Steps should be taken towards changing the mindset of people through active community awareness and participation. This will encourage the community to come forward and develop more ownership and acceptance for the programme. Last but not the least, steps can be taken to de-centralize the different functioning and monitoring agencies so that more and more participatory democracy and political will can be attained and goal of “Education for All” can be reached and the indicators of Human Development are achieved in their true ethos.

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6

A Study of Food Security in India

Supravat Bagli

Introduction

Food is the fuel of life. Without food we cannot survive. When food is not secured, life is definitely insecure. Non accessibility of food is, thus, our foremost enemy. Still now, across the globe a number of people die or tends to die only for the dearth of food. It is equally true for India. The problem of food security in India has a long history. Food security has been a major goal of development policy in India since independence. Till 1970s assurance of food availability and price stability were the main agenda for development in India. Achievement of self-sufficient was in priority in policy. As a result we got 'Green Revolution', land reform, many financial institutions for improving the conditions of agriculture in India. India has achieved self-sufficiency in food grains in 1970s and has sustained it since then. But recently food and Agriculture Organization reported that more than 20% of Indians remains chronically undernourished. So the problem of food security still persists in India. In the new millennium the issue of food security has been a global agendum. Alleviation of poverty and hunger is one of the important goals of the Millennium Development Goals. In 2009 the value of hunger index for India was 0.23 which was calculated on the basis of three indicators – percentage of under nourished people to the total population, prevalence of underweight children under age five years and infant mortality rate. It indicates that the problem of food security in India is really serious in recent time. This paper has tried to focus a glimpse of the issues of food security in India across the different phases of globalization.

The remaining part of this paper has five more sections. In section-2 we have discussed the definitions and dimensions of food security and stated the objectives of this study. Section-3 has presented the motivation of this study. The methodology and data source have been explained in section-4. Section-5 deals with the interpretation and discussion of the empirical

findings. We have proposed some alternative policies for achieving complete food security and concluded the paper in section-6.

Definition and Dimensions of Food Security

In literature we have found that different agencies have defined the concept of food security in different way. World Development Report (1986) defined food security “as access by all people at all times to enough food for an active, healthy life. According to Food and Agriculture Organisation, food security is “ensuring that all people at all times have both physical and economic access to basic food they need” (FAO 1983). Food Security is a situation when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for all active and healthy life (World Food Summit, 1996). Summing up these definitions we can say that food security refers to the sustainable assurance of minimum amount of nutritious food required for living with dignity. Availability of food is no doubt the basic condition for food security. It is not surprising that availability of the food grain does not necessarily ensure the access to the food for the all people. To have access to food people have to have some purchasing power and accordingly need to have some entitlement. It implies that availability and accessibility are vital dimensions of food security. Further, accessibility of food grains does not necessarily ensure the nutrition of the people. Nutrition or utilisation is another dimension of food security. Nutrition depends on the absorption power which in turn depends on health condition of the people. Thus in order to assess the nutritional aspect we need to examine the nature and accessibility of health care facility. It is common fact that lack of entitlement and or affordable price of food and due to inadequate access to health care facility poor people are suffering from malnutrition. We, therefore, require emphasis on the issues of health and hygiene to make the goal of food security. Finally, the concept of security is a dynamic phenomenon. To this end, food security system for the people must be effective in a sustainable manner which is compatible with the concept of sustainable development. Therefore, any food security system should have four dimensions –

- a) Availability of food,
- b) Accessibility to food
- c) Proper utilisation of food and
- d) Sustainability of the availability, accessibility and utilisation of food.

These four dimensions of food security are definitely interconnected and complementary for an effective food security system. The concept of food security may be viewed as household level as well as at the economy level with the above dimensions. It is fact that food security not only important to save life, it is very much important for accelerating productivity of workers. Food security is not only intrinsic (for its own sake); it has an instrumental power in increasing labour productivity. Thus, food security system of a country plays double role in development. In this view, complete food security is crucial for inclusive development. In this sense Food Security Act, 2013 is a right step towards inclusive development. However, any Bill/Act or policy is not enough if it is not possible to implement. In order to draw the glimpses of these dimensions of the food security system in India we have set the following objectives for analysis.

First, we have investigated the growth of availability of several food items in between the situation before and during the liberalisation era in India.

Second, this study explores the growth of the land used under food grain production during the period 1961-2010 and for sub-periods pre and post liberalisation.

Third, to assess the nature of accessibility to food we have estimated the growth of per capita consumption expenditure during the period 1961-2010 and studied the nature of the change of the per capita calorie intake in different phases of liberalisation.

Fourth, we have studied the scope of utilisation of food. Utilisation of food is closely connected with the basic status regarding health and hygiene of the people. In this step we have examined the rate of change of the health status, particularly access to safe drinking water, access to improved sanitation facility, of the Indian households.

Review of Selected Literature

In this section we have reviewed a few relevant studies regarding food security in India. Dev, *et al.*, (2011) has shown that the growth rate of food grains production declined from 2.93 per cent during the period 1986-1995 to 0.93 per cent during the period 1996-2008. The growth rate of production was much lower than that of population in the latter period. Similarly, growth rate of yields of food grains declined from 3.21 per cent to 1.04 per cent. There was also a decline in growth rates of production and yields for cereals, pulses, oilseeds, rice, and wheat. They have also recognised the declining trend of per capita availability of food grains. They think that the slowdown in agriculture growth is attributed to structural factors like public investment,

credit, technology, land and water management for agriculture, etc., rather than liberalization and trade reforms *per se*. Mani (2012) has shown that the growth rate of agricultural production slowed down considerably during the 1990s. According to him in the era of reforms the agricultural policies are consistent with the strategy of export-led growth. To cope with this strategy farmers are encouraged to produce more cash crops particularly rubber, tea coffee. It definitely reduces the area under food grains production. Besides, Mani (2012) believes that poor performance of the food grains production during reforms era is the result of poor supply and quality of input, inefficient market mechanism, recent trade policy and price policy of the governments. Dey, *et al.* (2013) have studied the trends in agricultural development in the era of new economic policies in India. Using the volume of production in two distinct years 1995-96 and 2005-06 they have also reported a declining trend in agricultural production for all over India— both food and cash crop production. However, they have pointed that in some states like Karnataka, Gujarat agricultural productivity has increased in between the time points under consideration. They have also found that agricultural productivity is closely related with the efficient use of the inputs. Sharma (2013) has computed the annual compound growth rates of area, production and productivity for three sub-periods -1950-51 to 1970-71, 1971-72 to 1991-92 and 1992-93 to 2012-13. He has observed that the growth rate in area, production and area productivity for food grains are positive but insignificant in most of the cases. Growth rate of productivity is however in first and last sub-periods and for entire period under review is positive and significant. But the point is that the value of growth rate of productivity is smaller in the last sub-period compared to the other sub-periods. According to Sharma (2013) poor availability of HYV seeds, wide spread infestation of pest and diseases, inadequate and irregular water supply are the major causes for the skimpy growth of food grains production during the era of globalisation.

There have seen a large number of studies regarding the growth of agricultural production in India. Many of them have studied production of food grains. Almost all these studies have calculated sub-period growth rates separately. This methodology suffers from the problem of discontinuity bias. The comparison of growth rates in between two or more sub-periods also suffer from discontinuity bias. Our study is therefore superior in the context of the methodology used for comparing the growth rate in between two sub-periods. Further, as an issue of food security the analysis of the per capita availability is more appropriate than the growth rate of production or area productivity.

Methodology

In order to examine the rate of growth of food grains availability and other selected aspects of food security we have divided the entire period under consideration into two sub-periods – before liberalisation (before 1991) and after liberalisation (after 1991). In order to obtain the annual exponential growth rate of the selected variables for the entire period (1961-2010) under study we have formulated a log-linear model as follow. Initially to calculate the annual compound growth rate of variable Y we can use the compound interest formula as follows.

$$Y_t = Y_0(1+r)^t \quad (3.1)$$

Where, r stands for compound annual growth rate of Y. By taking natural logarithm both sides of (3.1) we get

$$\ln Y_t = \ln Y_0 + t \ln(1+r) \quad (3.2)$$

The equation (3.2) can be rewritten as,

$$\ln Y_t = \alpha + \beta t + \varepsilon_t \quad (3.3)$$

Where Y_t stands for the value of the variable of interest at period t
 $\alpha (= \ln Y_0)$ and $\beta [= \ln(1+r)]$

t denotes time (year)

ε_t captures the error in the model

are the parameters of this model. Therefore, in our context $(\exp \beta - 1) \times 100$ turns out to be the annual exponential growth rate (per cent) of the variable Y.

In order to compare the growth rate of a variable in different sub-period, usually, we estimate the sub-period growth rate of the variable of interest. For this purpose investigators fit a separate exponential trend line for each sub-period for the series under consideration. However, this conventional approach suffers from the problem of discontinuity bias in the trend analysis of the growth for different sub-periods. In order to overcome the problem of discontinuity bias this study has applied the linear kinked exponential growth function approach (Poirier, 1974, Adhikary, et al., 2009) for capturing the trend in the growth of the selected variables for the defined regimes i.e. for the period 1961-90 or 1980-1990 as applicable and for the period 1991-2010. Assuming a linear time trend we can specify the function as follows.

Re *gime*-1: $\ln Y_t = \alpha_1 + \beta_1 t + \varepsilon_t$ where $t < 1991$

Re *gime*-1: $\ln Y_t = \alpha_2 + \beta_2 t + \varepsilon_t$ where $t \geq 1991$ (3.4)

In order to tackle the discontinuities in the regime-wise growth rates, the linear kinked exponential growth function has been re-parameterized as follows.

$\ln Y_t = \gamma_0 + \gamma_1 w_{1t} + \gamma_2 w_{2t} + \varepsilon_t$ (3.5)

Where $w_{1t} = t$

$w_{2t} = 0$ if $t < 1991$

$w_{2t} = t - 1990$ if

Finally, the growth rate for i^{th} regime of the particular variable Y can be deduced using the formula as noted below.

Where $\beta_1 = \gamma_1$ and $\beta_2 = \gamma_1 + \gamma_2$

In order to estimate these growth functions we mainly depend on secondary source of data. This study is based on time series data from 1961 to 2010. We have taken data for net per capita availability of food product gram per day from Economic Survey, 2011-12, Government of India. The data for population in crore and real GDP have been collected from Economic Survey, 2011-12. We have used the data of consumption expenditure at constant price, 2000, data of area under food grains production, and time series data regarding access to improved sanitation and safe drinking water published by World Bank, 2012. From India Human Development Report, 2011 we have taken the data for per capita intake of food grains.

Empirical Findings and Discussion

Now we present the empirical findings and interpretation of the estimates under study. During the last fifty years, total food grains production has increased four folds. However, we should remember that population in India has increased almost three times during the last fifty years. Therefore, per capita availability is important for analysis. Per capita net availability of food grains was 449.6 grams per day in 1960 and it was 444.0 grams per day in 2009 (Economic Survey, 2011-12). The net availability of food grains is defined as the sum of gross production and import minus export, seed, feed, wastage and plus/minus change in stock. Table-1 shows the growth

rate of the per capita net availability food grains in the periods before and after liberalization and in the whole period under consideration. It is found that per capita net availability of food grains has grown at 0.059 per cent per annum during the period 1961-2010. It is seen that in the pre liberalization period (1961-1990) per capita net availability of food grain had grown at 0.27 per cent per annum whereas in the liberalized era (1991-2010) the growth rate of per capita net availability of food grains was negative (-0.30 per cent). Therefore, per capita net availability of food grains has declined. Moreover, growth rate of per capita net availability of pulses is negative for the whole period under study and for the specified sub-periods. It implies that per capita availability of pulses is declining continuously. Our empirical analysis reveals that per capita availability of pulses has declined more rapidly during the pre liberalized era in contrast to the liberalized era. Therefore, the problem of net availability of pulses was more serious before liberalization. Though it has been checked in the era of liberalization but still the growth rate is negative. We now consider the rate of growth of the net availability of cereals. We find that per capita net availability of cereals has grown at 0.18 per cent per annum during 1961-2010. The growth rate of per capita net availability of cereals was 0.47 per cent per annum during the pre liberalization era. But per capita net availability of cereals has declined at rate 0.31 per cent per annum during the liberalization era.

Table-2 depicts the glimpses of the growth of per capita availability of the supplementary food items like milk, egg, fish and edible oil. We have computed the growth rates of per capita availability of these supplementary food items for the period 1980-2010 due to constraint of data availability. In table-2 we see that in India per capita availability of milk, eggs, fish and edible oil has increased by 2.27 per cent, 3.91 per cent, 2.37 per cent and 1.66 per cent per annum respectively during period 1980-2010. If we look into the sub period growth rates we find low growth of availability of all these supplementary food items except edible oil during strong liberalization era compared to the growth rate in pre liberalization era. Only in case of edible oil per capita availability has improved during liberalization era compared to pre liberalization.

In order to search the causes of the declining per capita food production during the era of liberalization we have examined the growth rate of the area under cultivation for food grains and growth rate of population. In table -2 we have observed that area under cultivation for food grains has expanded very slowly during the period 1961-2010. We can compare the expansion of area under food grains production in between the period pre and post liberalization in India. Our empirical estimates show that the area

Table 1: Per Capita Growth Rates of the Per Capita Availability of Food Grains in India

Variables	Constant	Coefficients for Regime			Growth rates (per cent per annum)		
		Regime-1 (1961-90)	Regime-2 (1991-2010)	Regime-1 (1961-90)	Regime-2 (1991-2010)	Regime-1 (1961-90)	Regime-2 (1991-2010)
Per Capita net Availability of Food grains	6.074(322.56*)	0.00269(2.836*)	-0.0057(-2.637*)	0.27	-0.30	0.059	0.059
Per Capita net Availability of Pulses	4.05(100.32*)	-0.015(-7.620*)	0.011(2.406**)	-1.54	-0.42	-1.13	-1.13
Per Capita net Availability of cereals	5.93(328.31*)	0.0047(5.20*)	-0.007(-3.77*)	0.47	-0.31	0.18	0.18

* stands for significant at 1% level, ** stands for significant at 5% level,

Source: Author's own computation

Table 2: Per Capita Growth rates of the Availability of Supplementary Food Items

Variables	Constant	Coefficients for			Growth rates (per cent)		
		Regime-1 (1980-90)	Regime-2 (1991-2010)	Regime-1 (1980-90)	Regime-2 (1991-2010)	Regime-1 (1980-90)	Regime-2 (1991-2010)
Per Capita Availability of Milk	-0.74(-68.65*)	0.028(21.81*)	-0.008(-5.08*)	2.93	2.01	2.01	2.27
Per Capita Availability of Eggs	5.00(169.45*)	0.047(13.13*)	-0.012(-2.55*)	4.83	3.56	3.56	3.91
Per Capita Availability of Fish	3.449(116.28*)	0.036(10.05*)	-0.017(-3.72*)	3.70	1.86	1.86	2.37
Per Capita Availability of Edible-oil	-2.66(-46.21*)	-0.006(-0.855)	0.031(3.35*)	-0.59	2.57	2.57	1.66

*Stands for significant at 1% level, ** stands for significant at 5% level,

Source: Author's own computation

Table 3: Per Capita Growth rates of Land used under Food Grain Production

Variables	Constant	Coefficients for Regime			Growth rates (per cent)		
		Regime-1 (1961-90)	Regime-2 (1991-2010)	Regime-1 (1961-90)	Regime-2 (1991-2010)	Entire period (1961-2010)	
Land under food grain production	18.37(1903.82*)	0.0031(6.38*)	-0.0072(-6.50*)	0.31	-0.41	0.045	
Per Capita Consumption expenditure	5.00(353.60*)	0.01(15.29*)	0.02775(17.00*)	1.09	3.94	2.13	

*stands for significant at 1% level, ** stands for significant at 5% level,

Source: Author's own computation

under food grains production had grown at 0.31 per cent per annum during 1961-1990. But during the liberalized era the area under food grains production has declined at the rate 0.41 per cent per annum. As food grains production is the major source of food availability, the declination of the area under food grains production may be the plausible cause of the declination of the per capita availability of good grains during the era of liberalization. In the era of liberalization rapid expansion of urbanization particularly expansion of construction industry is a cause of declining trend of land in food grain production. Further, non profitability in the food cultivation due to price hike of agricultural inputs like fertilizer and changing cropping pattern towards cash crop are the plausible cause of the declination of the area under food grain production. The prices of fertilizer partiality rise due to increasing cost of production and mainly due to reduction of subsidy and other liberalization policies of the Governments. Not only that a major portion of land used in food production is not irrigated. We find that in 2009 51.7% of total land used in food grains production is not under irrigations facility (Economic Survey, 2011-12). Thus, a major part of food grains production in India completely depends on vagaries of the nature. It is another case of the insecurity of food availability.

Table-3 shows that per capita consumption expenditure has increased significantly during period 1961-2010 and across the phases of liberalization. It has grown three times more rapidly in the strong liberalization era compared to the rate of growth in the years of pre liberalization era. But it is surprise that per capita intake of calories and protein has declined for the rural people as well as for the urban people across the phases of liberalizations (Refer to table -4). It indicates that during liberalized era common people in India preferred more the non-food product to food product for consumption. It creates the problem of malnutrition which in turn reduces the productivity of labour.

Table 4: Per Capita Intake of Calories and Protein

YEAR	Calories (Kcal/day)		Protein(gm/day)	
	Rural	Urban	Rural	Urban
1983	2221	2089	62	57
1993-94	2153	2071	60.2	57.2
1999-2000	2149	2156	59.1	58.5
2004-05	2047	2020	57.0	57

Source: NSS, 2004-05 cited in India Human Development Report, 2011

We can claim that absorption power of people have increased if the access to basic amenities of health and hygiene have increased sharply. Access to

improved sanitation and access to safe drinking water definitely enhance the absorption power of the people. In table -5 we have found that access to improved sanitation has been progressed at a commendable rate and access to safe drinking water has also been improved at a positive rate. Therefore, we can expect that absorption power of the people has been improved during the era of liberalization. However, we should keep in mind that although 92 % of Indian households have access to safe drinking water, two third of Indian households don't have access to improved sanitation in 2010 (World Bank, 2012). It indicates an enormous scope for further improvement of basic amenities of health and hygiene and accordingly absorption power of the people in India.

We can, therefore, claim that the problem of food security in India lies in the problem of availability of food items, accessibility to food items and absorption power of people. Against this backdrop we need to address the problems regarding food availability i.e. production of food, accessibility to food and absorption of food for sustainable assurance of food for all.

Table 5: Growth rates of the Basic Amenities of Health and Hygiene

Variables	Growth rates (per cent) (1991-2010)
Access to improved sanitation (% of households)	3.35
Access to safe drinking water (% of households)	1.40

* stands for significant at 1% level, ** stands for significant at 5% level,
Source: Author's own computation

Table 6: Growth rates of GDP and Population in India.

Variables	Coefficients for Regime			Growth rates (per cent)		
	Constant (1980-90)	Regime-1 (1991-2010)	Regime-2 (1980-90)	Regime-1 (1991-2010)	Regime-2 (1980-2010)	Entire period
Real GDP	9.03 (469.75*)	0.047 (20.26*)	0.015 (5.03*)	4.82	6.44	5.84
Population	4.18 (1070.68*)	0.022 (46.90)*	- 0.004 (6.79*)	2.24	1.81	1.91

* stands for significant at 1% level, ** stands for significant at 5% level,
Source: Author's own computation

Refer to table- 6. The estimates of the growth of real GDP points out that GDP has grown at 5.8 per cent per annum during entire period (1980-2010) under consideration. It was 3.5 per cent which is termed as Hindu growth rate. However, during the strong liberalization era (1991-2010) real GDP

has grown more rapidly. It is no doubt a good signal for a developing economy. But we should remember that contribution of agriculture in GDP has been declining sharply. Therefore, rapid growth of GDP does not imply the expansion of agricultural and allied production. Rather, expansion of non-farm production reduces the availability of land and makes the agricultural products scarce. Further, growth of population has also been checked in the recent decades. Yet, during 1991-2010 population in India has grown at 1.81 per cent per annum which makes negative the growth rate of per capita food grain availability as shown in table-1. The huge population and its steady growth are appeared as major constraints to ensure food availability and accessibility. One side it increases the demand for food and on other side it reduces the per capita availability of food grains. Ultimately it stimulates price hike of the food items that we are realizing in the recent years. The food price inflation reduces the access to food for the poor as well as rich people in our country and thereby creates food insecurity for a large section of people.

Suggestions for Sustainability of Food Security

This study reveals that declining trend of per capita net availability of food grains is the main challenge ahead for food security in India. One may think that the shortage of per capita availability may be met through import. But it is not a desirable policy for a developing country like India. Therefore, in order to improve the food availability we have to improve the production condition of the food grains. Once we solve the availability problem of food grains, the problem of distribution i.e. access to food grains arises and thereby the question of absorption. In order to redress the problems regarding accessibility to basic food grains the government has a public distribution (PDS) system which has been modified time to time. At present we have some supplementary programs such as targeted PDS including Antyodaya Anna Yojana (AAY), nutrition programs for children like mid-day meals, and ICDS to improve food and nutrition security of the children. However, several studies have identified the limitations of the public distribution system (PDS). In spite of the limitations, nobody can disagree with the fact that PDS in India has served a wide range of needy population regarding food security. But without sufficient food production it is nearly impossible to ensure food through PDS.

It is evident that hoarding of food grains sometimes insecure the access to food items. Some economists argue that hoarding is the main cause of food price inflation. Therefore, in order to ensure the access to food at an affordable price the governments have to take some active policies along with the PDS which control food price inflation.

It is identified that the vast size of population of India is the key obstacle of food security. So India has needed a compulsory population control policy not only for food security but also for faster inclusive growth. But it is unfortunate that recent policies in India do not emphasize on population control.

In order to ensure accessibility to food items people need to have sufficient purchasing power. Access to food can be increased through employment adopting labour intensive technique and/or through social protection programs. For this purpose government as well as NGOs should have to take necessary steps towards livelihood security. In particular the governments should have to take initiatives in which poor people can participate in production process. In this connection micro enterprise relating to food production or distribution is effective one. NREGS and self employment programs are useful to increase access to food and nutrition. It not only increases the purchasing power, it ensures the life and livelihood security of the people.

Malnutrition level of the people of a large part of India is worse than the levels of many countries in Africa (Deb, 2012). To solve this problem we need some steps covering diet diversification, women's empowerment, education, safe drinking water, sanitation, health, and hygiene. However, there are a number of gaps and inefficiencies in community health care programs. We, therefore, have to develop awareness among the common people regarding diet, health and hygiene which will enhance the absorption power of the people.

Finally, sufficient production of food grains i.e. availability of food is the necessary condition for solving the problems of the access to food and absorption of food. We have seen that Indian agricultural use inputs like HYV seeds, fertilizers at the more or less satisfactory level. A major part of food production is hampered due to inadequate capital accumulation and credit facility. It has been reported that 73% of Indian farmer has no access to formal credit (Government of India, 2008). To make the financial inclusion of the farmers the Governments have taken several steps like Krishan Credit Card, Crop insurance facility etc. in addition to these, Government have to take more steps for increasing the flow of credit in agriculture. We already have an established river based irrigation system but it is not functioning or improving as we expect. Still now half of our agrarian land does not come under any kind of irrigation system. It is mainly the failure of the government management regarding the irrigation facility. Water development projects and other integrated farming methods are therefore, essential for improving the food production. The government of India has

already initiated Accelerated Irrigation benefits program in 1996-97. The inordinate delay in the completion of many major and medium irrigation projects due to financial constraints is another problem towards complete irrigation. So government and appropriate authority have to allow private or foreign investment for improving the infrastructure like financial institutions, irrigation, storage and marketing facilities in agriculture for improving the per capita availability of food grains.

A large section of people in India is engaged in agricultural activity without land. In order to improve their productivity governments have to improve further land development program which redistribute land towards really landless farmers. In addition to this we have to take some steps to bring the barred land under arable land through proper land reforms. In this connection we may apply our NREGS program. We have to put emphasis on research and development relating to improved quality of seed and fertilizer, method of production and marketing for getting a successful and sustainable food security system.

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7

Nirmal Bharat Abhiyan (erstwhile Total Sanitation Campaign) Programme Status Report Reflecting its Impact of Last three Years in Rural areas of Siliguri Sub-Division under Darjeeling District

Urbi Ghosh

Nirmal Bharat Abhiyan or Clean India Initiative/NBA (earlier Total Sanitation Campaign) being a programme under the Ministry of Drinking Water and Sanitation of India Government is conducted by the District Water and Sanitation Cell, Siliguri Mahakuma Parishad for the rural areas (4 blocks- Matigara, Naxalbari, Kharibari and Phansidewa) covering all Gram Panchayats of the Siliguri Sub-division under Darjeeling district. Status of three years (2010-11, 2011-12 and 2012-13) of all 4 blocks shows achievements with respect to targets in all 4 sections of Individual Household Latrines (IHHL), School Toilet, Integrated Child Development Services (ICDS) toilet and Sanitary Complex. Following varied targets and achievements, implementation of the programme in the rural belt is still found difficult. Though non acceptance of sanitation practices by beneficiaries is found a major problem at times but less dissemination of information on sanitation can pose a real threat to implementation of the programme here. Information, Education and Communication (IEC) method has been implemented to spread information and make villagers aware of it but such method is yet to reach all corners of each block. However, 5 non-governmental organizations (NGOs), 3 Self Help Groups (SHGs) and 1 Gram Panchayat of Naxalbari block are working with the concerned cell in the rural areas here to implement the programme but yet to achieve desired result following gaps in performances altogether.

Universe

All 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa) under Siliguri sub-division of Darjeeling district. These blocks are considered as rural areas of the sub-division.

Aim

To find Nirmal Bharat Abhiyan programme implementation status of all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa) in last 3 years (2010-11, 2011-12 and 2012-13).

Objectives

1. Finding out condition of each block section wise in each year.
2. Comparison of the works executed in each block in each year.
3. Finding out positions of blocks with respect to one another.

Methodology

1. Government reports and records have been analyzed.
2. Interviews of government officials have been conducted.
3. Interviews of villagers especially of border sides have been done.

Findings and data analyses: - Each year physical performance report of NBA on each block is divided into four main sections of IHHL, School Toilet, ICDS toilet and Sanitary Complex. Physical performance achievement of each section is based on that year's target each year.

For the **Individual House Hold Latrine (IHHL)** status of last 3 years (2010-2011, 2011-2012 and 2012-2013) of all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa), it is found for the year 2010-2011 that total target of all 4 blocks is 28714 with total achievement of 4572 which is 16% achievement reflecting gap of 24142 or 84.0% between total target and total achievement. With respect to achievements, block Naxalbari with target of 2956 and with the achievement of 944 which is 32% absolute achievement reflecting gap of 2012 or 68.0% between target and achievement. Block kharibari with target of 4892 and with the achievement of 1088 which is 22.2% absolute achievement reflecting gap of 3804 or 78% between target and achievement. Block Phansidewa with target of 16089 and with the achievement of 1963 which is 12.2% absolute achievement reflecting gap of 14126 or 88% between target and achievement. Block Matigara with target of 4777 and with the achievement of 577 which is 12.0% absolute achievement reflecting gap of 4200 or 88% between target and achievement.

Above data reflects that block Naxalbari has the highest achievement at 944 or 32% against lowest target of 2956 with lowest gap at 68.0%. Block Matigara has the lowest achievement at 12.0% against target of 4777 but with highest gap at 88%. Here block Phansidewa with highest target of 16089 shows 12.2% achievement but with highest number of works executed at 1963 which is at 3rd position and is with equal highest 88% gap. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa. Block Matigara is found lowest in achievement against 2nd lowest target of 4777 whereas block Phansidewa is found 2nd lowest in achievement against highest target of 16089. Though number of works (1963) done are highest in Phansidewa.

For the year 2011-2012, it is found that total target of all 4 blocks is 34831 with total achievement of 2785 which is 8% achievement reflecting gap of 32046 or 92.0% between total target and total achievement. Considering achievements block Naxalbari with target of 4335 and with the achievement of 1212 which is 28% absolute achievement reflecting gap of 3123 or 72.0% between target and achievement. Block Matigara with target of 6531 and with the achievement of 659 which is 10.0% absolute achievement reflecting gap of 5872 or 90% between target and achievement. Block kharibari with target of 5918 and with the achievement of 546 which is 9.2% absolute achievement reflecting gap of 5372 or 91% between target and achievement. Block Phansidewa with target of 18047 and with the achievement of 368 which is 2.0% absolute achievement reflecting gap of 17679 or 98% between target and achievement.

Above data reflects that block Naxalbari has the highest achievement at 1212 or 28% against lowest target of 4335 with lowest gap at 72.0%. Here block Phansidewa has the lowest achievement at 368 or 2.0% against highest target of 18047 and with highest gap at 98%. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa.

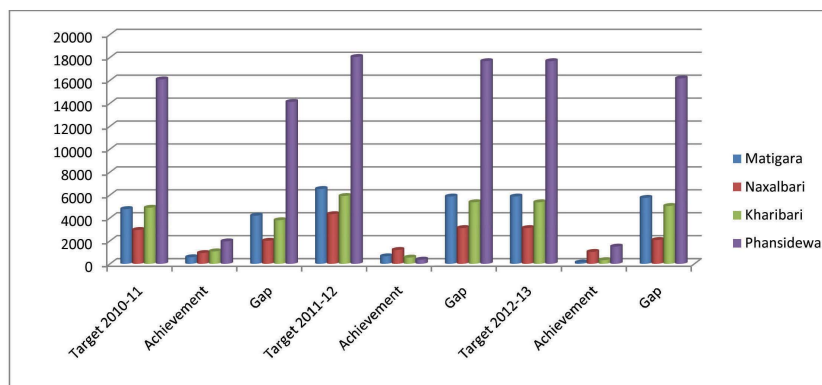
For the year 2012-2013, it is found that total target of all 4 blocks is 32046 with total achievement of 2987 which is 9.3% achievement reflecting gap of 29059 or 91% between total target and total achievement. Considering achievements block Naxalbari with target of 3123 and with the achievement of 1041 which is 33.3% absolute achievement reflecting gap of 2082 or 67% between target and achievement. Block Phansidewa with target of 17679 and with the achievement of 1504 which is 9% absolute achievement reflecting gap of 16175 or 91.4% between target and achievement. Block kharibari with target of 5372 and with the achievement of 325 which is

6.0% absolute achievement reflecting gap of 5047 or 94% between target and achievement. Block Matigara with target of 5872 and with the achievement of 117 which is 2% absolute achievement reflecting gap of 5755 or 98.0% between target and achievement.

Above data reflects that block Phansidewa has the highest number of achieved works but is at 2nd position at 1504 or 9% against highest target of 17679. Here block Kharibari has the lowest achieved number of works but is at 3rd position at 325 or 6.0%. Block Naxalbari has the lowest target of 3123 and the achievement rate is highest at 33.3%. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa.

It is found that for all 3 years and all 4 blocks, block Phansidewa has the highest target and block Naxalbari with lowest target is also with highest achievement rate. However, gaps in achievement are comparatively higher in Phansidewa block.

The respective chart is as followed:



IHL status of all blocks in last three years

For the **School Toilet** status of last 3 years (2010-2011, 2011-2012 and 2012-2013) of all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa), it is found for the year 2010-2011 that total target of all 4 blocks is 29 with total achievement of 19 which is 66% achievement reflecting gap of 10 or 34.5% between total target and total achievement. Considering achievements block Phansidewa with target of 8 and with the achievement of 8 which is 100% absolute achievement has no gap between target and achievement for the year. Block Naxalbari with target of 7 and with the achievement of 4 which is 57.1% absolute achievement reflecting gap of 3 or 43% between

target and achievement. Block Matigara with target of 8 and with the achievement of 4 which is 50% absolute achievement reflecting gap of 4 or 50% between target and achievement. Block kharibari with target of 6 and with the achievement of 3 which is 50% absolute achievement reflecting gap of 3 or 50% between target and achievement.

Above data reflects that only block Phansidewa has achieved its target fully. Though block Matigara has the same target of 8 but achieved 50% of it. Block Naxalbari shows lowest gap at 43% with respect to 2nd highest (equally 2nd lowest) target at 7. Here block Kharibari with lowest target of 6 also achieved 50% of it.

For all 4 blocks, it is found for the year 2011-2012 that total target of all 4 blocks is 10 with total achievement of 3 which is 30% achievement reflecting gap of 7 or 70% between total target and total achievement. With respect to achievements, block Naxalbari with target of 3 and with the achievement of 1 which is 33.3% absolute achievement reflecting gap of 2 or 67% between target and achievement. Block kharibari with target of 3 and with the achievement of 1 which is 33.3% absolute achievement reflecting gap of 2 or 67% between target and achievement. Block Matigara with target of 4 and with the achievement of 1 which is 25% absolute achievement reflecting gap of 3 or 75% between target and achievement. Block Phansidewa is not given any target to achieve further for the year as it completely met its given target in the year 2010-11.

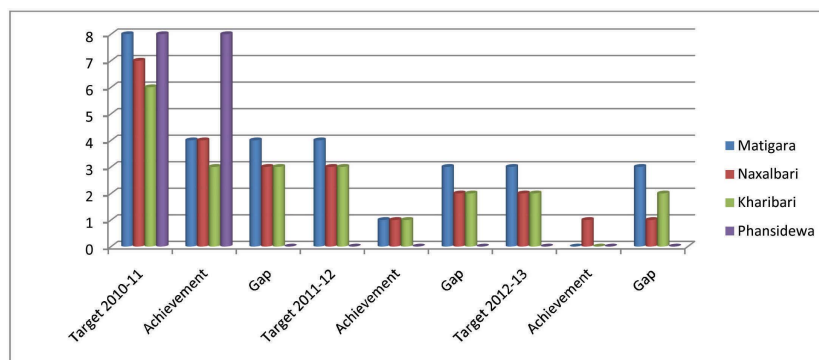
Above data reflects that only block Phansidewa has no target to achieve for the year due to completion of target. Here block Matigara has the highest target at 4 but achieved 25% of it reflecting highest gap of 75%. Block Naxalbari and Kharibari both have same target of 3 with same achievement at 33.3% and same gap at 67%. With lowest targets, both the blocks have performed same.

For all 4 blocks, it is found for the year 2012-2013 that total target of all 4 blocks is 7 with total achievement of 1 which is 14.3% achievement reflecting gap of 6 or 86% between total target and total achievement. For achievements, block Naxalbari with target of 2 and with the achievement of 1 which is 50% absolute achievement reflecting gap of 1 or 50% between target and achievement. Block Matigara with target of 3 and with 0 or no achievement showing its target intact. Block kharibari with target of 2 and with 0 or no achievement showing its target intact. Block Phansidewa is not given any target to achieve further for the year as it completely met its given target in the year 2010-11.

Above data reflects that only block Phansidewa has no target to achieve for the year due to completion of target. Here block Matigara has the highest target at 3 and block Naxalbari and Kharibari both have same target of 2 out of which only block Naxalbari achieved 50% and rest are at 0. The achievement status altogether is found poor for the year.

It is found that for all 3 years and all 4 blocks, only block Phansidewa has the 100% achievement but is not given any more target. Here it is at highest position than other blocks.

The respective chart is as followed:



School Toilet status of all blocks in last three years

For the **ICDS Toilet** status of last 3 years (2010-2011, 2011-2012 and 2012-2013) of all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa), it is found for the year 2010-2011 that total target of all 4 blocks is 1091 with total achievement of 108 which is 10% achievement reflecting gap of 983 or 90.1% between total target and total achievement. For achievements, block Naxalbari with target of 284 and with the achievement of 64 which is 23% absolute achievement reflecting gap of 220 or 77.4% between target and achievement. Block Matigara with target of 192 and with the achievement of 24 which is 13% absolute achievement reflecting gap of 168 or 88% between target and achievement. Block kharibari with target of 215 and with the achievement of 20 which is 9.3% absolute achievement reflecting gap of 195 or 91% between target and achievement. Block Phansidewa with target of 400 and with no achievement leaves back the given target intact for the year.

Above data reflects that block Naxalbari has the highest achievement at 64 or 23% against 2nd highest target of 284. Here block Phansidewa with highest target has no achievement. Block Matigara is with lowest target of 192 but performed 13% only which is at the 2nd position. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa.

For all 4 blocks, it is found for the year 2011-2012 that total target of all 4 blocks is 1049 with total achievement of 367 which is 35% achievement reflecting gap of 682 or 65.0% between total target and total achievement. For achievements, block Matigara with target of 196 and with the achievement of 145 which is 74% absolute achievement reflecting gap of 51 or 26.0% between target and achievement. Block kharibari with target of 206 and with the achievement of 129 which is 63% absolute achievement reflecting gap of 77 or 37.3% between target and achievement. Block Naxalbari with target of 234 and with the achievement of 74 which is 32% absolute achievement reflecting gap of 160 or 68.3% between target and achievement. Block Phansidewa with target of 413 and with the achievement of 19 which is 5% absolute achievement reflecting gap of 394 or 95.3% between target and achievement.

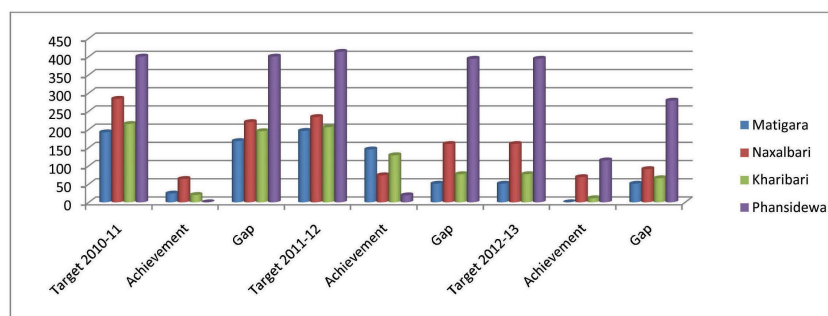
Above data reflects that block Matigara has the highest achievement at 145 or 74% against lowest target of 196. Here block Phansidewa with highest target of 413 has lowest achievement at 19 with highest gap of 95.3%. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa.

For all 4 blocks, it is found for the year 2012-2013 that total target of all 4 blocks is 682 with total achievement of 195 which is 29% achievement reflecting gap of 487 or 71.4% between total target and total achievement. Considering achievements block Naxalbari with target of 160 and with the achievement of 69 which is 43.1% absolute achievement reflecting gap of 91 or 57% between target and achievement. Block Phansidewa with target of 394 and with the achievement of 115 which is 29.1% absolute achievement reflecting gap of 279 or 71% between target and achievement. Block kharibari with target of 77 and with the achievement of 11 which is 14.2% absolute achievement reflecting gap of 66 or 86% between target and achievement. Block Matigara with target of 51 is at 0 or nil achievement leaving the target intact for the year.

Above data reflects that block Matigara is at nil achievement following lowest target at 51. Here block Phansidewa with highest target of 394

shows highest works executed at 115 which is at 2nd position. No block could achieve its target fully but comparing target of each block, achievements are more and closer to its respective target than block Phansidewa. Though are more in Phansidewa.

The respective chart is as followed:



ICDS Toilet status of all blocks in last three years

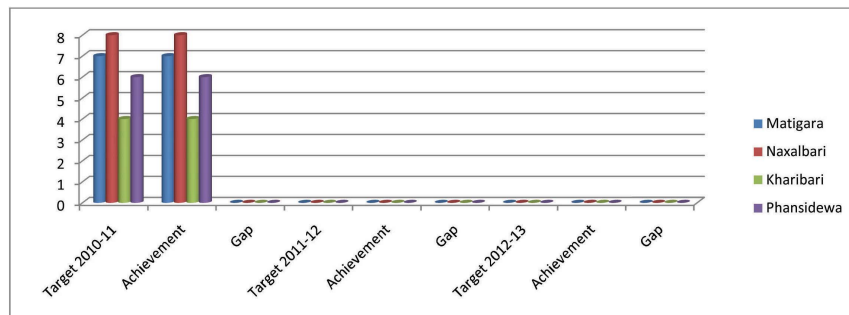
For the **Sanitary Complex** status of last 3 years (2010-2011, 2011-2012 and 2012-2013) of all 4 blocks (Matigara, Naxalbari, Kharibari and Phansidewa), it is found for the year 2010-2011 that total target of all 4 blocks is 25 with total achievement of 25 which is 100% achievement for the year. With respect to achievements, block Naxalbari with target of 8 and with achievement of 8 shows 100% absolute achievement of target. Block Matigara with target of 7 and with achievement of 7 shows 100% absolute achievement of target. Block Phansidewa with target of 6 and with achievement of 6 shows 100% absolute achievement of target. Block kharibari with target of 4 and with achievement of 4 shows 100% absolute achievement of target.

Above data reflects that irrespective of targets given, each block has achieved that fully for the year. Here block Naxalbari has the highest target at 8 and block Kharibari is with lowest target of 4.

For all 4 blocks, it is found for the year 2011-2012 that no target is given to any block to achieve for the year. Both target and achievement are nil.

For all 4 blocks, it is found for the year 2012-2013 that no target is given to any block to achieve for the year. Both target and achievement are nil.

The respective chart is as followed:



Sanitary Complex status of all blocks in last three years

It is found from above analyses that for both IHHL and ICDS toilet, block Phansidewa has the highest target for all 3 years. However, the achievement status is found quite low with respect to its target consistently and with highest gaps most of the times in both cases. For ICDS, for the year 2010-11, the achievement is found nil. In this section, block Matigara with lowest target has no achievement for the year 2012-13. However, for School Toilet status, only block Phansidewa achieved 100% in 2010-11 followed by no further target. In school toilet section, in 2012-13, both Matigara and Kharibari blocks have nil achievement showing poor performance. For Sanitary Complex, work performance of all 4 blocks is found 100% in 2010-11 followed by no further targets. It is found that only block Phansidewa has achieved 100% target twice, in both section School Toilet and section Sanitary Complex with other blocks here. But considering population of Phansidewa, which is highest among all blocks, though following highest targets in two sections (IHHL and ICDS Toilet) partial achievements have been done where works are needed more than other 3 blocks. Comparing targets of each block, achievements are more and closer to its respective target than block Phansidewa.

Conclusion

As per the targets following needs of each block, more works should be conducted fast to meet crises especially by Phansidewa block mainly in IHHL. The need of sanitation should be understood by villagers and this concept should reach villagers especially at the interior areas of blocks. Villagers should be motivated to adopt sanitation practices here. Appropriate communication methods to spread information should be practiced more by both government and non-government agencies engaged.

It is found that government is facilitating Rs.4600 for household sanitation on payment of Rs.900 by beneficiary here but this information is yet to reach all corners of each block though change in the financial amount is to be introduced. However, subsidizing all factors, 7 Primary Schools and 7 Upper Primary Schools received 'Nirmal Vidyalaya', 2013 award altogether of Siliguri sub-division among which 2 primary schools, Sudamgachh Primary School in Phansidewa block and Putimari Primary School in Naxalbari block have received 'Shishu Mitra Vidyalaya Puraskar', 2013 for child friendly sanitation practices and Muraliganj High School is awarded with 'Nirmal Vidyalaya', 'Shishu Mitra Vidyalaya Puraskar' and 'Jamini Roy Puraskar' for 2013 in block Phansidewa recognizing 'outstanding efforts made for advancing wash, education and aesthetics and adoption of child friendly norms and standards in the school' by the School Education Department of West Bengal Government which made the high school a model for proper sanitation practices. Though adoptability of sanitation practices are found quite less among villagers. Awareness campaigns are being conducted but at times villagers at border sides and other interior areas are remaining less aware of it. Though reach is still limited and convincing people is found difficult by the concerned functionary but only persisting efforts can result in desired changes in the belt.

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8

Media Exposure in Early Childhood Years and the Role of Parents

Divya Vaishnava

“Television does not let you think. It thinks for you. Television does not let you feel. It feels for you”

.....Isaac Stern

This paper is written using the findings of the research which the researcher had completed as part of her M.Phil course. The study was conducted in Gurgaon NCR with 150 children as respondents and their mothers. The age group of the children was 4 to 8 years. The respondents were selected from different economic backgrounds.

Early Childhood

According to UNESCO ECCE (Early Childhood Care and Education) Unit, early childhood is defined as the period from birth to 8 years old. These years are a time of remarkable brain development and lay the foundation for subsequent learning.

Childhood is a phase when psychological, social and biological developments are laying their foundations. Any hindrance or unexpected abruption during this phase may leave an impact with lifelong consequences if not managed well in time.

Media exposure in Early Childhood Years: The concept

Nowadays parents have a preference for premium preschools and schools that bombard children with visual information through televisions, computers and ‘smart’ classrooms. Television and computers are fabulous learning tools for older children. However, for younger children, the simple act of reading or exploring nature is the key to nurturing their creativity and intelligence. How small children internalize what they watch on TV is a

matter of great concern. For a small child, the simple acts of Tom and Jerry fighting or playing pranks on each other may have far serious impact than an adult can ever imagine.

Television and the Family Context

Parents can be seen exposing their children to television and computers in the hope that they will provide educational benefits. It is seen that children in homes with television are spending very considerable amounts of time watching TV programs. The effects of this massive exposure to a new mass medium on the developing personality of the child can be seen on relationships within the family and on social interaction among children. Television is being used as a baby sitter in most of the families where both the parents are working or keep long working hours and the children are left in the care of the domestic help. This study was done to assess the impact of the exposure of television on early childhood years.

The modern day parents are often so busy with their work that they are finding it increasingly difficult to spare even a few hours with their children. To overcome their guilt, they give in to their children's demands easily. The result is that even small children have their own cell-phones and computers with the latest apps, as a means of entertainment. This is apart from the television set in the kids' room, which has almost become a norm in some families.

In the families with more affordability, parents gift their kids gadgets like ipad, tabs, phones which serve as compact computers. The parents tend to download the latest apps, advertised as educational tools, for young children. They expose their children, sometimes as young as 1 to 2 years old, to television and computers in the hope that they will provide **educational benefits**. However, according to the experts like American Association of Pediatrics, spending time in front of the screen, does not in any manner, help in the child's education.

On the contrary, studies have shown that spending a lot of time in front of the screen trains the child's brain in a manner that it requires continuous audio-visual stimulation, which should change rapidly. Such children often find the classroom environment boring and may even suffer from **attention deficit**. Watching television or playing on the computer, also eats into the time he should be out in the **playground**, indulging in some **physical activity**. ("Television and Video Game Exposure and the Development of Attention Problems", by Edward L. Swing, Douglas A. Gentile, et al, Pediatrics, published on August 1, 2010).

The context, in which children view television, and their interaction with family members and peers, also moderates television's impact in important ways. In fact, the home environment is a major contributor to the (different uses that are made of television by individuals (Lull, 1980;1988a). But viewing patterns and situations do not just happen; they are constructed by viewers, and they involve the content that is viewed, (the uses to which program viewing is put, the program content, and (conversations that viewers engage in about the content (Lull, 1988a). The viewing situation becomes a social setting in which family members can communicate (Lull, 1988a). "Watching television' is a family activity that involves an intermeshing of the constantly changing personal agendas, moods, and emotional priorities of each family member with the fluctuating agenda of programs that emanates from TV sets" (Lull, 1988a, (p. 17).

Aggression in children

Television is one of the most prevalent media influences in kids' lives. How much impact TV has on children depends on many factors: how much they watch, their age and personality, whether they watch alone or with adults, and whether their parents talk with them about what they see on TV.

Child viewers are in very active developmental stages. Their attitudes, Beliefs, and ideas about the world, as well as physical and social skills, are taking form; and they absorb information from everywhere. Because of the considerable number of hours spent viewing television, however, television becomes a disproportionately informational and attitudinal source. (VanEvra 1990: xii).

Children do not become full-fledged "viewers" until around the age of two-and-a-half. As toddlers, they begin to pay more attention to the television set when it is on, and they develop a limited ability to extract meaning from television content. They are likely to imitate what they see and hear on television. The viewing patterns children establish, as toddlers will influence their viewing habits throughout their lives. Since toddlers have a strong preference for cartoons and other programs that have characters who move fast, there is considerable likelihood that they will be exposed to large amounts of violence which is a part of almost all the current cartoons.

At the preschool age (three to five years old), children begin watching television with an "exploration" approach. They actively search for meaning in the content, but are still especially attracted to vivid production features, such as rapid character movement, rapid changes of scene, and intense or unexpected sights and sounds.

Because vivid production features accompany television violence, preschoolers are predisposed to seek out and pay attention to violence—particularly cartoon violence. It is not the violence itself that makes the cartoons attractive to preschoolers, but the accompanying vivid production features. With this preference for cartoons, preschoolers are being exposed to a large number of violent acts in their viewing day. Moreover, they are unlikely to be able to put the violence in context, since they are likely to miss any subtlety conveyed mitigating information concerning motivation and consequences. Preschoolers behave more aggressively than usual in their play after watching any high-action exciting television content, but especially after watching violent television.

Researchers have identified three potential responses to media violence in children:

- **Increased fear—also known as the “mean and scary world” syndrome**

Children, particularly girls, are much more likely than adults to be portrayed as victims of violence on TV, and this can make them more afraid of the world around them.

- **Desensitization to real-life violence**

Some of the most violent TV shows are children’s cartoons, in which violence is portrayed as humorous—and realistic consequences of violence are seldom shown.

- **Increased aggressive behavior**

This can be especially true of young children, who are more likely to exhibit aggressive behavior after viewing violent TV shows or movies.

Cultivation theory is a social theory, which examines the long-term effects of television. This theory states that the more time people spend ‘living’ in the television world, the more likely they are to believe social reality portrayed on television. This theory was developed by **George Gerbner** and **Larry Gross** of the University of Pennsylvania.

One of the classic examples of cultivation theory is how seeing thin women since the childhood, in advertisements, in films and all over print media, children believe that to be the reality and seek to imitate them or bring about drastic changes in their lifestyle leading to eating disorders and behavioral problems.

A child watching mythological serials tries to imitate Hanuman or Ram or

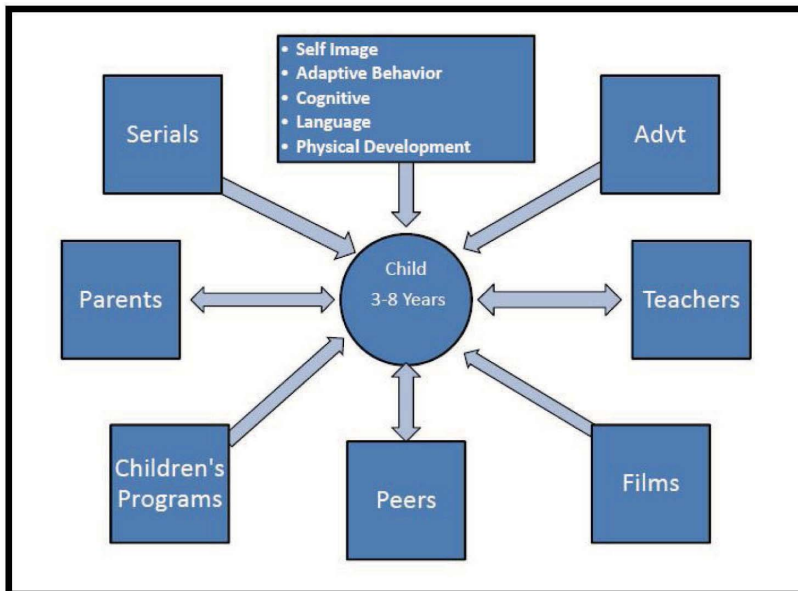


Fig. 1: Sphere of influence in a child of age group 3- 8 years

Arjun or other warriors who are shown killing their enemies or opponents and emerging as proud winners. Advertisements showing the preference for white skin do not send positive messages to people. One comes across small children who believe being fair is the only way they will ever be accepted by their friends.

On “Telebrands” (Tele-Shopping) one can easily come across advertisements selling products which claim to make someone fairer within 3 days. Health drinks showing children winning the first prize in academics/ sports or winning some extraordinary competition creates a feeling of inadequacy in the children who are not built like athletes or who don’t get the results expected by them in the traditional exams. Is first prize or attracting a good groom or a job on the basis of having a white skin is the only way to sell that particular cream?

Parents should also pay close attention to what their children see in the news since studies have shown that kids are more afraid of violence in news coverage than in any other media content. Fears based on real news events increases as children get older and are better able to distinguish fantasy from reality.

Children younger than 8 years cannot discriminate between fantasy and reality; they are uniquely vulnerable to learning and adopting as reality the circumstances, attitudes, and behaviors portrayed by entertainment media.

Some parents are very proud to see their daughters imitating screen ladies Kareena Kapoor and Malaika Khan and they dress them up as young women. An American reality show 'Toddlers and Tiaras' had a mother dress up her 4 year old daughter as the actress Dolly Parton with fake breasts and padded bottom. Fashion magazine Vogue ran the picture of a 10 year old girl with a sultry stare and a pout. Don't we have enough adult girls who would happily pose, as it is their profession?

Parents are often seen struggling to deal with the increased levels of aggression in their children, most of them blame the sibling rivalry, age or the outside influence. Parents nowadays can be seen using Television/DVDs as a bribe to either get something done or to keep the children away glued to the television set while the parents do their own thing.

Parents exposing their children to unsuitable media content are also in clear violation of the Article 18 and 19 of the UN Convention on the Rights of the Child which states that it's the responsibility of the parents to protect the children from any form of violence and do what is the best for their children. Article 17 states that government should not promote such media materials that are harmful for children.

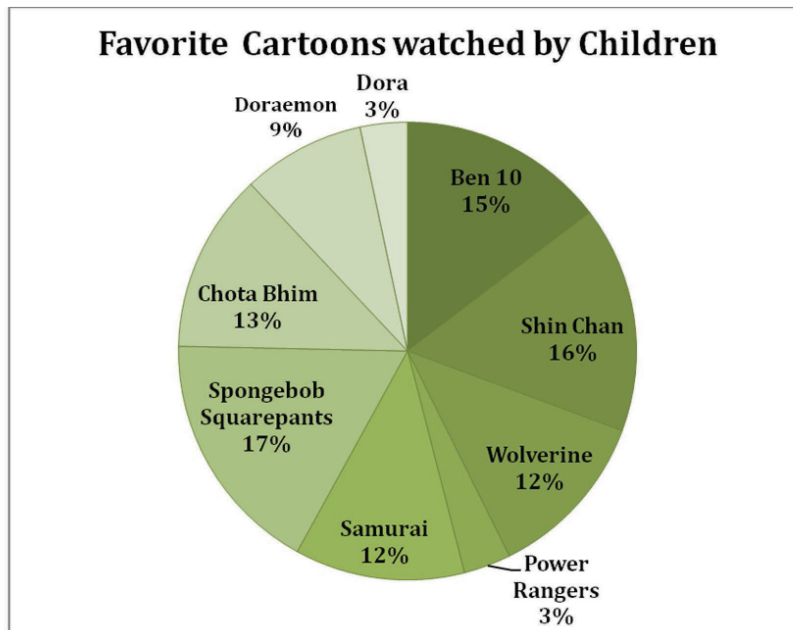


Fig. 2: Favorite cartoons watched by children

Parents forcing their children to participate in the reality shows at a tender age and making them go through the long hours of shooting is not in the best interests of the child. Most of the parents are trying to fulfill their own unfulfilled aspirations through the participation of their children.

The above figure shows the percentage of various programmes watched by children. There were 150 respondents in the age group of 4-8 years. Sponge bob square pants, Shin Chan and Ben 10 are the most watched cartoons followed closely by Chota Bhim, Samurai and Wolverine. Shin Chan is a Japanese cartoon which shows a boy of 5-6 years of age throwing tantrums, being unreasonable, playing pranks on his parents and giving a hard time to his mother in everything he does. The researcher has watched this cartoon many times to understand what kind of effect it would have on children and she observed that apart from the objectionable verbal content Shin Chan also has an aggressive body language.

Chota bhim, Samurai, wolverine, power rangers, ben 10, sponge bob square pants is a category of aggressive and violent programmes. 75% of the respondents were found to be watching this group of cartoons on a regular basis. Violent cartoons affect children's behavior negatively. Watching violent cartoons leads the children to consider violence as a normal response to stress and anger as that's what their favorite characters are doing it on screen. Chota Bheem is a boy with supernatural powers which he uses to help people of his village and he never loses. Programmes like these mislead and confuse the small children into believing that fantasy world to be true. It also makes them feel inferior when they are not able to perform as their cartoon superheroes like Chota Bheem, Bal Ganesh. There are a number of other superheroes which innocent children are fond of to the extent of being obsessed and such fantasies transports them to a different world where miracles are performed and one doesn't have to be working hard to be an achiever.

In the early childhood years, children's brains are still developing and they learn through the interaction with their peers and family members. In the first 24 months of life, the size of the brain triples in volume and the children build their brain themselves by responding to the environment around them. Parents should provide the nurturance that strengthens children's security and well-being and offer the cognitive challenges to exercise young minds. Children need to be stimulated constantly in order to discover their own abilities and inabilities to do certain things.

Access to the objectionable and unsuitable content

The researcher found that most of the respondent mothers allowed access to their own smart phones, Tabs, androids, or ipads to their children apart from the television exposure. The researcher observed most of the children playing with the ipads or tabs while their mothers were talking to her. Some mothers shared with the researcher that while they were at work, the other adults at home (domestic helps, grandparents) allowed access to ipad and tabs thinking it's an educational application which is being accessed. As most of these tabs and ipads are connected to Wi-Fi it's very easy to navigate and even accidentally access the net while playing some games. Some of the children shared with the researcher that they know how to look for stuff on the internet as their parents and older cousins have taught them. They explained to her that it was very simple as they had to just type a word and then press 'enter'.

There are a number of music channels (almost 15, including the regional channels) which are round the clock and offer mostly popular Hindi movie songs. Some of the mothers shared with the researcher that the music would be less harmful than letting them watch movies or play with video games. But these channels are misleading the viewers as they are mostly promoting the new Hindi movies by showing their songs, which invariably have objectionable lyrics with sexual overtones, and the choreography too is highly unsuitable. The reality shows for children like dance shows and the comedy shows in which the children participate from a young age are found to be popular as the adults feel that having child participants make them safer and watchable for their children. But the verbal content and the body language of these programmes is mostly obscene and vulgar and not suitable for children.

The researcher was able to conclude from her study that the objectionable and unsuitable content is easily available and accessible to the children.

Role of parents to minimize or control the impact of media

No TV in children's rooms

The adults of the family should keep television out of the children's rooms as it encourages them to watch TV for longer hours without any supervision by the adults. Some parents let the children watch TV before sleeping at night but it doesn't help them settle better. Most of the programmer telecast at night are not suitable for children viewing and have violent or adult content. Even the advertisements at night are sometimes not suitable for the children.

Planned viewing by parents

Parents should encourage planned viewing of specific programs rather than random viewing. If children have a limited number of hours that they can watch TV, with some choice over which programs they can watch, they will probably become more selective consumers of television. Parents should make use of the technology that allows recording the programmes and later parents can skip the unwanted or inappropriate content. In India many service providers like Tata sky plus, Airtel, Videocon are offering this option of recording at very nominal rates which is just marginal higher than the regular cable TV charges.

Avoid using TV as babysitter

Parents should make sure that television is not used as a substitute for participating in other activities. During this study many mothers admitted that it was tempting to use TV as a “babysitter” because it works so well as one, but the families should try to do that only in emergencies and not as an ongoing practice. Children watch passively, without engaging any active inner effort or will which is required by an active learning process. The researcher observed that the mothers or other adults (domestic help, grandparents or crèche workers) make the children sit in front of the television while they go about completing their work. Children are least demanding and often don’t move while watching TV and it suits the adults if they were busy on a phone call or doing some other work.

Suitable Alternatives for the children

The most important step to be taken by the parents and the society (schools, day cares, pediatricians) is to find alternatives other than screen time (TV, ipads, tabs) for the children. Parents have to refrain from giving in to temptation of making their children sit in front of television and have to spend time with them to engage them in meaningful activities like crafts, drawing, painting, reading, and gardening.

During the course of this study the researcher found that the children in the age group of 5 to 8 who had decreased television viewing time spent more time reading, studying and engaged in activities like puzzles, drawing, craft, painting and other creative activities. These children had more time to socialize so they also made more friends and participated more in outdoor sports or other outdoor activities. These children also showed improvements in their reading and cognitive skills as per the feedback given by their teachers to their parents.

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9

Need for a second Green Revolution

Amit Banerjee

“in a predominantly agricultural society, there is a strong linkage between ownership of land and the person’s status in the social system. Those without land suffer not only from an economic disadvantage, but a concomitant social disadvantage has also to be suffered by them. In the very nature of things, it is not possible to provide land to all landless persons but that cannot furnish an alibi for not undertaking at all a programme for the redistribution of agricultural land. Agrarian reform therefore requires, inter alia, the reduction of the larger holdings and distribution of the excess land according to social and economic considerations.”

(Women Rao and v. Union of India and decided by the Supreme Court of India on 13 November, 1980)

Agrarian reform can refer either, narrowly, to government-initiated or government-backed redistribution of agricultural land or, broadly, to an overall redirection of the agrarian system of the country, which often includes land reform measures. Agrarian reform can include credit measures, training, extension, land consolidations, etc. The World Bank evaluates agrarian reform using five dimensions: (1) price and market liberalization, (2) land reform (including the development of land markets), (3) agro-processing and input supply channels, (4) rural finance, (5) market institutions. Ben Cousins defines the difference between agrarian reform and land reform as follows: Land reform is concerned with rights in land, and their character, strength and distribution, while agrarian reform focuses not only on these but also a broader set of issues: the class character of the relations of production and distribution in farming and related enterprises, and how these connect to the wider class structure. It is thus concerned to economic and political power and the relations between them. Along similar lines, a 2003 World Bank report states that a key precondition for land reform to be

feasible and effective in improving beneficiaries' livelihoods is that such programs fit into a broader policy aimed at reducing poverty and establishing a favourable environment for the development of productive smallholder agriculture by beneficiaries. Examples of other issues include "tenure security" for "farm workers, labour tenants, farm dwellers [and] tenant peasants", which makes these workers and tenants better prospects for receiving private-sector loans; "infrastructure and support services"; government support of "forms of rural enterprise" that are "complementary" to agriculture; and increased community participation in government decisions in rural areas.⁽¹⁾

Agrarian reform in India had been adopted to reallocate the agricultural resources among all the people directly connected with agriculture. After independence, the Government of India started the process of building equity in rural population and improvement of the employment rate and productivity. So for this reason the Government had started agrarian reform. Since India had been under several rulers for a long time, i.e right from the beginning of the middle age, that's why it's rural economic policies kept changing. The main focus of those policies was to earn more money by exploiting the poor farmers. In the British period the scenario had not changed much. The British Government introduced the "Zamindari" system where the authority of land had been captured by some big and rich landowners called Zamindar. Moreover they created an intermediate class to collect tax easily. This class had no direct relationship with agriculture or land. Those Zamindars could acquire land from the British Government almost free of cost. So the economic security of the poor peasants lost completely. After independence, the Government's main focus was to remove those intermediate classes and secure a proper land management system. Since India is a large country, the redistribution process was a big challenge for the Government.

According to agrarian reform land was declared as a property of State Government. So agrarian reform varied from state to state. But the main objectives of agrarian reform in India were: Setting proper land management; Abolition of Intermediaries; Preventing fragmentation of lands; Tenancy reform. The land policies of different states faced several controversies. In some state the reform measures were biased in favour of the big land owners who could wield their political influence. However, agrarian reform in India had set a healthy socio-economic structure in the rural areas² Agrarian reform has been a recurrent theme in history. The Greek and Roman eras

¹http://en.wikipedia.org/wiki/Agrarian_reform (accessed on : 4.1.2014)

²<http://www.economywatch.com/agrarian/india> (accessed on 4.1.2014)

were filled with violent struggles between landowners and the landless. The land reform issue was a major factor in the Gracchian agrarian laws. During the Middle Ages, demands for land reform triggered peasant rebellions, including the Peasants' Revolt in England led by John Ball and Wat Tyler in 1381 and the German Peasants' War of 1524–26.

In the 20th century, the Russian Revolution added a new dimension to agrarian reform—the socialization of agriculture (i.e., the collective ownership of all land partly through state farming, but mainly through collective farming under state control) as a prerequisite for attaining communism. Driven in part by the peasant's desire for land, Lenin, shortly after assuming power, decreed (1917) all land as state property. Landed estates were seized by peasants, resulting in approximately 25 million peasant holdings. His government's promotion of voluntary collectivization was ineffective, however, and after 1929 Stalin forced collectivization at an estimated cost of ten million lives. After World War II, the Eastern European nations under Communist rule implemented agrarian reforms following the Soviet model. Since the collapse of Communist rule in Eastern Europe (1989–90) and the disintegration of the Soviet Union (1991) there has been movement, sometimes successful, sometimes fitful, toward privatization of agriculture in the former republics of the USSR.

China's Communist revolution in 1949 led, after the wholesale transfer of land to small peasants, to the amalgamation of peasant cooperatives into larger communes (1958). An attempt to establish socialist agriculture prior to mechanization, the communes were much criticized by the Soviet Union. They proved inefficient, causing stagnation in agricultural productivity, and China later abolished them. By 1980 China was rapidly returning land to individual smallholders and promoting market-oriented agriculture with marked success.

In Asia, especially in such densely populated areas as the Indian subcontinent, agitation has been mainly for redistribution among landless laborers; for security of tenure; and for the elimination of middlemen, oppressive rents, and usurious interest. Agrarian reforms began in Japan during the Meiji Restoration (1868–1912), when feudal fiefs and stipends were abolished. After World War II, U.S. occupation forces supervised further land reform. As a result, by 1949 over 80% of Japan's tenanted land had been transferred from absentee landlords to tenant cultivators. In India and Pakistan similar programs of agrarian reform were attempted, with less success.

In South Africa, where racial policies resulted in discriminatory land policies in Namibia, South Africa, and Zimbabwe, majority rule in the late 20th cent. led to pressure for land redistribution. In Zimbabwe, wholesale land redistribution at the end of the 1900s resulted in near collapse of the country's commercial agriculture when land was transferred from white farmers to blacks who had little farming experience and inadequate equipment. Land reform has proceeded more gradually in Namibia and South Africa, resulting in greater frustration on the part of the landless but less significant decreases in agricultural production.⁽³⁾

Agriculture has been an integral part of the Indian Economy, before and after Independence, despite its decline in share of GDP (17.2% as of 2011). Half of India's population depends on Agriculture as a livelihood. India is 2nd in farm output. It the largest producer of coriander, spices, millets and many more; second in fruits such as mangoes and papaya; and third in rapeseed, tomatoes and coconuts. Yet 1/3rd of Indian population is under poverty line.

The British colonial government of India did not pursue an active policy of agricultural development despite modest efforts to formulate one. Indian exports, at the latter part of British Raj mainly comprised of foodgrains, cotton, jute, opium and indigo. By 1881, Famine commissions were set in each province in India aiming to step up agriculture. They carried out scientific research. But output was very low.

After World War I, the Royal Commission (set up in 1926 to find reasons for low output) promoted welfare for the rural community and also suggested the formation of the ICAR (Imperial Council of Agricultural Research) which happened in 1929. Wide research was encouraged, and irrigation focused upon. The 1930s then saw the Great Depression felt worldwide. After World War II and incidents including Bengal Famine and Great Depression, reorganization was effected. Despite such great strides, there was a low productivity per hectare, because of several reasons, including the Great Depression of the 1930s, The Bengal Famine, primitive technology, extremely frequent droughts, unemployment or under-employment, poverty and exploitation of the rural community. Farmers were left with meager incentive and were bound to depend on moneylenders. The Land Tenure System was prominent. From 1891 to 1946, output of all crops grew at 0.4% per annum. This rate for food grains was only 0.1 % per year.

³<http://www.infoplease.com> (accessed on: 7.1.2014).

Specifically, there were few improvements in seeds, agricultural implements.⁽⁴⁾

Lack of food is rarely the reason people go hungry. Even now, there is enough food in the world, but more people cannot afford to buy the food they need. Even before the recent food price increases, an estimated billion people were suffering from chronic hunger, while another two billion were experiencing malnutrition, bringing the total number of food-insecure people to around three billion, or almost half the world's population.⁽⁵⁾

The simultaneous occurrence of high food inflation and large foodgrain stocks in our granaries has been a matter of concern. The aim of this paper is to understand the fundamentals of our foodgrains market and policy that lead to this situation and to suggest policies for rectifying this. The central argument is that it is imperative that we look at the entire system of food production, food procurement and the release and distribution of food. Trying to correct one segment of this complicated system is likely to end in failure. The paper argues that there are two different motives for food grain procurement by the state-to provide food security to the vulnerable and to even out foodgrain price fluctuations from one year to another. Further, how we procure the food has an impact on how we release the food, and vice versa. Inspired by the sight of foodgrains going waste, it is often made out to be that our central problem is that of poor foodgrain storage. This paper disagrees with this popular view. While we no doubt should improve our storage facilities, it is important to be clear that this in itself will not lower the price of food. To achieve that we need to redesign the mechanics of how we acquire and release food. To achieve that we need to redesign the mechanics of how we acquire and release food on the market.⁽⁶⁾

The global food price spikes of 2008 should not have come as a surprise. There were a number of long-term trends that were working towards the surge in food prices, which was finally occasioned by some proximate causes. While global prices have eased since then - though not in India - there are lessons to be drawn from the 2008 crisis. There is a need to increase food production without raising prices to consumers. This calls for significant public support for food production. Yet, the poverty and much more limited fiscal capacity of developing countries as well as the liberalised agricultural

⁴<http://www.studymode.com> (accessed on: 1.7.2014).

⁵Jomo Kwame Sundaram, Global Food Price Increases and Volatility, *Economic and Political Weekly*, May 28, 2011, p. 20.

⁶Kaushik Basu, India's Foodgrains Policy: An Economic Theory Perspective, *Economic and Political Weekly*, January 29, 2011, p. 37.

trade regulations over recent decades constrain them from being more supportive of food security efforts. In addition, international public support has fallen off since the 1980s as agro-business corporate interests increasingly influence public policy, trade regulations and access to technology.⁽⁷⁾

The “Joint Statement of Prime Minister Manmohan Singh and President Barack Obama” issued on 8 November at the end of the latter’s recent visit to India mentions the decision to “work together to develop, test, and replicate transformative technologies to extend food security as part of an Evergreen Revolution.” Indeed, the two sides would “adapt shared innovations and technologies and use their expertise in capacity building to extend food security to interested countries, including in Africa, in consultation with host governments.” Manmohan Singh has lauded the US’ role in launching India’s first green revolution, transforming Indian agricultural production, and has welcomed US Collaboration in spurring a “second green revolution.”⁽⁸⁾

The Bt brinjal debate has featured technological worries relating to genetically modified crops, which appear relatively minor in comparison to the critical issue of who controls Indian agriculture and therefore who controls food security in India. While there cannot be a mere technological fix to the problems of Indian agriculture, technology-and controls Indian agriculture and therefore who controls food security in India. While there cannot be a mere technological fix to the problems of Indian agriculture, technology-and therefore GM-will still be part of the solutions. Sadly, techno-worries-pitched by many who are opposed to technology and modernity-have held centre stage in the Bt brinjal debates.⁽⁹⁾ India is on the verge of approving a genetically modified food crop, Bt brinjal, for large-scale trials in the country. The unbridled proliferation of illegal Bt cotton in the country is already proof of serious regulatory failure and, elsewhere too contamination of the supply chain due to crops in field trials is on the rise. It is pertinent to ask questions about the bio-safety regime in the country and look at larger issues beyond, including whether GM technology is needed at all.⁽¹⁰⁾

⁷Jomo Kwame Sundaram, Lessons from the 2008 World Food Crisis, Economic and Political Weekly, March 20, 2010, p. 35.

⁸All for Food Security, Economic and Political Weekly, December 11, 2010, p. 8.

⁹Prabir Purkayastha, Satyajit Bath, Bt Brinjal: Need to Refocus the Debate, Economic and Political Weekly, May 15, 2010, p. 42.

¹⁰Kavitha Kuruganti, Biosafety and Beyond GM Crops in India, Economic and Political Weekly, October 7, 2006, p. 4245.

The fact that suicides are associated with high level of indebtedness is popularly, and even in some academic writings, seen as indicative of the Indian peasantry in general suffering from an unbearable burden of debt and teetering on the brink of bankruptcy. People are driven to the extreme step of suicide not only because of imprudently large borrowing from high cost sources and for non-productive uses but also because the increase in net incomes from loans used for productive purposes falls far below expectations. Suicide-afflicted households have also borrowed heavily for digging/deepening wells and for cultivating input-intensive high-value crops (like Bt cotton and spices) in the expectation of high yields and good prices. Failure of these expectations is a major reason for their inability to repay these debts.⁽¹¹⁾ The years of rapid economic growth have been years of jobless growth; does the governments care?⁽¹²⁾

The agriculture sector needs well-functioning markets to drive growth, employment and economic prosperity in rural areas. Currently agricultural markets are regulated under respective State Agricultural Produce Marketing (Regulation) Acts, generally known as APMC Act. Besides, there are other regulations, viz. Essential Commodities Act and various Control Orders issued thereunder. All these have created restrictive and monopolistic marketing structures, which have resulted in inefficient operation and high degree of marketing costs. They have also had an adverse impact upon agricultural production and system, inefficient flow of commodities, and lack of competitiveness.⁽¹³⁾

The Green Revolution converted India from a begging bowl into a bread basket. Now there is talk about the need for a second Green Revolution. However, such a revolution is nowhere in sight. Over 40 percent of farmers interviewed by the National Sample Survey Organisation have expressed a desire to quit farming, if there is another option available.⁽¹⁴⁾ Sadly, only mega-calamities such as severe flood, drought and tsunami, and farmers' suicides attract media attention. Unless the media assume a pro-small farmer approach in their reporting, food production will either stagnate or go down. This will obviously affect the country's social stability adversely.⁽¹⁵⁾ The

¹¹A Vaidyanathan, Farmers' Suicides and the Agrarian Crisis, *Economic and Political Weekly*, September 23, 2006, p. 4009.

¹²Jobless Growth, *Economic and Political Weekly*, September 25, 2010, p. 7.

¹³Eleventh Five Year Plan 2007-2012, Agricultural, Rural Development, Industry, Services and Physical Infrastructure, Volume III, Planning Commission Government of India, p.22.

¹⁴M.S. Swaminathan, The media and the farm sector, *The Hindu*, November 11, 2009, p.10.

¹⁵Ibid.

recent World Food Summit in Rome clearly failed to do its job. Though it drew attention on the risk of rising food prices yet it abjured its responsibility to the vision of a world free from chronic hunger and malnutrition, especially child malnutrition.⁽¹⁶⁾

The present global economic crisis is the biggest challenge confronting mankind since the Great Depression of 1929. The policy of liberal capitalism, followed since disintegration of Soviet Union in 1991, has now come under attack since globally as well as nationally it has led to unprecedented rich-poor and urban-rural divide. Though developing large economies like India are not export driven, there has been a significant slowdown in its growth and the concept of free market capitalism is now being opposed by the advocates of democracy and human rights for all which are being strengthened by fast growing communication technology. At present the world is waiting for the emergence of a new global economic order, because the current institutions like IMF, World Bank and WTO have largely failed to resolve the problems of the developing and least developed countries.⁽¹⁷⁾ International finance structures must be drastically overhauled in the face of the current global economic crisis, a panel of experts convened by the United Nations observed, calling on wealthier nations to direct one per cent of their economic stimulus packages to help developing countries address poverty.⁽¹⁸⁾

India is facing its worst economic crisis in decades yet prices of essential food items are soaring. The policy of mixed economy followed by the Government of India since independence was given up in 1991, under changed international scenario, and instead the policy of market economy was adopted. Markets became the main driving force and the State was relegated to the background. India continues to hold a dismal position in UNDP's Human Development Report and according to the latest report India's rank is 126. What is needed now is new architecture of business enterprises which will neither be capitalism nor be socialism but a business model for, by and of the people. The object should be to raise domestic expenditure that would lead to faster growth. This crisis reveals that globalization can be successful if it improves the economic condition of the masses which can aptly be described as sustainable globalization.

¹⁶Food summit let down, Editorial, The Hindu, November 21, 2009, p.10.

¹⁷Special Correspondent, Financial experts express concern over meltdown, The Hindu, Delhi edition, April 5, 2009, p.7.

¹⁸Global finance structures must be revamped, says UN expert panel. (www.un.org)

India has to make drastic changes in its pattern of agriculture which prevails at present. These include supply of irrigation water, adequate electricity, artificial rain etc. A significant amount of food grains in India is wasted due to absence of adequate storage facilities. Proper steps should be taken to solve this problem. The right to food is closely associated with facilities to protect food grains. A land bank should be prepared for each State whereby fertile agricultural lands should be earmarked for agrarian reforms and only barren lands should be used for purposes of industry. The Special Economic Zone Act, 2005 was criticised by many for it destroyed fertile agricultural lands and displaced thousands.

Agrarian reforms should strike a balance between economic growth and sustainable agricultural development. Globalisation is a buzzword. But it has to be carried out with a humane face. Increase in population, rising food prices and acute shortage of fertile agricultural land has given rise to the crying need for urgent agrarian reforms. The market driven economy is hugely different from the mixed economy. The current era is witnessing sweeping changes in the field of economy. Agriculture should not lag behind. Land acquisition should be in tune with needs of social justice enshrined in Article 38 of the Constitution of India. The concept of eminent domain or forcible acquisition of land has come for severe criticism and Land Acquisition Act, 1894 has been most misused legislation in India. The decision to allow Tata Motors to construct a car factory at Singur at West Bengal on an agricultural land which produced harvest thrice a year proved to be an electoral debacle for the Left Front in West Bengal. That sad reality is that even under the new law only cash compensation is provided to the evicted and not any other rehabilitation. The State present of West Bengal has decided in a policy decision that land will have to be purchased directly by the industrialists from the farmers.

The battle between agrarian reforms and economic development is, indeed, a very delicate one. A close harmony is needed for overall economic development of the country. In a recent development the Government of West Bengal has decided to earmark certain lands where industrialists will be asked to set up there factories. It should be remembered that agricultural growth is at an alarmingly low level. Agrarian reforms should aim at sustainable agricultural growth. State should say at regular intervals about progress of agricultural growth. Shopping Malls should be set up in each district head quarter apart from sub-division of each district as also towns and cities to sell agro products. Suitable IT should be provided for farmers to sell their produce and suitable experiments be made before starting Genetically Modified crops. Right to food, right to work, right to information

and agrarian reforms go hand to hand.

The first decade of the twenty first century showed the ominous sign of global economic recession. The tragedy of the Great Bengal Famine haunted the policy makers when scores of people thronged the streets of Calcutta in quest of bare subsistence. The imperatives of social justice enshrined in Article 38 of the Constitution and the goal of Justice: Social, economic and political embodied in the Preamble to the Constitution awakened the need to provide some wage guarantee to the rural masses, mostly being half-hungry and languishing in poverty, ignorance and illiteracy.

National policy on agriculture has undergone different phases of development: pre-green revolution land reforms and expansion of irrigation (1950s); green revolution for enhanced food production responded by measures for fair price (1960s and 1970s); State assistance to agriculture through subsidy (1980s); the impact of trade liberalization on Indian agriculture which later on turned out to be real threat for several commodities produced in the country (1990s); and the New Agricultural Policy announced in 2000.⁽¹⁹⁾

The year 2005 is significant in Indian political history. The second phase of Maoist movement which began in 1992 with the onset of liberalisation in 1991 reached a turning point in September, 2004 when the Maoist Communist Centre (MCC) of Bihar and People's War Group (PWG) of Andhra Pradesh merged to form the People's Liberation Guerrilla Army (PLGA). According to official report of the Union Home Ministry, out of 542 districts in India about 220 districts are Maoist affected. These regions are characterised by breathtaking natural beauty on the one hand and century old poverty and social exclusion on the other hand. The enactment of the National Mineral Policy in 2003 and Special Economic Zone Act, 2005 are significant events around this time. Corrupt politicians and industrialists were hand in glove to acquire the vast natural resources belonging to the tribal's. The need of the hour, therefore, was to provide some sort of mechanism like MGNREGA that would provide employment to rural Indians and prevent rural India from migrating to urban India. The need, further, was to arrest the ever increasing spread of Maoist activities. Soon, thereafter, MGNREGA has been spread to the whole of rural India and guarantees one hundred work days per year to build and maintain local infrastructure.

Agrarian reforms find a vital component of the subject entitled economics of law. Long under colonial domination in an agricultural country like India, the farmers suffered from distress conditions for most part of the year. The

¹⁹P. Ishwara Bhat, Law Social and Transformation, Eastern book Company, p. 797.

British did resort to their improvement and various policies of the colonial Government led to “progressive pauperization of Indian agriculture.”⁽²⁰⁾ The Tebhaga movement in West Bengal resulted in legal restriction of land owner’s share to one-third produce. The Operation Barga launched by the Government was a big success. During the early years of our independence nation building was a top priority. Numerous legislations pertaining to land reforms were passed by Parliament and they were often challenged in Courts. Hence, in order to protect agrarian and economic reforms from Constitutional challenges legislations relating to such constitutional challenges were put under Ninth Schedule of the Constitution to give such legislations immunity from judicial review. Property rights which existed under Part III of the Constitution as a fundamental right was moved to Article 300A as a legal right.

Agrarian reforms and third world human rights jurisprudence go hand in hand. Long under colonial rule third world nations suffered gross aberrations due to deliberate neglect of the British Raj. The dynamic and charismatic leadership of the Nehru-Gandhi family effected the First Green Revolution. But since then the winds of globalisation and liberalisation are blowing and new facets of dynamism are required in the field of agriculture. Despite structural adjustment programmes, India is an agricultural country and a serious thinking about its policies is the crying need of the hour. Agrarian reforms are not separate from industrial development; rather they go hand in hand. However, it must be remembered that Indian farmers and Kisan leaders have to come out of decade long feudal mind and set themselves in tune with scientific temper and modern outlook. Indeed, Indian agriculture is in shambles and unless something revolutionary is done the signature tune of social justice enshrined in Article 38 of the Constitution cannot be achieved.

Agrarian reforms would go a long way in ensuring a fair and just society for rural India which is often divorced from shining, urban India. Ensuring agrarian reforms is a sine qua non for improving human development of the rural population. Interlinking of rivers, an ambitious project of the Government of India, is a step in the right direction to ensure fruitful agrarian reforms. The twenty first century has set in and a new horizon of democracy vis-à-vis social justice has emerged which signifies that second generation agrarian reforms must be ensured to translate constitutional mandates into living reality and to prevent large sections of Indian population from being

²⁰A R Deasi, Social background of Indian Nationalism, Bombay, 1976.

Maoists and terrorists. Indeed, marginalisation of Indian democracy is the root cause of a section of the population leaving the national mainstream. Agrarian reforms would certainly end the scourge of bonded labour from many areas of the country. Second generation agrarian reforms is the urgent need in a liberalized Indian economy where the current imperatives are social security and sustainable agricultural development.

10

Tracing the Restructuring of Urban Governance and Finance in India: The Case of JNNURM

**Soumyadip Chattopadhyay
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The Perspective

Over the last two decades, cities have emerged as powerful actors in the global economy. Forces of economic growth and globalization have facilitated the concentration of economic and commercial activities and rapid expansion of human settlements in city regions. India is no exception to this trend. As per Census 2011, 31.1 percent of India's population lives in the urban area and this indicates a little more than 3 percentage points increase in the level of urbanization during 2001-2011. HPEC (2011) projection suggests that, by 2031, the urban population of India would be 40 percent of the total population. Importantly, after 1990s, urbanization in India has found to be concentrated in developed regions and larger cities as they have received a large part of the industrial and infrastructural investment. These centers have assumed the role of "engines of economic growth". Therefore, for full realization of India's economic potential, it is essential to achieve a world class urban system through attainment of efficiency and equity in delivery and financing of urban infrastructure.

However, the haphazard and rapid process of urbanization has created tremendous pressure on existing infrastructure as well as governance system for such city regions. The state and local governments' decrepit financial position as well as limited institutional capacity of most of the municipal governments exacerbate the problem. Many urban residents have little access to basic services like water and sanitation, solid waste collection, roads and shelter etc. (HPEC, 2011). As per 2001 Census, only 64 percent of the urban population is covered by individual water connections and stand post. Almost 94 percent of cities and towns in India do not have even a partial sewerage networks. About 18 percent of urban households do not have access to any form of latrine facility (HPEC, 2011). Waste collection

coverage ranges from 70 percent to 90 percent in major metropolitan cities and is less than 50 percent in smaller cities (11th Five Year Plan, 2007). Poverty continues to be a serious problem with the Indian cities as almost 26 percent of total urban population lives below the poverty line (Planning Commission Poverty Estimate 2009). Slums and pavement dwellers are the most visible manifestations of 'shelter poverty' in urban India. Slums are, as expected, characterized by huge under-provision of urban basic services. The high degree of 'urban service deprivation' coupled with 'shelter deficiency' degrades the urban environment and makes urban life and urban living increasingly precarious.

Moreover, government's attempt to project the large cities in general as the 'emerging global centers of growth' requires substantial investment to improve availability of infrastructural facilities in those cities. A major issue is, therefore, how Indian cities balance out between the demands of the international networks of which they are becoming a part and the need to improve the quality of life of their citizens. In other words, Indian policy makers face a very difficult task of addressing two conflicting objectives - one relates to serving city population's needs for basic services and the other one relates to infrastructural needs for making cities 'world class' as desired by the international business interests (Banerjee-Guha, 2009). This creates the scope for confusions, conflicts and fragmentation of urban paradigm and policy space in India (Mahadevia, 2011).

Policy makers have responded to this urban crisis by prescribing two major changes in urban development policies in India and these are: (i) withdrawal of state and entry of private capital in urban development with the concomitant change in state's role towards establishing the institutional conditions that are necessary for a successful market economy and (ii) the rescaling of government from central to local levels through the process of decentralization of government mandates to local levels which opens up the opportunities for 'partnership' between government and private sector, and government and citizens (Kundu, 2003; Harriss, 2007).

In particular, focusing on reforms in the urban sector in India, one can observe that, till 1990s, municipalities used to rely on budgetary support from the state/central government for developing infrastructure. After that, urban development programs embraced the private financing options and reforms were driven at municipal level to ensure the return of the investment along with visible changes within the institutional and policy framework. In particular the Eighth Five Year Plan (1992-97), for the first time, emphasized on building cost recovery in the municipal system. The Ninth Plan period (1997-2002) experienced a substantial reduction in budgetary allocation for

urban infrastructure development and by the late 1990s, the union Ministry of Urban Development (MoUD) launched a series of urban development programs that aimed at moving away from state subsidies and guarantees and raising funds from the market and through user fees. These programs not only promote private financing options but also focused on building local government capacity in certain aspects such as property tax reforms, accounting systems, PPP structuring and implementation etc. Credit enhancement mechanisms like escrow, pooled financing were promoted to improve the creditworthiness of big and small municipalities which, in turn, help them to attract private financing (Baindur *et.al.*, 2009).

Government's attempts at pursuing urban reforms and putting the cities on a fast track of development have culminated in the adoption of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in December 2005. The JNNURM is conceived as an institutional mechanism to grant central government funds on a competitive basis to urban local governments. As per the JNNURM norms set up in 2005, urban local bodies (ULBs) are required to develop a comprehensive city development plan (CDP) to implement a set of reforms and submit proposals for infrastructure upgrading and basic services for the urban poor to be funded under the mission. Simultaneously, the state governments under which the ULBs fall have to also implement certain reforms related to urban governance (JNNURM, 2006). The proposals for funding along with undertakings from both the ULBs and the state governments to implement the reforms are evaluated by a team of experts constituted as the advisory group in the Urban Development Ministry of GOI. The JNNURM is structured such that the GOI, the state government and the ULB share the cost of the project in a pre-determined proportion depending on the size of the city.

Against this background, this paper examines how the JNNURM unfolds on the ground and its various implications. To systematically address the issue, the paper has been divided into five sections including the introductory section. The second section discusses the main features of JNNURM. In the next section, this paper assesses the implications that the program entails for urban governance framework in India. The fourth section, using the latest available secondary data, looks at the physical progress of the program and its implications for regional disparities in provision of urban infrastructure. In the concluding section, a brief summary of findings is appended with some policy implications.

Section Two: Introducing JNNURM

The rationale for JNNURM has been described in various government

documents. The programme with its estimated investment plan of Rs.100,000 Crores, with half as the Central government's share covering initially 65 cities, has indeed been large scale programme. There were similar programmes initiated before by the Ministry such as the Urban Reform Fund (U.R.F), Integrated Development of Small and Medium Towns (I.D.S.M.T) etc. but the financial outlay was far less. Most importantly, for the first time, the access to Central Fund is claimed to be contingent upon various reforms. This Mission seeks a different kind of identity, because it is contingent on reforms.

In general, the JNNURM aims to achieve the following objectives:

- a) Focused attention to integrated development of infrastructure services in cities covered under the Mission;
- b) Establishment of linkages between asset-creation and asset-management through a slew of reforms for long-term project sustainability;
- c) Ensuring adequate funds to meet the deficiencies in urban infrastructural services;
- d) Planned development of identified cities including peri-urban areas, outgrowths and urban corridors leading to dispersed urbanization;
- e) Scale-up delivery of civic amenities and provision of utilities with emphasis on universal access to the urban poor;
- f) Special focus on urban renewal programme for the old city areas to reduce congestion; and
- g) Provision of basic services to the urban poor including security of tenure at affordable prices, improved housing, water supply and sanitation, and ensuring delivery of other existing universal services of the government for education, health and social security.

Box 2.1: Mandatory & Optional Reforms for State Government

Mandatory Reforms for State Governments	Optional Reforms for State Governments
Implementation of the 74th Constitutional Amendment a) Elections to ULBs and transfer of 12th Schedule functions to ULBs	Introduction of Property Title Certification system in ULBs

Contd.

Mandatory Reforms for State Governments	Optional Reforms for State Governments
b) Formation of District/Metropolitan Planning Committees (DPCs/MPCs) Assigning City Planning Functions to ULBs Reform in Rent Control Rationalisation of stamp duty to not more than 5 % Repeal of ULCRA Enactment of Community Participation Law Enactment of Public Disclosure Law	Earmarking 20-25 % of developed land for LIG/EWS categories Simplification of framework for conversion of land from agricultural to non-agricultural purposes

Source: MoUD, Government of India

Box 2.2: Mandatory and Optional Reforms for the Urban Local Bodies

Mandatory Reforms for ULBs	Optional Reforms for ULBs
Reforms for Municipal Finances: Accounting Reforms a) Introduction of accrual-based double-entry system b) Preparation of annual balance sheets Property Tax Reforms a) Introduction of Self-Assessment system b) More than 85 per cent properties to be brought under tax record c) More than 90 per cent tax collection Recovering User Charges a) 100 % collection of operations and maintenance expenses for water supply and solid waste management E-Governance set up Internal earmarking of funds for services to the urban poor Provision of basic services to the urban poor	Computerised process of registration of land and property. Revision of building bye-laws to streamline approval process Bye-laws for rain-water harvesting Bye-laws for reuse of recycled water Administrative reforms a) HRD policy covering recruitment, training, transfers, and promotions Structural reforms a) Building municipal cadre Encouraging public-private partnerships (PPPs)

Note: ULCRA is Urban Land Ceiling and Regulation Act; LIG is low income groups; EWS is economically weaker sections; and HRD is human resource development.

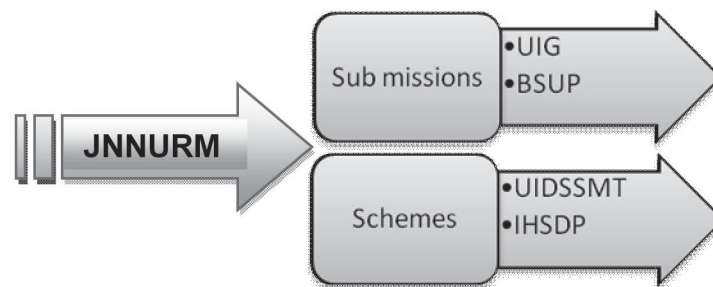
Source: MoUD, Government of India.

In particular, the thrust of the JNNURM is to ensure improvement in urban governance and service delivery so that ULBs become financially sound and sustainable for undertaking new programmes. It is also envisaged that, with the charter of reforms that are followed by the State Governments and ULBs, a stage will be set for Public-Private Partnerships (PPPs). The Mission has listed the set of mandatory and optional reforms for state and local governments and these are as follows:

JNNURM covers the Indian cities under following two Sub-Missions and two sub-schemes:

- a) Urban Infrastructure and Governance (UIG)
- b) Basic Services for the Urban Poor (BSUP)
- c) Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) and
- d) Integrated Housing and Slum Development Programme (IHSDP) respectively.

The UIG and BSUP sub-missions focus on the 66 mission cities. The UIDSSMT and the IHSDP focus on all other urban centers though the states are encouraged to prioritize among them based on existing infrastructure, population of socially and economically disadvantaged groups.



The Ministry of Urban Development (MoUD) is the nodal Ministry for the UIG Sub-Mission and UIDSSMT, while the Ministry of Housing and Urban Poverty Alleviation (MoHUPA) is the nodal Ministry for the BSUP Sub-Mission and IHSDP. Under JNNURM financial assistance will be available to the ULBs and Parastatal Agencies which could deploy these funds for implementing the projects themselves or through the special purpose vehicles (SPVs) that may be expected to be set up. Assistance under JNNURM is additional central assistance (ACA), which would be provided as grant

(100% Central grant) to the implementing agencies. Further, assistance from JNNURM is expected to facilitate further investment in the urban sector. To this end, the implementing agencies are expected to leverage the sanctioned funds under JNNURM to attract greater private sector investments through PPP that enables sharing of risks between the private and public sector. The financing patterns under different schemes are shown in the following tables.

The Mission has also specified the sectors and projects that are eligible under sub-mission and sub-scheme and these are as follows:

Section Three: Implementing JNNURM - Implications for Institutional Restructuring

Government's attempts at pursuing urban reforms and putting the cities on a fast track of development have culminated in the adoption of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for 65 select cities in December 2005. As mentioned in detail in the earlier section, under JNNURM, the state government and the ULBs are needed to make specified parallel contribution along with government of India. The extents of contributions to be made by each level of government vary according to size of the cities. Urban development department (UDD) of the state government receives fund from central government. The UDD transfers the fund to a state level nodal agency for distributing it among the JNNURM cities. The allocation of grant is tangled by to a set of financial and governance reforms at the state and city level and these include: (i) implementations of provisions of 74th CAA; (ii) repeal of Urban Land Ceiling and Regulation Act; (iii) reform of Rent Control Law and introduction of computerized process of land registration; (iv) reforms of property tax system to achieve the collection efficiency of at least 85%; (v) levy of user charges with objective of full cost recovery; (vi) introduction of double entry system of accounting in the ULBs; (vii) introduction of community participation law and community participation fund and (viii) preparation of city development plan (CDP) and Detailed Project Report (DPR), a document defining the direction of development. It has been argued that the International Financial Organizations have significantly influenced the design of the JNNURM as reform components are very similar to the government reforms and management prescriptions promoted by those organization.

Mode of implementation of JNNURM has got important implications for urban governance system and it's equity objective in India. The mission have served to embed a policy shift favoring private sector participation (PSP) and promoting public-private partnership (PPP) in provision of urban

Table 2: Share of Total approved cost (TAC), Central grant commitment (CGC) & Central grant released (CGR) for 15 major states

State Name	UIG		UIDSSMT		BSUP		IHSDP		BUS FUNDING		Share of TAC under JNNUR		Share of CGC under JNNUR		Share of CGR under JNNUR			
	TAC	CGC	TAC	CGC	TAC	CGC	TAC	CGC	TAC	CGC	M	M	M	M	M	M		
AP	7.9	7.3	8.4	17.5	17.7	22.4	11.8	10.8	14.5	8.2	8.8	11.8	9.1	8.4	9.1	10.1	10.1	12.9
Assam	0.5	1.0	1.3	1.5	1.7	1.4	0.4	0.7	0.6	0.7	0.9	0.7	1.1	2.3	2.2	0.6	1.1	1.1
Bihar	1.1	1.4	0.6	1.9	1.9	1.2	2.4	2.1	0.9	6.3	4.9	4.0	1.0	1.2	0.9	2.0	2.0	1.2
Gujarat	9.4	9.0	10.2	3.1	3.1	3.8	6.8	6.8	8.4	3.5	3.3	3.7	5.3	4.2	2.8	7.3	6.6	7.5
Haryana	1.1	1.2	1.6	1.4	1.4	1.3	0.2	0.2	0.4	2.6	3.2	2.9	1.2	1.3	0.9	1.1	1.3	1.4
Karnataka	5.9	5.0	5.4	4.9	4.9	5.6	2.8	2.8	3.6	3.4	2.9	4.1	8.3	7.6	8.9	4.9	4.3	5.1
Kerala	1.6	2.2	1.2	3.0	3.1	2.0	1.1	1.6	1.5	2.3	2.6	2.8	2.6	3.7	4.3	1.8	2.3	1.7
MP	4.0	4.5	22.1	8.9	8.9	6.3	2.3	2.3	2.6	3.1	3.3	2.6	4.1	4.8	3.8	4.1	4.6	4.1
Maharashtra	18.8	18.3	4.3	19.8	19.8	21.3	20.7	20.2	20.0	22.2	21.8	15.5	15.2	14.5	12.9	19.6	19.3	20.4
Orissa	1.3	2.2	1.7	1.8	1.8	1.2	0.2	0.4	0.4	2.4	2.5	2.3	0.4	0.8	0.7	1.2	1.7	1.4
Punjab	1.2	1.3	0.8	2.8	2.8	2.1	0.6	0.6	0.3	2.8	1.9	1.4	2.1	2.3	1.7	1.4	1.5	1.1
Rajasthan	2.0	2.7	2.4	4.3	4.4	3.3	1.0	1.2	1.0	8.7	8.3	7.0	3.2	3.7	4.5	2.7	3.3	2.9
Tamil Nadu	8.6	7.4	8.0	6.3	6.3	6.5	7.7	7.0	7.4	4.7	5.2	6.8	10.0	9.2	9.0	7.8	6.9	7.5
UP	8.6	9.4	10.5	8.3	8.4	9.7	7.8	7.7	9.4	11.0	10.9	12.8	6.0	6.8	9.0	8.5	8.9	10.4
WB	11.2	8.9	6.7	4.4	4.3	3.7	13.9	13.8	12.1	7.8	9.2	12.1	8.6	6.9	4.7	10.7	9.2	7.8
All India	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Situation as on 24/05/2013 (UIG); 31/03/2013 (UIDSSMT & Bus funding); 8/08/2012 (BSUP & IHSDP)

Source: Calculated from JNNURM, MoUD UIDSSMT & indiastat website data

Table 2.1: UIG funding pattern (% of total project cost)

City type	Central grant	State grant	ULB/Parastatal/loan from FI
Cities with more than 4 million population	35	15	50
Cities with more than one million but less than 4 million population	50	20	30
Cities in North-eastern States and Jammu & Kashmir	90	10	-
Other Cities	80	10	10
Setting up desalination plants	80	10	10

Source: MoUD, Govt of India

Table 2.2: BSUP funding pattern (% of total project cost)

Category of cities	Central grant	ULB/Parastatal/ loan from FI
Cities with more than 4 million population	50	50
Cities with more than one million but less than 4 million population	50	50
Cities in North-eastern States and Jammu & Kashmir	90	10
Other Cities	80	20

Source: MoUD, Govt of India

Table 2.3: UIDSSMT funding pattern (% of total project cost)

City type	Central grant	State grant	ULB/Parastatal/loan from FI
Cities with more than 4 million population	80	10	10
Cities with more than one million but less than 4 million population	80	10	10
Cities in North-eastern States and Jammu & Kashmir	90	10	-
Other Cities	80	10	10

Source: MoUD, Govt of India

Table 2.4: IHSDP funding pattern (% of total project cost)

City type	Central grant	State grant	ULB/Parastatal/loan from FI
Cities in North-eastern States and Jammu & Kashmir	90	10	-
Other Cities	80	20	-

Source: MoUD, Govt of India

Table 2.5: Eligible sectors & projects under UIG & BSUP

UIG	BSUP
<p>(1) Urban renewal, that is, redevelopment of inner (old) city areas including widening of narrow streets, shifting of industrial and commercial establishments from non conforming (inner city) areas to conforming (outer city) areas to reduce congestion, replacement of old and worn out pipes by new and higher capacity ones, renewal of the sewerage, drainage, and solid waste disposal system etc.]</p> <p>(2) Water supply (including desalination plants) and sanitation.</p> <p>(3) Sewerage and solid waste management.</p> <p>(4) Construction and improvement of drains and storm water drains.</p> <p>(5) Urban transportation including roads, highways, expressways, MRTS, and metro projects.</p> <p>(6) Parking lots and spaces on PPP basis.</p> <p>(7) Development of heritage areas</p> <p>(8) Prevention and rehabilitation of soil erosion and landslides only in cases of special category States where such problems are common;</p> <p>(9) Preservation of water bodies.</p>	<p>(1) Integrated development of slums, housing and development of infrastructure projects in slums in the identified cities</p> <p>(2) Projects involving development, improvement, and maintenance of basic services to the urban poor.</p> <p>(3) Slum improvement and rehabilitation of projects.</p> <p>(4) Projects on water supply, sewerage, drainage, community toilets, and baths etc.</p> <p>(5) Projects for providing houses at affordable cost for slum dwellers, urban poor, economically weaker sections (EWS) and lower income group (LIG) categories.</p> <p>(6) Construction and improvement of drains and storm water drains.</p> <p>(7) Environmental improvement of slums and solid waste management.</p> <p>(8) Street lighting.</p> <p>(9) Civic amenities like community halls, child care centers etc.</p> <p>(10) Operation and Maintenance of assets created under this component.</p> <p>(11) Convergence of health, education and social security schemes for the urban poor</p>

Source: MoUD, Government of India

Table 2.6: Eligible sectors & projects under UIDSSMT & ISHDP

UIDSSMT	ISHDP
Admissible Components: <ul style="list-style-type: none"> • Urban Renewal • Water Supply (including de-salivation plants) and sanitation • Sewerage and Solid Waste Management • Construction and improvement of drains/storm water drains • Construction/Upgradation of roads, highways / expressways • Parking lots/spaces on PPP basis • Development of heritage areas • Prevention & rehabilitation of soil erosion/landslides only in case of Special Category States where such problems are common • Preservation of water bodies. 	Admissible components: <ul style="list-style-type: none"> • Provision of Shelter including upgradation & Construction of new houses. • Provision of Community toilets. • Provision of Physical amenities like water supply, storm water drains, Community bath, widening and paving of existing lanes, sewers, Community latrines, street lights, etc., • Community infrastructure like provision of Community centers to be used for preschool education, non-formal education, adult education, recreational activities etc., • Community Primary Health Care center Buildings can be provided. • Social amenities like pre-school education, non-formal education, adult education, maternity, child health and primary health care including immunization, etc., • Provision of Model Demonstration projects. • Sites and Services/Houses at affordable costs for EWS & LIG categories. • Slum improvement and rehabilitation projects. • Land acquisition cost will not be financed except for acquisition of private land for schemes / projects in the North Eastern States & hilly states Himachal Pradesh, Uttaranchal and Jammu & Kashmir.

Source: MoUD, Govt of India

infrastructure. Under the impression of public sectors' lack of adequate funds, entry of private capital has been projected as the major panacea to get rid of the problem of urban decadence emanating from the gap between disproportionately fast pace of urban growth and urban infrastructural development. However, lack of well-defined framework facilitating PSP, low rate of return and absence of meaningful financial incentives (e.g., tax concessions) make the option of investment in urban infrastructure unattractive before the private players. They have also been found to be reluctant in undertaking large infrastructure projects as many such projects invited huge resistance to large scale land acquisition in many cities. Market financing has appeared to be a distant possibility against the backdrop ULBs' inabilities in undertaking reforms as mandated by the Mission. Thus, prospect of PSP in urban infrastructure has yet to be materialized in a significant form as envisaged by the Mission.

Preparation of CDP is one of the crucial preconditions for accessing central government's fund. The CDPs are supposed to link spatial planning with the socio-economic planning and to identify cities' development priorities through stakeholder participation. However, the rhetoric of stakeholders'/ citizens' participation did not match reality as the citizens hardly found any scope to be involved in the CDP preparation (Narayanan, 2008). Needs and priorities of poor people were not given their due importance in the planning process and, thus, these people were viewed not as stakeholders but as beneficiaries of the process. Consequently, they remained at the mercy of the official stakeholders (Mahadevia, 2011). ULBs did not have adequate capacity to prepare such a vision document for their cities (HPEC, 2011). In such situation, IFIs directly supported the formulation of city development strategies which in many cases were converted into CDP. The tasks of preparation of CDPs were outsourced to private consultants who put special emphasis on forming capital investment plans for urban infrastructure (Baindur, 2009). Another undesirable outcome of the process of CDP preparation is that the plans were prepared and funds were approved for 'stand alone projects' that obfuscated the integrated vision for the development of the city as a whole (HPEC, 2011).

The Mission has tried to address the problem of inadequate capacity by creating a National Technical Advisory Group (NTAG). Apart from this group, the Mission has also recommended setting up of State Technical Advisory Group (STAG) and City Voluntary Technical Cells (CVTC) to build capacity at the city level and to enable greater citizens' participation in urban governance. Even these arrangements were fraught with many problems. At the state and city levels, STAGs and CVTCs have not been

either formed or made functional. The specific role and functions of the NTAG were not clear. These groups were represented by the people from private sector and people having a close working relationship with IFIs. As mentioned earlier, a SLNA distributes central funds among the cities and monitors project's implementation. A Central Sanctioning and Monitoring Committee has also been created to review the project proposals as per the guidelines of the JNNURM. All these agencies are represented by the bureaucrats, many of whom have very little knowledge about the cities. In such situation, instead of preparing projects based on local priorities, the ULBs formulated projects based on the criteria and priorities set by the Mission as it increased the project's chance of being selected for central funding. The Mission has also recommended establishment Project Management Units (PMU) and Project Implementation Units (PMI) to build capacities of the ULBs for management and implementation of JNNURM projects and reforms. All such measures are thus employed to increase central control over the selection and design of local projects. In other words, the non-elected bodies at the higher levels of government have used central financing as both 'carrot' and disciplining mechanism to implement Mission's reforms (Baindur *et.al.*, 2011). This is clearly antithetical to the spirit of 74th CAA that envisaged peoples' participation in urban governance arrangements so that urban development strategies conform to needs and priorities of local people.

Quite naturally, the Mission has attracted resistances from citizen, state and local governments. The extreme centralization of project preparation, monitoring and implementation has reduced the role of ULBs to being the mute spectators. In reality, citizen participation has been a hypothetical myth in formulation of urban development plan. Even the State governments have been opposing this Mission as the Central Government did not consult with them for forming consensus on issues related to design and implementation of Mission. Some states (Karnataka, Maharashtra Gujarat) have created their own urban renewal mission. Some states (Kerala, Punjab) also have demanded delinking of reforms from financing. Kerala government incurred fiscal loss on account of it's adherence to one of the reforms components, namely, reduction in stamp duties. West Bengal Government has refused to charge user fee for water. Such varied responses from the state government have further corroborated the fragmented and *ad hoc* nature implementation of the Mission (Baindur *et.al.*, 2011).

Section Four: Evaluating JNNURM - Physical Progress

Table 4.1 and Figure 4.1 present a summary view of the physical progress as well as financial approvals, commitments, and releases under different components of the Mission. By March end 2013, the Mission has allocated Rupees 65000 crores – out of which 67 percent of the funds being allocated for 65 mission cities. Among the mission cities, 65 percent of the allocated fund has been marked for the UIG component. More or less similar allocation pattern has been followed in case of non-mission cities with 60 percent and 40 percent funds being allocated for UIDSSMT and IHSDP component respectively. Out of it's committed fund, the central government has released relatively higher amount of funds for the two components of non-mission cities as compared to that for the mission cities. The corresponding figures for UIDSSMT and IHSDP are 77 percent and 68 percent respectively whereas those figures for UIG and BSUP are 67 percent and 58 percent respectively. This can be explained the fact that the central government contributes 80 percent of the costs for projects under UIDSSMT and releases the funds in two installments. However, under UIG scheme, government shares only 35 percent of the project cost and releases the funds in four installments. Nonetheless, by releasing comparatively higher fund for the non-mission cities, government has attempted to address the problem of regional imbalance as regard provision of urban infrastructure.

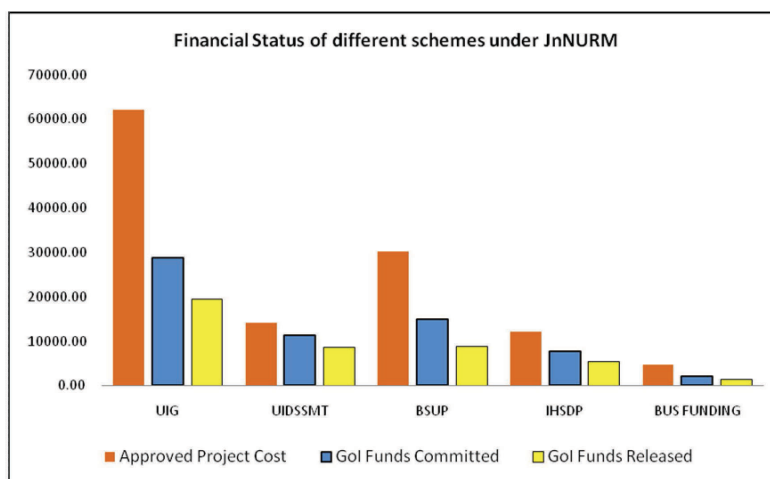


Fig. 1:

Table 4.2 and Fig 4.2 gives state-wise distribution of JNNURM funds under it's different components. The pattern of disbursement of fund exhibits skewed distribution of funds towards comparatively stronger states and larger cities

Table 4.1: JNNURM - An overall scenario

Key Indicator	UIG	UIDSSMT	BSUP	IHSDP	BUS FUNDING
Cities/Towns Covered	65	673	65	927	67
DPRs received	1093	N/A	630	1501	N/A
Projects/Bus Approved	562	807	527	1084	15388
Projects Completed	185	312	N/A	N/A	x
Dwelling Units for the Poor Approved	X	x	1017252	570951	x
Dwelling Units for the Poor Completed	X	x	478707	210350	x
Approved Project Cost	62136.73	14026.49	30188.71	12048.47	4723.97
GoI Funds Committed	28759.66	11278.86	14914.98	7740.42	2092.10
GoI Funds Released	19554.72	8718.41	8749.24	5322.30	1445.55

Situation as on 24/05/2013 (UIG); 31/03/2013 (UIDSSMT & Bus funding); 8/8/2012 (BSUP & IHSDP) Source: Calculated from JNNURM, MoUD UIDSSMT & indiastat website data

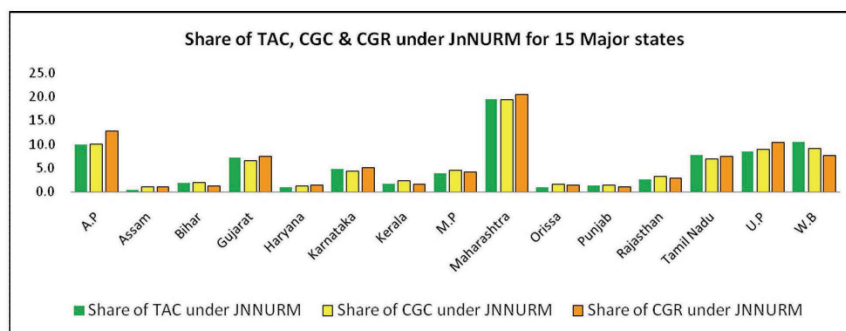


Fig. 2:

of these states. By March end 2013, almost 70 percent of the funds went to seven states: Maharashtra, Andhra Pradesh, West Bengal, Uttar Pradesh, Tamil Nadu, Gujarat and Karnataka. The corresponding percentage shares for states like Bihar, Assam, Orissa and Rajasthan were significantly low. Even states like Punjab and Haryana did not receive adequate fund under this Mission. Kundu *et.al.* (2011) examined the coverage of JNNURM schemes at the size class level and showed that the coverage of JNNURM in class I cities was significantly higher whereas a large percentage of population in class II to Class VI cities remained uncovered. Even for the class I cities, the coverage was found to be higher in case of developed states. In particular, big cities namely Mumbai, Chennai, Pune, Bangalore, Kolkata, Hyderabad and Ahmedabad turned out to be the principal beneficiaries of JNUURM funding (Sivaramakrishnan, 2011).

This concentration of JNNURM fund has really been a major concern for urban policy makers in India. As mentioned earlier, central government's matching financial contribution is conditional on state and ULBs implementing a set of mandatory and optional reforms. Reform status for 15 major states in India is presented in Table 4.3. Quite naturally, the states, that were successful in implementing majority of reforms, received majority of central

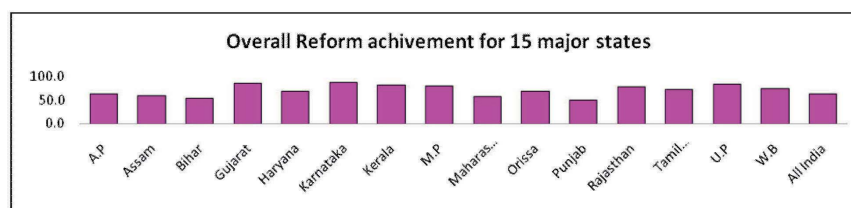


Fig. 3:

Table 4.3: Reform achievement for 15 major states

States	ULB Level Reforms	State Level Reforms	Optional Reforms	Overall State Performance
Andhra Pradesh	79.2	21.4	90.0	63.5
Assam	55.4	57.1	63.5	59.5
Bihar	55.5	54.0	53.0	53.9
Gujarat	83.8	89.0	88.6	87.0
Haryana	77.0	71.0	66.0	70.5
Karnataka	93.0	94.0	85.0	89.6
Kerala	99.0	71.0	80.0	82.4
Madhya Pradesh	50.6	60.5	77.5	82.0
Maharashtra	71.7	17.1	88.0	58.9
Orissa	63.5	65.0	75.5	69.0
Punjab	22.5	89.0	40.0	50.5
Rajasthan	71.0	96.0	73.7	79.9
Tamil Nadu	83.7	71.0	72.0	74.0
Uttar Pradesh	79.7	89.0	86.0	85.2
West Bengal	71.0	77.0	78.0	75.9
All India	56.9	70.3	65.1	64.7

Situation as on 1/06/2013 Source: Calculated from JNNURM website data

assistance. Gujarat, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal comprised the list of successful states with implementation rates ranged from 74 percent to almost 90 percent. Bihar, Assam, Punjab and Orissa appeared as the laggard states with relatively lower levels of implementation rate. Inability of these states in introducing reform measures resulted in sluggish flow of funds there (Fig 4.3).

Reform implementation status for 65 Mission cities has got very important policy implications (Table 4.4). As on 1st April 2013, implementation status of reform measures directly related to decentralization and participatory urban governance has been really pathetic. Only about 30 percent of the mission cities were endowed with the city planning functions. Community participation law and public disclosure law were implemented only in two-fifth of the mission cities. The creation of District Planning Committee and Metropolitan Planning Committee also remained as a hypothetical myth. This has undoubtedly curtailed the role of ULBs in framing local development plan and also reduced the scope of citizens' participation in urban governance. Among the ULB level mandatory reforms, 85 percent coverage for property tax was achieved in only 40 cities. Only 31 cities became successful in touching 90 percent collection efficiency for property tax. Only one-third of the cities achieved 100 percent cost recovery in water supply. The situation was even gloomier in case of cost recovery for solid waste. Consequently, internal resource mobilization capacities of most of the ULB did not improve as it was expected and these bodies failed to raise matching contribution that resulted in discontinuation of flow of central fund to them. In fact, the 13th Finance Commission data reveals high dependence of the ULBs on grants from higher levels of government. In 2007-08, own revenue constituted only 53 percent of the total revenue of the ULBs in India. This dependency would undoubtedly be higher for small and medium cities. It is also to be noted that grant component only cover partial capital costs of any projects, leaving the entire operation and maintenance costs to be met by the local bodies themselves. With their existing source of funding and limited revenue improvement potential, it is simply impossible for them to operate in the financial market to generate requisite resources through, e.g., issuance of municipal bond. In such situation, it has been observed that some ULBs have resorted to easy techniques of raising finances through mortgaging public assets, redeveloping estates and imposing new taxes on citizen (Maringanti, 2012). Absence of any public consultation on these new modes of increasing municipal revenue has engendered resentment among the citizens. Moreover, the feeble financial health of the ULBs has made them unattractive to the private players.

Table 4.4: Reforms implementation status both for States & ULBs

Mandatory & Optional reforms	Applicable in no. of mission cities	Implemented in no. of mission cities	% of implemented
State Level Mandatory Reforms			
74 th CAA: Transfer of 12 sch. functions	64	17	26.6
74 th CAA: Constitution of DPC	64	27	42.2
74 th CAA: Constitution of MPC	47	9	19.1
Transfer of city planning functions	64	19	29.7
Transfer of water supply & sanitation	64	20	31.3
Reform in rent control	64	18	28.1
Stamp duty rationalization to 5%	65	26	40.0
Repeal of ULCRA	65	30	46.2
Enactment of community participation law	65	23	35.4
Enactment of public disclosure law	65	27	41.5
Ulb Level Mandatory Reforms			
E- governance set up	65	37	56.9
Shift to accrual based double entry accounting	65	53	81.5
Property tax (85% coverage)	65	40	61.5
Property tax (90% collection efficiency)	65	31	47.7
100% cost recovery (water supply)	65	23	35.4
100% cost recovery (solid waste)	65	11	16.9
Internal earmarking of funds for services to urban poor	65	63	96.9
Provision of basic services to urban poor	65	14	21.5

Contd.

Mandatory & Optional reforms	Applicable in no. of mission cities	Implemented in no. of mission cities	% of implemented
Optional Reforms			
Introduction of property title certification system	65	0	0.0
Revision of building bye laws-streamlining the approval process	65	59	90.8
Revision of building bye laws-mandatory rainwater harvesting in all buildings	65	63	96.9
Earmarking 25% developed land in all housing projects for EWS/LIG	65	54	83.1
Simplification of legal and procedural framework for conversion of agricultural land for non-agricultural purpose	65	52	80.0
Introduction of computerized process of Registration of land and property	65	55	84.6
Bye laws on reuse of recycled water	65	51	78.5
Administrative Reforms	65	40	61.5
Structural Reforms	65	40	61.5
Encouraging Public Private Partnership	65	63	96.9

Status as on 1/4/2013 Source: Calculated from JNNURM website data.

Table 4.5 further corroborates state governments' intents towards improving the infrastructural situation in mission cities. By March end 2013, total approved costs for UIDSSMT schemes turn out to be only 23 percent of total approved costs for UIG schemes. Most of the states that received bulk of the JNNURM exhibited little interest in UIDSSMT. For states like Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh the percentage figures of total approved fund under UIDSSMT to that of UIG hovered between 17 percent to 24 percent. Big city bias is very much pronounced in two states - West Bengal and Gujarat that recorded corresponding percentage figures of 8.8 and 7.8 respectively. On the other hand, states like Andhra Pradesh, Assam, Kerala, Madhya Pradesh, Punjab and Rajasthan exhibited interest in improving the infrastructural situation in their small and medium towns. Central government's responses in this regard have been positive as the proportion of ACA released for the UIDSSMT to that for UIG projects is 44 percent at all India level for 15 major states. For Punjab and Andhra Pradesh, these proportions are more than 100 percent. Bihar, Kerala, Madhya Pradesh and Rajasthan recorded significant proportion of ACA released for UIDSSMT to that for UIG projects.

Pattern of sectoral distribution of UIDSSMT fund indicates the importance of water supply and sewerage as they accounted for 91 percent of the total fund (Figure 4.4). This is indeed a positive aspect of UIDSSMT projects that have been successful in identifying water and sewerage related problems having important implications for livelihoods of majority of urban residents. Bihar emerged as an exception to this trend with almost 59 percent of the UIDSSMT funds was approved for road and related infrastructure.

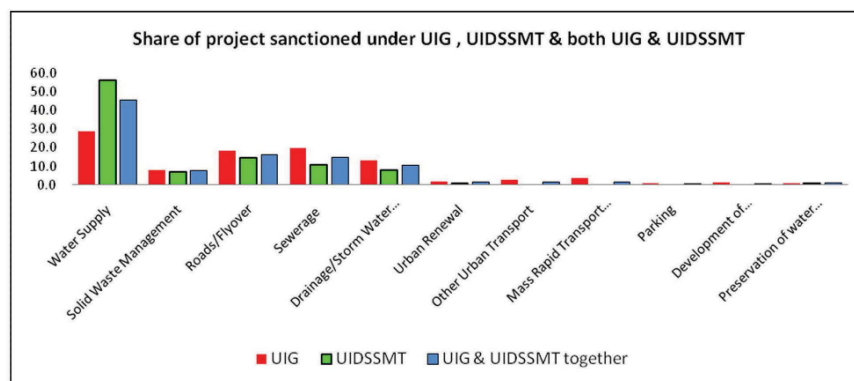


Fig. 4:

Table 4.5: Sectoral shares of total approved cost for 15 major states: UIDSSMT versus UIG

States	Water Supply	Sewerage/SWM/Drainage/SWD	Roads / Flyovers / OUT/ MRTS / Parking	Urban renewal/ PWB / DHA	Total Approved	Number of Towns approved)	UIDSSMT to UIG (Total)	UIDSSMT to UIG (Total ACA released)
AP	73.0	22.1	4.9	0.0	100	68	49.9	118.2
Assam	9.0	91.0	0.0	0.0	100	28	65.7	49.8
Bihar	37.8	3.8	58.4	0.0	100	11	36.7	86.7
Gujarat	100.0	0.0	0.0	0.0	100	52	7.5	16.5
Haryana	0.0	100.0	0.0	0.0	100	7	28.8	35.3
Karnataka	61.3	22.2	16.6	0.0	100	30	18.6	45.9
Kerala	79.8	20.2	0.0	0.0	100	22	42.9	75.3
MP	80.8	12.7	6.3	0.1	100	49	50.1	64.7
Maharashtra	74.5	23.5	1.9	0.1	100	86	23.8	42.9
Orissa	61.8	2.3	19.7	16.1	100	14	31.7	31.6
Punjab	15.0	85.0	0.0	0.0	100	14	54.6	108.8
Rajasthan	25.0	68.5	4.4	2.1	100	35	49.7	59.6
Tamil Nadu	72.0	16.9	11.1	0.0	100	116	16.6	36.1
UP	41.6	41.0	17.5	0.0	100	46	21.8	40.9
WB	88.7	10.1	1.2	0.0	100	33	8.8	24.4
All India	63.1	28.2	8.2	0.5	100	673	22.6	44.6

Note: SWM= Solid Waste Management; SWD= Storm Water Drains; OUt= Other Urban Transport; MRTS= Mass Rapid Transport System; PWB= Preservation of water bodies; DHA= Development of Heritage Areas Situation as on 24/05/2013 (UIG); 31/03/2013 (UIDSSMT) Source: Calculated from JNNURM & MoUD UIDSSMT website data

However, from table 4.6, it appears that, for UIG component apart from water supply and sewerage, road related infrastructure emerged as another important sector. Water supply and sewage attracted relatively lower share (72 percent) of the approved UIG fund at all India level whereas the corresponding figure for the road was almost 27 percent. Among the states, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan and West Bengal were successful in obtaining 25 percent to 40 percent of their UIG fund for improving road related infrastructural facilities. Moreover, it is important to note that although quite a significant proportion of UIG fund was approved to increase the total capacity water and sewerage services at the city level; but no explicit provision was made to improve the delivery of those facilities in deficient areas or to improve access of these services among the poor. This would likely to increase intra city inequity in access to these basic services (Kundu *et.al*, 2011).

For BSUP and IHSDP projects, it has been observed that the states like Maharashtra, West Bengal, Tamil Nadu, Gujarat and Uttar Pradesh received significant amount of approved project costs (Table 4.7 and Figure 4.5). However, a closer look at the DPRs reveals that BSUP funds are largely utilized for new housing construction. Projects related to slum upgradation have not been accorded their due importance. This has got serious policy implications as most of the new houses have turned out to be unaffordable to the urban poor. These houses are also unsuitable for the urban poor as these have majorly been constructed at the peripheries of most of the cities. In essence, BSUP and IHSDP funds have produced little benefits for the urban poor. The scope for infrastructural improvements has been limited as only a few approved DPRs were for slum upgradation. Several private players, instead of the urban poor have been benefitted from the construction of new houses.

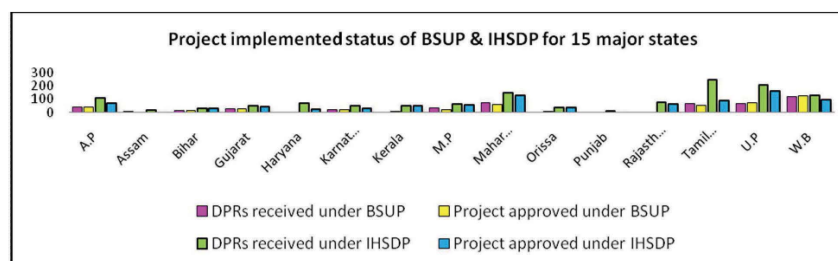


Fig. 5:

Table 4.6: Sectoral share of total approved costs and central grant released for 15 major states: UIG

States	Water Supply	Sewerage/SWM/ Drainage /SWD	Roads / Flyovers / OUT/ MRTS / Parking	Urban renewal / PWB / DHA	Total Approved	Share of state in total UIG approvals	Share of central grant released of committed	Share of state in total UIG central grant released
AP	45.2	35.0	18.2	1.6	100	7.9	79.1	8.4
Assam	88.9	11.1	0.0	0.0	100	0.5	87.2	1.3
Bihar	79.7	20.3	0.0	0.0	100	1.1	31.2	0.6
Gujarat	18.0	43.8	36.3	1.9	100	9.4	77.1	10.2
Haryana	70.6	29.4	0.0	0.0	100	1.1	90.0	1.6
Karnataka	9.5	60.7	28.7	1.2	100	5.9	74.0	5.4
Kerala	28.9	57.9	11.0	2.2	100	1.6	35.7	1.2
MP	34.2	34.8	27.9	3.1	100	4.0	65.8	4.3
Maharashtra	38.3	36.7	24.2	0.9	100	18.8	82.1	22.1
Orissa	20.6	78.7	0.0	0.7	100	1.3	51.8	1.7
Punjab	31.0	48.4	20.6	0.0	100	1.2	45.4	0.8
Rajasthan	28.9	25.3	39.1	6.7	100	2.0	62.3	2.4
Tamil Nadu	29.1	69.2	1.6	0.1	100	8.6	73.9	8.0
UP	40.9	59.1	0.0	0.0	100	8.6	76.5	10.5
WB	49.9	19.0	30.8	0.3	100	11.2	51.2	6.7
All India	33.2	38.7	26.7	1.4	100	100.0	68.0	100.0

Note: SWM= Solid Waste Management; SWD= Storm Water Drains; OUT= Other Urban Transport; MRTS= Mass Rapid Transport System; PWB= Preservation of water bodies; DHA= Development of Heritage Areas Situation as on 24/05/2013 (UIG) Source: Calculated from JNNURM website data

Table 4.7: Project implementation status of BSUP & IHSDP for 15 major states

STATES	DPRs received		Project approved		Project cost (Crore)	
	BSUP	IHSDP	BSUP	IHSDP	BSUP	IHSDP
A.P	45	109	41	74	4825.31	1788.80
Assam	8	20	2	16	179.18	142.77
Bihar	18	32	18	32	699.16	757.60
Gujarat	30	53	27	44	2566.00	631.68
Haryana	5	69	2	25	226.90	637.56
Karnataka	26	50	19	34	1077.51	745.53
Kerala	7	53	7	53	383.86	271.56
M.P	37	68	22	57	1223.10	414.06
Maharashtra	77	153	62	129	9668.45	2986.69
Orissa	6	38	6	38	74.61	287.91
Punjab	5	16	4	16	173.80	351.12
Rajasthan	4	78	3	67	458.55	1131.97
Tamil Nadu	66	251	52	94	2487.48	717.71
U.P	71	207	71	164	2496.80	1350.73
W.B	122	131	122	95	5097.96	1143.43
ALL INDIA	635	1503	535	1084	40,806.60	14908.80

Situation as on 8/08/2012 (BSUP & IHSDP) Source: Calculated from JNNURM & MoUD website data Figure 4.5:

Section Five: Summing Up

JNNURM is the single largest initiatives of Government of India for planned urban development and over the last seven years the Mission has provided substantial central assistances to cities and towns mainly for infrastructure development and housing the poor. However, a closer examination of characteristics and implementations of this flagship urban development program reveals quite a disturbing picture having important implications for regional and spatial disparities. Distribution of JNNURM has been found to be concentrated in comparatively stronger states and larger cities of these states. This is the outcome of reform conditionalities imposed by the central government for accessing fund under the Mission. Quite expectedly, the state and city governments with better administrative and financial capabilities have become successful in implementing the required reforms and thus have enjoyed access to the fund. Given the structural and financial deficiencies of ULBs of small and medium town in India, it is quite unlikely that they would be able to undertake necessary structural changes to arrange the matching finance. Moreover, even in the cities that received JNNURM funds, less attention has been paid to provide basic services for all. Instead, commercially viable infrastructure projects have been given priority. These projects, in majority cases, involve displacement of large section of vulnerable people. Thus, intra-city inequality has got ingrained in the ongoing urban transformation among the Indian cities.

Preparation of CDP appears as another area of concern that needs immediate policy intervention. Given the limited technical capacity of the ULBs, it is simply not possible for them to prepare a vision plan for the city. The problem, quite expectedly, is severe in case of small and medium towns. IFIs and the parastatal bodies prepared the CDPs on a project basis. As a result, these CDPs failed to present an integrated city development plan. Needs and priorities of the people hardly got reflected in such plans as, in majority cases, they were not provided with any opportunity to participate in CDP preparation. Even the democratically elected municipal councilors failed to influence the city development strategy. The Mission has tried to address the problem of capacity constraints through formation of different management and implementation units at central, state and local level. The functioning of these units is closely monitored by the concerned ULB, State government and MoUD. As these units are dominated by the bureaucrats, the channel of democratic accountability is bound to suffer as they are not accountable to the local people. All these reinforce centralization of powers and controls of state and MoUD over JNNURM projects. Undoubtedly, the 'functional impotence of democratically elected bodies' exacerbate the

problems of the poor people as regard access to basic services as they, using their bargaining power through votes, forces elected representatives to pay attention to their demands.

Unsatisfactory state of municipal finances in India makes it really difficult for the ULBs to arrange their contribution in JNNURM funded projects. In fact, inefficiencies unearthen in every sphere of municipal finance, be it internal resource generation, system of transfers, or the extent of autonomy that municipalities can exercise. ULBs have tried to improve their financial health by imposing user fees, imposition of new taxes and so on. These steps are although necessary to improve the financial health of the ULBs but equally important is the concern whether this higher fees result in improvement in service delivery for all. There are some instances, for example in case of Greater Bangalore Water Supply Program, poor people did not receive water even after paying the capital cost contribution (Ranganathan, 2011).

Thus, it is quite clear that 'one size fit for all' approach as practiced in the JNNURM program is problematic. ULBs of the small and medium towns should be given longer time and greater assistance from higher level of governments to implement the reform measures. These cities require special unconditional grant from the Central and State government to meet their infrastructural demands. Acknowledging such requirement, HPEC (2011) has proposed New Improved JNNURM (NIJNNURM) that would aim to link funds to a set of reforms that will be differentiated across different types of ULBs. Greater emphasis should be placed on capacity building of the ULBs, especially those of small and medium towns, so that they can undertake the reform measures in transparent and accountable way. Effective citizen participation should be there to prepare a comprehensive CDP that incorporates the needs and preferences of common people in general and poor people in particular. It is also necessary to aim at a long run improvement in the municipal system. Conscious and combined efforts by the government towards improving overall capacity of the ULBs along with greater involvement of the citizens have the potentiality to ensure equitable and sustainable urban growth.

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11

Encashment Of People's Ignorance As Alternative Earning : A Dangerous Deal

Harasankar Adhikari

Health status of people is an important indicator of human development. The people in better health condition mean that out of many indicators one most is the accessibility of scientific health care facilities in their door step. Generally the accessibility of scientific health care facilities depends on the education, knowledge, information and economy of the particular people and their family. Again in India as it is mentioned as welfare state that the Nation has taken responsibility to provide health care facilities to the people of all corners and it has been laid down in the Constitution of India(Avasthi, A & Maheswari, S,1962),. After Independence the “Health for All” –a National Health Policy was adopted with a mission to escape the people from their traditional cultural belief regarding their health care and management. As because the people of India is mostly living in the rural villages with high illiteracy they are variously with conscious or unconscious depending on the traditional health care system.

So, for health care in door step the Indian Government and its States both jointly or sometimes separately has taken initiative for institutionalised health care services with a hierarchy – Sub health care centre at Gram Panchayat level (consisting 15-20 villages), Block Health care centre at Block level (which is constituted with 6-8 Gram Panchayat), Sub-divisional hospital at Sub divisional level comprising 4-6 Blocks and District Hospital at district level. For more specialized treatment and care at State level there are some hospitals with medical colleges. The people of the state are getting the health care service either free of cost depending on the income level or a nominal fees to be paid by the patient for the service. But the services are not enough as per the need and demand of the people while the health professional and paraprofessional are more concerned about their jobs

guarantee and related matters, they are less concerned with the people's care(Basic Health Guide, Govt. Of India, 2000).

However the Governments' initiative was failed to cover the people due to lack of infrastructure and other resources matching with the growth of population. So, the Government has given space to private sectors for arrangement of better health care facilities in the state. In some cases these are collaborative initiative of public and private sectors. But the modernized and multi speciality services are paid. For this purpose the government introduces the Clinical Establishment Act for opening and running of such private health care initiative. The act directs with a schedule to provide registration of new initiative and control of the services with monitoring and supervision of the establishment. The rapid globalization and urbanization take place where the modern health care facilities are mostly urban oriented. These are mostly developed in the urban area.

It is fact that the level of literacy in villages is slowly in progress and it is in case of girls too slow. But the people's contact with urban area for the cause of their earning as semi skilled or non-skilled workers and adjustment with new global society has helped to adopt the new technologies in all cases. It is very much practical that rural people's contact with urban brings a change in their lifestyle as an indirect impact of urbanization(Dreze & Sen, 2000). The development of people and their society has been accelerated through urbanization because it has created a new era. The development and urbanization have its close integrity. Development comes through urbanization and on the other hand urbanization brings development. So, the people try to adopt themselves with the new situation. But it is slow due to other some crucial reasons like economy and education. However the traits of imitation in human nature have a reflection in the life of particular human being regardless of the class, caste, creed, economy and education background, etc. That's why their lifestyle might change to some extent and it is a normal process of progress of the society.

Particularly in case of accessibility of scientific health care facilities has been coped up the people's mind more than any awareness and education. The traditional health care system based on the 'Vaidya'(doing treatment with the help of medicinal plants), 'Ojha'(who uses their supernatural power and belief for treatment) and quack(untrained medical practioner) has been gradually replaced by modern health care facilities. But the inaccessible services or lack in education and knowledge have been the factors of reliability when they believe the doctors who have a medical degree. It is the main point of exploitation to the people of exploitative nature. They are enchasing this as their alternative earning strategies in remote and backward area.

Through this paper the health care system of people of rural India has been discussed and simultaneously how a segment of unemployed people are taking advantage of people's ignorance for their earning where the life and death of service takers are being violated.

For this purpose of the study we have examined the situation of rural minority dominated area, Domkol Sub-division, out of 5 subdivisions consisting 4 Development Blocks under the district of Murshidabad of West Bengal. Domkol is the only Municipal area of this sub-division and the area is located in the southern eastern part of the district and surrounded by the neighbouring district, Nadia. In the eastern part of the area is covered by the Indo-Bangladesh boarder.

The population of the district dominated by Muslim (63.61%) and Muslim population in this district is highest in West Bengal.

Health condition of people

The population of this area is suffering from some chronic illness as well. But a gradual change has been occurred in their living pattern due to their connection with urban places. While they have their own belief and taboos they are expecting their health care from proper scientific sources. So, in any type of their illness they depend on the health practitioners who have a medical degree displaying in their sign board.

The fever, cold, cough, skin diseases, problem of stomach, guinea, dental and eyes, etc are their chronic illness.

The health care services are in operation through a network of the doctors and their agents. The so-called doctors in the area are practically non-professional. But they are exhibiting themselves as doctor with their false degrees which has been displayed in their sign board and other publicity materials. Their chamber is located within a short distance from the locality. They have selected some people in the area who have a good connection and reputation with the people of the particular area. When they need any health related guidance these people reach to the suffering families and advise them for treatment. Generally the question of reference of good practitioner's option comes to their knowledge. They then advise to visit the particular practitioner with whom they have an understanding. They also promise to arrange the treatment with low prices. The practitioners generally take Rs.70/- from a patient for first visit from which Rs.20/- has been shared to the referee. In the first visit the practitioner generally prescribes some common medicines beyond the proper diagnosis. If it can

help to cure the patient, unfortunately he becomes a good one. The case is not only so, the patient visits for next and he advises for betterment even some surgery. He refers to the nursing home which is within his connection. Literally the suffering people enter into a critical case with longstanding suffering or death is written in his or her fate. Surprisingly the surgery is conducted by a registered practitioner, but post operative management system is supervised by non-professional. This is one of the most obstacles for cure of the particular patients.

Thus the family of the particular patient abides the guidance of their referral doctor for treatment for a promise of better treatment with low cost. For such cases many times the patient goes through wrong and (s)he loses his/her organ. It has been reported that in many cases the patients expire and then and there the authority/doctor negotiate it through a compensation to hide it from public.

The whole system is within a network of non-professional unemployed village people and it is practically supported by a greedy people. The people health is an issue to encash for their own benefit. These people have an education within the range of Class-VIII to Class-XI standard. Sometimes they are also graduate. They have no scope of earning beyond as daily labour and it is outside their community. A significant portion of the population in this area is migrant labour and they are mostly illiterate. They are doing jobs of construction works in the urban area of Kolkata and its suburbs. They are the key agent of connectivity with the urban places. So, the economy of the area is gradually in a changing form. The living standard has also changed. Specially the people has got orientation for their health care. But those who are unemployed and living in their own community they have taken this path of alternative earning.

Role of Government (Health Dept.)

The Govt. Health Department is the facilitator to implement of the Clinical Establishment Act through which it is giving approval of the Nursing Homes and there is a mandatory rule for renewal of the registration of these establishments. It is the rules of law and order. But there is no strict supervision on the same. It is not monitoring as per the rules. Even in any case of harassment is brought to the notice of the authority they are not taking any legal step as laid down in the rule as punishment. But they comment when the existing services of Government has failed to cover the people they do not interfere the system. If they take legal step how they cope up the crowd for treatment in their existing services system.

Conclusion

The urbanization has brought a change in the life style of people of even of rural and backward area of India. Although they have no such education and knowledge about good and scientific health care system, the connection with the urban area has taught them for the same. So, for development of people of any corner accelerate through urbanization. The rural population has contact with urban area and it has indirect impact in their life.

The people of Domkol sub-division of Murshidabad, a minority (Muslim) and backward dominated bordering district of West Bengal is getting touch of urbanization when a significant of them are migrant labour. The education rate is not so high in the area and the people of this area is dominated by their cultural belief in their daily life. But so far as their health care is concerned they have changed their mind set for accessibility of scientific care and they are investing according to their capability for these services.

But the Government Health services are not enough and accessible for these population. So, the people depend on the private services. This service is corrupted and it generates alternative employment to some people in this area. The people's affiliation with changing world has taught them for scientific services, but in reality they are till sufferer and cheated. It is the hindrance of development of people in the global society. The deceived role of such people is an agony of progress of the society.

The Right to Information Act, 2005 has been enacted in India, but the people are mostly unaware about the provision and other aspects for the betterment of citizen of all corners.

So, the people would be educated about the act and how it might be used for their welfare specially their health care is concerned. The setting up of rural information bureau for proper health guidance would be more purposeful work to rescue the people from untrained and greedy.

It would be effective for good of humanity and the changing indicator of human development would be a successful one in this era of globalization.

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12

A Study on Grassroots Women Leaders in Development

Nivedita M. Thapliyal

In a society with uneven distribution of resources the access and control of opportunity is in hands of the “haves” but not in the hands of “have-nots”. Same picture of deprivation and inequality is true between men and women. In a country like India where social orientation is based on class, caste and gender, the picture of deprivation and inequality is appalling. Till date the women are not considered as a social group in their own right, rather they are either clubbed with men or are totally ignored. The endeavor to improve the quality of women’s life has produced a series of development strategies which have largely aimed at poverty alleviation measures, welfare and marginal approaches. Even in the Millennium Development Goals (MDGs) which are to be accomplished by 2015, out of the eight goals two goals target the development of women thus reflecting on the marginalized status all over the world.

The State of Uttarakhand

Uttarakhand, the hill state of Indian republic is well known for its rich biotic wealth, high mountainous peaks, and diverse cultural and climatic system. The total human population of the state is around 84,79,562 of which 41,63,161 are women. The state covers about 12.18% of the total Indian Himalayan region and about 40% of its total area has different forest types. The socio-cultural fabric in this region is characterized by diverse ethnic group, which have developed their own cultures based on available natural resources, giving rise to a cultural diversity. About 75% of the total population of the state is dependent on agriculture. Uttarakhand consist of thirteen districts that are Almora, Bageshwar, Champawat, Chamoli, Dehradun, Haridwar, Nainital, Pauri Garhwal, Pithoragarh, Rudraprayag, Tehri Garhwal, Udam

Singh Nagar and Uttarkashi. Linguistically, and geographically, Uttaranchal is distinguished into two prominent regions, Garhwal and Kumaon.

Women in Uttarakhand

Women play a vital part in the mountainous region of Uttaranchal state. Role of women in the hills has undergone many changes in the hills, some of the important reasons being migration of men, poor agriculture, illiteracy, gender based roles, shrinking natural resource base, outside interventions like voluntary agencies. In this region men in most of the families work outside due to lack of industries or other avenues of employment in this region. Women of this hill state are hard working who toil through the day, starting with the family chores like nurturing children and livestock, going out for fodder, fuel, drinking, water, and collection for sustaining livelihoods. Women of this region are aware about the biological diversity and rich in indigenous knowledge of natural resources and management on which they depend for livelihood. They have been active participants in some of the very important national movements like the Chipko movement and the anti-alcohol movement. Chipko movement especially needs a mention as it is an internationally acclaimed movement by the women of the State wherein they would embrace the trunk of the tree when the contractors' axe men would come to cut the tree, thus emerging to be the saviours of this valuable natural resource. Besides this the women of Uttarakhand have seen to be involved in income generation activities such as organic farming, mushroom cultivation, food processing and cottage industries. The state has crossed the 33% reservation for women and serious discussions are in process for 50% reservation of seats at the level of Panchayati Raj Institutions (PRI) in the State thus officially assigning the women a platform to participate more in the development of their area.

Rational of the study

Uttarakhand is a state with strong women movement and it cannot be denied that women along with their men have been active participants in the formation of the State. Their involvement in the State's Chipko movement and the anti-alcohol movement has been nationally accepted. A reflection on their profile shows that, out of the 50% female population of the State, 76% are rural women. Most of the agriculture work is done by these women who look after the land almost completely along with actual cultivation as men migrate for employment. However they face low female literacy, lack of nutrition and health facilities. Further, the patriarchal nature of the society creates hurdles for them in their active participation in the addressal of

social and development issues such as violence against women, income generation activities, infrastructural development, female infanticide and child marriage. This is because their efforts get manipulated by bureaucrats, politicians and dominant power brokers in the villages. Most of the women faced the problem of non-cooperation from the officials. These problems have slowed the pace of developmental work.

In such a scenario which is characterized by hardworking rural women who are single handedly managing their home, land, social and developmental issues despite various kinds of resistance, it becomes important to study the various aspects of women and development.

Objectives

The main objective is to study the involvement of grassroots women leaders, both formal and informal, in development of their area (village, block and district) that is, their association in planning, designing, implementation of the plans, schemes and projects for their respective area along with initiative taken for addressal of social and development issues. The other objectives are as follows:

- To study the socio-economic profile of women leaders.
- To study the perspective and vision of the women leaders towards development of their village/block/district.
- To understand their awareness regarding the various development programmes and their implementing.
- To study the nature of work and initiatives undertaken by the women leaders in their respective areas.
- To understand the problems and constraint faced by the women leaders in performing their role in development domain.
- To study the opinion of the public regarding the development work done by women leaders.

Research Methodology

The scope of the study covers the Kumaon and Garhwal regions of Uttarakhand state. The study included women leaders, both formal and informal from the area .The study included a sample of the public (Gram Sabha) and the government officials of the regions. The study is empirical in nature.

Universe

The Universe for the study comprises of:

- Both formal and informal women leaders from the region of Garhwal and Kumaon.
- Public of the selected villages inclusive of the government officials

Sampling Unit

The sampling unit for the purpose of the study was:

- Women leader
- Voter

Sampling technique

Multistage purposive sampling used to select the district, block and the villages.

Sample collected from the Garhwal and Kumaon region. The study proposes to select two district each from the mentioned two regions, two blocks from each district and villages selected from the mentioned blocks. Convenience sampling used for selection of the public and the government officials.

The major criterion for selection of the geographical units was the Human Development Index of the selected unit, the education status of the women being a major indicator.

Sample Size

A sample size of 250-300 respondents taken for the study.

Data collection and Analysis

Both qualitative and quantitative data collected for the purpose of the study. For this purpose two different schedules framed for the primary data collection of the women leaders and the public respectively. The data from the government officials collected through Interview Guide. The secondary data collected from Uttarakhand Development report, reports from the Department of Women and child development, Department of Rural Development and the annual reports from the NGOs working in the area.

Findings of the study

Contribution made by the women family members and society : - 30% of the EWRs husbands and 12% of other family members like mother-in-laws, father-in-laws, son etc. were reported as playing an important role in motivating women representatives to contest elections and help were also lend during the administrative work. While 58% reported that non-cooperation is been done with the EWRs and even the government official and villagers do not support if the women contest the election. Social work participatory method of PLA like prioritizing the need and discussion with the EWRs in group highlighted that most of the women are working without the support and feeling it hard to work or implement the development programme.

Election contested: - The majority of the elected representatives had contested only one election (87%) and hence the proportion of first timers in politics was also high (86%). Around 14 per cent were re-elected more than once at the Gram Panchayat level. Reservation has played a significant role as four-fifths of all the representatives got elected from reserved seats. Reservation facilitated the first entry into politics for most of the elected representatives (83%). However, it did not help much in continuing for second or third terms, as the proportion that got elected from the reserved seats was 58 per cent and 45 per cent respectively. Ex-women representatives, who faced defeat in their attempts to continue their careers, accepted that there was less social interaction and/or no proper campaigning (52%) on their part. The problem of unacceptability/conflict across different social categories was another important reason mentioned by two-fifths of them. 91 per cent did not contest any intermediate/Zilla Parishad election; higher levels of political aspiration are generally not present among the Gram Panchayat-level Panchayati Raj functionaries. 30% even reveals that most of the women felt dislike to contest election due to the ex-women leaders struggle for carrying out their role. The Social work participatory method of PRA techniques and discussion with the EWRs in group highlighted that the reservation has made the women to contest election but not fully as political strong leaders. They are not cooperated and the impact of the ex-women problems in performing their role the other are also facing it difficult to come forward as it may be the reason for few women contesting for open seat and higher rank like any intermediate/Zilla Parishad election.

Participation of male member's w.r.t. women leaders and decision making power of EWRs: - 42% of the women and their families reveal that EWRS are performing their role but 58% said that women elected are not aware about the duties and responsibilities and male partners are dominated and

takes most of the decision in the works of the panchayat. As the result reflects from the Social work participatory method of PLA highlighted earlier that most of the Women Representatives faced the problems of non cooperation from the officials and due to that fact that they have slowed the pace of developmental works and also elected representatives to fully participate in the development sector and no power in decision making. Needless to say that the women were not meant to be representatives as the rest of the members, instead they were meant to be co-opted.

Development programme initiated by the women: - Participation of women in development sector like health, education, micro planning and politics is not a new phenomenon. The women in Garhwal (70%) and Kumaon (75%) followed the age old practices for the development of their villages. They have been involved even in the government programmes but most of the women are not the beneficiaries (50%) but facilitation in the work of development in educating the children, health awareness, environment protection. Participation of women (70%) in Joint forest management activities mostly as partners and supporters through attending general meetings, patrolling, formation of SHGs in the regions. There is a high level of awareness among the women population (80%) on climate change but they have little options left. Measures are taken by some women to conserve their surroundings, but they are far from sufficient. Lesser economic incentives and hardships faced by the women compel them to think more economically than ecologically. Some of the women in the Garhwal and Kumaon region do rely on traditional practices for making their livelihoods few women(20%) are aware of the modern practices.

Problems faced and suggestion by the women leaders: The study also highlighted the problems faced by the women while contributing in the development of villages. Some of them are lack of cooperation from other villagers (20%), lack of fund and infrastructure (45%), lack of cooperation from the official (20%), lack of transportation (45%). Migration from the villages to town alone with their husband also creates a problem for the other women who stayed back in villages. Some of the women reveal that due to the change in the livelihood pattern most of the villages go out from the villages for earning. Most of the women no doubt gained benefit from the development programme run by the government and NGOs. For the women who are representing particular institution for the first and for those who are elected as a leader in local self governance and Community based organizations. But for the better output few suggestion are suggested by them like timely training to update knowledge based practices, field visits, proper coordination among the three tier system, timely disburse of fund.

Social work intervention: The present study reveals that most of the women (60%) find it difficult to perform their role and following the procedure for moving the file for speedy working environment to the government officials for approval. It was also noted that elected women could be enhanced and made effective with the knowledge of Participatory method of PLA which can even help them to work on priority base along with the deserving beneficiaries. The gram Sabha could be aware and made effective to work with the EWRs and create a pressure groups for effective development work in their villages. The pressure groups members can be the members from the CBO present in the villages. There are a large number of success stories in different Commonwealth countries that show how women have been getting empowered through collective decision-making and collective action. There are also a large number of success stories about how women have worked at the local level to promote peace in the family and in the community. Documentation of such success stories, however, is still weak and needs to be undertaken urgently. Women's use of traditional knowledge, whether in agriculture, in health, in medicinal herbs, is an important area for documentation. Networking, building alliances and linkages at all levels is essential for documenting the women's contribution programs who have achieved any degree of success. Workshops, exchange programs, study visits can be organized to facilitate and strengthen the women and platform to learn from each other experiences.

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13

Importance of Agriculture and Rural Development in India

Partha Mukherjee and P.P. Sengupta

Introduction

Predictive and technical information both are important for agricultural development. Although agriculture contributes only 21% of India's GDP, its importance in the country's economic, social, and political fabric goes well beyond this indicator. The rural areas are still home to some 72 percent of the India's 1.1 billion people, a large number of whom are poor. Most of the rural poor depend on rain-fed agriculture and fragile forests for their livelihoods.

The Government of India places high priority on reducing poverty by raising agricultural productivity. However, bold action from policymakers will be required to shift away from the existing subsidy-based regime that is no longer sustainable, to build a solid foundation for a highly productive, internationally competitive, and diversified agricultural sector.

Importance of agriculture in India's economic development:

The share of agriculture in the total GDP is very high (24%) in comparison to other developed and developing nations. It is seen that the GDP growth is directly related with the growth of agriculture sector. Again on locating the decadal growth of agriculture since 1950-51, it is seen that, this sector shows no significant remarks in growth. The annual compound rate of growth remains in between 1.7 percent to 3.9 percent. After globalization, the growth is some how reduced from 3.9% to 2.8%, which is not sufficient to achieve high rate of growth and again it can be concluded in saying that globalization neglects agriculture development.

Productivity

India is coming under the developing category. This happens only because of our low productivity in agriculture. In the production of wheat, France produces more than 71 Quintals. Similarly in paddy production U.S.A. tops the list with 70.4 quintals where as we produce only 30 quintals per hectare. The condition is also very precarious in seeing the productivity of cotton and groundnut. So, it is required to improve the productivity of different crops of India by improving the factors responsible for high production. But a point to mark is that the production is in increasing trend for the period under globalization. The basic factor for producing more from agriculture sector is supplying credit to the needy cultivators. To highlight on the investment it is seen that the public investment is reducing year after year i.e from 39% (1980-81) to 26% (2001-02), public investment in agriculture is less than 15% in 2012-13 as per NIC (<http://pib.nic.in/archieve/others/2012/mar/d2012031302.pdf>) where as the private sector investment is bridging the gap on investing more and more. This shows a clear government withdrawal from investing in the agriculture sector in the period of reform. During the period of globalization, on implementation of high yielding technology, our country not only becomes self sufficient in food production but also able to export to some of our neighbors.

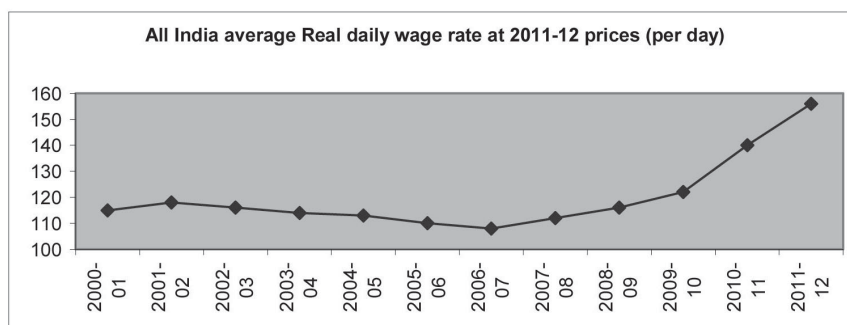
The policymakers proudly announce the amounts spent and the poor who benefited, but there are no arrangements at all to ensure food security and employment security to neither the poor nor a more adequate accounting of reduction in poverty.

Share of Agriculture in GDP and employment

Year	Share of agriculture in GDP at 2012-13 prices	Share of agriculture in employment
1972-73	41.0	73.9
1993-94	30.0	63.9
1999-00	25.0	60.2
2004-05	20.2	56.5
2011-12	14.2	58.2

Source : http://planningcommission.gov.in/plans/planrel/12thplan/pdf/vol_2.pdf

So our country 58.2% workforce contributes to only 14.2% of GDP and hence farmer of India is poor and backward. Earnings per day are not adequate. But this sector is too much important as it supply food, fodder and raw materials for a vast segment of industry. Hence Indian agriculture required for inclusive growth.



Source: http://planningcommission.gov.in/plans/planrel/12thplan/pdf/vol_2.pdf

Indian farmers facing problems with high cost of production and low selling price. To improve our economical condition, we must try to improve the financial condition of our farmers who can bring rural development.

The farmers of our country do not adhere to invest the required finance for agricultural production. Moneylenders generally exploit our farmers. In order to check this, after independence a lot of steps have been taken by the Government i.e., nationalizing Banking sector, establishment of cooperative Banks, NABARD, and Regional Rural Banks, Priority sector lending, etc.

Poverty and rural development are inversely proportional

To poverty reduction and empower the powerless in many rural societies one line solution is redistribution which is skewed distribution of property. Consumption is directly proportional to income. It is thus a better indicator of usual level of living of a household.

Some common Measurement of Poverty

Poverty line: It is the income or consumption expenditure level that is considered to represent the minimum desirable level of living in a society for all its citizens. The poverty line is often defined as the threshold income that just meets food expenditure corresponding to minimum energy (calorie) need of an average person and makes a small allowance for nonfood expenditure.

Lorenz curve: It is a curve that represents the relationship between the cumulative proportion of income and cumulative proportion of the population in income distribution, beginning with the lowest income group. If there were perfect income equality, the Lorenz curve would be a 45-degree line.

Gini coefficient: It is the area between the Lorenz curve and the 45-degree line, expressed as a percentage of the area under the 45-degree line. It is a commonly used measure of inequality. With perfect income equality, the Gini coefficient would be equal to zero; with perfect inequality, it would equal one. Gini coefficient normally ranges from 0.3 to 0.7 in cross-country data.

Source: [en.wikipedia.org/./poverty gap index](http://en.wikipedia.org/./poverty%20gap%20index)

Economic growth in general has been found to have a poverty reducing effect. Phases of relatively high economic growth have generally been found to be phases of faster reduction in poverty.

Agricultural growth, especially when brought about by area increase or multiple cropping, would typically expand the employment opportunities for the poor. A second channel is through the increase in real wage rate as demand for employment grows from various sectors of the economy. Employment expansion and wage rate rise are certainly the most direct channels through which the poor benefit

Minimizing poverty gap

Fiscal policy is a major instrument of government intervention for poverty reduction.

Rural development is influenced by a multitude of factors such as natural resources, human resources (labour), capital, technology, public policies, and institutions and organizations.

The prime goal of rural development is to improve the quality of life of the rural people by alleviating poverty through the instrument of self-employment and wage employment programmes, by providing community infrastructure facilities such as drinking water, electricity, road connectivity, health facilities, rural housing and education etc.

Literature review

Food production and agricultural development have been core areas of concern for policymakers in India since Independence. In the 1960s, food shortages decided to use food exports as an instrument of foreign policy. As a consequence, the government of India (GoI) adopted policies that aimed at making the country self-sufficient in food grain production (Subramaniam 1995). Together with promoting high-yielding varieties, two policies have been instrumental in achieving this goal: promoting the application of fertilizer and promoting groundwater irrigation. According to

several estimates, between 50 and 60 percent of the increase in food grain production in India since the 1960s can be attributed to higher fertilizer use (Venugopal 2004, 59-60), and between 55 and 60 percent of India's irrigated lands now depend on groundwater (Shah et al. 2003).

Both the labour productivity as well as land productivity have fallen and capital-labour ratio has increased in agriculture. As a result overburden compel Indian farmers for Suicidal activities.

Several scholars who have analysed the farmers suicides contend that these suicides are the legacy of the economic reforms. [Parthasarathy, (2003), Revathi *et al* (2009), Mishra(2009) etc.]

Objectives of the study

The study focuses on achieving the following objectives:

- Identifying the problems of agriculture and rural developments and its solutions.
- What are the difficulties faces by our farmers.
- Discussing the success models and failure models of other countries, so that we can modify ourselves in policy making.

Data collection method

With a self-completion questionnaire, respondents (Only farmers in this study) answer questions by completing the questionnaire themselves. This method is chosen for quick and easy way to collect. The 5-point Likert measurements are used in this research to limit the bias evaluation of respondents. It was putting respondent's view within a range from 1 to 5 point. There are 3 categories. 1 to 2 less interested, 3 to 4 moderate interested and 5 is highly interested in each questions. Mean values are less than 2 shows that the variables have very low impacts and 3 to 4 shows that the variables have moderate impacts and Mean values are above 4 shows that the variables have high impacts.

Respondent selection

Questionnaires are sent to respondents (farmers only). Among 240, only 119 respondents answered.

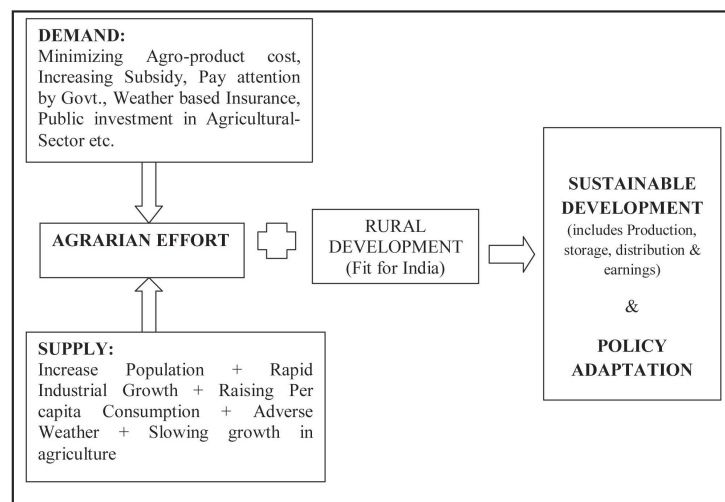
Descriptive Statistics: Descriptive Statistics (mean, standard deviation) are used to describe respondents' personal information.

Analysis and interpretation

An Agriculture and rural development model

Minimizing the gap between the demand (in favour of peasant) and supply (all problems) is taken here as Agrarian effort. Agrarian effort should be uplift to encourage new unemployed youth. Following principles may add value to agrarian effort.

- **Listening to farmers and addressing their specific needs:** The crops they want to grow and eat, as well as the unique challenges they face. Understanding and are equipped to address these challenges, and invest in research to identify relevant and affordable solutions that farmers want and will use.
- **Increasing farm productivity:** Support a comprehensive approach to helping smallholder farmers prosper that includes access to heartier seeds, more effective tools and farm management practices, locally relevant knowledge, emerging digital technologies (ICT), and reliable markets.
- **Fostering sustainable agricultural practices.** In an era of increasingly scarce resources and growing impact of climate change, Govt. should encourage farmers to embrace and adopt sustainable practices that help them grow more with less land, water, fertilizer, and other costly inputs while preserving natural resources for future generations.



Agriculture and rural development model

Source: The Author

Rural Development models analysis

Miracle in Desert (Israel model)

Israel is the most advanced agriculture in the world, especially in research and creation.

Israel's natural condition is significantly dry with very low rainfall. The annual rainfall is about 800 mm in the North while the in the South it is only about 50 mm. The raining season lasts from November to the next March. The amount of water evaporating naturally is up to 1,900 – 2,600 mm per year. Fresh water is regarded as “white gold” in Israel and is managed more strictly than anywhere all over the world. The Government builds a specific law measuring the amount of consumed water, controlling the exploitation of underground water and preventing water pollution. Israel's technology on water treatment is state of the art technology with the recycling ratio of 75 percent.

(Israel model) Failure in Vietnam

[Vietnam has much better conditions but they cannot succeed like Israel. Vietnam has an agricultural economy but Agriculture has not been paid attention to and gone in the right direction. In the past many years, they tried to advocate for industrialization and, modernization and recently urbanization, however agriculture and rural development was only the second priority. The gap between living standards in cities and rural areas has increased, which leads to the situation where farmers leave their land to migrate to cities to earn their living. The young generation rooted from rural areas tends to find jobs in big cities.]

<http://www2.kenes.com/agritech2012/about/Documents/VnEconomy.pdf>

With clear goals, national and local inclusion, and donor support, Ghana's rural enterprise project has had impressive results.

Ghana's Rural Enterprise Project (REP) demonstrates that – with clear-sighted goals, well-defined targets and determined international donor support – state-driven social intervention can succeed.

[Initiated by the Ghanaian government in 1995 under the auspices of the GRATIS Foundation and with the support of the International Fund for Agricultural Development (IFAD), the project seeks to reduce poverty and improve living conditions in rural areas through increased productivity for the rural poor.

In 2002, the Ghanaian government and IFAD scaled up the project to cover 66 districts that were considered amongst the poorest in Ghana. Within these operating districts, there have been verifiable success stories as exemplified by the number of businesses operating sustainably and making profits over the last decade.

With 70% of Ghanaians - and around 86% of the population who live below the poverty line - living in rural areas, REP's targeting of economically-active youth and women in the rural areas lends support to a strategic area of the country's development.

Conservative estimates from the government indicate that over 170,000 people have been trained under REP in various community-based trading and enterprise development undertakings. Between 2003 and 2010, almost GHS150000 (\$83,000) was been disbursed by financial institutions involved in the project.]

<http://thinkafricapress.com/ghana/rep-model-rural-development-africa-ifad>

From the above analysis, it is clear that the agriculture should paid attention particularly with clear-sighted goals; well-defined targets can success in each case.

Environmental challenges

Indian agriculture is characterized by agro-ecological diversities in soil, rainfall, temperature, and cropping system. Besides favorable solar energy, the country receives about 3 trillion m³ of rainwater, 14 major, 44 medium and 55 minor rivers share about 83 per cent of the drainage basin. About 210 billion m³ water is estimated to be available as ground water. Irrigation water is becoming a scarce commodity.

In India, agricultural production per hectare is much lower than world average. There is an urgent need to increase productivity.

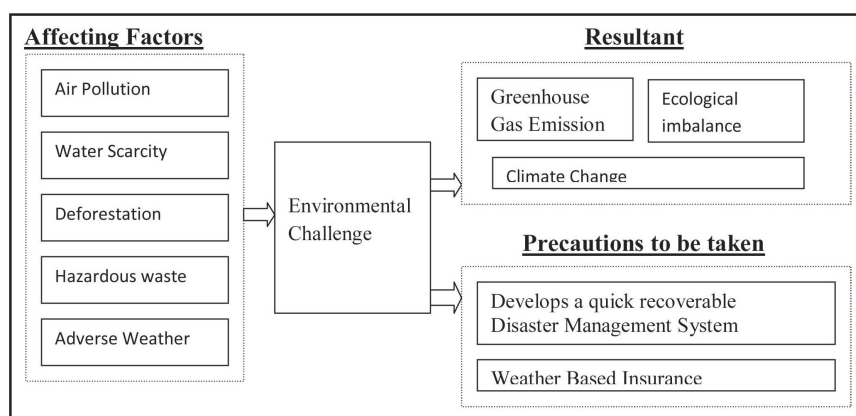
Climate change and agriculture are interrelated processes, both of which take place on a global scale.

In a recent survey of 132 countries environments were surveyed. India ranked **126th** overall and last in the 'Air Pollution (effects on human health)' ranking. The survey concluded that India has the **worst** air pollution in the entire world, beating China, Pakistan, Nepal and Bangladesh. Also, according to another recent WHO survey, across the G-20 economies, 13 of the 20 most polluted cities are in India.

The annual study, the Environmental Performance Index, (July 17, 2013)

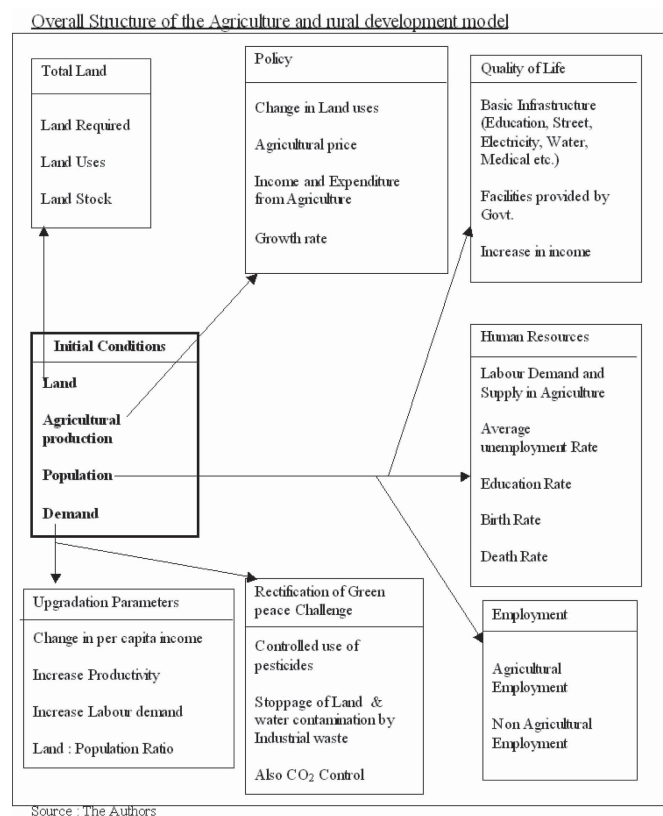
<http://www.worldbank.org/en/news/feature/2013/07/17/green-growth-overcoming-india-environment-challenges-promote-development#ranking>

So India is suffering from drastic environmental challenge. To meet these challenges a no of steps to be taken by Govt. of India as well as Indian citizens also. Here is a solution model in chart form:



Environmental challenge and Precaution
 Source: the Author

This model is self-explanatory. Unlike many models of economic relationships, this model is partially supply oriented. Land use is the primary engine of this model. Up-gradation of quality of life, HR & employment is considered for Rural Development and Environmental issues are also considered as demand.

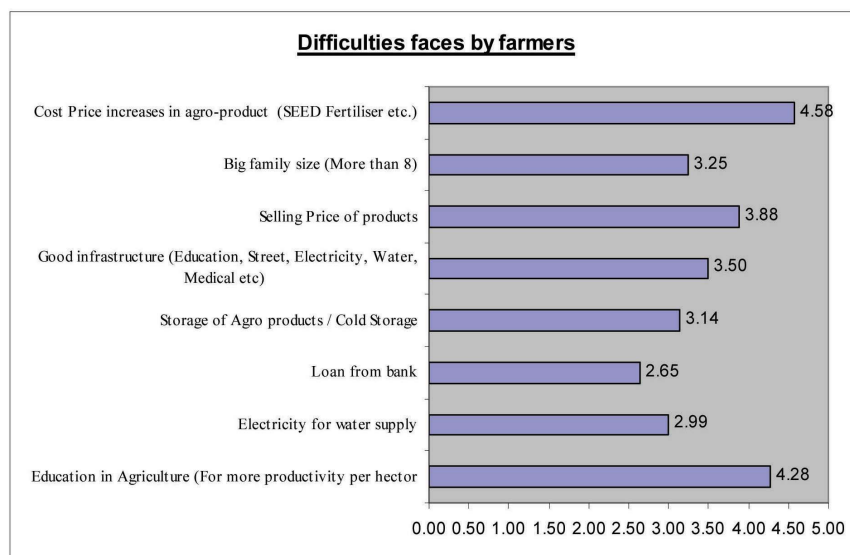


A Survey in a small demographic area of West Bengal

In August-September 2013, a no of **119** respondents (**Farmers only**) were asked from Burdwan Birbhum, Bankura, Purulia, Medinipur, and Hoogly districts of West Bengal to find out difficulties in relation to Agriculture and rural development. The farmers were asked to

Sl No	Difficulties faces by farmers	N	Mean	Std Deviation
1.	Education in Agriculture(For more productivity per hector)	119	4.28	0.76
2.	Electricity for water supply	119	2.99	1.41
3.	Loan from bank	119	2.65	0.94
4.	Storage of Agro products / Cold Storage	119	3.14	1.16
5.	Good infrastructure (Education, Street, Electricity, Water, Medical etc.)	119	3.50	1.13
6.	Selling Price of products	119	3.88	0.78
7.	Big family size (More than 8)	119	3.25	0.84
8.	Cost Price increases in agro-product (Seed, Fertilizers, etc)	119	4.58	0 . 7 6

Graphical view



In this survey, it is found that cost price of agro product direct affect to the farmers. For more productivity like France or US, lack of education is another big factor. Selling price and good infrastructure are next difficulties faces by farmers of this area. Storage of agro product is a burning question also.

This survey generates an idea of present difficulties faces by the farmers of above demographic area only.

Towards sustainability where agriculture, development, and environmental sustainability meet

Helping to the farmers and improving our environment as well as expanding their sources of income and keeping them on their land.

Public Funding:

1. Government payments that reward farmers in the form of conservation payments
2. Government weather based insurance for farmers.

By assigning an economic value to ecosystems, farmers can be paid to produce environmental benefits through certain conservation practices on their land.

Paying farmers for these benefits is among the most cost-effective and shovel-ready solutions for protecting our environment in the near term.

Management Practice through ICT

Through ICT farmers became aware about using fertilizer uses. Participating farmers can develop to save money and maintain optimal yields while helping to protect our water and soil.

Pest Management (PM) is a wholly integrated approach to safely and effectively controlling insects, weeds and plant diseases. It is one of the most widely used approaches that farmers can improve the environment.

Engaging agriculture to develop and participate in ecosystems services markets

In the coming decades, we face critical food and farm challenges. With a global population anticipated to reach 10 billion, we will need to produce more with less, nearly doubling production with less land, less water and fewer inputs. Farmers should engage properly to solve a lot of the environmental challenges.

Recent Agricultural Development

The constraints of low productivity in agriculture were realized and thus, central and state governments emphasized the need for accelerated development of agriculture. Adoption of high yielding varieties by farmers coupled with the use of higher doses of fertilizer and assured irrigation through tube wells accelerated the pace of progress in agriculture. As a result of adoption of improved inputs and management practices, the total food grain production increased from a mere 50.8 million tonnes in 1950-51, to 257.44 million tonnes in 2011-12 and productivity increased from 522 kg/ha to more than 1807 kg/ha).

As per the latest estimates, India has produced 257.44 million tonnes of foodgrains during 2011-12 compared to 244.78 million tonnes in the previous year. This is highest ever foodgrains production, surpassing all earlier records.

Record production has been achieved in the case of rice (104.3 MT), wheat (93.9 MT), cotton (35.2 million bales), and sugarcane (357.7 MT).

2011-12 Production: (in Million tones)

	Foodgrains – 257.44	Pulses – 17.21	Oilseeds – 30.01	Milk-5.0
Rice	104.32	Tur – 2.65	Soyabean – 12.28	Egg-5.4
Wheat	93.90	Moong – 1.71	Groundnut – 6.93	Meat-13.2
Coarse Cereals	42.01	Urads – 1.83	Rapeseed & mustard – 6.78	Wool-4.05
Maize	21.57	Gram – 7.58	Sugarcane – 357.67	
			Cotton – 35.20 million bales (of 170 kg each)	

(Source: Directorate and Economics and Statistics, Department of Agriculture and Cooperation) <http://agricoop.nic.in/agristatistics.htm>

But India's overall foodgrain production in the **2012-13** crop marketing year that would end in June 2013 was expected to be 255.36 mn tons (May 03, 2013 06:47 PM) foodgrain output to be less than last year's record output of almost 259 million tonnes because of low production during the kharif sowing season. The 'agriculture, forestry and fishing' sector is likely to show a growth of 1.8 per cent in its GDP during 2012-13, as against the previous year's growth rate of 3.6 per cent. The production of cotton and sugarcane is also expected to decline by 4.0 per cent and 6.5 per cent, respectively, in 2012-13. Among the horticultural crops, production of fruits and vegetables is expected to increase by 3.5 per cent during the year 2012-13 as against 5.1 percent in the previous year.

Governmental Initiatives (in India)

Govt. has Plan to encourage more efficient practices without actually reducing the quantum of subsidy. Because any proposal for reducing subsidies will be opposed by farmers on the grounds that output will fall if the subsidy cut reduces input use.

Agricultural development in India could be achieved only with the reforms of India's rural institutional structure. So Land reforms planned by planning commission of India. [see www.planningcommission.nic.in/reports/], Ministry of rural development also published report on Land (with other) reforms. 24th Jul 2013 [[http\ rural.nic.in/sites/download/latest](http://rural.nic.in/sites/download/latest)].

Employment Potential: The agriculture-processing sector has immense employment potential for rural people, provided the primary processing activities in rural areas. Cottage and industrial level primary/ secondary processing include, rice mills, grain mills, fruit and vegetable processing, etc. Employment generation by food grain processing in production in rural area by a systematic approach needs to be considered.

Major Findings

Agricultural Subsidies

Government reduced different types of subsidies to agriculture; especially control of fertilizers over the last few years has adversely affected the agricultural sector. It was deemed that reducing subsidies may improve fiscal deficit and subsidy expenditure towards expenditure on public investment, but it would not be beneficial.

Subsidy Vs. public investment

Budgetary subsidies to agriculture increased from an average of 4.1 per cent of agricultural GDP during the Tenth Plan to average 8.2 per cent in the first four years of the Eleventh Plan. Public investment in agriculture averaged only about **3 per cent** of agricultural GDP during 10th and 11th Plan periods.

Lack of structured supply chain in distributing agricultural product

Product wasted due to inefficiencies and fragmented supply chain. At least 5-7 intermediates add values. So, cost of products increases.

Continuous Decline in Government Investment in the Agricultural Sector:

From Budget and GDP, it is found that government's expenditure and investment in the agricultural sector have been reduced.

The way out from the present agricultural and rural developmental obstacles:

1. From the above analysis, it is clear that the agriculture should paid attention particularly with clear-sighted goals; well-defined targets can success in each case. Hence, India should follow the same.
2. In India, declining share of Agriculture in GDP and employment proves that Govt. paid less attention in agriculture sector as industrial sector.
3. Governmental intervention in weather insurance meets the agrarian challenge from problematic weather situation to the peasant.
4. Fostering sustainable agricultural practices in the way Govt. should encourage farmers to embrace and adopt sustainable practices etc.
5. Encouraging Public investment in Agricultural-Sector through Govt. Bond.

Major Challenge

Plan expenditure on agriculture and in infrastructure, which together to improve functioning of markets and efficient use of natural resources.

Concluding Remarks

The agriculture and rural development is not the solution of a few packages but in drastic changes in the present agrarian crisis and rural developmental challenge. Precaution from disaster is also a burning question. Uncertainties presents in all agricultural factors including environment (weather, climate,

rainfall etc). Long-term strategies requires more stable income from agriculture, It is most challenging time for introduce energy and cost effective technology and equipment for sustainable agriculture.

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Questionnaire-1

Name -----

Address (you can put email also) ----- Mobile no: -----

Category	Group	Please tick about yourself
Age	Below 25 years	
	25-40 years	
	40-60 years	
	Above 60 years	
Qualification	Literate	
	10 pass +	
	Engg. Diploma	
	Graduate	
Income	1L-3L	
	3L-5L	
	5L-9L	
	9L-14L	

Family Member (Pl. Put your family member nos) :

Questionnaire-2

You are requested to give a no ranging 1 to 5

(1-2=less interested, 3-4= moderate interested and 5= highly interested to the question)

Sl No	Difficulties faces	(1-5)
1.	Education in Agriculture(For more productivity per hector)	
2.	Electricity for water supply	
3.	Loan from bank	
4.	Storage of Agro products / Cold Storage	
5.	Good infrastructure (Education, Street, Electricity, Water, Medical etc.)	
6.	Selling Price of your product	
7.	Big family size (More than 8)	
8.	Cost Price increases in agro-product (Seed, Fertilizers, etc)	

14

Constraints of Farm Women in Rice based Farming System: An Empirical Assessment

S.K. Nath and Sarthak Chowdhury

Rice is the staple food of more than half of world's population, most of who live in the less developed countries. In terms of global food security requirements, it is reported that rice production must be increased by 70 per cent to support the needs of the world's population by 2025 (Riveros, 1994). Improved technologies are an important prerequisite in sustainable agricultural development that makes rice production efficient, cost-effective and suitable for resource poor farmers. In keeping with the goals and objectives of the World Food Summit, the policy related to rice production must therefore respond to the realities of the critical people involved in producing, providing and managing food supplies—both men and women. In many parts of the world today, there is an increasing trend called, “Feminization of Agriculture”. In the era of economic change, men are migrating from rural areas to cities in search of employment. Therefore, women are taking more and more responsibilities in agricultural production. Besides working for longer hours than men in the agrarian sector, women are also responsible for aspects like family food security and all the household works. Their contribution towards improving rural economy is noteworthy. The women who constitute almost half of the total population are seen as strong, potential work force to be tapped in strengthening the economy. Feminization of agriculture, being an important issue in this direction, needs active participation of women in agriculture as worker, manager and entrepreneur. But development among the vast segment of women population has not been taken care due to male dominancy, perpetuation of socio-cultural restrictions and non-realization of women's capabilities to produce by the planners and policy makers. Keeping these in view the present study was undertaken to study the farm level constraints as perceived by the farm women in the rice based farming system.

Materials and methods

This study has been undertaken in purposively selected Balasore district of Odisha where rice is cultivated in more than 90 per cent of the total cultivated area of the district. All the 12 blocks were taken for the study and one village from each of the blocks were selected randomly. 20 resource poor farm women belonging to small and marginal category were purposively selected as 90% of the total farm families of the district belong to both these categories. Questions were asked through a well structured interview schedule. Constraints were categorized into different heads. 0, 1, 2, 3 scores were given to never, somewhat, moderate and extreme respectively to the perceived constraints. Ranks were given according to the mean score obtained by each constraint. Pearsons correlation was established between the constraints and adoption of technologies by the farm women respondents.

Results and Discussions

The constraints faced by farm women while performing their roles were categorized as socio-psychological, technical, financial, input supply and marketing heads.

Analyzing the socio-psychological constraints (including drudgery) of respondents, it was found that more drudgery in farming operation ranked the top position as the most social constraint while performing their role. Verma and Sinha (1991) also observed from their study that farm women take more drudgery prone works than their male counterparts in rice farming. Dominating character of male members of the family in decision making process perceived as the second important constraint of the farm women. Pressure of household works over farming (ranked third) was also perceived as important social constraints by them. It was found during discussion that women did not feel much difference in going to field which secured the lowest rank among all the constraints. It was observed that these social barriers were gradually diminishing among the small and marginal farming community of Orissa.

Table 2 indicates that most of the respondents were not involved in the government sponsored demonstration programmes. This was perceived as the most important technical constraint of farm women in performing their role. Trainings were mostly targeted to male farmers and faulty time management was found as the second and third crucial constraints of the farm women. The constraint of inadequate female extension worker came at the fourth position. Gender biased technologies secured the last rank.

Table 1: Socio-psychological constraints as perceived by the respondents

n=240

Sl. No.	Constraints	Extent of constraints				Total score	Mean score	Rank
		Extreme	Moderate	Some what	Never			
1.	Family restriction to go to field	18	22	56	144	154	0.64	VI
2.	Working with men still a taboo in the locality	25	37	48	130	197	0.82	V
3.	Male are dominating in the decision making process	69	41	81	49	370	1.54	II
4.	Few operations are restricted to the women by the society	16	44	135	45	271	1.13	IV
5.	Not considered as profession of women	05	17	53	165	103	0.43	VII
6.	Domestic works dominate over farming	19	115	74	32	361	1.50	III
7.	Drudgery in various farming operation is more	92	96	40	12	508	2.12	I

Table 2: Farm level technical constraints as perceived by the respondents

n=240

Sl. No.	Constraints	Extent of constraints				Total score	Mean score	Rank
		Extreme	Moderate	Some what	Never			
1.	Trainings are male oriented	90	71	50	29	462	1.93	II
2.	Information on trainings are not communicated	28	137	47	28	405	1.69	V
3.	Training timings are not fitting suitably to women	73	85	69	13	458	1.91	III
4.	Inadequate female extension personnel for easy dissemination of farm knowledge	46	89	93	12	409	1.70	IV
5.	Technologies not gender neutral	06	35	170	29	258	1.08	VII
6.	No involvement of farm women in demonstrations	122	118	0	0	602	2.51	I
7.	No attempt for sharing of technical information	30	56	130	24	332	1.38	VI

It is found from table 3 that inadequate knowledge about banking schemes was the most crucial financial constraint as perceived by farm women. Leaving a few, for everyone of the studied sample this was a problem and highest number of them opined that the constraint was extreme. Similarly maximum number of women rejected the view of non-involvement in family budgeting was a serious problem. It was the last rank holder in rank analysis. One-twelfth of the sample opined while investigation that poor accessibility to credit institution was a problem. It came at the penultimate position. Non-availability of resources for credit and gender bias in banking secured the 2nd and 3rd positions respectively. Fabiyi (2007) also reported from his study that lack of support and non-cooperation attitude of the bankers were the problems faced by farm women.

In the constraint analysis of input supply to the respondents, priority not given to farm women in providing technical inputs were perceived as the most important constraint. Insufficient skill in using farm inputs and implements and knowledge on them were found at second and third positions respectively. From the above table, it was observed that all the respondents were not empowered to purchase required inputs which came at the penultimate rank. Lack of adequate knowledge on availability of the inputs was the least important constraint as perceived by the responding women.

Marketing is an important aspect in any production process. Farm women not getting adequate support from government was the most important constraint perceived by them. The monopoly of the traders and middle men and no fixed minimum support price for the produce were perceived as the second and third major constraints of farm women. The least number of respondents opined insufficient knowledge on post-harvest operation was the extreme constraint. They did not perceive knowledge on marketing network, an important problem which secured the second lowest rank.

Table 6 indicates inadequate knowledge about the banking schemes was the topmost constraint for the respondents among all the constraints they perceived in performing their role in rice based farming system. They opined alienation of them from the government sponsored demonstration programmes was the second most crucial problem. Market related problems also play much in role performance of farm women in farming activities. Drudgery in farming operations was found a major constraint. Farm women were not involved while allocating inputs was perceived as a crucial problem for them.

Table 3: Financial constraints in farming as perceived by the respondents

n=240

Sl. No.	Constraints	Extent of constraints			Total score	Mean score	Rank
		Extreme	Moderate	Some what Never			
1.	Gender biasness by bankers	83	40	85	414	2.19	III
2.	Inadequate knowledge about banking schemes	155	59	24	607	2.55	I
3.	No credit support for infrastructure	73	53	83	408	1.7	IV
4.	No involvement in family budgeting	27	30	38	179	0.49	VIII
5.	No resources/ mortgage for availing credit	114	46	19	453	1.89	II
6.	No access over family earnings	32	55	154	360	1.5	IV
7.	No accessibility to the credit institutions	20	39	127	265	0.94	VII

Table 4: Input supply constraints as perceived by the respondents in farming
n=240

Sl. No.	Constraints	Extent of constraints				Total score	Mean score	Rank
		Extreme	Moderate	Some what	Never			
1.	Inadequate knowledge about input requirements	60	106	61	13	453	1.89	III
2.	No idea about its availability	33	63	81	63	306	1.28	VII
3.	Insufficient skill in use of farm inputs and implements	52	114	74	20	458	1.91	II
4.	Not empowered to purchase required inputs	53	61	70	56	351	1.46	VI
5.	Not involved in the decision making process of application of inputs	62	67	64	57	384	1.6	IV
6.	Priority not given to farm women in providing technical inputs	82	82	71	05	481	2.00	I
7.	Technical literatures not supplied as required	44	83	67	46	365	1.52	V

Table 5: Marketing constraints as perceived by the respondents in farming

n=240

Sl. No. Constraints	Extent of constraints			Total score	Mean score	Rank
	Extreme	Moderate	Some what Never			
1. In- sufficient knowledge on post harvest operations	07	125	102	373	1.55	VI
2. Poor knowledge on value addition	10	141	77	389	1.62	V
3. No knowledge on marketing network	12	93	89	311	1.30	VII
4. No minimum support price	90	102	38	512	2.13	III
5. No support from govt officials	112	100	22	558	2.33	I
6. Monopoly of the traders	77	138	14	521	2.17	II
7. No mandis/regulated markets to provide suitable price to producers	61	122	37	464	1.93	IV

Table 6: Major constraints of farm women in rice based farming system

Sl. No.	Constraints	Mean score	Rank
1.	Inadequate knowledge about banking schemes	2.55	I
2.	No involvement of farm women in demonstrations	2.51	II
3.	No support from govt officials	2.33	III
4.	Monopoly of the traders	2.17	IV
5.	No minimum support price	2.13	V
6.	Drudgery in various farming operation is more	2.11	VI
7.	Priority not given to farm women in providing technical inputs	2.00	VII

n=240

Table 7: Correlation of different types of constraints with adoption of technologies by the respondents

		n=240
Sl. No.	Constraints	r value
X ₁	Socio-psychological	-0.1864
X ₂	Technical	-0.3014**
X ₃	Financial	-0.2126
X ₄	Input supply	-0.2831*
X ₅	Marketing	-0.3037**

*Significant at 5% level

**Significant at 1% level

Table 7 indicates the correlation between constraints and adoption of various technologies in rice farming. It was found that all the constraints were negatively correlated with adoption of various technologies in rice farming. Technical and marketing constraints were highly significantly related with the adoption of technologies in rice farming.

Conclusion

Women have played an important role in farming since starting of the civilization. Various gender roles have been instrumental in putting impediments in performing their roles in farming successfully. From the study it was found that lack of marketing support to the agricultural produce was the greatest constraint for them. Among all the constraints, they perceived inadequate knowledge about the banking schemes was found at the top position. Adoption of new technologies in rice farming was found negatively correlated with the constraints faced by the farm women. Our planners should be very careful about these constraints while formulating new programmes for increasing rice productivity.

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15

Diversification and Competitiveness of Indian Agricultural Exports During Liberalized Regime

Tushar Das

Since 1991, following economic policy reforms, the agricultural, industrial and trade policies of India have undergone several changes with the prime objective of globalization of the economy where the changed economic environment is expected to bring market forces to operate with lesser constraints. One important feature of this policy shift has been the curtailment of the role of government giving top most priority to the relaxation of government controls in various economic activities like production and trade thereby ushering a new era of economic liberalization. At the time of the introduction of economic liberalization in India in 1991, there was not much about the reforms in agriculture. But as soon as the WTO came into the picture in mid-1990s, Indian agriculture was exposed to many policy reforms.

The economic liberalization package in agriculture focuses mainly three areas-External Trade Sector, Internal Market Liberalisation and Fiscal Reforms. International trade in agriculture is liberalized emphasizing mainly the liberal import of agricultural products. All Indian product lines are placed under Generalised System of Preferences(GSP). All most all agricultural products are removed from Quantitative Restrictions(QRs) and brought under tariff system. Trade trading agencies are replaced and most of the products are brought under Open General Licensing(OGI). The average tariffs on agriculture products are reduced significantly. As the measures related to Internal Market Liberalization, trade in High Yielding Varieties(HYV) seeds was opened to private trade, hundred percent foreign equity was allowed in seed industry and restrictions on import of seeds were relaxed. Fertiliser subsidy was reduced noticeably. 'Power and water' incentives were withdrawn, Power tariff increased and power sector was

thrown open to private sector investment. Water rates were revised upward. The commercial banks and the Regional Rural Banks are given the additional responsibility of priority lending to weaker sections in rural areas. The relaxation of restriction on the interstate movement of farm produce, enactment of model agricultural market act and encouragement of Contract Farming are the crucial reform measures related to agricultural marketing. In the fiscal front, the measures are directed towards giving emphasis on tax reduction and public expenditure in order to reduce fiscal deficit.

All these measures had implications for the farm sector. The most prominent manifestation of these measures is the remarkable deceleration in agricultural growth in general and agricultural exports in particular. The drastic decline in the growth rate of agricultural GDP and exports points to the acute agrarian crisis which have affected the vast majority of the population. In this paper, we have made an attempt to examine the performance of India's agricultural exports during the pre and post reform periods in respect of composition, diversification, trends and competitiveness. Our study period relates to 1989-90, 1993-94, 1998-99, 2003-04, 2006-07 and 2007-08. The year 1989-90 belongs to pre-liberalization phase for the Indian Economy. The years 1993-94, 1998-99, 2003-04, 2006-07 and 2007-08 relate to the post liberalization phase. We take 1993-94 as the year in which liberalization process already started, but was yet to make perceptible impact on the economy. By the year 1998-99 the impact was already recognizable, and by 2007-08 the liberalization progressed sufficiently so as to make substantial impact on the economy.

Given the sweeping economic reforms initiated in 1991 in India, it seems essential to study the pattern and growth of agricultural exports along with the nature and extent of diversification of agricultural exportable commodities. As the prime objective of economic liberalization was to bring export competitiveness of Indian industries and in this context, it is to be mentioned here that being a labour surplus country, India enjoys comparative advantage in agricultural productions, so, it seems necessary to study the export competitiveness and export intensities of agricultural commodities in India particularly during the reform periods in order to capture the impact of liberalization measure.. Again, boosting up of exports may not be an end in itself. Ultimately, we need be concerned with net foreign exchange earning. True, more export means more foreign exchange earning. But more export may mean more import requirement (direct and induced) also. Again some of the exportable goods for their domestic production need very little direct and induced imported inputs and some other exportable goods may require substantial imported input. Hence, the question of 'sectoral composition of

agricultural export' and 'Net Foreign Exchange Inflow Rate(NFEIR)' come in a big way as far as balance of payments are concerned. In this paper we have also studied the 'forex' earning potentiality of agricultural sectors in India under liberalization.

So, the paper is organized as follows-

After highlighting the reform measures undertaken in Indian agriculture and mentioning the objectives of this paper in section-1, relevant literatures are surveyed in section-2. Section-3 presents the data base of the study. Section-4 discusses the methodological framework. The results of our study are outlined in section-5. Finally, section-6 concludes with some policy implications.

Section-2 : Literature Survey

The existing economic literature regarding the agrarian crisis in India under liberalization seems quite illuminating and exciting too. Basically, we find a lively debate in many of the studies. Some economists advocate that faster growth in India has reduced poverty. So, we need not be concerned about the declining agricultural growth. Others argue that faster growth contributes to the widening of interstate gaps in income and poverty.

As far as 'agrarian crisis' is concerned, D. Narasimha Reddy(2006) points out that even after decades of planned development strategy, the Indian economy is still predominantly rural with slow urbanization and there is growing rural urban disparities in income and levels of living. Agriculture continues to be the most important economic activity in the countryside with a disproportionate retention of high share in the total workforce, but with a fast decline share in the national product. Muzaffar Assadi(2008) examines the causes of farmers' suicide in Karnataka from different perspective and analyses how the capitalist path of development through globalization is the major factor responsible for the sharpening agrarian crisis in India. Vijay Paul Sharma(2007) tries to understand socio economic implications of corporate led initiatives in agriculture(mainly contract farming) in the state of Punjab and the results indicate that contract farming is a good initiative for medium and large scale farmers producing for the market but the long term success of such initiatives will depend on how a large number of small and marginal farmers can be linked to restructured markets under changing market and policy environment. Bhupat M. Desai and others show that India's agricultural growth rate has averaged less than one third of the government's modest target of 4 percent. The sector's performance has been about the same before and after the economic reforms in the early 1990s. The reforms that brought a dramatic acceleration

of growth in urban sectors have essentially had no effect on agriculture. S. Mahendra Dev (2007, 2008) have discussed the most important elements of inclusive growth such as agriculture, poverty and employment, social sector and, regional disparities. He indicates that Improving decentralisation and governance are also part of inclusive growth. It is more challenging for the state to achieve this inclusive growth than getting 8 to 9 per cent growth in GSDP. He also found that there are six deficits in Indian agriculture. These are: (a) investment, credit and infrastructural deficit (b) research and extension (technology) deficit (c) market deficit (d) diversification deficit (e) institutions deficit and (f) education/skill deficit. A crisis in agriculture affects wage labour households through decline in income from cultivation. At the same time, level of agricultural productivity also affects income of agricultural labour households through its indirect effect on availability of employment in agriculture as well as through its impact on wages (Datt and Ravallion, 1998a, 1998b). Firmino G. Mucavele(2009) recommended the use of Social Accounting Matrices (SAMs) to examine the structural links between production, consumption, trade and the accumulation and distribution of income. GOI (1959) and Ahluwalia (1978,2011) viewed agriculture as a source of food and raw materials for the economy and its people so that they can over come poverty. But it is a narrow vision because agricultural growth is a means to the larger goals of employment led growth and poverty reduction(Vakil and Brahmananda 1956, Johnston and Mellor 1961, Danwala 1962, Mellor and Lele 1973, Mellor 1976, Lele and Mellor 1981, rangarajan 1982, Desai 1997, Ojha 1997, Desai and Namboodiri 1998, Mellor and Ranade 2007, Balakrishan 2010 Mellor and Dorosh 2011).

In agricultural export front, using Revealed Symmetric Comparative Advantage based on Balassa(1965), Kanaka and Chinadurai(2012) ascertained the changes in comparative advantage status of India's major agricultural exports during the post reforms period. Khem Chand and others(2001) studies the temporal changes, growth & instability in the exports of agricultural commodities from 1962-94 and suggested that the growth in export of fruits and vegetables, oilseeds, fish and fishery products and feeding stuff for animals have been remarkable in early nineties as compared to previous decade (1980-90). The export of cereals and cereal preparations, and sugar and honey were observed to be most volatile in the last two decades. Both total merchandise and agricultural sector trade are showing deficit since 1962-65 but trade in agricultural sector turned to surplus of \$ 1349 million in 1990-94, indicating positive impact of new liberalised trade policies. Based on time series and cross section data, M. Gopinath and others(1993) advocated significant decline in the growth rate of agricultural exports during New Economic Policy(NEP) regime.

Section-3: Data Base of the Study

The entire study is based on the officially published secondary data. For our purpose, we have used the input output tables for the years 1989-90, 1993-94, 1998-99, 2003-04, 2006-07 and 2007-08 published by the CSO, Govt. of India as it provides us the sectoral breakdown of 'agriculture' including food and non food items. Sectoral exports and imports are also obtained from the said tables. Besides, for commodities we have taken export, import and output data from Economic Survey, various years. For world data on exports, we have visited [www. faostat.com](http://www.faostat.com)

Section-4 : Methodological Framework

As far as methodological framework is concerned, we have used Theil Entropy Measure for obtaining export diversification status. The competitiveness has mainly studied by Revealed Comparative Advantage(RCA) as proposed by Balassa(1965). We have compared the results of RCA with that of α -coefficients(output elasticity of exports) which is obtained by fitting regression equations following OLS technique in order to get a functional relationship between output and exports which is mostly determined by comparative advantage. However, the formal procedures for getting the relevant indices are discussed below.

4.1 Theil Entropy Measure of Export Diversification

The compositional changes brought about in the composite agricultural exports can be captured by an index of agricultural exportable commodity diversification(DI)based on Theil(1967) Entropy measure which is given by-

$$DI = E/\log n \dots \dots \dots (1)$$

Where $E = \sum x_i \log(1/x_i)$

and x_i : Share of i th exportable commodity in the total agricultural exports,
 n : Number of commodities.

When $E=0$, $DI =0$. In this case, the export distribution is completely in egalitarian and the whole export basket is completely shared by only one commodity. For $E=\log n$, $DI=1$. This implies that the exports pattern is completely diversified among the commodities. Hence, $0 \leq DI \leq 1$. Higher(lower) the value of DI higher(lower) the degree of diversification of exports.

4.2 Revealed Comparative Advantage(RCA)

Revealed Comparative Advantage' (RCA) is a measure of international trade specialization and it is originally proposed by Balassa(1965). It identifies the comparative advantage (disadvantage) a country enjoys for a commodity with respect to another country (group of countries). It provides a ranking of commodities by degree of comparative advantage and identifies a binary type demarcation of commodities based on the comparative advantage. Under the assumption that the commodity pattern of trade reflects the inter-country differences in relative costs as well as non-price factors, the index is assumed to reveal the comparative advantage of the trading countries. The factors that contribute to movements in RCA are economic, structural, world demand and trade specialization. The advantage of using the comparative advantage index is that it considers the intrinsic advantage of a particular export commodity and is consistent with the changes in an economy's relative factor endowment and productivity. It is given by-

$$RCA_{ij} = (X_{ij}/X_{ia})/(X_{wj}/X_{wa}) \dots \dots \dots (2)$$

where,

X_{ij} = Exports of country i of commodity j

X_{ia} = Exports of country i of total agricultural commodities, a

X_{wj} = Exports of world w of commodity j and

X_{wa} = Exports of world w of total agricultural commodities, a

When RCA assumed the value greater than unity for a given country in a given commodity, the country is said to have a revealed comparative advantage in that commodity.

4.3 Output Elasticity of Exports

As we are interested to examine the agri-exports competitiveness in India, we have adopted an unconventional way where RCA has been compared with the output elasticity of exports given by beta-coefficients which are obtained by fitting regression equations(OLS Technique). Exports of any commodity depend on the production of that commodity in the economy. In general, exports of any economy depend on the output of that economy at a particular period of time. More GDP leads to more exports. If GDP increases then after meeting domestic demand surplus also increases and this will lead to increase in exports. Similarly GDP of any sector in the economy leads to increase in exports of that sector. So increase in

agricultural GDP will bring about increase in agricultural exports. The functional relationship between output and exports can be expressed by log-log model given by-

$$\text{Log(agri. Exports)} = \alpha + \beta \text{Log(agri. Output)} \dots \dots \dots (3)$$

Where α and β are constants. Here the estimated value of $\hat{\alpha}$ indicates the agricultural output elasticity of agricultural exports. If the value of $\hat{\alpha}$ is greater than unity then it implies that exports increase more than proportionately with increase in output. On the other hand, if the value of $\hat{\alpha}$ is less than unity then it implies exports increase less proportionately with increase in output. Our line of reasoning is that if $\hat{\alpha} > 1$, it implies export competitiveness for that sector and this competitiveness is possibly due to the comparative advantage in the world market.

4.4 Export Share, Export Intensity and Forex Inflow

Export share of a sector is defined as the share value of export of the j^{th} sector to total export value and is given by $e_j = E_j/E \dots \dots \dots (4)$ where E_j = value of export in the j^{th} sector, E = aggregate value of the export basket. We can define the Export Intensity of a sector as the ratio of value of export of the i^{th} sector to value of total output of that sector. Formally, it can be written as $e_i = E_i/O_i \dots \dots \dots (5)$ where E_i = the export of i^{th} sector and O_i = Output of i^{th} sector. Direct import intensity of the sectors has already been defined earlier in this section. Net Foreign Exchange Inflow Rate (NFEIR) is basically the ratio of foreign exchange value of net exports to total value exports of a specific industry expressed as percentage. In symbols, Net Foreign Exchange Inflow Rate,

$$\text{NFEIR} = (X_i - I_i) / X_i * 100 \dots \dots \dots (6) \text{ Where } X_i = \text{Exports of } i^{\text{th}} \text{ industry and } I_i = \text{Imports of } i^{\text{th}} \text{ industry.}$$

Section-5 : Results

Table- 1 shows major agricultural exports and their share in total agricultural exports over the period 1990-91-2008-09. It is observed from the table that total agricultural export has increased from 3521 million US\$ in 1990-91 to 16914 million US\$ in 2008-09. This increase in total agri-exports may be due to economic liberalization and trade reforms initiated in India in 1991. It is also observed from the table that the Compound Annual Growth Rate (CAGR) for agri-exports has increased from 3.07 percent in 1990-91 to 5.92 percent in 2000-01 and further to 13.34 percent in 2008-09. This phenomenal increase in exports has been possible due to the export growth of oil cakes (9.6 percent in 1990-91 to 12 percent in 2007-08), Spices (3.8

percent in 1990-91 to 7.4 percent in 2008-09), Rice(7.3 percent in 1990-91 to 13 percent in 2008-09) , Meat and Meat Products(2.2 percent in 1990-91 to 6.2 percent in 2008-09) and Sugar and Molasses(.6 percent in 1990-91 to 5.3 percent in 2008-09). The pattern and growth of agricultural exports are also depicted by bar diagram. Surprisingly, it is noted that bulk of India's agricultural exports still conforms to traditional crop based items like rice, spices, tea, coffee, textile fibres, tobacco , cashew etc.

Table 1: Major Agricultural Exports(US\$Million) and Their Share in Total Agri-Exports(%)

Commodities	1990-91	2000-01	2008-09
Coffee	4.0	4.1	2.6
Tea	16.9	6.2	3.1
Oil Cakes	9.6	7.1	12.0
Tobacco	4.2	3.0	4.0
Cashew Kernels	7.1	7.2	3.4
Spices	3.8	5.7	7.4
Sugar & Molasses	.6	1.8	5.3
Raw cotton	13.4	.8	3.3
Rice	7.3	10.2	13.0
Fish and Fish Products	15.2	22.2	8.2
Meat & Meat Products	2.2	5.1	6.2
Fruits, Veg & Pulses	3.4	5.0	5.2
Misc. Processed Items	3.4	4.5	4.5
Total	100	100	100
All Agri. & Allied Prods.	3521	6256	16914
CAGR	3.07	5.92	13.24

Source: Economic Survey 2009-10

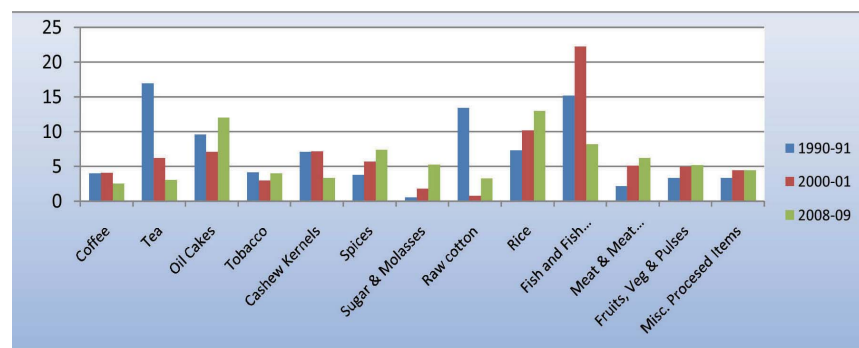


Fig.1: Bar Diagram Showing the Sectoral Share of Agricultural Exports

Source: Table-1

Table-2 highlights the diversification of agri-exports measured by Theil Entropy index over time. Besides, total agricultural exports, food and non food items are also considered separately. The diversification indices are depicted in figure also. As is observed from the table, agri-exports showed intermittent ups and downs during 1989-90-2007-08. It increases marginally from .56 in 1989-90 to .57 in 1993-94 but decreases to .54 in 1998-99. It reaches as high as .74 in 2003-04, then it steadily falls(.68 in 2006-07 and .62 in 2007-08). As expected, non food exports are emerged more diversified as compared to that of food exports.

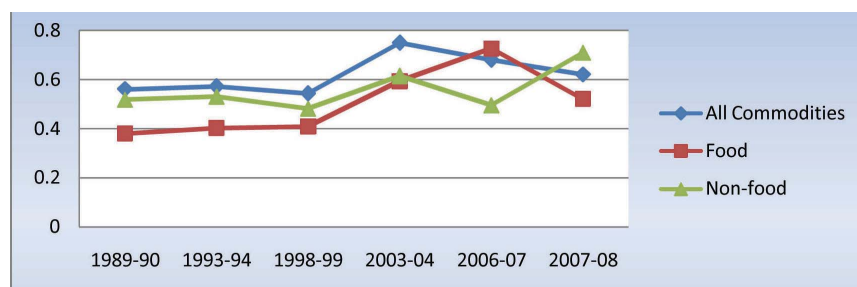


Fig. 2: Agri-exports Diversification Indices

Table-3 presents the measures of export competitiveness as observed by Revealed Comparative Advantage(RCA) originally suggested by Balasa(1965). The results so obtained have been compared with the beta-coefficients(output elasticity of exports) estimated by fitting regression equations following OLS technique. We observe that RCA is greater than unity for the commodities like Paddy, Pulses, Ground Nut, Tea and Cashew for all the years under study. This then indicates that these commodities enjoy comparative advantage in the world market as compared to other commodities. Coffee was competitive over the period 1989-90 to 2006-07. But it lost its competitiveness in 2007-08. Sugar and Tobacco were less competitive for all the years under study.

Table-4 shows the output elasticity of exports as measured by beta-coefficients. It is observed from the table that for the overall period(1989-90-2007-08) and for two sub periods(1989-90-1998-99) and (1998-99-2007-08), beta coefficients are positive and statistically significant. This suggests that the exports of agriculture are increasing with the increase of agricultural output and it is possibly due to the comparative advantage that India enjoyed in the world market.

Table 2: Indices of Agri-exports Diversification

Years	1989-90	1993-94	1998-99	2003-04	2006-07	2007-08
All commodities	0.561218	0.5723812	0.543958214	0.749701	0.680621	0.620776
Food	0.380287802	0.40304616	0.408074507	0.593209324	0.726611374	0.521357275
Non-Food	0.518514842	0.530374651	0.481700653	0.614915427	0.495205439	0.709575566

Source: Author's Own Calculation based on Equation-1

Table 3: Sectoral Revealed Comparative Advantage(RCA)

Year/Commodities	Paddy	Pulses	Ground Nut	Tobacco	Cotton	Tea	Coffee	Cashew	Sugar
1993-94	5.06	1.15	5.67	0.47	1.22	14.38	4.00	199.00	0.52
1998-99	17.18	1.82	3.76	0.60	0.20	17.18	4.71	99.00	0.54
2003-04	6.14	1.44	2.64	0.43	2.08	6.41	1.17	65.67	0.20
2006-07	7.33	2.23	3.76	0.38	4.41	6.69	1.35	99.00	0.34
2007-08	9.00	1.08	5.90	0.38	5.06	4.88	0.87	99.00	0.09

Source: Author's Own Calculation based on Equation-2

Table 4: Measures of Competitiveness at Economy Level

Time Period	Constants	β -Coeff.	F-Stat	P-Value	R ²
1989-90-2007-08	-6.28595(4.09)	1.5923442*(8.03)	64.612534	.001	0.9417016
1989-1998-99	-10.7665(10.44)	2.195144*(15.97)	255.3142	.039	0.996099
1998-99-2007-08	0.141141(.059)	0.783731**(2.603)	6.776045	.0121	0.772107

Note: Figures in brackets indicate t-value

*indicates 5% level of significance

** indicates 10 % level of significance

Table 5A: Measures of Competitiveness for Paddy

Time Period	Constants	β -Coeff.	F-Stat	P-Value	R ²
1989-90-2007-08	-6.31322(2.922)	1.6977954*(5.454)	29.755645	.005	0.8815013
1989-1998-99	-13.06773269(3.20)	2.718179507*(4.46)	19.92	.140	0.952200195
1998-99-2007-08	0.709118	0.7114796	0.940292	.628	0.319795

Note: Figures in brackets indicate t-value

*indicates 5% level of significance

** indicates 10 % level of significance

Table 5B: Measures of Competitiveness for Rubber

Time Period	Constants	β -Coeff.	F-Stat	P-Value	R ²
1989-90-2007-08	-16.68616633(9.50)	3.684858568*(11.19)	125.2737356	.056	0.969057907
1989-1998-99	-16.35825705(6.56)	3.603763*(7.11)	50.65256	.088	0.98064
1998-99-2007-08	-15.20094357(2.84)	3.421122701*(3.57)	12.80032648	.070	0.864867846

Note: Figures in brackets indicate t-value

*indicates 5% level of significance

** indicates 10 % level of significance

Whatever is observed at the economy level, may not be equally hold good at sectoral level. At the commodity level, we find some significant variations. As for example, Table-5A presents the output elasticity of paddy exports. During 1989-90-2007-08 and for a sub period, namely 1989-90-1998-99, paddy exports increase with the increase of paddy output as measured by beta coefficients which are positive and statistically significant. But for the period 1998-99-2007-08, the performance of paddy export is to some extent disappointing.

Performances of Rubber exports in terms of competitiveness is worth mentioning here. As observed from table-5B, for all the periods, namely 1989-90-2007-08, 1989-90-1998-99 and 1998-99-2007-08, beta coefficients are positive and statistically significant. This suggests that the comparative advantage enjoyed by this sector in the world market has increased the export with the increase in output.

Table-6A, 6B and 7 examine the exports intensity and Net Forex Inflow Rate respectively for agricultural sector. It is observed from tables-6A and 6B that export intensity of paddy increases from .0129 in 1989-90 to .0757 in 1998-99 but it then decreases to .0588. For other commodities, in general, we observe a falling tendency as far as export intensities are concerned. This result is quite expected as we know that Indian economy is mainly manufacturing export oriented.

Table 6A: Export Intensity : 1989-90-1998-99

Si. No.	Commodities	1989-90	1993-94	1998-99
1.	Paddy	0.0129	0.0209	0.0757
2.	Wheat	0.0001	0.0001	0.0001
3.	Jowar	0.0003	0.0040	0.0002
4.	Bajra	0.0007	0.0012	0.0009
5.	Maize	0.0000	0.0026	0.0003
6.	Gram	0.0001	0.0000	0.0000
7.	Pulses	0.0022	0.0029	0.0098
8.	Sugarcane	0.0000	0.0001	0.0004
9.	Groundnut	0.0062	0.0214	0.0111
10.	Jute	0.0064	0.0007	0.0077
11.	Cotton	0.0151	0.0448	0.0083
12.	Tea	0.0000	0.0000	0.0000
13.	Coffee	0.8152	0.0000	0.0000
14.	Rubber	0.0000	0.0003	0.0013
15.	Coconut	0.0000	0.0313	0.2433

Contd.

Si. No.	Commodities	1989-90	1993-94	1998-99
16.	Tobacco	0.0466	0.2270	0.1982
17.	Other crops	0.0124	0.0190	0.0221
18.	Milk and milk products	0.0000	0.0000	0.0000
19.	Animal services(agricultural)	0.0000	0.0000	0.0000
20.	Other livestock products	0.0042	0.0009	0.0039
21.	Forestry and logging	0.0072	0.0298	0.0585
22.	Fishing	0.0018	0.1627	0.1786

Source: Author's Own Calculation Based on Equation-5

Table 6B: Export Intensity : 2003-04-2007-08

Si. No.		2003-04	2006-07	2007-08
1.	Paddy	0.0305	0.0395	0.0588
2.	Wheat	0.0326	0.0526	0.0005
3.	Jowar	0.0000	0.0000	0.0028
4.	Bajra	0.0000	0.0000	0.0078
5.	Maize	0.0341	0.0384	0.1571
6.	Gram	0.0000	0.0000	0.0000
7.	Pulses	0.0003	0.0049	0.0073
8.	Sugarcane	0.0000	0.0000	0.0000
9.	Groundnut	0.0372	0.0050	0.0000
10.	Coconut	0.0001	0.0009	0.0000
11.	Other oilseeds	0.0255	0.0301	0.0101
12.	Jute	0.0030	0.0028	0.0000
13.	Cotton	0.0000	0.0000	0.0000
14.	Tea	0.0000	0.0000	0.0000
15.	Coffee	0.0000	0.0000	0.0000
16.	Rubber	0.0539	0.0590	0.0481
17.	Tobacco	0.2554	0.0529	0.3066
18.	Fruits	0.0375	0.0452	0.0334
19.	Vegetables	0.0170	0.0212	0.0156
20.	Other crops	0.0084	0.0203	0.0219
21.	Milk and milk products	0.0000	0.0001	0.0002
22.	Animal services(agricultural)	0.0000	0.0000	0.0000
23.	Poultry & Eggs	0.0160	0.0319	0.0105
24.	Other liv.st. produ. & Gobar Gas	0.0407	0.0461	0.0184
25.	Forestry and logging	0.0443	0.0705	0.0136
26.	Fishing	0.1251	0.1623	0.0838

Source: Author's Own Calculation Based on Equation-5

Finally, we have tried to explore the relationship between imported raw materials and exports in agriculture products in the reform periods. Here, we consider 'Net Foreign Exchange Inflow Rate(NFEIR)' as the relevant critical parameter. Table-7 presents our results of agricultural sub sectors'

NFEIRs for the years 1989-90, 1993-94, 1998-99, 2003-04, 2006-07 and 2007-08. It is to be kept in mind that simply high value of NFEIR may not have much sense if absolute value of export i.e., foreign exchange earning and the sectoral share of export is not significant at all. All though the export share is not significant for most of the sub sectors of agriculture, yet, we have considered the NFEIRs for only the sub-sectors which have some export performance.

We find that many of the agricultural sectors - 'Cotton', 'Coffee' and 'paddy', 'wheat', 'coconut' and 'fishing' have high NFEIR over the period 1989-90-2007-08. The sector 'Cotton' shows 100 percent NFEIR in the years 1989-90 and 1993-94 and 1998-99. It slips down to 99.46 percent and further to 95.35 percent in 2003-04 and 2006-07 respectively. Though 'coffee' had a high NFEIR (100%) in 1989-90 and 1993-94, the NFEIR of this sector has gradually decreased in the subsequent years (99.99 % in 1998-99, 99.85% in 1998-99 and 96.45 % in 2006-07). The NFEIR for 'paddy' sector was significantly high for the years 1989-90(92.20%), 1993-94(99.89%) and 1998-99(99.99%). It increased to 100 percent in 2003-04 but again decreased to 99.99 percent in 2006-07. Further it increases to 100 percent in 2007-08. Particularly for paddy, the high NFEIR may be due to fertilizer import reduction. It is interesting to note that for all the sectors the NFEIR has decreased over the period 2003-04-2007-08.

Table 7: Agricultural Sub-Sectors' NFEIR (%)

	1989-90	1993-94	1998-99	2003-04	2006-07	2007-08
Paddy	99.20	99.89	99.99	100.00	99.99	100
Wheat	99.89	99.54	97.64	99.99	94.02	-467
Cotton	100	100	100	99.46	95.35	-
Coffee	100	100	99.99	99.85	96.45	-
Other crops	99.48	98.59	98.65	99.14	68.42	61
Tobacco	99.90	99.73	99.07	93.45	68.88	97
Coconut	99.99	99.99	100	96.56	94.78	-
Forestry	95.38	95.57	90.01	100	65.56	-295
Fishing	99.58	99.80	99.56	99.99	97.69	95

Source: Own calculation based on the Equation-6

Conclusion

In this paper, we have studied the performance of India's agriculture during 1989-90-2007-08 in respect of composition and diversification, trends and competitiveness. We observed that though there has been some diversification in products exported, bulk of India's agricultural exports still

conforms to crop based traditional items like cotton, coffee, tea, rice, oil cakes, cashew, spices etc. As expected non-food items are more diversified than that of food items.

The Revealed Comparative Advantage(RCA) as proposed by Balassa(1965) and the output elasticity of exports measured by beta-coefficients fitting regression equations following OLS technique suggest that India enjoys comparative advantage in the world market for its agri-exports at least at the economy level but at the commodity level significant variations over time are observed. India had enjoyed a comparative advantage in tea and coffee exports but had depicted a declining trend over the years losing its comparative advantage to other world's tea coffee exporters. An unstable pattern of comparative advantage had been observed in the case of paddy exports with intermittent ups and downs in the status. A gradual decline in India's comparative advantage had been depicted for exports of sugar and cashew also. But for groundnut , we find a reversal where India has managed to strengthen its position in the global markets .

We have considered the case of paddy where we find that during 1989-90-2007-08 and for a sub period, namely 1989-90-1998-99, paddy exports increase with the increase of paddy output as measured by beta coefficients which are positive and statistically significant. But for the period 1998-99-2007-08, the performance of paddy export is to some extent disappointing. But, the export performance of rubber is quite comfortable during post reform era.

As expected, for most of the commodities export intensities are low and decreasing over the period 1989-90-2007-08. This suggests that Indian exports are mainly manufacturing oriented. As far as Net Forex Inflow Rates are concerned, we find that many of the agricultural sectors namely 'Cotton', 'Coffee' and 'paddy', 'wheat', 'coconut' and 'fishing' have high NFEIR over the period 1989-90-2007-08.

Being a labour surplus economy, India has comparative advantage naturally in agri-exports on account of low level of input costs coupled with diverse agro-climatic conditions. This advantage has to be maximised by giving a special thrust to specific non traditional commodities like processed fruits, fish and fishery, meat and meat products which have a great demand in the world market. In the new world trade regime, more and more emphasis must be given on the improvement of quality, packaging and value addition in export commodities in order to realize the benefit of comparative advantage in the international market.

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16

Rural Infrastructure Opportunities: Entitlement to Development

Sashi Sekhar Biswal

Infrastructure as Opportunity

Infrastructure is an attribute of developmental opportunity for human beings. Infrastructure claims an opportunity approach in mechanism of development because infrastructure generates many more opportunities and make capable to individual to live with quality life. The World Bank was published a report in 1994 named as World Development Report with a title “*Infrastructure for Development*” where it was mentioned that “the adequacy of infrastructure helps determine one country’s success and another’s failure – in diversifying production, expanding trade, coping with population growth, reducing poverty, or improving environmental conditions” (World Bank 1994:2). Mody aptly suggests that in any modern society, infrastructure plays a vital role- often decisive role in determining the overall productivity and development of a country’s economy, as well as the quality of life of its citizens” (1997: xii). In third world countries characterizes by poverty, poor health, illiteracy, unemployment and lack of communication because these countries people have no essential opportunities to maintain normal life. When we focus the *quality of life* it goes to the buck of people of the nation. All rational individual should live with entitlement of his basic needs. The opportunities (social & physical) to human beings are the greatest inter alia to promote capability. ‘Capability is ingredient to real opportunity and real opportunity to human beings imparts *freedom to achieve*’. Achievement judges the utility or consumption or quality of life (well-being) of a person. Freedom to achievement is being entirely instrumental-as means to actual achievement. To more clear it, Prof. Amartya Sen given importance the equal distribution of primary goods and resources; found that both cannot move towards the freedom because the equalizing ownership on primary goods or resources may not generate equal freedom to different person.

The all factors have interrelated *functioning* to achieve well-being (goodness) of a person. A functioning is an achievement of a person: what she or he manages to do or be. It reflects, as it were, a part of the “state” of that person. Therefore it refers to the *use* a person makes of the commodities at his or her command. He starts from the idea that “living may be seen as consisting of a set of interrelated functioning’s, consisting of beings and doings”. Being adequately nourished, avoiding premature mortality and being happy are all examples of functioning’s. Functioning’s are to be distinguished from commodities; commodities are objects which a person might use, while a functioning is an aspect of living itself.

A capability set represents a person’s opportunities to achieve well-being. We may also say that it represents a person’s freedom, with freedom being understood in the positive rather than the negative sense. Sen proposes that when we evaluate a person’s good we should focus on her functioning’s and capabilities, or on both. The functioning and capability is between commodity and utility. Commodities ’! capability (to function) ’! function(ing) ’! utility (e.g. happiness). Happiness is the real development of human beings. Poet, social reformer and philosopher Rabindranath Tagore viewed after his small experiment at the Sriniketan in 1921-22 that the change of position or living status of the human beings without changing the place or location which will bring for them joy and happiness is alternatively hypothesized as the freedom or ‘development’ for common human beings. Amartya Sen’s critical analysis capability approach and utilitarian theory gives us a valuable finding that human well-being (utility) is “happiness” (*good life*) or desire fulfillment followed by functioning and capability of human beings. Opportunities build human beings capability to achievement of functioning. Thus only infrastructure can produce opportunities for them who are living without fulfillment of basic needs.

IOs - Entitlement to Development

“*India lives in its villages*” said Mahatma Gandhi. According to the census 2011 of India, the total number village is 6.41 lakh and about 72.2 per cent population lives in these villages and national economy is reflected in the high proportion living in rural village. The subject of rural development is still object of developmental planning and policies. The quality of life of the rural areas is below normal. The quality of life needs freedom to achievement of complete basic needs. Freedom to achieve needs capability opportunities. Human capability and liberties in all dimensions-economic, social, cultural, political and spiritual requires abolition of deprivation. The deprived rural lives are not totally poor in capital (social) and their natural resources.

They have resources but have no mechanism/ facilities (infrastructure opportunities) to process and get utility from that. The non/underutilization of capital or resources means low capital formation and goes to Vicious Circle of Poverty (VCP). ‘And yet an exclusively income-centered view of poverty cannot but miss many important features in the causation of deprivation’ said Prof. Sen. While low income is certainly one of the many predisposing condition for economic deprivation, there are others (ill health, malnutrition, education). Lowness of income itself often reflects inadequate social and physical infrastructure development. If, for example, transport is inadequately developed for easy access to market for agricultural products, then the earnings based on the use of the market may be correspondingly reduced. “Roads, electricity supplies, telecommunications, and other infrastructure services are limited in all rural areas, although they are of key importance to stimulate agricultural investment and growth” It is further argued that “Better communications are a key requirement. They reduce transportation cost, increase competition, reduce marketing margins, and in this way can directly improve farm incomes and private investment opportunities and also they create opportunity to access education and health service. It is essential that IOs are only inputs to stop VCP and evoke opportunities for achievement of the aim of development. IOs directly or indirectly produce the socio-economic growth and development for the country or its members. Therefore, we cannot simply neglect or avoid the rural infrastructure at any cost and IOs as entitlement to progress or development of nation cannot be undermined.

Basic IOs

Infrastructure is one of the most vital components of the developmental mechanism because it generates more and more opportunities to achieve fundamental needs and produces well-being for human beings. Following are some of the basic physical and social Infrastructure that may provide opportunities for well-being of human beings.

Physical Infrastructure

- I. Rural Road-** Road connectivity minimizes the gap between rural and urban and secondly it improves productivity, employment opportunities in agriculture and rural industries reduce poverty and raise the quality of life. The increased opportunities enhance the working capacity and the opportunities for the poor. Transport system (the road connectivity) is one of the most important ones of capital formation because road connectivity is a prime determinant of eco-

conomic development. Hence, keeping this as the object, many programmes have been initiated by the central Government and one of the most important time bound (2000-2007) programme is Pradhan Mantri Gram Sadak Yojana (PMGSY).

- II. Water-** Water is one of the essential commodities for survival of human beings. Water is only substitute against any nutritional food for a numbers of poor at night in India. The “Right to Food” 2013 comes to force with a single objective that “Food for all”. When we are talking ‘water is life’ simply we forgot water or ‘Right to water’. Where water is required for purpose of domestic, irrigation, industrial and other uses, which are very relevant for survival and progress of society. Generally we use water for three purposes such as *water for life, water for citizen and water for development*. The first one is most essential for survival of the human beings as well as living beings. Second one is related to social rights of the individuals and community (provision of water for public health and institutions), the last one is related to the economic function (production activities) which fulfills private interests (irrigation for agriculture, hydroelectricity, industry. Water supply is a purely state subject and water supply is one of the basic functions to be carried out by rural and urban local bodies’ as per the 11th Scheduled of the Indian constitution. Accelerated Rural Water Supply Programme (ARWSP) was started by the central government in 1972-73 to supply of clean drinking water opportunities for all which was later taken up under the programme ‘National Drinking Water Mission’ in 1986. The same was renamed in 1991 as ‘Rajiv Gandhi National Drinking Water Mission’.
- III. Electrification-** Electricity is one form of energy which has become an essential ingredient of economic development .The same is required for commercial and non commercial uses. The commercial use focuses industries (small) and agriculture and non-commercial uses like domestic lighting, cooking, and other domestic machineries functioning like TV and other electronic media. The rapid socio-economic growth requires uses of both but primarily domestic electrification is more necessary. A large proportion of the populations in our country are simply out of opportunities of electronic media and agricultural machineries due to lack of electricity. To emphasize such opportunities the central government lunched Kutir Jyoti scheme for below poverty line (BPL) families in 1988-89, and in 2000-01 it was an important component of the Minimum Needs Programme and

then in 2005 it was restructured by the Policies and Acts and re-named as Rajiv Gandhi Gramin Vidyut Yojana (RGGVY) with the objective of providing electricity to all village and all BPL families.

- IV. Telecommunication-** Advancement in information and communication technologies (ICT) has demonstrated opportunities to the people to utilize it in their socio-economic and cultural development in a better and more sophisticated way. Rural telecommunication or communication technologies bridge the gap between urban and rural areas in terms of access to telephones. Its multidimensional use helps the villagers in various aspects of daily life like access to health care and other allied services at the time of urgency, gives timely information on business, marketing (Agricultural & Non-agricultural), price, etc. and it helps bringing better coordination for delivery of administration and public services including education, health, and etc. Although this infrastructure opportunity is not so much available in the rural areas at present due to cost effectiveness, the modern information technology era has offered the cell phone as the most viable alternative.

Social Infrastructure

Economic growth of a country largely depends on the standards of its social infrastructure. Education and Healthcare are twin most important social infrastructure areas. Education and health provide biggest guarantee for social security (social safety net). 'A society of educated workforce brings further pressure on government for improving standards for education and health infrastructure which in turn improves levels of social security. Due to funds limitations, successive governments did not spend enough on elementary education'. Higher levels of qualitative elementary education help contain social and gender inequity that facilitates social security. Government, NGOs and corporates need to accord much greater priority to social infrastructure, particularly education and healthcare belonging child development, women empowerment and care of the elderly are also vital components of social infrastructure.

- I. Education-** Education is a qualitative measure and the primary agent of transformation for a society towards growth and development, increasing people's capabilities to set their societies on the path towards a healthy and prosperous future. Amartya Sen views that 'the solution of all problems be they related to the economic development or population lies in education. Education is a fundamental instrument in the hands of human beings, which helps in the promotion of

human capabilities to all other basic needs'. Tagore said 'Peoples' knowledge is a fundamental instrument to solve village problems and utilize the resources. So he stressed on 'Elementary Education' or 'Basic Education' which is everyone's right, particularly to emphasize adult and women education. The real aim of education is the development of individuals to the utmost of their potentialities. It grows capability in human mind to learn, to read and use simple mathematics, to acquire information, and to think critically about that information. To universalize the elementary education, Sarva Shikshya Abhiyan (SSA) is a land mark programme of Govt. of India. Right to Education Act 2009" aims at providing better opportunity for the development of human beings.

- II. Health-** Health is the core determination of human development as well as the national development. It is an important determinant of a person's quality of life. So, it is a subjective as well as an objective evaluation of the physical, mental and social status and it is a vital indicator and parameter of measuring the development of a country. When development of India depends heavily on transformation of rural areas and health is biggest parameter for the development, no individual should be neglected at any place of the country. Good health builds capacities and opportunities to achieve functioning. To provide better opportunities to human beings 'Right to Health' comes to force from 6th September 2003 on the occasion of 25th anniversary of the 'Health for All'. To provide health facilities for all, the government of India has launched a National Rural Health Mission on 12th April 2005. The Mission covers entire country with special focus on 18 poor states.

Basic Factors Linkage

All factors of basic infrastructure are interrelated to each other. Now it is examined by the help of some views and arguments. Education makes more secure and functioning to achievement of better life (quality of life). In 2003 Common Wealth Education Conference Prof. Sen viewed that 'illiteracy increases insecurity and deprivation for human beings and invokes that their legal rights can be very limited. Education is one of the most powerful instruments known for reducing poverty and inequality (deprivation) and for laying the basis for sustained economic growth. It helps to raise manpower (capability) for different levels of economy and empower the poor masses becoming self-reliant and self-respectful enough to participate in the process of development in a country.' Secondly, health is another

attribute of the human development (Basic Needs) because health is a fundamental ingredient of quality of life (Good Life). Health benefits in terms of reducing mortality and morbidity are outcomes associated with the provision of safe drinking water and sanitation is an example of a social multiplier cause. 'Good health is an achievement in itself and also contributes both to higher productivity and to an enhanced ability to convert incomes and resources into good living'. Rural roads and electricity are other two basic needs which are not only to promote quality of life of human beings directly but also to support to other basic infrastructural factors. Connectivity of the road (Village to Main) promotes opportunity of employment in the both agriculture and industry and access to education and health care. Rural electrification helps us to use of modern technology and electronic media. Last but not the least, the telecommunication, bridging the rural urban divide, promotes business and marketing facilities (Agricultural and hand/small industries) and information about public administration and education, health and other related matters. All physical and social attributes of infrastructure are interlinked with one another and all are responsible for the good life of human beings. The UPA government has initiated a single programme called "Bharat Nirman" (launched in 2005-06 for building infrastructure and basic amenities in rural areas, has six components, namely, rural housing, irrigation potential, drinking water, rural roads, electrification and rural telephony) aiming to build a healthy and prosperous India.

Conclusion

It may be concluded that development needs basic IOs and in absence of it the sense of development is almost impossible and meaningless. After a long time central government has taken a better step to covering all programmes with a single objective with multiple intervention to change quality of life of deprive people called as 'Bharat Nirman'. This programme, launched in 2005-06 for building infrastructure and basic amenities in rural areas with six basic components, namely, rural housing, irrigation potential, drinking water, rural roads, electrification and rural telephony. Education and healthcare and other social infrastructure development should thus be accorded much greater priority by the government.

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17

Fish Based Integrated Farming System – A New Approach to Farming in the Red Lateritic Zone of Birbhum District, West Bengal

Prabuddha Ray, Subrata Mandal, Krishna Mitra and Dulal Chandra Manna

Integrated farming is commonly and narrowly equated with the direct use of fresh livestock manure in fish culture (Little and Edwards, 1999). However, there are broader definitions that better illustrate potential linkages. Indeed, the term ‘integrated farming’ has been used for integrated resource management which may not include either livestock or fish components. Our focus is the integration of livestock and fish, often within a larger farming or livelihood system. Although housing of livestock over or adjacent to fish ponds facilitates loading of wastes, in practice livestock and fish may be produced at separate locations and by different people yet be integrated. Chen *et al.* (1994) distinguished between the use of manures produced next to the fishpond and elsewhere on the same farm. A wider definition includes manures obtained from off-farm and transported in bags, e.g. poultry manure, or as slurry in tanks, such as for pig and large ruminant manure.

Integrated farming involving aquaculture defined broadly is the concurrent or sequential linkage between two or more activities, of which at least one is aquaculture. These may occur directly on-site or indirectly through off-site needs and opportunities, or both (Edwards, 1997). Benefits of integration are synergistic rather than additive; and the fish and livestock components may benefit to varying degrees. The term “waste” has not been omitted because of common usage but philosophically and practically it is better to consider wastes as “resources out of place” (Taiganides, 1978).

The assets of a small and marginal farmer is of various kinds – a small piece of land, a homestead garden, few chickens and ducks, 1~2 cows/pig etc. From the viewpoint of industrial mono-cropping agricultural pattern, it is not accountable as the sizes of the assets are small. But this is the scenario of most of the Indian farmers. The large scale system, loan, government schemes etc do not support such small scale farmers, as production mostly seen as a single crop output. Integrated farming is a commonly and broadly used word to explain a more integrated approach to farming as compared to existing monoculture approaches. It refers to agricultural systems that integrate livestock, fisheries, poultry and perennial/seasonal crop production. This system defines output as total biomass outcome of the system.

In the farm level, the farmers/gardeners are motivated to change the shape/style/design of the land so that it could be developed in to integrated farming system that utilizes the waste of one component as a resource for the other and sets up a network of nutrient flow. The diversification that comes from integrating crops, vegetables, livestock, trees and fish imparts stability in production, efficiency in resource use and conservation of the environment. In integrated farming, wastes of one enterprise become inputs to another and thus optimize the use of resources and minimize pollution.

The main potential linkages between livestock and fish production concern use of **nutrients**, particularly reuse of livestock manures for fish production. The term nutrients mainly refers to elements such as nitrogen (N) and phosphorous (P) which function as fertilizers to stimulate natural food webs rather than conventional livestock nutrition usage such as feed ingredients, although solid slaughterhouse wastes fed to carnivorous fish fall into the latter category. There are also implications for use of other resources such as capital, labour, space and water. A variety of factors affect potential linkages between livestock and fish production.

Both production and processing of livestock generate by-products that can be used for aquaculture. Direct use of livestock production wastes is the most widespread and conventionally recognized type of integrated farming. Production wastes include manure, urine and spilled feed; and they may be used as fresh inputs or be processed in some way before use.

Use of wastes in static water fishponds imposes limitations in terms of both species and intensity of culture. Stimulation of natural food webs in the pond by organic wastes can support relatively low densities of herbivorous and omnivorous fish but not a large biomass of carnivorous fish. These biological processes are also temperature dependent. The optimal temperature range is between 25° - 32° C although waste-fed aquaculture

in sub-tropical and temperate zones where temperatures rise seasonally has also been successful. Processing wastes through organisms such as earthworms and insect larvae that feed on them and concentrate nutrients to produce 'live feeds' is an alternative approach to raising fish needing high levels of dietary animal protein. Livestock processing can also provide a wide variety of wastes that vary from dilute washing water to high value meat and blood-meal that can be used as high value fish feeds or feed ingredients. If enough of these types of feeds are available, high density and intensive production of carnivorous fish species can be supported. Aquaculture may also provide inputs and other benefits to livestock production. A variety of aquatic plants e.g. duckweeds and the aquatic fern *Azolla* have proven potential as livestock feeds; and invertebrates such as snails and crustaceans can be used for poultry feeds.

Our study focuses on the integration of fish and livestock. The use of cultured fish or fish products as livestock feeds, although currently uncommon, holds promise and is reviewed. Other, more minor beneficial linkages between fish and livestock production include use of fish culture water for drinking/bathing livestock and cooling livestock housing. Nutrients contained in culture water and sediments may be used to produce arable crops for livestock. The viability of these options depends on a variety of factors, including the types of livestock and fish that can be raised profitably and the production systems used.

Relevance of Integrated Farming Systems

The integration of fish and livestock production is probably closer today, and more important than ever before (FAO, 2000). On a global basis most cultured freshwater fish are produced in Asia in semi-intensive systems that depend on fertilizer nutrients. Moreover, with increasing need for multipurpose use of water resources, community water bodies used for watering livestock are increasingly stocked with fish seed and their management intensified. Several studies of small-holder aquaculture in Bangladesh, India, Thailand and Viet Nam indicate that livestock wastes are the most commonly used input. Fish yields may not be optimized for a variety of reasons but livestock wastes purposely used in ponds, or draining into them, support the production of most cultured fish in Asia.

An analysis of China, the ancestral home of aquaculture, indicates that whilst intensive practices based on formulated pelleted feed are developing rapidly, much of the vast increase in China's recent inland aquaculture production is linked to organic fertilization, provided by the equally dramatic growth of poultry and pig production. Trends in those parts of Asia which

are undergoing rapid industrialization and urbanization suggest that livestock-fish systems can retain a relative advantage over intensive aquaculture for production of low-cost carps and tilapias. A strong link to the use of livestock wastes remains even when high-quality supplementary feeds are available and widely used.

A major issue is the potential competition for, and relative efficiency of the use of, limited amounts of feeds between livestock and farmed fish. This has both local and global implications. Supplementary feeds, such as rice bran and oil cakes, which are traditionally fed to livestock, are often in demand for feeding fish. Continued growth in demand for livestock and fish has raised alarm bells over the sustainability of feed supplies and the impacts of such growth on the environment.

The present study was conducted by the Rathindra Krishi Vigyan Kendra, Palli Siksha Bhavana, Visva-Bharati, Sriniketan, Birbhum, West Bengal, India with the main objective of assessment of profitability within components of integrated farming systems under fish based production system in lateritic soil of Birbhum District.

Materials and Methods

Rathindra KVK conducted the on Farm Trial (OFT) on Fish based IFS consisting of 07 (seven) number of Trials in Seven (07) numbers of randomly selected different villages adopted by the Rathindra KVK of Birbhum District during December, 2012- November, 2013 to assess the profitability under fish based production system with poultry and pulses/vegetables.

It is also necessary to mention that in this Trial a Unit means 0.19 ha pond + 150 numbers of poultry (where applicable) + 0.13 ha utilized land with Pulse or Vegetable (where applicable). Rathindra KVK made this OFT on Seven independent Trials each consisting 03 (three) numbers and types of Replication Units [viz. A. Framers' Practice (FP): Traditional Fish Farming (1 unit = 0.19 ha pond only + fallow land); B. Technology Option (Opt.) I: Composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos) + Pulses (Redgram- Blackgram) (1 unit= 0.19 ha pond + 150 nos. Of poultry + 0.13 ha utilised land with pulse) and C. Technology Option (Opt.) II: Composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos.) + Vegetables (Ladys' Finger-Capsicum) (1 unit= 0.19 ha pond + 150 nos. Poultry + 0.13 ha utilised land by vegetables)] each resulting into a total of Twenty one (21) replication Units.

Farmers helped the KVK scientists for data collection and implemented the technology very carefully. Day to day supervisory practices also one of

the important participation. Beside this, farmers also invested different cost of cultivation except seed and fertilizer.

The focus of Rathindra Krishi Vigyan Kendra, Birbhum, West Bengal is the integration of livestock and fish, often within a larger farming or livelihood system. Although housing of livestock over or adjacent to fish ponds facilitates loading of wastes, in practice livestock and fish may be produced at separate locations and by different people yet be integrated. The top, inner and outer dykes of ponds as well as adjoining areas can be best utilized for horticulture crops like vegetables or agronomic crops like pulses. Pond water is used for irrigation and silt, which is a high-quality manure is used for crops especially Pulses like Red gram, Black gram, vegetables like Lady's Finger in the Summer season and Capsicum in the Winter season.

Residues of vegetables cultivated could be recycled into fishponds, particularly when stocked with fishes like Indian Major Carps (IMC i.e. Rohu, Katla and Mrigel) and Exotic Carps like Common Carps, Grass Carp and Silver Carp. Residues of vegetables cultivated could be recycled into fishponds, particularly when stocked with fishes like Grass Carp. Grass Carps can be stocked @ 1000/ha and additions of common carps are beneficial for utilizing faecal debris. In mixed culture of Silver Carps along with IMC viz. Rohu, Catla and Mrigel, in 50: 15: 20: 15 ratio at a density of 5000 fish/ha. Similarly when Capsicum or Lady's Finger is cultivated in rows in dykes, the ditches made between such rows act as supply or drainage canals. These canals serve as fish culture systems owing to their round-the-clock supply of water and rich insect populations. This integrated system fetched 20-25% higher return compared to aquaculture alone.

Source:-[http://www.vuatkerala.ofile:///E:/Animal%20Husbandry/TNAU-Agri%20Tech%20Portal/ani_chik_grower&layer%20mgt.html

http://www.vuatkerala.org/static/eng/advisory/fisheries/culture_fisheries/integrated_farming/introduction.htm]

The droppings of chicks (Black Australorp) rich in nitrogen and phosphorus would fertilise fishponds. Black Australorp chicks are used by the Rathindra KVK in fish-poultry system for their better growth and egg laying capacity. The number of chicks used for this system is about 150 per Trial i.e. 800/ha however; the stocking density of chicks may be increased in the event of increase in the stocking density of fish fingerlings. Egg-type birds are fed with starter 0-8 weeks, grower 8-20 weeks and brooder feed 20 weeks onwards, while broilers are fed 0-4 weeks with starter and 4-6 weeks with finisher feed. The deep poultry litter is applied to pond in daily doses at 30-35 kg/ha. One adult chicken produces about 25 kg of compost poultry-

manure in a year; 1000 birds can provide sufficient manure for 1 ha water body.

Results and Discussion

Table 1:

Title of On Farm Trials	Assessment of profitability within components of integrated farming systems under fish based production system in lateritic soil of Birbhum District
Problem Diagnosed	Lack of knowledge in integration of components in proper way for maximum profit
Details of Technologies selected for assessment	Framers' Practice (FP): Traditional Fish Farming (1 unit = 0.19 ha pond only + fallow land) Technology Option (Opt.) I: Composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos.) + Pulses (Redgram- Blackgram) (1 unit= 0.19 ha pond + 150 nos. Of poultry + 0.13 ha utilised land with pulse) Technology Option (Opt.) II: Composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos.) + Vegetables (Ladys' Finger-Capsicum) (1 unit= 0.19 ha pond + 150 nos. Poultry + 0.13 ha utilised land by vegetables)
Source of Technology	DARE/ICAR Annual Report, 2008-09 Fertiliser News, 46(11)
Production system	Fish Based Integrated
Thematic area	Farming System
Performance indicators	Employment generated (Man-days) and Economics of farming systems

- FP: 1 unit = 0.19 ha pond only + fallow land
- Opt.-I: 1 unit = 0.19 ha pond + 150 nos. of poultry + 0.13 ha utilised land with pulse
- Opt.-II: 1 unit = 0.19 ha pond + 150 nos. of Poultry + 0.13 ha utilised land by vegetables

Rathindra KVK conducted the On Farm Trial (OFT) on Fish based IFS consisting of 07 (seven) number of Trials in different villages of Birbhum District during 2012-2013 to assess the profitability under fish based production system with poultry and pulses/vegetables (Table -1). The result of the trials indicated that composite fish culture (IMC + Prawn) + Poultry farming (Black Australorp 150 numbers) + Pulses (Redgram + Blackgram) exhibited higher return of Rs. 57,357.00 per Unit and a Benefit : Cost Ratio (BC Ratio) of 2.3 and also involved 225 mandays of labour per year as compared to farmers' practice of traditional Fish farming where Net Return

Table 2: Profitability under Fish based Integrated Farming System

Technology option	No. of trials	No. of Replication Units	Man days utilized per year	Cost of cultivation (Rs./unit*)	Gross return (Rs./unit)	Net Return (Rs /unit)	BC Ratio
Farmer's Practice (FP): Traditional fish farming	7	21	18	6326.00	8386.00	2060.00	1.3
Opt. I. composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos) + Pulses (Redgram- Blackgram)			225	42531.00	99888.00	57357.00	2.3
Opt. II. composite fish culture (IMC, prawn) + Poultry farming (Black Australorp 150 nos) + Vegetables (Ladys' Finger-Capsicum)			260	59212.00	109589.00	50377.00	1.9
SEM±			11.11				
CD(P=0.05)			32.3				

was only Rs. 2,060.00 per Unit and B:C Ratio is 1.3 and involvement of labour was as low as only 18 mandays per year; where as it is relevant to mention that the Integrated Farming System comprising of composite fish culture (IMC + Prawn) + Poultry farming (Black Australorp 150 numbers) + Vegetables (Ladys' Finger + Capsicum) gives a moderate Net Return of Rs. 50,377.00 per unit and a Benefit:Cost ratio of 1.9 and here involvement of labour was highest i.e. 260 mandays per year (Table -2). It is also necessary to mention that in this Trial a Unit means 0.19 ha pond + 150 numbers of poultry (where applicable) + 0.13 ha utilized land with Pulse or Vegetable (where applicable).

Conclusion

The final recommendation coming out from the On Farm Trial mentioned above is that Tech. Opt.I i.e composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) exhibited higher profit. In the course study, it was also found out that improper monetary transaction in the lean period was the main constraint for better profitability.

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18

Applied General Equilibrium Analysis of Food Security in India: A CGE Modelling Approach

Koushik Das

National level committee to address the issue of food security has been set up to examine the provisions and opportunity of government's planning and policy in providing food security as the part of constitutional obligation and to fulfil international conventions. To ensure food security at the household level, government is implementing Targeted Public Distribution System (TPDS) under which subsidised food grains are provided to people below the poverty line (BPL) and above poverty line (APL). The government proposes a new legislation namely "National food security bill 2011" that aims at providing food and nutritional security to all the citizen of our nation by ensuring the access to adequate quantity of food at affordable prices and to live a life with dignity. This turns out to be a shift from welfare based approach to right based approach. About two thirds of the population will be entitled to receive subsidized food grains under Targeted Public Distribution System after implementation of the Bill. It will also confer legal rights on women and children and other Special Groups such as destitute, homeless, disaster and emergency affected persons and persons living in starvation, to receive meal free of charge or at affordable price.

The Committee points out that under the existing Targeted Public Distribution System (TPDS), allocation of food grains are being made by the Central Government to States/UTs based on the accepted number of 6.52 crore Below Poverty Line (BPL) households (including 2.43 crore Antodaya Anna Yojana {AAY} households) and 11.5 crore Above Poverty Line (APL) households. The allocations are based on the population estimates for the year 2000 of the Registrar General of India, using 1993-94 Poverty Estimates of the Planning Commission. Accordingly, the quantum of food subsidy for the year 2010-11 was Rs. 65,045 crore which is likely to increase to Rs.

88,977 crores during the year 2012-13. Further, the Department has informed that using the population figures of 2011 Census and poverty estimates of 1993-94 and taking household size as 5.3 as per census 2001, the quantum of subsidy for 2011-12 works out to Rs. 95,787 crores which is likely to increase to Rs. 1,09,796 crores for the year 2012-13. As per provisions of the National Food Security Bill, 2011, the food subsidy for 2012-13 shall be Rs. 1,12,205 crores. There will thus be marginal increase in the food subsidy during 2012-13 from Rs. 1,09,796 crores to Rs. 1,12,205 crores which work out to Rs. 2,409 crores.

While noting that the proposed National Food Security Bill, 2011 is going to be an important step towards the elimination of hunger and under nutrition in India, the Committee feel that it is of utmost importance that the Bill remains a simple yet effective framework of the Public Distribution System ensuring food security to the people of India. The Committee are also conscious of the large amount of subsidy involved in the implementation of the Bill and are aware that it is likely to increase substantially in the coming years.

Table 1: Production and Procurement of Rice and Wheat (in lakh tons)

Crop Year	Rice		Wheat		Total(Rice + Wheat)	
	Production	Proc.	Production	Proc.	Production	Proc.
2006-07	933.55	251.07	758.10	111.28	1691.65	362.35
2007-08	966.93	287.36	785.70	226.89	1752.63	514.25
2008-09	991.80	341.04	806.80	253.82	1798.60	594.86
2009-10	890.90	320.34	808.00	225.14	1698.90	545.48
2010-11	959.80	342.00	868.70	283.35	1828.50	625.35
2011-12	1043.22	350.36	939.03	381.48	1982.25	731.84

The purpose of this paper is to model food security in an applied general equilibrium framework, commonly known as CGE (Computable General Equilibrium) framework in order to analyse different policy options for the government to finance the subsidy required for ensuring food security in India. In our CGE model based of Social Accounting Matrix (SAM) we would have segregated three prominent food sectors, i.e. 1) Rice, 2) Wheat and 3) Coarse serial, for which food subsidies will be provided. We classify the households into two rural and two urban type households in accordance with the provision of food subsidies made for the households.

Survey of Literatures

Indian economy embraces new phase of economic development with reforms activities under taken since 1991. The chief purpose was to becoming globally competitive through greater openness of trade, foreign capital and technology inflows while private sector was expected to play greater role reducing public sector activities. In several noteworthy works CGE modelling approach based on SAM has been applied with the aim of analyzing the comparative static effects of selected post-1991 trade and domestic policy reforms on trade, domestic factor income and consumption, economic welfare and intersects oral allocation of resources. CGE models are essentially based on Social Accounting Matrix (SAM). There is a rich tradition of constructing SAM for India which extends India's Input/output table and provide consistent database for simulation based policy analysis. Several CGE models have been developed for India in recent years. We may classify the models into two groups: structuralist and neoclassical. Taylor (1983), de Janvry and Subbarao (1986), Sarkar and Panda (1990), Taylor (1983), Storm (1993) and Naastepad (1998) are some of the models for India in the structuralist tradition. Contrary to this, Narayana et al (1990) and Subramanian (1993), Parikh et al (1997) belong to the neoclassical tradition. The structuralist models emphasized on short run macroeconomic issues such as inflation, wage indexation and demand management. On the other hand, the neoclassical models focus on long run issues like relative prices and resource allocation mechanisms. Since the main logic for trade liberalization is to enhance efficiency through inter sectoral resource reallocation, most of the trade focused CGE models developed for the analysis of liberalized international trade, belongs to the neoclassical tradition and focus on medium run issues like, agricultural trade liberalization, foreign capital inflow, technological up gradation etc. Parikh et al. (1997) examined the impacts of trade liberalization in an applied general equilibrium model with nine agricultural sectors, one non trade able non agricultural sector and one trade able non agricultural sector and five rural and five urban expenditure classes. Policy alternatives are accessed based on equivalent incomes of expenditure classes. Their simulation study demonstrates that relevance of accounting for large country effects in rice trade. They also estimate optimal tariff/quota for rice exports of India. Panda and Sarkar(1990) studied the appropriate framework for analyzing various implications of change in administered prices in an General equilibrium model in which output, price, income and expenditure are determined simultaneously. Few notable works like Panda M. and J. Quizon(1999) and Panda M. and A. Ganes Kumar(2009) attempted to analyze sectoral resource allocation and output effects of trade liberalization in India. Panda

Table 2: CGE Application in Indian Economy

Model	Uses/Application	Database used
Sarkar H. and M. Panda(1990)	Short run forecasting and policy analysis through structural macroeconomic model	SAM of India for 1983-84
Panda M. and H. Sarkar (1990)	Resource mobilization through administered price in India	SAM of India for 1983-84
Narayana et al.(1991)	Policy analysis for agricultural growth and redistribution	SAM of India for 1983 –84
Panda M.(1992)	A note on the database for poverty analysis through CGE model	-
Panda M. and J. Quizon(2001)	Growth and Distribution under Trade liberalization in India	SAM of India for 1990-91
Parikh K.S. et al.(1997)	Agricultural trade liberalization, growth , welfare and large country effects	SAM of India for 1990-91
Sinha A.et al.(Sept,2003)	Impact of Globalization on Indian Women Workers	SAM of India for 1999
Panda M. and A. Ganes Kumar (2009)	Impact of trade liberalization on Poverty and Food security in India	SAM of India for the year 2003-04
Ojha V. P. and B.K.Pradhan	Human capital formation and Economic growth in India	SAM of india-1994-95
Ojha V. P. and B.K.Pradhan (2009)	Macroeconomic and sectoral impacts of HIV and AIDS in India.	SAM of India 2002-03
Ojha V.P. et al.(May 20011)	Economy-Wide Impacts of Biodiesel Production and Use inIndia.	SAM of India of 2006-07

M. and Quiuzon J. (1999) studied the impacts of agricultural other sectoral trade liberalization through the reduction of import duty in a computable general Equilibrium framework and their simulation results show that trade liberalization in agriculture and non-agriculture taken together help to increase GDP growth and real income for all classes of population in rural and urban India. Moreover, only manufacturing liberalization in their study benefited all the rural and urban household classes. Panda M. and A. Ganesh Kumar (2009) attempted to assess the impact of trade liberalization on growth, poverty and food security in India. They used a national level computable general equilibrium model following Dervis, De Melo and Robinson(1982) tradition to show that GDP growth and income poverty reduction that usually take place owing to trade liberalization, may not necessarily improve food security and nutritional status of the poor. CGE based study by Sinha A. et al. (Sept. 2003) examined the impact of socially relevant policy changes on the welfare of the women in India. Macroeconomic analysis is conducted by considering various economic agents of the economy having gender distinction within a SAM. National bio-diesel policy in CGE framework is studied by Pohit S. et al (May 20011). They examined economy wide impacts of the expansion of bio-diesel production using Computable General Equilibrium model. Increased public expenditure in different social sectors, like in higher education is studied in CGE framework by Ojha V.P. and B.K. Pradhan(2009). Ojha V.P. and B.K. Pradhan(2009) applied CGE modelling in accessing macroeconomic and sectoral impacts of HIV and AIDS in India. Considering a five sector CGE model their study concludes that the increase in health expenditure of the households and the government causes a reduction of domestic savings which crowds out private investment.

We find that no serious attempt has been made to model India's food security issue and its alternative financing opportunities. In this paper that research gap has been addressed to find out the cost and benefits of the alternative financing opportunities so far as India's food security has been concerned

Social Accounting Matrix

CGE models are traditionally based on SAM which is matrix representation of all transactions and transfers that takes place between different production activities, various factors of production and different institutions like households, corporate and government within the country and with respect to rest of the world in a particular financial year. SAM therefore defines a comprehensive framework that can depict full circular flow of income from production activities to factor service providers like households. Each row

of a SAM represents total receipts of any account and column represents expenditure of that account. Therefore row total is supposed to be equal with corresponding column total. An entry in the i^{th} row and j^{th} column represents receipts of i^{th} account from the j^{th} account¹.

A SAM is a database and extension over input/output matrix (I/O). Use of I/O matrix is widely accepted with the pioneering work of Wassily Leontief. I/O matrix however, does not represent interrelationship between factor value added and agent's final expenditure. Extension of an I/O table with the introduction agent's behavior and institutional characteristics one can get essential features of a SAM. This can depict entire circular flow of income much more effectively. Our environmental CGE model is based on schematic structure of SAM and for calibration of the model we constructed Food crop based SAM for India for the year 2003-04 following Saluja and Yadav(2006)².

Structure of the CGE

Sectors and agents: Following SAM of India for the year 2004 produced by Saluja and Yadav(2006) and Ojha V.P., Pohit S. *et al.*(2009) we grouped all sectors of the economy into seven aggregated sectors i.e. 1) *Primary sector* consists of all agricultural products excepts food items, minerals, primary products such as iron ores, crude petroleum and agro process activities 2) *Secondary sector* is comprised mainly of all manufacturing activities like, cotton & textile, plastic, rubber and lather products, cement, different chemical products etc. 3) *Infrastructural sector* consists infrastructural services and 4) *Other service* sectors like education, health care services, public administration, bank and insurance, postal services etc and three separate food sectors 5) *Paddy* 6) *Wheat* and 7) *Coarse serial*. We considered four types of agents in the economy i.e. a) Household b) Firm c) Government and d) Rest of the World (ROW). There are four types of households i.e. i) RHH-1(Rural agricultural and other laborers) ii) RHH-2(Agricultural self employed and other households) iii) UHH-1(Urban salaried class) and iv) UHH-2(Urban casual labour and others). All other countries and regions are clubbed together into ROW. Among them RHH-2 and UHH-2 household class are entitled to receive food subsidy from the government.

¹Schematic structure of SAM is presented at the end of the body of this paper.

²In Indian context I/O table is published by Central Statistical Office (CSO) in every five years gap. Saluja et al (2006)

Table 3: Schematic Structure of Social Accounting Matrix

	Activities (1)	Commodities (2)	Factors (3)	Households (4)	PVT Corp. (5)	Pub.Ent (6)	Govt. (7)	Ind. taxes (8)	Capital A/C (9)	ROW (10)	Total
1	Activities	Gross output									Output
2	Commodities	Purchase of rawma- terial		Household consump- tion			Govt. consum- ption		Gross Fixed Capital Formation	Exports	Aggregate demand
3	Factors	Value added								Net factor income	Factor Income
4	Household		Endow- mentof HH				Govt. transfer,			Net current- transfer	Total House hold income
5	PVT corp.		Operating Profits				Interest on debt				Income of Private Corporate
6	Pub. Ent.		Operating Surplus								Income of Corporate Public depart- mental
7	Govt.		Income from- trepr.	Income tax by house- holds	Corporate taxes			Total indirect taxes		Net capital transfer	Total govt. earnings

Contd.

	Activities	Commodities	Factors	Households	PVT Corp.	Pub.Ent	Govt.	Ind. taxes	Capital A/C	ROW	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
8	Ind. tax	Taxes on intermediate		Taxes on purchases			Taxes on purchases		Taxes on investment	Tax on exports	Total Indirect taxes
9	Capital A/C		Depreciation	Household dsavings	Corporate savings	Public sector savings	Govt. savings			Foreign savings economy	Gross savings of
10	ROW	Imports									Foreign exchange payments
Total	Total cost of production	Aggregate supply	Total factor endowments	Total use of HH income	PVT COR P income	Income of PSU	Aggregate govt. exp.	Total ind. tax	Aggregate investment	Foreign Ex. Receipt.	

Production and Factor inputs: We have considered two basic factors of production i.e. labour and capital that take part in the production process within which substitution is possible through Cobb-Dauglus production technology. Each production unit requires intermediate inputs following fixed coefficient type Lontief technology.

Prices: Product prices are determined from the equality of price and average cost. Average cost is comprised of basic factor cost, cost of intermediate inputs that includes cost of energy inputs. Increasing returns to scale is assumed through the presence of fixed cost in the production units.

Household income and expenditure: Households are rendering factor services in terms of labour and capital while in return they are receiving factor payments in the form of wages and rentals. We have considered four types of household, two of them are rural type and other two are urban type. Household spends his income for consumption purposes. We have assumed linier expenditure system type demand function for household. RHH-2 and UHH-2 household class are receiving procured food i.e. a) Rice b) Wheat and c) Coarse serial in almost negligible price.

Government income and expenditure: Source of income of the Government is a) Direct, indirect and corporate taxes b) Import tariff³ c) Income from entrepreneurial activity. In the expenditure front we assumed government's expenditure in any sector is exogenously determined i.e. determined in the government's budget and adjusted to benchmark SAM. Difference between government's income and expenditure is government's savings⁴. Government is purchasing food crops from the market at the market price and distributing those food crops among the rural and urban households.

Specific GAMS code for food transfer to different household

$$Xp1(fd,SHH) = e= \alpha1(fd,SHH)*(HI(SHH)-Sp1(SHH)-$$

$$Tdr(SHH))/pq(fd)+gt1(SHH)*Xg(fd);$$

$$Xp1(fd,NSHH) = e= \alpha1(fd,NSHH)*(HI(NSHH)-Sp1(NSHH)-$$

$$Tdr(NSHH))/pq(fd);$$

³Net indirect tax mentioned in the SAM has been classified into domestic indirect tax and import tariff.

⁴In the Indian context government savings in most of the cases is negative that constitute large part of country's fiscal deficit. Expenditure of the government is usually determined in annual budget.

$$Xp1(nfd,HH) = e = \alpha1(nfd,HH)*(HI(HH)-Sp1(HH)-Tdr(HH))/pq(nfd);$$

Investment and Savings: We considered Neo-classical type closure rule where investment is guided by saving. Total saving is comprised of i) Household saving ii) Government saving iii) Corporate saving iv) Foreign savings. Total saving is converted to total investment.

Armington function and trade: International trade in our model is guided by Armington function. Total availability of composite commodity in the domestic economy is composed of domestically produced variety of the good demanded by the domestic people and foreign variety of the same good. Both types of variety is combined together following a Constant Elasticity of Substitution type preference function.

Production of output and transformation: Total supply of each domestic good produced using labour, capital and intermediate input is used up by export of that good and to meet up domestic demand of domestic variety. Both export and domestic demand of the produced good is combined together following CES type transformation function.

Factor prices and equilibrium: We consider two basic factors of production i.e. labour and capital. Total supply of basic factor is fixed in value terms and factor prices are flexible. Physical quantity of labour or capital may change in different simulation experiments following demand and supply equilibrium mechanism in the factor market. Demand for factor is originated from the production of goods and services.

Equilibrium in commodity market: In the commodity market total supply of the composite commodity is constituted by domestic variety as well as imported foreign variety corresponds to each good. Demand for the composite commodity is generated from household consumption, government consumption expenditure, total investment demand and demand for intermediate input. Composite commodity price is determined from the demand and supply of composite commodity.

GDP and Welfare: Under perfect competition GDP has been computed adding all sectoral outputs. Social welfare has been of Cobb-Duaglus type and depends on private household consumption.

Food SAM and Calibration of the Model

The parameters of the constructed model are then estimated in conjunction with the benchmark dataset. In few instances, econometric estimates obtained from other sources have been applied for the purpose of parameter

estimation. For example, number of varieties in the industry has been considered as 10 based on certain assumption. Remaining parameters are chosen, such that, they are consistent with the benchmark data. Here we have manipulated the equations of the model, so that parameters can be represented as the function of the data and solved the equations to obtain parameter values. This process is known as calibration, a deterministic

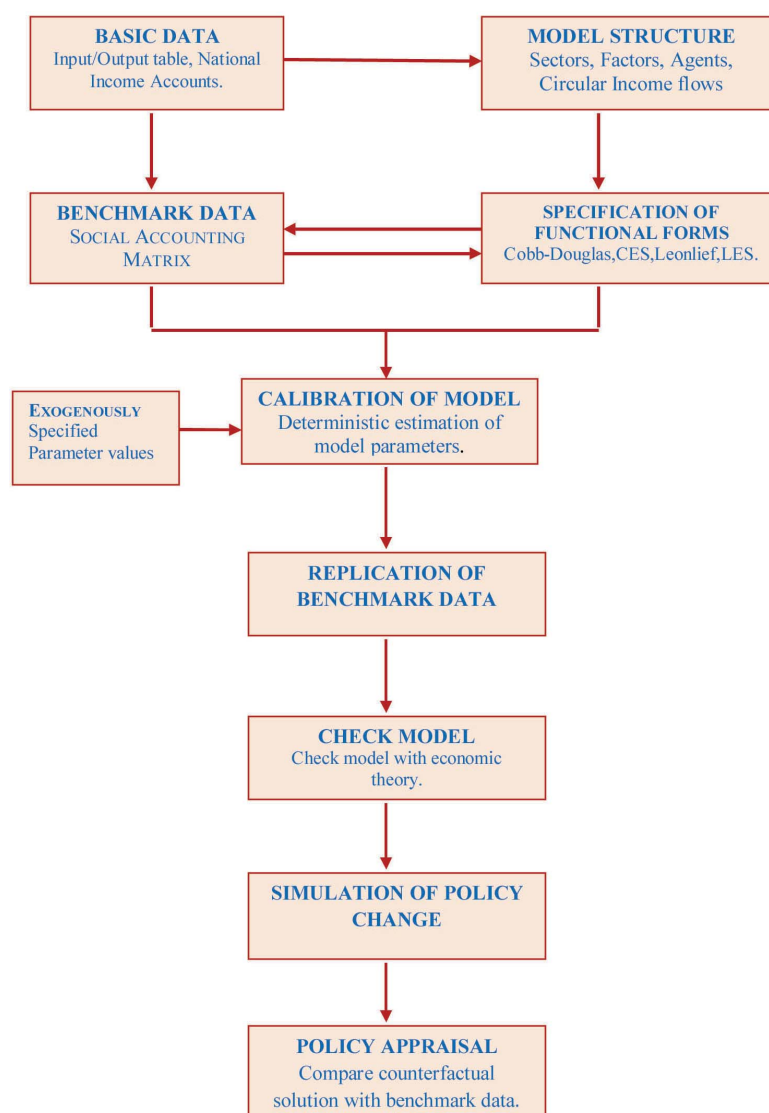


Fig. 1: Flow chart of Calibration process

Table 4: Food SAM of India -2003-04(Rs. In Lakhs)

Sectors	Paddy	Wheat	Coarse Serial	Primary sector	Secondary sector	Infrastructure	Other service	Labour	Capital
Paddy	957558	7333	0	98089	1062980	226	0	0	0
Wheat	3933	597192	0	133091	734216	10499	0	0	0
Coarse Serial	0	5152	18351	63140	86643	0	0	0	0
Primary sector	214577	191523	230679	7813229	35487406	2764682	148968	0	0
Secondary sector	1247075	1125940	330853	6791879	72102447	15722644	6844878	0	0
Infrastructure	242314	192714	57988	3310796	25253708	6639444	3069054	0	0
Other service	484628	385428	115976	771827	13603244	8167558	8196396	0	0
Labour	3962449	2682315	983584	34310321	33292466	24461809	38969523	0	0
Capital	3148420	2131272	781521	29878150	27090185	33397891	31081063	0	0
RHH1	0	0	0	0	0	0	0	38556099	8909593
RHH2	0	0	0	0	0	0	0	22966890	45955245
UHH1	0	0	0	0	0	0	0	61509848	16734549
UHH2	0	0	0	0	0	0	0	8661430	5406382
Private corporations									9557281
Public Enterprises									4626200
Government									3618000
Indirect taxes	-400964	-376583	-81614	-1306585	9471626	3514423	1145516		
Capital A/C	0	0	0	0	0	0	0		25363700
Rest of the world	27	25	148	12756258	28730550	3326565	4213424		
Total	9767804	6829068	2450782	93480335	231376699	100069843	106094471	130721519	120352089

Table 5: Food SAM of India 2003-04 continued

Activities	RHH1	RHH2	UHH1	UHH2	PVT. corporat-ions	Pub. Enterp-rises	Government	Ind. Taxes	Capital a/c	Rest of the world	Total
Paddy	1125841	3055968	326698	969227	0	0	25749	0	921324	404391	8860050
Wheat	595959	2140500	291839	878272	0	0	28584	0	-96064	262897	5853378
Coarse Serial	390861	1054145	64696	103682	0	0	52	0	-2694	31824	1825080
Primary sector	9738070	14496584	10020308	260612	0	0	241670	0	1803896	2978019	93480335
Secondary Sector	13296472	15681302	14754899	818775	0	0	5157523	0	55622644	25376947	231376699
Infrastructure	5644772	5679316	6855314	1209437	0	0	1871435	0	3260561	10605075	100069843
Other service	11734098	18534595	25392996	5250963	0	0	24837174	0	693607	4824222	106094471
Labour	0	0	0	0	0	0	0	0	0	-312600	130721521
Capital	0	0	0	0	0	0	0	0	0	-1095200	120352089
RHH1	0	0	0	0	0	0	52075667	0	0	993035	53666294
RHH2	0	0	0	0	0	0	9824402	0	0	2157927	80904465
UHH1	0	0	0	0	0	0	9113270	0	0	6175802	93533470
UHH2	0	0	0	0	0	0	1190924	0	0	2562618	17821354
Private									1216819		10774100
Corporations											
Enterprises	0	0	0	0	0	0	0	0	0	0	4626200
Government	224068	3506373	1500237	2906519	6099400			24616465		-248200	40437165
Indirect taxes	1517569	2035126	13333662	440247			685090		5094808	-157127	24616465
Capital a/c	10308227	20323643	21205637	2945766	4674700	4626200	-16661127			-3426241	67692335
Rest of the World	0	0	0	0							49026796
Total	53666294	80904465	93533470	17821354	10774100	4626200	40437165	24616465	67692335	49026796	

Table 6: Calibrated values of the parameters

Parameter	Description	Paddy	Wheat	Coarse Cereals	Primary	Secondary	Infra.	Service
β_l (Labour)	Share parameter in production function	0.583	0.583	0.583	.561	0.577	0.449	0.582
β_c (Capital)	Share parameter in production function	0.417	0.417	0.417	0.439	0.423	.551	.418
b_i	Production function shift parameter.	1.972	1.972	1.972	1.98	1.97	1.98	1.97
α_i	Composite factor requirement	0.412	0.393	0.421	0.766	0.283	0.621	0.786
μ_i	Government consumption share	.000055	.000005	.000001	0.01	0.207	0.075	0.996
τ_{im}	Import tariff rate.	0.3	0.3	0.3	.3	.14	.14	.14
τ_{ind}	Indirect tax rate	-0.003	-0.005	-0.003	-0.004	0.012	0.010	0.003
γ	Scale parameter in Armington function	0.512	0.496	0.435	1.624	1.655	1.077	1.98
δ_{lam}	Share parameter of imported good.	0.001	0.001	0.006	0.29	0.285	0.171	0.186
δ_{lad}	Share parameter of domestic good.	0.999	0.999	0.994	0.710	0.715	0.829	0.814
ϵ	Elasticity of substitution in Armington.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
θ	Scale parameter in transformation func.	8454.853	13249.413	4751.280	54980	138610	78534	63972
χ_e	Share parameter of export.	2.5987E-5	4.381E-6	3.4268E-5	4.020E-7	5.41E-8	1.29E-7	2.5E-7
χ_d	Share param. Of domestic good(Trans)	2.5987E-5	4.381E-6	3.4238E-5	7.9559E-8	2.034E-8	4.77E-8	6.33E-8
ϕ	Substitution elasticity in transformation.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Parameter	Description	RHH1	RHH2	UHH1	UHH2			
τ_{aud}	Direct tax rate.	0.018	0.41	0.017	0.190			
g_t	Parameter for govt. transfer.	0.189	0.413	0.365	0.048			
ssp_b	Propensity to save for households.	0.14	0.344	0.243	0.029			
r_l (Labour)	Labour income share for households.	0.246	0.223	0.128	0.041			
r_b (Capital)	Capital income share for households.	0.117	0.268	0.563	0.078			

procedure, in which we get point estimates of the parameters without having any standard errors. Calibrated CGE model will be solved to check whether it can reproduce a replica of the benchmark data. If benchmark Social Accounting Matrix (SAM) is not regenerated during solve of the model, we have to re-specify our model and re-estimate the parameters until the model generates a replica of the benchmark SAM.

We have used Food SAM (FSAM) constructed by segregating separate Food sectors. In our FSAM we have total seven sectors. Four of them are conventional production sectors excepting food sectors namely 1) Primary sector (Other than food) 2) Secondary manufacturing sector 3) Infrastructural services 4) Other service sectors and three of them are food sectors, namely 5) Rice 6) Wheat 7) Coarse serial. Our constructed SAM is for the year 2003-04 and we aggregated the SAM produced by Saluja and Yadav(2006) for the same year according to our requirement.

Policy Simulation Experiments

After estimating the model parameters through benchmark equilibrium, we performed simulation experiments to obtain the impacts of policy change. We have changed the policy parameters appropriately and solved the model once again to obtain counterfactual equilibrium data values. We made three simulation experiments related to trade liberalization a) 50% reduction of import tariff b) Technological up gradation and c) Greater foreign capital inflow. In order to obtain the impacts of policy changes, counterfactual equilibrium values are compared with benchmark equilibrium values of the macroeconomic variables.

Experiment-1: *Trade liberalization in Food crop sector*

We reduced import tariff and subsidy by 100% respectively in food sectors i.e. a) Paddy b) Wheat and c) Coarse serial. As a result, share of import in total domestic consumption increases in food sectors along with the increase in export. However there is depreciation of real exchange rate by 3.314 % owing to greater demand of foreign exchange to pay the import. This makes export profitable and we find export increases almost every sector. Change in export and import affects domestic production pattern. Sectoral domestic production rises in manufacturing industries and Infrastructural service sectors, sectoral output however falls in agricultural sector and very little percentage in other service activities due to shift of labour and capital towards industrial sectors. Greater supply of composite commodity due to higher import leads to fall of composite commodity prices in almost every sector.

According to our assumption wage rate is acting as the numeraire and total basic factors payments are fixed exogenously i.e. adjusted to benchmark SAM value. Sectoral change in demand and supply of physical volume of labour and capital along with substitution possibilities leads to rise of rental rate approximately by .2%. Although this may lead to an increase of household income, we get reduction of household income for all types of household due to sharp decrease of government transfer owing to fall of government income from lower tariff revenue earning. This leads to fall of household consumption among rural self employed and urban salaried class. Composition of product variety within household consumption however shifts from domestic to foreign variety. Social welfare rises by very little percentage owing to increased private consumption among rural labour class and urban non-salaried casual working class whose income has not reduced owing to lesser government transfer.

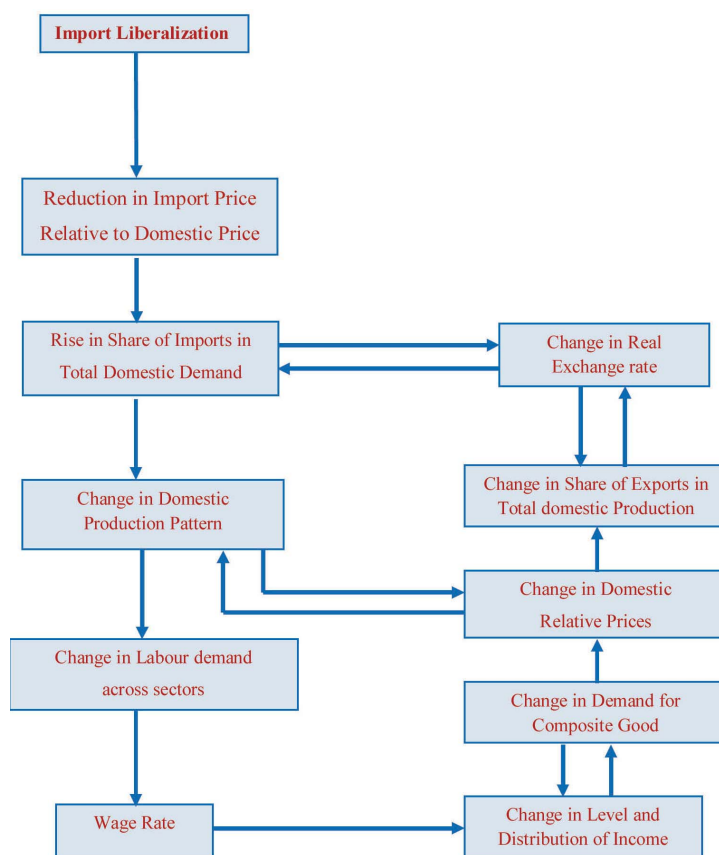


Fig. 2: Major Interactions due to import liberalization

Experiment-2: Higher government procurement of food crops and distribution of the

Same to the rural and urban households

According to our model assumption government can procure food crops from the market at market price. This procured amount is distributed among the urban casual worker class and informal worker class i.e. among UHH-2 and rural agricultural and non agricultural labour class i.e. among RHH-2, in subsidised price which is very low as compared to the procurement price. We assumed zero prices for the distributed amount.

The immediate impact is the increase in food consumption of the RHH-2 and UHH-2 type of households. But this entails reduction of consumption of non food items by all types of households. Since government is spending much without having increased its income, its budgetary deficit increases. Thus social welfare increases due to the escalation of food consumption, but at the same time there is increased deficit for the government⁵.

Experiment-3: Higher government procurement and distribution of food crops along with

Lower government expenditure in non-food sectors

We also have experimented the scenario where government is procuring food grains from the market at market price and distributing the same to the rural and urban households (RHH-2 and UHH-2) at a very negligible price. Since in our previous experiment, the economy ends up with high fiscal deficit, in this section we experimented higher government procurement of food crops along with budgetary expenditure reduction on non food items.

We find that food crop consumption has been increased in food sectors for RHH-2 and UHH-2 where as there has been a reduction of consumption in non food items. Govt's budgetary deficit reduces because of this policy changes.

Concluding remarks

Ensuring food security is not only the responsibility of the national government but the right of the common people of the nation. In order to keep track the

⁵If government finances deficit by the borrowing from central bank and creating more money, this will end up with inflationary pressure which will ultimately reduce purchasing power of the households.

issue Indian government has decided bulk procurement of basic food crops like paddy, wheat and coarse serial; and distribute them to the downtrodden people at a very nominal price. This policy has been proved to be very promising to reduce food insecurity and hunger and to bring a large section of the population in an honoured livelihood, so far as poverty, hunger and destitution are concerned. But at the same time government must ensure adequate fund for providing huge subsidy required for the food sector. Government may create budgetary provision by slightly reducing allocation of funds in other developmental activities.

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Appendices

Appendix-1: Mathematical Structure of the Cge Model:

Production Block:

$$Y_j = b_j \cdot \left[\prod_h F_{h,j}^{\beta_{j,h}} \right] \quad (1)$$

$$X_{i,j} = ax_{i,j} \cdot Z_j \quad (2)$$

$$Y_j = ay_j \cdot Z_j \quad (3)$$

$$F_{h,j} = \beta_{h,j} \cdot py_j \cdot Y_j / pf_h \quad (4)$$

$$pz_j = ay_j \cdot py_j + \sum_i ax_{i,j} \cdot pq_i + \frac{FC_j}{Z_j} \quad (5)$$

Government behavior:

$$GINC = Td + Tdc + TInd + NCAT + ENT + TARR - Ts \quad (6)$$

$$Td = \sum_b \tau aud_b \cdot \left[\sum_h pf_h \cdot FF_h \cdot r_{h,b} + GT_b + NCUT_b \right] \quad (7)$$

$$Tdc = tcorp \cdot (OPR + IND) \quad (8)$$

$$OPR = sop \cdot \left[\sum_h pf_h \cdot FF_h + NF_1 + NF_2 \right] \quad (9)$$

$$TInd = \sum_b \tau auz_j \cdot pz_j \cdot Z_j \quad (10)$$

$$TARR = \sum_i \tau aum_i \cdot pm_i \cdot M_i \quad (11)$$

$$Ts = \tau aus \cdot \sum_i pe_i \cdot E_i \quad (12)$$

$$Xg_i = mu \times GDP / pq_i \quad (13)$$

$$GT_b = gt_b \cdot GINC \quad (14)$$

$$GEXP = \sum_i Xg_i + \sum_b GT_b + Ts \quad (15)$$

$$S_G = GINC - GEXP \quad (16)$$

Investment behaviors:

$$Xv_i = lamda_i \cdot \left[Dep + \sum_b Sp_b + Sg + Sc + Sf \cdot epsilon \right] / pq_i \quad (17)$$

Savings:

$$HHIN_b = \sum_h \left[\sum_h FF_h \cdot pf_h + NF_1 + NF_2 \right] \cdot r_{hb} + NCUT_b + GT_b \quad (18)$$

$$HHIN_b = \left[\sum_h FF_h \cdot pf_h + NF_1 + NF_2 \right] \cdot r_b + NCUT_b + GT_b \quad (18.a)$$

$$\text{Where } r_b = \sum_h r_{h,b}$$

$$Sp_b = ssp_b \cdot HHIN_b \quad (19)$$

$$Sc = ssc \cdot (OPR + IND) \quad (20)$$

Household consumption:

$$Xp_{i,b} = alpha_{i,b} \cdot [HHIN_b - Td_b - Sp_b] / pq_i \quad (21)$$

International trade:

$$pm_i = epsilon * pWm_i * (1 + taum_i) \quad (22)$$

$$pe_i = epsilon * pWe_i * (1 + taus) \quad (23)$$

$$\sum_i pWe_i * E_i + Sf + \sum_b NCUT_b + NF_1 + NF_2 + NCAT + Ts = \sum_i pWm_i * M_i \quad (24)$$

Armington function:

$$Q_i = \text{gamma}_i \left[\text{deltam}_i \cdot M_i^{\text{eta}_i} + \text{deltad}_i \cdot D_i^{\text{eta}_i} \right]^{\frac{1}{\text{eta}_i}} \quad (25)$$

$$\frac{M_i}{Q_i} = \left[\text{gamma}_i^{\text{eta}_i} \cdot \text{deltam}_i \cdot \frac{pq_i}{pm_i} \right]^{\frac{1}{1-\text{eta}_i}} \quad (26)$$

$$\frac{D_i}{Q_i} = \left[\text{gamma}_i^{\text{eta}_i} \cdot \text{deltad}_i \cdot \frac{pq_i}{pd_i} \right]^{\frac{1}{1-\text{eta}_i}} \quad (27)$$

Transformation function:

$$Z_i = \text{theta}_i \cdot \left[\text{xie}_i \cdot E_i^{\text{phi}_i} + \text{xid}_i \cdot D_i^{\text{phi}_i} \right]^{\frac{1}{\text{phi}_i}} \quad (28)$$

$$\frac{E_i}{Z_i} = \left[\text{theta}_i^{\text{phi}_i} \cdot \text{xie}_i \cdot (1 + \text{tind}) \cdot \frac{pz_i}{pe_i} \right]^{\frac{1}{1-\text{phi}_i}} \quad (29)$$

$$\frac{D_i}{Z_i} = \left[\text{theta}_i^{\text{phi}_i} \cdot \text{xid}_i \cdot (1 + \text{tind}) \cdot \frac{pz_i}{pd_i} \right]^{\frac{1}{1-\text{phi}_i}} \quad (30)$$

Market clearing condition:

$$Q_i = \sum_b Xp_{i,b} + Xg_i + Xv_i + \sum_j X_{i,j} \quad (31)$$

$$FF_h = \sum_j F_{h,j} \quad (32)$$

Fictitious Objective function:

$$UU = \sum_b \prod_i Xp_{i,b}^{\alpha_{i,b}} \quad (33)$$

Appendix-1.A: List of Endogenous variables:

Y_j = Combined input used in j^{th} activity.

$F_{h,j}$ = Demand for basic input h in j^{th} activity.

Z_j = Output of j^{th} activity

py_j = Price of combined input in j^{th} activity.

pf_h = Price of basic input h .

pq_i = Price of the i^{th} commodity.

$GINC$ = Total Government income.

Td = Household income tax.

Tdc = Corporate tax.

$TInd$ = Indirect tax

pf_h = Factor price of the h^{th} factor.

FF_h = Factor demand of the h^{th} factor

GT_b = Government transfer to the b^{th} household.

gt_b = Government income share transferred to b^{th} household.

$Xp_{i,b}$ = b^{th} household consumption of the i^{th} good.

Xg_i = Government consumption of the i^{th} good.

$X_{i,j}$ = i^{th} sector's output goes to j^{th} sector as intermediate input.

Xv_i = i^{th} commodity used as investment good.

pq_i = Price of the i^{th} commodity.

pe_i = Price of export.

Sg = Government savings.

Sp_b = Private savings of the b^{th} household.

Sg = Government savings.

Sc = Corporate savings.

ϵ = Exchange rate.

$HHIN_b$ = Income of the b^{th} household.

pe_i = Export price of good i in domestic currency.

pm_i = Imports price of good i in domestic currency.

pd_i = Price of domestic good.

pz_i = Supply price of the i^{th} good.

pWe_i = World export price.

pWm_i = World import price.

E_i = Export of good i .

M_i = Import of good i .

ϵ = Exchange rate.

Q_i = Output composite good.

D_i = Output domestic good.

UU = Social welfare function.

Appendix-1.B: List of exogenous variables:

b_j = Production function shift parameter.

$\beta^{j,h}$ = Share of hth input within combined input in jth activity.

$ax_{i,j}$ = Per unit requirement of i^{th} commodity in jth activity as intermediate input.

ay_j = Per unit requirement of combined input in jth activity.

$r_{h,b}$ = h^{th} factor income share of b^{th} household.

ENT = Income of the government from entrepreneurial activity.

$taud_b$ = Share of total household income paid as income tax by b^{th} household.

mu_i = Share of government expenditure on i^{th} commodity.

$NCAT$ = Net transfer to government.

Sf = Foreign savings at world prices.

$lamda_i$ = Proportion of savings converted into investment.

Dep = Depreciation of capital.

FF_h = Total factor demand of the h^{th} factor.

$gamma_i$ = Scale parameter in Armington function.

$deltad_i$ = Share coefficient of domestic good in Armington function.

$deltam_i$ = Share coefficient of import good in Armington function.

eta_i = Constant determining elasticity of substitution in Armington function.

$theta_i$ = Scale parameter transformation function.

xie_i = Share parameter of export in Transformation function.

xid_i = Share parameter of domestic good in transformation function.

ϕ_i = Constant determining elasticity of substitution in Transformation function.

t_{ind} = Indirect tax rate.

τ_{a_i} = Import tariff rate.

τ_{aus} = Export subsidy rate.

$NCUT_b$ = Net current transfer to b^{th} household.

t_{corp} = Share of corporate income to tax.

OPR = Operating profit.

IND = Interest on debt.

sop = Share of operating profit to total factor income.

NF_1 = Net labor income earned abroad.

NF_2 = Net capital income earned abroad.

T_{purhh} = b^{th} household purchase tax.

T_{purg} = Government purchase tax.

T_{ing} = Taxes on intermediate.

T_{inv} = Taxes on investment good.

T_s = Taxes on export.

t_{purhh}_b = Share of household purchase paid as purchase tax by b^{th} household.

t_{purg} = Share of government purchase paid as purchase tax.

t_{ing} = Share of intermediate good purchase to tax.

t_{inv} = Share of investment to tax.

τ_{aus} = Share of export paid as tax.

FC_j = Fixed cost in the j^{th} sector.

Table-8: Alternative Closure Rules

Government	Rest of the world	Saving-Investment
Gov-1 Flexible government savings, fixed Direct tax rates.	ROW-1 Fixed foreign saving, Flexible exchange rate.	S-1 Fixed capital formation, Uniform MPS point change for selected institution.
Gov-2 for Uniform direct tax rates	ROW-2 Fixed government savings fixed real exchange rate.	S-2 Flexible foreign saving, Fixed capital formation, scaled MPS selected institution.
Gov-3 Fixed government savings Scaled direct tax for selected institution.		S-3 Flexible capital formation, Fixed MPS for all non governmental institutions.
		S-4 Fixed investment and government consumption absorption shares (flexible quantities) Uniform MPS, point change for selected institution.
		S-5 Fixed investment and government consumption absorption shares. (flexible quantities) Scaled MPS for selected institution.

19

Influence of the Socio-Personal Traits of the Vegetable Growers on their Knowledge Index regarding the Judicious Use of Pesticides in Brinjal Cultivation

Sarthak Chowdhury and Prabuddha Ray

Knowledge is the totality of understood information possessed by a person. Rolling (1988) stated that 'Knowledge' was an attribute of the mind. It could not be transferred. It is the outcome of lifelong information processing, storage and retrieval going on in the neuro-physiological system. Witzel (2004) defined knowledge as accumulated store of information and data we carry around in our minds, together with our own interpretation of them based on reason, instinct and prior experience. Knowledge is recognized as one of the most important component of human behaviour which gives impetus to adopt a technology.

In plant protection technologies, we find that in order to minimize crop loss, farmers aggressively adopt self-defeating practices such as increasing either dosage or frequency of pesticide application, regardless of its effects on environment, health and socio-economic conditions of the community. Farmers have tended to overuse pesticides according to their perception of the worst possible losses. For example, farmers tend to overuse chemicals to achieve full protection of high value crops such as vegetables because the physical appearance to the consumers or processors greatly affects the price of these crops.

The risks of increased use hazardous pesticides are magnified in India as in tropical conditions; it is very difficult to use protective clothing, facemasks, gloves and boots while spraying. A survey of farm workers spraying pesticides in Gujarat revealed that only 50 percent covered their faces with a cloth and only 20 percent washed their hands after spraying (Bull – 1982).

Despite the limited coverage of vegetables by pesticides in India, the problem of residue has assumed significant proportion.

These misuses of pesticides give rise to a broader question. The broader question is that whether there is low level of knowledge of the vegetable growers regarding the use of pesticides. But, if the farmers are to manage pests in the best way, there is certain set of knowledge and information they need to be aware of, including conceptual and technical knowledge, as well as the 'Know-how' to carry out certain practices. So, it is necessary to determine the knowledge level of the farmers in relation to the judicious use of pesticides and understand the relationship among various socio-economic factors that influence.

Objectives of the Study:

1. To find out the distribution pattern of the respondents on the basis of the various categories of Knowledge Index in relation to judicious use of pesticides and
2. To examine the relationship between the socio-personal traits of the selected vegetable growers with their Knowledge Index in relation to judicious use of pesticides.

Methodology

Among these C.D. Blocks, the Katwa - I Block in the district of Bardhaman in the state of West Bengal was purposively selected for the present study, because the soil of Katwa - I Block was conducive for vegetable cultivation. This was supported by the fact that nearly 700 hectares and 1300 hectares of land were under the vegetable cultivation in the summer and winter seasons respectively in the Katwa - I Block in the year 2010-11 (Source :- Department of Agriculture, Govt. of West Bengal). This C.D. Block also consumed a large amount of pesticides for plant protection purposes.

All the villages, eighteen (18) in numbers falling under the five (5) kilometers radius of Katwa Town were selected for the present study, as these villages have sizeable population who grew the above mentioned four vegetables in more than 0.33 acre or 0.57 hectare or 1 bigha of farm land were taken into consideration for the present study. At present 150 such farmers were there. So, all the 145 vegetable growers were selected as the sample population of the present study.

In the summer season, the production of Brinjal topped the list, whereas in the winter season also, the production of Brinjal topped the list of the

produced vegetables in the selected CD Block. So, Brinjal was selected for the present study.

The data was collected with the help of a structured question-schedule developed for the study and through the personal interview method. The data was collected from January, 2012 to December, 2012 at the selected villages. After completion of data collection, thorough checking was made on the filled up schedules and then the schedules were numbered. The numbered schedules were tabulated according to their numbers. The collected data were analyzed with the help of the various statistical tools.

It was thought worthwhile to measure the Knowledge Index (KI) of the vegetable growers regarding judicious use of pesticides. Knowledge Index in the present context was conceptualized by the following general formula:

$$\text{Knowledge Index (KI)} = \frac{\text{Actual level of knowledge}}{\text{Recommended level of knowledge}} \times 100$$

Here, the Knowledge Index (K.I.) of the respondents regarding the judicious use of pesticides in the selected vegetables was calculated by the following specific formula: -

$$\text{Knowledge Index (KI) regarding the judicious use of pesticides in the selected vegetable cultivation} = \frac{K_m}{P_m} \times 100$$

Where, P_m = possible maximum number of the correct answers given by the respondents on the knowledge items regarding the judicious use of pesticides in the selected vegetables and

K_m = actual number of the correct answers given by the respondents on the knowledge items regarding the judicious use of pesticides in the selected vegetables.

Here the recommended level of knowledge and actual level of knowledge in relation to judicious use of pesticides in vegetable cultivation were measured by the total number of plant protection practices as suggested by the Agriculture Department of Government of West Bengal for the selected vegetable production and the total number of Agriculture Department suggested plant protection practices followed by the vegetable growers in the actual field level of production of selected vegetables.

For measuring the Knowledge Index of the vegetable growers in relation to judicious use of pesticides, the recommended package of practices in relation to use of pesticides on Brinjal of the Department of Agriculture, Government

of West Bengal was the bench-mark for measuring the knowledge level of the vegetable growers in relation to judicious use of pesticides on the selected vegetables.

The individual Knowledge Index in relation to judicious use of pesticides of each of the selected 145 (one hundred forty five) respondents was measured by the formula mentioned before. The mean and Standard Deviation (S.D.) of the individual Knowledge Indexes (KI) regarding the judicious use of pesticides of all the 145 respondents were calculated, which were 69.705 and 10.823 respectively. Then the respondents were categorized into three categories of respondents whose respective Knowledge Indexes were High [More than (Mean + S.D.)] (Knowledge Index of 80.529 and higher), Medium [(Mean – S.D.) to (Mean + S.D.)] (Knowledge Index of 58.878 to 80.528) and Low [Less than (Mean – S.D.)] (Knowledge Index up to 58.877).

The relationship between the selected 17 (seventeen) socio-personal traits of the respondents and their Knowledge Index in relation to judicious use of pesticides was examined by using simple correlation of co-efficient, multiple regression and stepwise multiple regression tools.

Results and Discussion

The distribution of the respondents on the basis of the Knowledge Index of the respondents regarding the judicious use of pesticides

There were forty nine numbers of items of knowledge regarding the judicious use of pesticides. These items were:

1. Knowledge about pesticide in general,
2. Knowledge about the exact type of required pesticide,
3. Knowledge about the brand name of the applied pesticide,
4. Knowledge about the manufacturing company of the applied pesticide,
5. Knowledge about the chemical group of the applied pesticide,
6. Knowledge about the nature of the applied pesticide-systemic or contact,
7. Knowledge about the forms of the applied pesticides,
8. Knowledge about the danger level of the applied pesticide-Red/Yellow/Blue/Green,

9. Knowledge about “ “ symbol,
10. Knowledge about the meanings of each colour used in “ “ symbol,
11. Knowledge about the total numbers of the colours used in” “ symbol,
12. Knowledge about the type of “ “ symbol,
13. Knowledge about the expiry dates of the applied pesticides,
14. Knowledge about the user manual leaflet kept in the pesticide container,
15. Knowledge about the pesticide user manual, already read by the respondent,
16. Knowledge about the measurement procedure of the pesticides,
17. Knowledge about the concepts of units of measurements of volumes like 1, 2, 3, 4, 5, 10, 15, 20 litres etc.,
18. Knowledge about the irrigation schedule and pesticide application schedule synchronization,
19. Knowledge about the mixture of the various types of the pesticides,
20. Knowledge about the mixture of the pesticides, chemical and bio-fertilizers,
21. Knowledge about pesticide rotation of the applied pesticides,
22. Knowledge about the ideal crop stage of the pesticide application,
23. Knowledge about the ideal interval period in days between two pesticide applications,
24. Knowledge about the ideal gap in days between the last pesticide application and harvesting time of the vegetable,
25. Knowledge about the consciousness of the neighbouring farmers while pesticide application goes on
26. Knowledge about the dose of the applied pesticide,
27. Knowledge about the general weather condition needed for the pesticide application,
28. Knowledge about the ideal pesticide application time in the day,
29. Knowledge about the ideal pesticide application procedure,
30. Knowledge about the ideal handling procedure of the applied pesticide,

31. Knowledge about the clothing to be worn during the time of application of the pesticides,
32. Knowledge about the covering the face with clothes or masks while the pesticide application is on,
33. Knowledge about covering the hands with gloves while the pesticide application goes,
34. Knowledge about the antidote to the pesticide poisoning,
35. Knowledge about the ideal place of washing spray machines, making mixtures, pouring of the mixture etc.,
36. Knowledge about washing of the body of the applicator after the pesticide application,
37. Knowledge about washing of the clothes after the pesticide application,
38. Knowledge about the keeping of the full or partially full containers of pesticides,
39. Knowledge about the procedure of disposing off of the unused, date expired, old pesticide containers,
40. Knowledge about the use of the empty containers for domestic use,
41. Knowledge about the advantages of the applied pesticides,
42. Knowledge about the general disadvantages of the applied pesticides, vegetable cultivation
43. Knowledge about the result of the wrong, excessive and the unmindful use of the pesticides,
44. Knowledge about the bio-pesticides,
45. Knowledge about the I.S.I. marks on the farm implements,
46. Knowledge about the Economic Threshold Limit (ETL) of the particular pests of selected vegetables,
47. Knowledge about the Integrated Pest Management (IPM) of the selected vegetables,
48. Knowledge about the 'Friendly Insect' and 'Enemy Insect' of the selected vegetables and
49. Knowledge about the advantages and disadvantages of the pesticide application on the 'Friendly' and 'Enemy' insects of the selected vegetables.

On the basis of the above mentioned forty nine (49) numbers of knowledge items Knowledge Index (KI) regarding the judicious use of pesticides of each individual respondent was calculated. The individual Knowledge Index in relation to judicious use of pesticides of each of the selected 145 (one hundred forty five) respondents was measured by the formula mentioned before. The mean and Standard Deviation (S.D.) of the individual Knowledge Indexes (KI) regarding the judicious use of pesticides of all the 145 respondents were calculated, which were 69.705 and 10.823 respectively. Then the respondents were categorized into three categories of respondents whose respective Knowledge Indexes were High [More than (Mean + S.D.)] (Knowledge Index of 80.529 and higher), Medium [(Mean – S.D.) to (Mean + S.D.)] (Knowledge Index of 58.878 to 80.528) and Low [Less than (Mean – S.D.)] (Knowledge Index up to 58.877).

The categorization of the vegetable growers according to their individual Knowledge Index regarding the judicious use of pesticides was given in Table 1.

Table 1: Distribution of the respondents (vegetable growers) according to their respective Knowledge Index regarding the judicious use of pesticides

Sl. No.	Category of Knowledge Index	Frequency	Percentage
1.	High Knowledge Index	15	10.35
2.	Medium Knowledge Index	88	60.68
3.	Low Knowledge Index	42	28.97
4.	Total	145	100.00

From the above table, it was safely noted that a vast majority of the respondents i.e. 60.68 percent had medium Knowledge Index regarding the judicious use of pesticides while 28.97 percent of the respondents had low Knowledge Index regarding the judicious use of pesticides. It was interesting to observe that a minority of the respondent i.e. 10.35 percent of the respondents belonged to the high Knowledge Index category regarding the judicious use of pesticides.

From the above-mentioned facts, it was observed that a huge majority of the respondents had medium knowledge level regarding the judicious use of pesticides and 28.97 percent of the respondents had low knowledge level. However it was interesting to note that only 10.35 percent of the respondents had high knowledge level regarding the judicious use of pesticides. This picture gave rise to the fact that in general a medium level of knowledge regarding the judicious use of pesticides prevailed among the vegetable growers.

Relationship between Socio-personal traits of respondents and their Knowledge Index regarding the judicious use of pesticides

The following table revealed the selected seventeen (17) socio-personal traits (variables) of the respondents (vegetable growers).

Table 2: Description of socio-personal variables

Sl. No.	Symbol of the variable	Description of socio-personal variables
1.	X ₁	Age of the respondent
2.	X ₂	Caste of the respondent
3.	X ₃	Educational Status of the respondent
4.	X ₄	Total monthly income of the family of respondent
5.	X ₅	Total monthly income of respondent
6.	X ₆	Type of family of respondent
7.	X ₇	Size of family of respondent
8.	X ₈	Type of dwelling of respondent
9.	X ₉	Material Possession of respondent
10.	X ₁₀	Respondent's total cultivable land
11.	X ₁₁	Type of farm power used by the respondent in vegetable cultivation
12.	X ₁₂	Experience of respondent in vegetable cultivation
13.	X ₁₃	Social participation of respondent
14.	X ₁₄	Respondent's family contact with extension agencies
15.	X ₁₅	Extension participation of respondent
16.	X ₁₆	Mass Media participation of respondent
17.	X ₁₇	Exposure of the respondent to mass media sources

The correlation of coefficient between the seventeen (17) independent socio-personal- variables and the dependent variable (Y) viz. Knowledge Index regarding the judicious use of pesticides in the vegetable production was given in the following table.

Table 3: Correlation of co-efficient between socio-personal traits of the respondents (independent variables) and Knowledge Index regarding the judicious use of pesticides (Dependent variable)(Y)

Sl. No	Variables	r-value
1.	X ₁	-.2487
2.	X ₂	.9845**
3.	X ₃	.3071**
4.	X ₄	.9178**
5.	X ₅	.9935**
6.	X ₆	.2971*
7.	X ₇	-.1574

Contd.

Sl. No	Variables	r-value
8.	X ₈	.2888*
9.	X ₉	.8886**
10.	X ₁₀	-.1110
11.	X ₁₁	.7728**
12.	X ₁₂	.9931**
13.	X ₁₃	.8269**
14.	X ₁₄	.9444**
15.	X ₁₅	.2504
16.	X ₁₆	.1096
17.	X ₁₇	.9591**

* Correlation is significant at 0.05 level of significance

** Correlation is significant at 0.01 level of significance

The Table 3 showed that the independent variables X₂ (caste of respondent), X₃ (educational status of respondent), X₄ (total monthly income of the family of respondent), X₅ (total monthly income of respondent), X₆ (type of family of respondent), X₇ (type of dwelling of respondent), X₈ (material possession of respondent), X₉ (type of Farm power used by respondent in vegetable cultivation), X₁₀ (experience of respondent in vegetable cultivation), X₁₁ (social participation of respondent), X₁₂ (respondent's family contact with extension agencies) and X₁₇ (exposure of the respondent to mass media sources) were significantly and positively correlated with the dependent variable Knowledge Index of the vegetable growers in relation to the judicious use of pesticides in vegetable cultivation.

The result of Regression Analysis with significant $\hat{\alpha}$ values with the total 145 respondents was tabulated. The independent variables (socio-personal traits of respondents) were ranked on the basis of standard partial $\hat{\alpha}$ values, to find out their relative importance in predicting the dependent variable (Y₁) (Knowledge Index regarding the judicious use of pesticides in the vegetable production) in Table 4.

Table 4: Rank Position of the independent variables (socio-personal traits of respondents) in predicting the dependent variable (Y) (Knowledge Index regarding the judicious use of pesticides in the vegetable production)

Sl. No.	Independent Variables	Partial β	't' value for partial β	Standard partial β values	Rank
1.	X ₁₇	3.691	8.428**	.616	I
2.	X ₁₂	1.928	3.977**	.285	II
3.	X ₉	9.055E-02	3.995**	.275	III
4.	X ₂	0.930	3.162**	.248	IV
5.	X ₅	-1.288	-1.825	-.124	V
6.	X ₁₃	0.566	0.802	.078	VI
7.	X ₁₄	0.443	0.351	.069	VII
8.	X ₁₀	0.741	1.691	.040	VIII
9.	X ₁	-0.264	-1.652	-.038	IX
10.	X ₁₆	-0.780	-1.187	-.029	X
11.	X ₃	-6.72E-02	-0.890	-.022	XI
12.	X ₄	0.106	0.156	.020	XII
13.	X ₇	-0.333	-0.615	-.014	XIII
14.	X ₈	6.149E-02	0.466	.012	XIV
15.	X ₁₅	0.205	0.358	.009	XV
16.	X ₆	-7.89E-02	-0.264	-.006	XVI
17.	X ₁₁	2.399E-02	0.139	.004	XVII

R² = 0.953 F= 137.682** Intercept constant = 29.556

* Correlation is significant at 0.05 level of significance

** Correlation is significant at 0.01 level of significance

The interpretation of the table 5 was briefly as follows:-

1. R² was significant as F was significant.
2. The 17 independent variables (socio-personal traits of respondents) jointly explained nearly 95.3 percent (0.953 X 100) of variation in the dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production). This means that there were very few numbers of other factors (excluding the above mentioned seventeen numbers of variables) which affected the dependent variable. This states that the above mentioned seventeen numbers of the variables influenced the dependent variable to a great extent.
3. Out of 17 independent variables, 4 variables viz. X₁₇ (exposure of the respondent to mass media sources), X₁₂ (experience of respondent in vegetable cultivation), X₉ (material possession of respondent) and X₂ (caste of respondent) contributed significantly to the prediction of the dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production) (which has been shown in the table 4).

4. The variables were ranked on the basis of their standard partial $\hat{\alpha}$ values.
5. The partial $\hat{\alpha}$ value indicated the amount of change which shall be brought about in the dependent variable by one unit change in the independent variable, other things remaining constant. That is, a change in one unit of the independent variables X_{17} (exposure of the respondent to mass media sources), X_{12} (experience of respondent in vegetable cultivation), X_9 (material possession of respondent) and X_2 (caste of respondent) each shall bring about a change of 3.691, 1.928, 9.055 and 0.930 units respectively in the dependent variable, other things remaining constant.

The results indicated that exposure of the respondent to mass media sources, experience of respondent in vegetable cultivation, material possession of respondent and caste of respondent affected significantly to the dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production) (which has been shown in the Table 4).

The independent and the dependent variables were again judged with the help of the Stepwise Multiple Regression and the calculation was done up to the sixth stage. The results of Stepwise Multiple Regression were given in following tables.

Table 5: Result of the Stepwise Multiple Regression between the Socio-personal traits of the respondents (independent variables) and (Y) (Knowledge Index regarding the judicious use of pesticides in the vegetable production) (dependent variable)

Sl. No.	Variables	R	R ²
1.	X_{17}	.937	.888
2.	X_{17}, X_{14}	.950	.913
3.	X_{17}, X_{14}, X_9	.954	.920
4.	$X_{17}, X_{14}, X_9, X_{12}$.955	.923
5.	$X_{17}, X_{14}, X_9, X_{12}, X_2$.957	.945
6.	X_{17}, X_9, X_{12}, X_2	.956	.941

The Table 5, reveals that out of 17 independent variables, 4 variables viz. X_{17} (exposure of the respondent to mass media sources), X_9 (material possession of respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) variables had explained an overwhelming 94.10 percent of the variance in dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production). R value i.e. multivariate equivalent indicated a very strong relationship between the combination of independent variables X_{17} (exposure of the respondent to mass media sources), X_9 (material possession of

respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) and dependent variable Y_1 (Knowledge Index regarding the judicious use of pesticides in the vegetable production). At the same time, it may be safely noted that the fifth step of the Stepwise Multiple Regression clearly showed us that that out of 17 independent variables, 5 variables viz. X_{17} (exposure of the respondent to mass media sources), X_{14} (respondent's family contact with extension agencies), X_9 (material possession of respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) variables had explained an overwhelming 94.50 percent of the variance in dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production). R value i.e. multivariate equivalent indicated a very strong relationship between the combination of independent variables X_{17} (exposure of the respondent to mass media sources), X_{14} (respondent's family contact with extension agencies), X_9 (material possession of respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) and dependent variable Y_1 (Knowledge Index regarding the judicious use of pesticides in the vegetable production).

Conclusion

1. From the above-mentioned facts, it was observed that a huge majority of the respondents had medium knowledge level regarding the judicious use of pesticides and 28.97 percent of the respondents had low knowledge level. However it was interesting to note that a small minority of the respondents i.e. 10.35 percent of the respondents had high knowledge level regarding the judicious use of pesticides. This picture gave rise to the fact that in general a medium level of knowledge regarding the judicious use of pesticides prevailed among the vegetable growers.
2. The study showed that the independent variables (socio-personal traits of the respondents) viz. caste of respondent, educational status of respondent, total monthly income of the family of respondent, total monthly income of respondent, type of family of respondent, type of dwelling of respondent, material possession of respondent, type of farm power used by respondent in vegetable cultivation, experience of respondent in vegetable cultivation, social participation of respondent, respondent's family contact with extension agencies and exposure of the respondent to mass media sources were highly, significantly and positively correlated with the dependent variable Knowledge Index of the vegetable growers in relation to the judicious use of pesticides in vegetable cultivation.

On the other hand, it is also revealed through the values of the regression coefficient 'â' that out of 17 independent variables the independent variables, 4 variables viz. caste of respondent, material possession of respondent, experience of respondent in vegetable cultivation and exposure of the respondent to mass media sources did contribute significantly to the variation in the knowledge index of the respondents regarding the judicious use of the pesticides.

The independent and the dependent variables were again judged with the help of the Stepwise Multiple Regression. The fifth step of the Stepwise Multiple Regression clearly showed us that that out of 17 independent variables, 5 variables viz. X_{17} (exposure of the respondent to mass media sources), X_{14} (respondent's family contact with extension agencies), X_9 (material possession of respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) variables had explained an overwhelming 94.50 percent of the variance in dependent variable (Knowledge Index regarding the judicious use of pesticides in the vegetable production). R value i.e. multivariate equivalent indicated a very strong relationship between the combination of independent variables X_{17} (exposure of the respondent to mass media sources), X_{14} (respondent's family contact with extension agencies), X_9 (material possession of respondent), X_{12} (experience of respondent in vegetable cultivation), and X_2 (caste of respondent) and dependent variable Y_1 (Knowledge Index regarding the judicious use of pesticides in the vegetable production).

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Participation of Elementary School Activities of Tribal Children in India

Harinam Singh

The Indian Constitution assigns special status to the Scheduled Tribes (STs). Traditionally referred to as adivasis, vanbasis, tribes, or tribals, STs constitute about 8% of the Indian population. Education of tribal is an important task before the Government of India, Article 46 of the Constitution talks about promotion of educational and economic interests of Schedule Castes (SCs), STs and other weaker sections. To quote “The State shall promote with special care the educational and economic interests of weaker sections of the people and in particular of SCs and STs and shall protect them from social injustice and all forms of exploitations.” About 8.08% of this vast country is the tribal (scheduled) population. Many more other constitutional rights are available for tribal people but they fail to utilize these benefits because of their educational backwardness (Ekka, 1990).

No other area of social-cultural empowerment has been encouraged as much as education, which has been portrayed globally as essential to progress and the development of individual abilities and capabilities. Formal and informal approaches and strategies in inclusive education systems aim to engender the transformation of individuals, and in turn the transformation of communities and societies, and given this purpose, the proper design and planning of education and its timely implementation is a high priority. Most importantly, however, education should be within the framework of societal values, considering ethical dimensions, functional aspects and contemporary requirements. Thus, ‘education significantly empowers the individual, enabling to become aware of their personal situation and to take effective measures to improve and emancipate themselves from poverty, hunger, disease, economic and social marginalization and exclusion’ (Freire, 1972,

1995). It also has a significant role in fostering national integration; democratic strengthening requires social development and transformation, and education is an instrument for this, making people aware of the resources available to them.

As a multicultural society, the Indian population is enriched by numerous regional and local cultures. However socio-cultural diversity, which includes hierarchies of caste, means that inter caste relations, occupation, and economic status all deeply influence access to education. This can be seen in the sharp disparities in school enrolment and completion rates between different caste and economic groups. In particular, children, especially girls, from the Dalit, Tribal and other marginalized groups, have sidelined.

Indian education system is largely concerned with the existing formal structure of education and the institutionalized methodology of imparting knowledge to individuals. Within this very system exist many sub-groups of individuals with specific needs and tribals are one of them. In fact, tribal form a large group of individuals in Indian Society. For several historical, economic and social reasons the scheduled groups have remained economically backward and socially retarded even to this day. This is true with respect to their educational levels also. India has the second largest tribal population in the world. This Scheduled Tribes (STs) population is 8.08% of the total population of India and about 10% of all rural people. Twenty two of the twenty six states of the country have considerable ST population. There are 573 STs living in different parts of the country, having their own languages different from the one mostly spoken in the states where they live. There are more than 270 such languages in India (Indian Education Report, 2002).

Meaning of Tribe or Tribal

The term tribe is derived from the Latin word 'tribus'. Originally it was used to imply three divisions among the early Romans. Later on, it was used to mean the poor or the masses. In English language, the word appeared in the sixteen century and denoted a community of persons claiming descent from a common ancestor. The term tribe or tribal is not defined anywhere in the Constitution of India although according to the Article 342, STs represents the tribe or tribal communities that are notified by the President. Tribes are not part of the traditional Hindu caste structure. STs in India are more like the "indigenous" or "native people" in other parts of the world. Mishra (2002) defines scheduled tribes as people who (i). claim themselves as indigenous to the soil, (ii). generally inhabit forest regions, (iii). largely pursue a subsistence level of economy, (iv). have grate regard for traditional

religious and cultural practices, (v). believe in common ancestry, and (vi). have strong group ties. However, all characteristics do not apply to all tribal communities. While, the Concise Oxford Dictionary define tribe as a group of (esp. primitive) families or communities, linked by social, economic, religious or blood ties and usually having a common culture and dialect and a recognized leader or any similar natural or political division.

Constitutional Provisions for Tribal

The Constitution has devoted more than 20 articles on the redressal and upliftment of underprivileged following the policy of positive discrimination and affirmative action, particularly with reference to the ST. Recognizing the special needs of ST, the Constitution of India made certain special safeguards to protect these communities from all the possible exploitation and thus ensure social justice. While Article 14 confers equal rights and opportunities to all, Article 15 prohibits discrimination against any citizen on the grounds of sex, religion, race, caste etc; Article 15(4) enjoins upon the state to make special provisions for the advancement of any socially And educationally backward classes; Article 16(4) empowers the state to make provisions for reservation in appointments or posts in favour of any backward class of citizens, which in the opinion of state, is not adequately represented in the services under the state; Article 46 enjoins upon the state to promote with special care the educational and economic interests of the weaker sections of the people and in particular, the ST and promises to protect them from social injustice and all from of exploitation. Further, Article 275 promises grant-in-aid for promoting the welfare of ST and for raising the level of administration of scheduled areas, Article 330, 332, and 335 stipulates reservation of seats for ST in the Lok Sabha and in the State Legislative Assemblies and in services. Finally, the Constitution also empowers the state to appoint a commission to investigate the conditions of the socially and educationally backward classes (Article 340) and to specify those Tribes or Tribal Communities deemed to be as ST (Article 342). The Fifth Schedule to the Constitution lays down certain perceptions about the Scheduled Areas as well as the Scheduled Tribes in state other than Assam, Meghalaya, Tripura and Mizoram by ensuring submission of Annual Reports by Governors to the President of India regarding the Administration of the scheduled areas and setting up of Tribal Advisory Councils to advise on matters pertaining to the welfare and advancement of the ST (Article 244(1)). Likewise, the Sixth Schedule to the Constitution also refers to the administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram by designing certain tribal areas as Autonomous districts and Autonomous Regions and also by constituting District Councils (Article

244(2)). To ensure effective participation of tribal in the process of planning and decision making, the 73rd and 74th Amendments of Constitution are extended to the Scheduled Areas through the Panchayats (Extension to Scheduled Areas) Act, 1996.

Tribal Education: Indian Scenario

A tribe may be seen as a sub group of the society. The members of a tribe live in a common territory and have a common dialect, which is the prime means of communication. Each tribe has a uniform social organization and processes cultural homogeneity. The tribal population is characterized by a heterogeneous cultural pattern with variegated economic conditions and activities depending largely on ecology. There are also wide variations in psychological, cultural, social, economic and political background of various tribal groups. In a country like India there are large numbers of tribals, who because of historical and sociological reasons have strayed away from the main stream.

The 2001 census of India shows that 35% of the total population is still illiterate. The rate of illiteracy among women is 54% and the gap between women and men 21%. This gap has increased since independence, from 18% in 1951. The census reports also revealed a decadal change of 12% in the literacy rate of men, and of 15% for women. For the first time since India's independence, there has been a decline in the number of non-literates from 328 million in 1991 to 296 million in 2001 (Census of India, 2001). Female literacy has also improved over the decade, from 39% in 1991 to 54% in 2001, and the male-female literacy gap has come down from 25% to 22%.

India has witnessed remarkable progress in spread of literacy. Compared to barely 18 percent of India's population recorded as literacy in the first Census after Independence, according to the 2011 Census, that proportion has gone up to 74%. The achievement among males has been from 27 to 82% in the 60 years. From less than one in 10 women counted as literate in 1951, today two out of three women are enumerated as literate. The pace of progress in literacy rates as revealed by decennial census is very slow in India. In the span of fifty years i.e. from 1951 (18.33) to 2001 (64.83), there has been only marginal increase of 46.5% in literacy rate. Between, 1951 to 2001, female literacy shows a mere 44.7% increase which is only five times for the whole point. According to census 2011, out of 74.04% of literacy rate, the corresponding figures for male and female are 82.14% and 65.46% respectively which means four out of every three females of the age seven and above are literate in India. Though the target set by

Planning Commission to reduce the gender gap by 10% in 2011-12 has not been achieved yet the reduction by 5% has been achieved which is a positive stride towards decreasing illiteracy. (See Table-1)

Table 1: Trends of Literacy Rate in India: 1951-2011

Census Year	% Literacy in 7+ Population			Decadal Increase*	Gender Gap
	Males	Females	Persons		
1951	27.2	8.9	18.3	-	18.3
1961	40.4	15.4	28.3	9.97	25.0
1971	46.0	22.0	34.4	6.15	24.0
1981	56.4	29.8	43.6	9.12	26.6
1991	64.1	39.3	52.2	8.64	24.8
2001	75.3	53.7	64.8	12.62	21.6
2011	82.1	65.5	74.0	9.21	16.7

Source: - * Maulick, Barna (2011): "Literacy Trends in the Country", Yojana, Vol.-55, New Delhi, July.

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Unfortunately, the literacy rate of the tribal population is very low. The literacy rate, of scheduled Tribes according to 2001 census is 47.10%, which is much lower than national literacy rate i.e. 64.80%. In tribal population the female literacy rate is 34.76% while the male literacy rate is 59.71% (Annual Report, 2004-05). While literacy rate is only means to education and not an end in itself, education tends to lead to economic benefits, which are the result of the increased ability of the individual to utilize the information acquired through the process of learning. Therefore, any educational planning for such a vast group of individuals should aim at educating all its members in the school going age group. Education is in fact, an input not only for economic development of tribals but also for inner strength of the tribal communities, it also helps them in meeting the new challenges of life. Out of the ST child population of 16 million in the age group of 6-14 years, more than 87.5% ST children were attending schools during 2000-01 (Selected Educational Statistics, 2001-02). This means about 12.5% ST children were not attending school during 2001-02.

The disparity among various states in terms of tribal literacy is high ranging from 82% in Mizoram to 17% in Andhra Pradesh (Indian Education Report, 2002). As many as 174 districts (out of 418 districts in the country in 1991) have ST literacy rate below the national average literacy rate (29.6). Tribal literacy in 17 districts (7 in Uttar Pradesh, 4 in Madhya Pradesh, 3 in Rajasthan, 2 in Assam and 1 in Orissa) is below 10%; while in 3 districts, it

is more than 90% (2 Himachal Pradesh and 1 in Bihar). Data reveal that states, which are low in general and tribal literacy are also states with higher gender disparity (Sujatha, 2000). Not only in literacy rate but variation do exist in the administration of primary education. For example, the administration primary education under Panchayati Raj leadership in Gujarat was found to be effective whereas in Rajasthan and Bihar, irregularities of various kinds were noticed (Sathyabalan, 1993).

It has been widely understood that socio-economic conditions in tribal areas, cultural traditions, and gender disparities act as major constraint in the successful implementation of primary education (Bindu, 2001), and a large proportion of tribal children from the economically poorest conditions especially from groups designated as Primitive Tribes are either denied opportunities or are failing to complete basic primary education. However, the education of Scheduled Tribe children has been prioritized beyond the constitutional obligation, because it is even as crucial for the total development of India.

Universalizing Participation of Tribal Children

Out of the ST child population of 16 million in the age group of 6-14 years, more than 14 million (11 million at primary stage and 3 million upper primary stage) ST children are attending schools during 2000-01 (**Selected Educational Statistics 2001-02**). This means about 2 million ST children were not attending school during 2001-02. (See Table-2)

Table 2: Enrolment of ST Students During 1980-81 to 2000-01 (In million)

Year	Primary (I-V)			Upper Primary (VI-VIII)			Elementary (I-VIII)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1980-81	3.1	1.5	4.6	0.5	0.2	0.7	3.6	1.7	5.3
1985-86	4.2	2.4	6.6	0.9	0.4	1.3	5.1	2.8	7.9
1990-91	4.9	2.9	7.8	1.1	0.6	1.7	6.0	3.5	9.5
1995-96	5.6	3.8	9.4	1.5	0.8	2.3	7.1	4.6	11.7
2000-2001	6.3	4.7	11.0	1.9	1.2	3.1	8.2	5.9	14.1

Source: Selected Educational Statistics 2000-01.

Table-2 has shown that the enrolment of scheduled tribes at the primary and upper primary in the last 20 years from 1980-81 to 2000-01 increased by 2.4 and 4.2 times respectively. There has been a clear positive trend with respect to participation of ST girls in education. Their enrolment increased by 3 times at primary and 6 times at upper primary stage during

the same period. The share of tribal girls in the total school going tribal children at the elementary stage increased from 32.1% in 1981 to 41.2% in 2000-01.

The Gross Enrollment Ratio (GER) of ST children is now about 96 to 100% at primary stage and 88 to 89% at elementary stage, as shown in Table 3.

Table 3: Gross Enrolment Ratios (GERs) of ST Students (In per cent)

Year	Primary (I-V)			Upper Primary (VI-VIII)			Elementary (I-VIII)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1986-87	111.0	68.0	90.0	45.6	21.9	34.1	87.1	51.1	69.6
1990-91	125.4	81.4	104.0	53.9	26.7	40.7	99.6	60.2	80.4
1995-96	115.0	80.2	96.9	57.3	35.0	46.5	105.7	75.1	90.9
2000-01	116.9	85.5	101.1	72.5	47.7	60.2	102.5	73.5	88.0
2001-02	106.9	85.1	96.3	82.1	57.3	70.3	99.8	77.3	88.9

Source: Abstract of Selected Educational Statistics – 2001-02.

Strategies and Approaches in Sarva Shiksha Abhiyan

The National Programme of Sarva Shiksha Abhiyan (SSA), which aims to achieve Universal Elementary Education (UEE), has a special focus on education of the tribal children. Tribal children are an important constituent of the Special Focus Group (SFG) under SSA; other focus groups include girls, SCs, working children, urban deprived children, children with special needs, children below poverty line and migrating children. These groups are not mutually exclusive and they overlap.

One of the super goals of SSA is to “bridge all gender and social category gaps at primary stage by 2007 and at elementary stage by 2010”. The broad strategies under SSA reiterate that there will be a focus on participation of children from SC/ST and minorities, urban deprived children, children with special needs, working children and children in the hardest to reach groups.

The Sarva Shiksha Abhiyan (SSA) recognizes the varied issues and challenges in tribal education in view of the heterogeneous structure of tribal population in the country. The issues and challenges in tribal education can be categorized as external, internal, socio-economic and psychological. The external constraints are related to issues at levels of policy, planning and implementation while internal constraints are with respect to school

system, content, curriculum, pedagogy, medium of instruction etc. The third set of problems relates to social economic and cultural background of tribals and psychological aspects of first generation learners.

STs are at different levels of socio-economic and educational development. STs in North Eastern States and those settled in urban and semi-urban areas are comparatively better placed. The problems of education of the ST children vary from area to area and tribe to tribe. Therefore, SSA emphasises on area specific and tribe specific planning and implementation of interventions, which could meet the learning needs of ST children.

The planning teams at the State and district levels under SSA have been sensitized about the approach adopted and provisions made in the SSA framework for the education of ST children. The assessment of the problems issues and challenges relating to/of tribal education is made through the household surveys and micro planning exercise. The plans are developed by the districts based on the findings as well as the secondary data.

The '**Manual of Appraisal of Plans**' brought out by the Ministry of Human Resource Development has outlined appraisal issues with respect to planning of interventions for the education of tribal children. **Monitoring** tools have also been developed to ensure that programmes for education of tribal children are implemented as planned. A **checklist** to address the equity issues specially focusing the education of ST children has also been developed. Some of the interventions being promoted in States under Sarva Shiksha Abhiyan (SSA) include: -

1. Setting up schools, education guarantees centres and alternative schools in tribal habitations for non-enrolled and drop out children.
2. Textbooks in mother tongue for children at the beginning of the primary education cycle, where they do not understand the regional language. Suitably adapt the curriculum and make available locally relevant teaching learning materials for tribal students.
3. Special training for non-tribal teachers to work in tribal areas, including knowledge of tribal dialect.
4. Special support to teachers as per need.
5. Deploying community teachers.
6. Bridge Language Inventory for use of teachers.
7. The school calendar in tribal areas may be prepared as per local requirements and festivals.

8. Anganwadis and Balwadis or creches in each school in tribal areas so that the girls are relieved from sibling care responsibilities.
9. Special plan for nomadic and migrant workers.
10. Engagement of community organizers from ST communities with a focus on schooling needs of children from specific households.
11. Ensuring sense of ownership of school communities by ST communities by increasing representatives of STs in VECs / PTAs etc. Involving community leaders in school management.
12. Monitoring attendance and retention of children.
13. Providing context specific interventions eg. Ashram school, hostel, incentives etc.

Provision under Sarva Shiksha Abhiyan

SSA provides for Rs. 1.5 million per district per year for specific interventions for education of SC/ST children. It also provides free textbooks up to Rs. 150/- for girls and SC/ST children (SSA framework for implementation, 2002).

The other components under the broad framework of SSA which have an impact on the education of tribal education are (i) school/EGS like alternative facility to be set up within one kilometer of all habitations; (ii) up gradation of EGS to regular schools after two years; (iii) mainstreaming camps, bridge courses/residential camps for out of school girls SC/ST children under the alternative and innovative education component; (iv) provision of process based community participation with a focus on the participation of women and SC/ST; (v) free midday- meal to all children at primary stage; and (vi) interventions for early childhood care and education.

Community Mobilization/Involvement of Tribalís

As for all other population groups and areas, community mobilization and awareness generation on issues of enrolment, education of girl children, retention of children in schools and school involvement are carried out in tribal areas. The specific features of such mobilization in tribal areas have been / are:

1. Use of tribal/folk art forms (Kerala, Assam, Bihar, Orissa).
2. Meetings of mothers and family meetings and involvement of tribal youth volunteers (Assam, Kerala, Orissa).

3. Leaflets posters, Kalajathas, and videocassettes in tribal languages (Kerala, Assam, Orissa, Gujarat, Andhra Pradesh, Karnataka, etc.).
4. Organization of meetings in tribal 'haats' / bazaars and use of tribal fairs and festive occasions to discuss primary education issues (Assam, Gujarat).
5. Involvement of traditional tribal organizations in the mobilization effort (Assam, Orissa).
6. Involvement of the community including VECs members in documentation of local folklore, history, traditional medicine, agricultural practices (Assam).

Conclusion

It is seen from the field experiences that a learning atmosphere is a necessity for tribal children, especially in their home. Attention should be given to creating such an atmosphere, so as to reduce negative consequences such as dropping out of education and stagnation. As tribal life is enriched with cultural resources such as oral histories and folklore, the curriculum can be planned in tune with the cultural background of tribal student which is found to be an effective way to create interest in learning in the primary classes.

The implications of these findings for schooling of tribal children are clear. A programme of schooling, which does not pay attention to the ecological, cultural and psychological characteristics of tribal children, is highly unlikely to make any significant impact. The educational system of the dominant non-tribal population is of very limited value in the tribal cultural milieu because it does not match with the lifestyle of individuals and the needs of the tribal community. Linking school education with life in general and the needs of the tribal communities in particular is a most important step that requires serious attention.

The evidences suggest that tribal children do possess the basic cognitive abilities and psychological dispositions necessary for successful participation in school. Yet tribal children have very low levels of participation and success in school education programmes. This points to our failure to develop a sensitive model of education that is rooted in the psychological strengths of tribal children. Studies indicate that, in comparison to other groups, hunters and gatherers possess a high level of visual and tactual differentiation; they demonstrate capacity for fine judgment of shape and size of stimuli as well as spatial relations and they produce fine categorization of an array of objects (Mishra et al 1996). These abilities are required for success in

science, art, music, dance, athletic activities, and vocations like carpentry, tailoring, wood and stone crafts. These skills need to be utilized not only for education of tribal children in schools, but also in the broader economic spheres of tribal life. Such attempts will be helpful in generating and promoting the sense of competence, self-efficacy, self-respect and positive self-image among tribal children in general.

This is possible only through sensitivity to tribal culture and life, recognition of the cognitive strengths of tribal children, and appreciation of their personality qualities. Efforts in these directions will be very helpful in organizing the programme of tribal education as well as promoting economic and other aspects of tribal development.

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Growth of Information Technology In Rural Area

Sisir Gurung

The village that I have chosen for my research is Gairibas under Kalimpong Sub-division, pin code 734502 in west Bengal. The block office Gourbathan is about 15 kilometers away. Gairibas is actually a plantation area where various plantations like IPECAC, rubber, Cinchona and other medicinal plants are planted in large numbers by the west Bengal government. The village is interlocked between the hot plains and the mildly cool hills making it an ideal place for all the vegetation.

The development of transistors in the late 1940s at Bell Laboratories allowed a new generation of computers to be designed with greatly reduced power consumption. The first commercially available stored-program computer, the Ferranti Mark I, contained 4050 valves and had a power consumption of 25 kilowatts. By comparison the first transistorised computer, developed at the University of Manchester and operational by November 1953, consumed only 150 watts in its final version.^[3]

In this present time everybody of us especially those of us who are born and brought up in town and cities think that Information Technology is everywhere and without it people are not able to spend their life like a blessing. In fact we cannot even fathom of people living without technology, technology is everywhere and everybody needs it for a better life but the truth is that there are still places in this world where Information Technology is a farfetched dream and the irony is that people in these places are still

³Cooke-Yarborough, E. H. (June 1998), "Some early transistor applications in the UK", *Engineering and Science Education Journal (IEE)* 7 (3): 100–106,doi:10.1049/esej:19980301, ISSN 0963-7346

doing all very well with their lives. They have good life and the living is all fun even without technology. So here I am with this paper exploring all the facts that has fabricated the reasons why Information Technology is not breeding in some places like in the above mentioned villages of my research field.

We as an individual living in the midst of glories of Science and Technology cannot live a single minute without the company of technology. Electronic gadgets have become more close to us than some of our family members, machines have replaced the friends we once use to have, and conversation these days in verbal face to face approach lasts not more than few odd minutes.

Every one of us now have a smart phone with us where we have the world at our fingertips, we have more than thousand songs, videos and other form of entertainment inside our pockets, we somehow have become so much depended in the technology around us that without it we are lame. We have started to trust more in the devices we have around us than ourselves. We have become more social over the internet and less human in the practical presentation. Few years back from now we were just fine with land line phones then we wanted mobile phones which was a great improvement over the former then we wanted smart phones with which internet became a must in each device. We have made the technology a part of our life that now we cannot even live a single moment without it. We have lost the art of writing as we use more of the keys than paper and pen, we have lost the power of memory because we don't like to waste time in remembering when we can readily save and get the information we want in our devices, we have even lost the music of a language and literature as we enjoy using more of abbreviations, slangs and short forms of words.

In US according to the latest survey everyone person inside a family have an ipad, a smart phone, laptop, ipod and for adults a car. In India the rate is little less but we do come up to the level of world's third largest users of mobile phones and electronic devices.

Objective

The Objective of this research paper is to bring to knowledge to all the people especially people who are in the field of Information Technology that no matter how much far technology has set its milestone in achieving greater goals there are still some places with in our circle where technology is still considered a far fetch goal, were technology is still an foreign luxury which they don't want to entertain and trust. This research paper is to give

you a clear picture where Information Technology stands even in the present time in many of rural villages. Though Information Technology plays major role in many of the places we live but there are still places where electricity is there, where transport is available and all other means of educational growth but still information technology is not taken into practice.

Through this paper I would like to bring to the surface the reasons why technology does not surpass all the minds and lives of people. I have personally explored the field, the various villages of these areas and surveyed the reasons for the non-breeding of the information technology in rural places. Though this paper I would like to present some of the facts I have gathered in the research. The objective is to break the false notion that technology rules all lives of the present age, that technology is heart of present civilization.

Why Information Technology remains un-approached in rural places

Presently in these villages there is good road ways, and electricity is there for 24 x 7 because they have Jaldakha Hydel project near them. All these basic needs for information technology to flourish are not a one of the issue. Education is also not one of the causes because there are three nursery and primary schools, two High Schools and one Higher Secondary School in the heart of the village. 60 percentage of the total population of the village are literate but still computer education is not imparted. "Regular subject courses are taught in all the schools but computer subject is still not up to the mark of present Information Technology progress", said the head master of New Era English School Mr. Jonny Tamang. Computer subject is taught only in junior classes where they study the basics in theory. Practical classes are not given much priority and these junior schools have about only four to five computers. Students don't take much interest in machine because schools don't have professionals to teach them and parents don't push the children to lean computer because they think its extra expenditure in the school fees which they prefer not to pay. Mr. Taranath Singh Biswakarma, the head master of Gairibas Higher Secondary School told me that they have only eight computers out of which six are working properly where as there are about thirty five students in each class who have computer as an optional subject. "we cannot afford to buy more computers as there are no professionals who can repair and trouble shoot the machine whenever it's not working properly, we don't even have teachers who can take this charge and since computer has always been an optional subject this lack of facility has not been a major issue to the students", said the head master of the School.

There is not even a single internet café, or computer game parlor in the entire five villages under the sub-division. The only place where printouts can be done are in the government offices or schools in the headmaster's office. Mr. Barber Gurung a teacher of Gairibas Higher Secondary School said, "it's just been one year the network tower of cellular phone "Vodafone" has been set up in a village called Rongo which is about twelve kilometers away from the school area and it's impossible to get the network service here". However BSNL has been there for about four years but since it doesn't have good promotion and network services like other private network services people of these villages don't prefer much to use even cell phones. Only teachers, plantation managers, rich landlords and other government individuals use mobile phones. Very few out of them use smart phones. The chart given below shows the survey statistics of the use of mobile phones and other electronic gadgets in Gairibas, (the overall data taken out of 100).

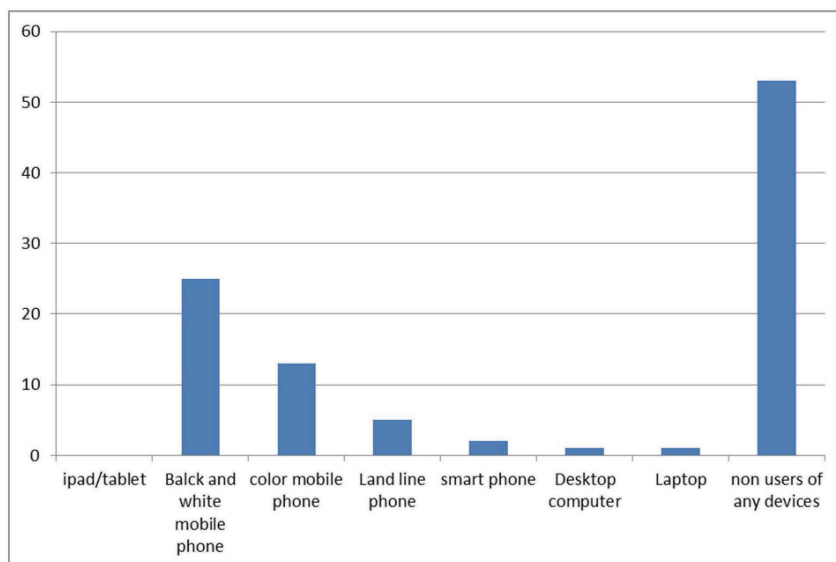


Chart 1: Bar chart showing the percentage of usage of electronic devices in Gairibas

Why Information Technology is not preferred in rural places

After a series of survey taken from various villages in Gairibas the common answer to all the questions was that they don't have time and money to spend over some electronic devices. Many of them have not even heard about tablet, laptop and ipad. Information technology related electronic

devices are just a waste of money for them. The only device they are familiar with and have a compulsion to use is a mobile phone. Mobile phones too are available one in one house and the next in another house which is away from the first one at least few blocks. One mobile phone in one house is almost like a public booth for the rest few houses and they are quite ok with that.

Since most of the people in the village are plantation workers they spend most of their time in the plantation earning their daily wages. "My day starts at 5 AM when I wake up and do the house chores, then getting the fodders for the live stocks after which at 6 AM I go for my work in the plantation and come back home around 5 PM almost exhausted, after that I tend my field and garden by the time its already dinner time and then off to bed I go, you see we don't have much time for all these technology stuff", says Miss. Bikum Subba. Life in Gairibas is almost same for all others. Even students don't have time spared for technological things because they too help the house with works like feeding the live stocks, storing water and various other activities after school hours. People here are in their own little world where internet and Information Technology has not much role to play. It is amazing to find out that just few miles away we have towns like Chalsa, Mal Bazar and Kalimpong yet in this widely spread village we don't get a mobile tower other than BSNL. We just have dealers selling few recharge cards in few shops in the entire village. Internet recharge cards are not to be found because there is no one to use as there is no service provider for it.

People here are not dependent on Internet or Information Technology like in the urban areas. To them the source of entertainment is not confined within some electronic devices. Mobile phones games, smart phones internet communications and documentation works with electronic devices have not yet gained their dominion over these people of this rural place.

Fields that has been affected due to lack of information technology

When at the surface everything seems working fine and the livelihood of each family seem to revolve in their own peaceful pace there are many fields in this rural place where the lack of Information Technology and its products have made the village still a backward in the eye of urban civilization. Fields that remain most effected are:

- i. Health
- ii. Communication

iii. Education

iv. Banking

i. Health

In Gairibas there are about five sub small villages namely Chalyis, Kaliser, Dulgoan, Jhulong and Naksal and for all these villages there is just one small dispensary. Even a small health issues has to be referred to Kalimpong or Mal Bazar. This dispensary don't have good health care facilities like there is no digital weighing machine especially for a new born baby, no devices like electric syringe discarding machines, there is no digital thermometers for reading temperature of patients. There is not even a computer for keeping the records of the medicine and patient reports. Miss. Kapila Gurung a nurse who has just been transferred from this dispensary to a hospital in Deradoon says, "there is lot to be improved in Gairibas health care, there is need of many new electronic instruments and devices that are available in district level hospitals which makes the work of the health department much easier and error free."

ii. Communication

There is no telephone booth available within short walk able distance. There are just two telephone booths in Gairibas one in Jhulong and the other in Dulgaon. Any sort of urgent communication in any other places has to be done through someone who has a mobile phone in the particular area. Mr. Tarak Rai who is from Garibas and who at present is in second year B. A., Kalimpong College said, "it's very difficult to be in touch with my family members as I can hardly get the ring going through to my dad because the network signal at my place is very weak and most of the time there is no signal at all". Mr. Niru Gurung former Payanchat Pradhan said, "More telecommunication network services should be set up in Gairibas. There should be competition among the service providers than only communication facilities will improve and the use of internet and other communication applications can be encouraged among the people". Almost 80 percentage students out of 100 have not seen what Internet is actually like. For many they don't even know what a social networking site is. Thus communication in this rural area is confined not only domestically but also internationally. They have no international friends and letter writing is still an art in practice here. The chart below shows the percentage usage of internet and its facilities by the students in Gairibas.

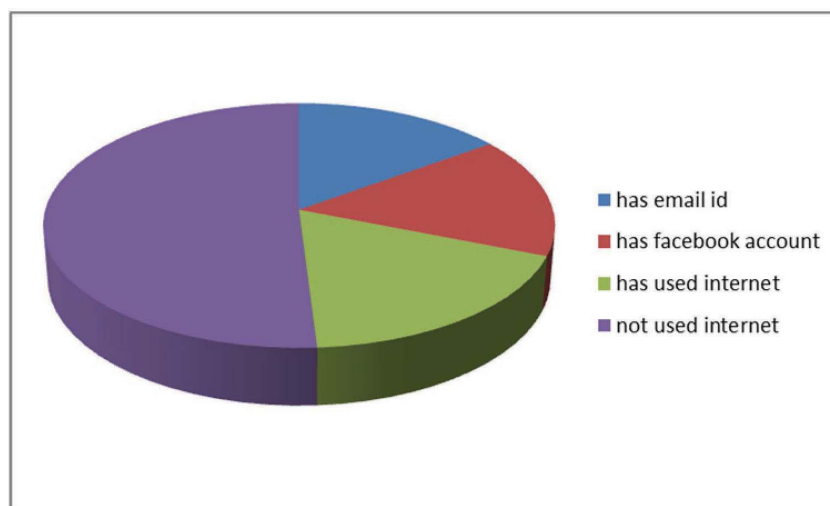


Chart 2: Pie diagram showing the percentage usage of internet and its facilities in Gairibas as on 1st February 2014

iii. Education

In this field the most affected are the students as they don't have internet access they don't have the advantage of getting the information and notes from internet as other students of the urban areas do. Students here in the rural area have to study only from the books they have been provided by the school syllabus. They don't have the advantage of using Google, online news and even online job application options. Almost all the students have to ask their friends in urban areas to check for their results of higher Secondary Examination and other major examination when it gets published online. Since information technology is not much encouraged the students don't have much idea of computer education as they pass out their schooling days and go for higher education in the urban areas. Students from rural areas don't have any idea about Information Technology oriented job opportunities. The unavailability of Information Technology and the facilities have not only effected the students but even the teachers who work in rural areas, because they too cannot remain updated to the current new teaching methods, new assignment topics, current affair news and new technology inventions. All these add to the drawback of educational aspect of an individual.

iv. Banking

Gairibas don't have any bank facility which is again due to lack of Information

Technology. Mr. Birbal Gurung who works as a security guard in a S.B.I ATM in Jhulung says, “I believe there would be a bank in here too if Information Technology was very well established and people had knowledge of Information Technology. Here even when the ATM machine malfunctions we have to wait days for it to get back in the working condition, as professionals have to be called from Mal Bazar”.

Factors that hinders the usage of Information Technology in rural areas

When information technology has grown and spread very rapidly in urban areas it has not been able to take its hold in the lives of people of rural areas. Information Technology has not been able to gain its trust and usefulness in the mind of rural people. People of rural areas have still not broken up from the ancient thoughts they have been in, where Information Technology has not even entered their lives even in the furthest of their life circle.

It is not that Information Technology is not of use to the people of rural areas but the people of rural areas have not yet tasted the flavor of technologies. They have not experienced the advantages of having Information Technology. They have become very busy in the old practice of using primitive tools, methods in doing almost all the things in their life. People of rural areas have made a strong bond with their old practices that they don't prefer to explore new methods that have been brought by the evolution of Information Technology. Rural people trust too much in their traditional used techniques and tools that they don't have time and zeal to try something new. From writing a letter to ploughing of the fields they are more comfortable to use the traditional methods and tools.

Mr. Ashit Rai who is a graduate in B.Sc General from Kalimpong Government College is now settled in Gairibas and works in Rubber Plantation, he said, “people over here are not aware of all the new inventions in Information Technology and the advantages of using it, they have a sort of phobia of trying the new. I think we need to help them break up that fear and if we do I am sure all the people here will be interested to embrace Information technology very willingly”.

The main reason behind Information Technology not being used in rural areas is because of the lack of time and interest in the new inventions and technological devices. It is due to the lack of knowledge in these new ideas of Information Technology.

How can use of Information Technology be encouraged in the rural areas?

People both from urban and rural settlements have a need to use Information Technology but only the urban settlements have broken through the barrier of fear and capital issues whereas rural settlement have not yet crossed these barriers. After the survey I got the following statistics when interviewed a total of 100 people.

Table 1: Statistics showing the desire for using Information technology in rural area.

Studies	Percentage
1. People who has fear to use the Information technology but wants to use	55 %
2. People who has desire to use Information Technology and is not afraid	15 %
3. People who does not want to use Information Technology at all	30 %

After studying the above data I understood that if people of rural area are encouraged to use Information Technology by teaching them about the advantages of having it, by giving them short classes and workshop about how to use and practice it, I think they will start using Information Technology like in urban areas. People in rural areas have to be taught the various ways by which life can be made easier with the use of Information Technology. People in this area have to be helped in building a trust relation between the machine and the humans.

Conclusion

Information Technology has for sure surpassed the urban settlements and life has become much easier and entertaining. Information Technology has a role play in almost everyone one's life in the urban life. Days in urban places starts with technologies and ends with it. Information Technology surrounds them all the time from a small phone to complex machine like refrigerators and micro oven. Life in rural areas can also be in the same surrounding if an effort is taken to introduce to them the need and advantage of having it. Information Technology is there for all and it is there to make life easier with reduced work load and save time, it's there for people of all categories. Rural area people are also in need of Information Technology they too can have their life made easier, more hygienic, faster and more reliable.

With the introduction of Information technology in Schools and educating students to the fullest about the various aspects of Information technology in the life of a common people they will embrace it more readily than ever.

Rural areas should be provided with better communication facilities like network services and internet access. People will then gradually learn to trust the new innovations and eventually get familiarized with it. Information Technology is a must in the present age though it be in urban or rural areas. But the first step towards making a rural area into an urban area is the advent of Information Technology in the area. Information Technology not only opens the closed doors to development in physical aspect but it also opens the doors of mind and knowledge in every people's life. And if people upgrade in their thinking level their attitude towards life changes which ultimately lead to whole new level of generation of civilization. Information technology thus is a must in every rural area.

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Impact of BGREI Programme on the Adoption of Improved Rice Production Technology in Coastal Districts of Odisha

U.S. Nayak, S.K. Mohanty, S.K. Nath and G. Shial

Rice is the most important staple food of India and besides, meeting the caloric demand of the growing population it also provides employment opportunity to the major chunk of the rural community. India is the largest rice growing country in the world occupying 24 % of the gross cropped area and accounts for more than 40% food grain production. Hence, its sustainable production is of paramount significance for ensuring food and livelihood security of the country. In order to maximize the rice productivity in the eastern region and to reduce the regional disparity the program “Bringing Green Revolution to Eastern India (BGREI) was launched on December, 2009 in seven states of eastern India. This programme has a multi pronged strategy to improve the rice productivity through innovative crop production & protection technologies demonstrated in compact patches of minimum 1000 ha with adequate input support and appropriate extension services. After 3 years of the implementation of programme an effort was made to assess the impact of BGREI in terms of knowledge gained, attitude changed and practice adopted on improved rice production technologies demonstrated during the implementation of the programme.

Methodology

The study was conducted in Bhadrak and Balasore districts of Odisha situated in the coastal tracts of the state under North Eastern Coastal Plain Agro-climatic Zone. The study was based on the primary data collected from the total 6 selected community development blocks (three from each district i.e. Dhamnagar, Basudevpur and Bonth of Bhadrak and Simulia, Soro and Khaira of Balasore). Four villages were selected purposively from each block and five respondents from each village were randomly

selected, thus making a total size of 120 respondents for the study. A structured and pre-tested interview schedule was used to collect data from the respondents by personal interview method. The improved rice production technologies were grouped into three broad categories i.e. Production technology, Protection technology and Harvesting and storage technology. In each broad category certain specific technologies were mentioned to assess the farmers' knowledge, attitude and adoption level among the participating farmers. The obtained data were analyzed with the help of frequency percentage.

In addition to study the impact of BGREI programme, attempt was also made to find out the constraints faced by the farmers in adoption of the improved rice production technology. The schedule contained 16 constraints under four categories viz. economical constraints, technological constraints, input constraints and situational constraints. The constraint index was prepared in consultation with experts, grass root extension functionaries and innovative farmers. The respondents were asked to rate each item in the index with respect to their relative importance on a three point scale having most important, less important and least important with scores of 3, 2 and 1 respectively. The item wise and category wise total scores and mean score were calculated and used for interpretation.

Results and Discussion

The knowledge, attitude and adoption level of the farmers on different rice production technologies demonstrated in the BGREI programme has been presented in Table 1. It is obvious from Table 1 that there was wide variation in farmers' knowledge level on different technologies. In the category of production technology, maximum farmers were fully aware about improved variety (100 %), line transplanting with proper spacing (77.5 %) and proper seed rate (72.5 %) signifying a better impact of BGREI in these aspects. Some farmers also gained full knowledge on the practices like irrigation and water management (56.7 %), deep tillage (52.5 %) and soil testing (47.5 %). However, few farmers had full knowledge on balanced fertilizer application (32.5 %), mechanical weeding (32.5 %), green manuring (26.7 %) and secondary and micro-nutrient application (25.8 %). Around half of the respondents had partial knowledge on balanced fertilizer application and green manuring, while around one third of the farmers gained partial knowledge on secondary and micronutrients. Similarly, around half of the BGREI beneficiaries were completely unknown about rice hybrids and mechanical weeding. Under the protection technology category only seed treatment practice was fully or partially known to majority of the respondents

and most of the farmers did not acquire adequate knowledge in many crop protection technologies. Pest surveillance & ETL, use of pheromone traps and biological control was almost unknown to most of the farmers. In the harvesting and storage category, proper storage technique was fully or partially known to the maximum farmers followed by mechanical harvesting and threshing. Around half of the farmers were completely unknown to storage pest management. Hence from this study it was revealed that there had been no appreciable increase in knowledge level of the rice farmers in protection and harvesting and storage technologies due to BGREI programme.

There has been a perceptible change in the attitude of the participating farmers due to BGREI programme and majority of the respondents developed favourable attitude to improved variety, soil testing, irrigation and water management, proper seed rate and deep tillage in the production technology category. A sizable group of farmers had unfavourable attitude for green manuring, hybrid rice production, secondary and micronutrient application and line transplanting. While, green manuring was not favoured due to open grazing and difficulty in incorporation during the dry spell period of July-August, farmers remained indifferent to hybrid rice production and secondary & micro-nutrient application due to lack of conviction. It was interesting to note that despite of maximum emphasis on line transplanting, farmers had developed less favourable attitude to this technology and perceived that it was a labour consuming and tedious process. Maximum farmers developed a favourable attitude for almost all the protection technologies because of the quantum of losses incurred by the insect, diseases and weeds to rice crop. However, seedling treatment was least favoured by the farmers as it was found to be cumbersome and time consuming. Similarly, most of the farmers were favourable to all the technologies related to harvesting and storage keeping the high labour requirement during harvesting and post harvest handling and huge loss during the conventional storage in view.

From the analysis it can be realized that under production technology category majority of the farmers fully adopted the practices like recommended variety (78.3 %) and proper seed rate (55 %). While, partial adoption of the technologies were noticed in balanced fertilizer management (71.7 %) and irrigation and water management (49.2 %), majority of the farmers did not adopt the practices like green manuring, mechanical weeding, hybrid rice production, deep tillage, soil testing and line transplanting. In the protection technology category except seed treatment, the adoption level of other technologies was not very encouraging. Around 25 % of the

respondents partially adopted the selection of appropriate pesticides and pesticide dealers still continue their major influence in pest management decision making. While, none of the farmers adopted seedling treatment, pheromone trap installation and biological control, majority of the farmers could not adopt pest surveillance & ETL and herbicide application. Similarly, around 60 % of the farmers either fully or partially adopted the proper storage technology and nearly one third adopted mechanical harvesting and threshing and majority of them could not adopt storage pest management practices. Hence, it can be concluded that except a few technologies the adoption level of BGREI technologies was not very promising and therefore, a holistic strategy need to be adopted for creating a better impact of the scheme.

The major constraints faced by rice farmers in adoption of improved technologies demonstrated in the BGREI programme strategy have been ranked as per the perception of the respondents and depicted in Table 2. The findings revealed that the major constraints in adoption of improved rice production technologies belong to economical constraint group with highest mean score of 2.32 indicating that the farmers with more economic resources could better adopt the technologies. Technological constraint group with a mean score of 2.08 found to be the second most important constraints limiting the adoption rate of the farmers followed by input constraint (mean score of 1.84). The lowest score of 1.58 was obtained for situational constraints category. Among the economic constraints high cost of external inputs, low market price of the produce and high labour cost are the major limiting factors responsible for low adoption of technologies. Similarly, in the technological constraints less follow up initiatives after implementation, low level of knowledge and awareness among the farmers and inadequate monitoring during the programme implementation influenced negatively for the sustained adoption of the technologies. In the input constraints category timely unavailability of some critical inputs and low availability of quality inputs were found to be the major impediment in the adoption process. However, in the situational constraints category, untimely outbreak of insect pests often prevented the farmers in the adoption of recommended pest management strategies. However, it was noteworthy to mention that abrupt withdrawal of the scheme without any proper withdrawal strategy affected the impact in terms of technology adoption.

Table 1: Distribution of respondents in terms of their knowledge, attitude and adoption of improved rice production technology

S.N	Improved Rice Production technology	Knowledge level				Attitude level				Adoption level							
		Fully Known	% Known	Partially Known	% Not Known	Favorable	% Favorable	Unfavorable	% Unfavorable	Full adoption	% Full adoption	Partial adoption	% Partial adoption	Non Adoption	% Non Adoption		
A	Production technology																
	Recommended	120	100.0	-	-	120	100.0	-	-	94	78.3	26	21.7	-	-		
	Improved variety Hybrids	52	43.3	-	68	56.7	43	35.8	77	64.2	24	20.0	-	96	80.0		
	Deep tillage with MB plough	63	52.5	38	31.7	19	15.8	81	67.5	39	32.5	27	22.5	-	93	77.5	
	Soil testing	57	47.5	36	30.0	27	22.5	96	80.0	24	20.0	11	9.2	17	14.2	92	76.7
	Green manuring	32	26.7	61	50.8	27	22.5	24	20.0	96	80.0	8	6.7	-	112	93.3	
	Proper seed rate	87	72.5	33	27.5	-	-	88	73.3	32	26.7	66	55.0	54	45.0	0.0	0.0
	Line transplanting with proper spacing (20X 15 cm)	93	77.5	27	22.5	-	-	54	45.0	66	55.0	26	21.7	21	17.5	73	60.8
	Balanced fertilizer application	39	32.5	62	51.7	19	15.8	66	55.0	54	45.0	18	15.0	86	71.7	16	13.3
	Application of secondary & micro-nutrient	31	25.8	43	35.8	46	38.3	52	43.3	68	56.7	11	9.2	24	20.0	85	70.8
	Mechanical weeding and interculture	39	32.5	33	27.5	58	48.3	87	72.5	33	27.5	14	11.7	-	-	106	88.3
	Irrigation & water management	68	56.7	38	31.7	14	11.7	91	75.8	29	24.2	33	27.5	59	49.2	28	23.3
B	Protection technology																
	Seed treatment	48	40.0	55	45.8	17	14.2	97	80.8	23	19.2	27	22.5	54	45.0	39	32.5
	Seedling treatment	23	19.2	34	28.3	63	52.5	11	9.2	109	90.8	-	-	-	-	120	100.0

Contd.

Table 2: Major constraints in adoption of improved rice production technology

Sl.No	Constraints	Mean scores	Rank
A.	Economical Constraint	2.32	I
1.	High cost of external inputs	2.62	
2.	High labour cost and scarcity of labour during work season	1.94	
3.	High cost of implements	1.83	
4.	Low market price of the produce	2.38	
B.	Input constraint	1.84	III
1.	Low availability of quality inputs like micronutrient, pesticides, trap, lure, bio-pesticide, safer new generation pesticide etc	1.88	
2.	Timely unavailability of inputs (seed, fertilizer)	2.13	
3.	Low quality inputs (pesticides, micronutrient)	1.66	
C.	Technological constraints	2.08	II
1.	Low level of knowledge & awareness on technology	2.18	
2.	Less monitoring of field extension personnel during the programme	1.93	
3.	Low availability of farm literatures technical bulletins an	1.64	
4.	Low technical expertise of NGOs and lack of adequate social mobilization	1.78	
5.	Less follow up initiatives after implementation	2.37	
D.	Situational constraints	1.58	IV
1.	Outbreak of insect pest	1.84	
2.	Non-availability of irrigation during dry spell	1.48	
3.	Marginal farmers and fragmented land holding limits farm mechanization	1.55	
4.	Abrupt withdrawal of the scheme without any withdrawal strategy	1.72	

Conclusion

From the investigation it can be concluded that the BGREI scheme though succeeded in improving the technical knowledge, creating a favourable attitude and adoption of improved production technology among the farmers, there are still some gaps in the policy and implementation level that need to be addressed for creating a better impact. For ensuring better adoption of the technologies the adoption constraints need to be removed by regular technical guidance of the farmers, improving their access to formal credit systems and streamlining input supply mechanisms. Besides, for creating a better impact of the programme awareness among various stakeholders and capacity building of officials, NGOs, progressive farmers and farmers on recent advances in rice production technologies and strengthening the DLMT and other monitoring mechanism need to be emphasized.

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Krishi Vigyan Kendras (KVKs) in the context of Agricultural Research and Extension System – An Assessment

Sarthak Chowdhury and Prabuddha Ray

As in many other developing countries, agricultural research and extension services in India have traditionally been funded and delivered by government. Organised attempts in this direction started after the country became independent in 1947. Pre-Independence efforts had been largely local attempts, driven mainly by the humanitarian essays of a few individuals and organisations. These were area-specific and had limited impact. Independent India acknowledged the relevance of extension quite early, a decade earlier than organised attempts to strengthen agricultural research were initiated in the country.

Organized Agricultural Research in India first started with the establishment of Indian Council of Agricultural Research (ICAR) in the year . Later a string of national and regional level Agricultural Research Institutes was established under the administrative and financial control of ICAR.

On the other hand, external aid for agricultural development emphasized extension in the 1950s. Two important programmes, the Community Development (CD) and the National Extension Service (NES) were clear examples of the Government of India's commitment to provide a number of services in such areas as agriculture, health, animal husbandry, etc. to all sections of society. With little progress on the agricultural front, the need to pay special attention to agriculture was realised, and since the 1960s many new programmes that aim to raise agricultural production have been initiated.

Till the 1960s, agricultural extension was purely a function performed under the guidance of the State Departments of Agriculture (DoA). A few voluntary organisations were also doing effective work in their limited areas of jurisdiction. The Indian Council of Agricultural Research (ICAR) first

became involved in extension activities in 1966, with the National Demonstration Programme. ICAR's involvement increased considerably in later years, with the initiation and spread of Krishi Vigyan Kendras (Farm Science Centres, KVK).

Since the initial years of economic planning, particularly from the Third Plan onwards, agriculture remained the prime agenda of planners. With the advent of new technologies in the field of agriculture, it was felt necessary to come out with package of programme to boost agriculture output to desired levels. The best way, thus perceived was to take technological advancement to farming communities in the form of packages of basic agriculture inputs. This is where the concept of constituting Krishi Vigyan Kendras took roots in the sensibilities of agriculture experts that, in subsequent years, took deeper roots.

The Education Commission [1964-66] recommended that a vigorous effort be made to establish specialized institutions to provide Vocational Education in agriculture and allied fields at the pre and the post matriculation levels to cater to the training needs of a large number of boys and girls coming from rural areas. The Commission further suggested that such institutions be named as "Agricultural Polytechnics". The recommendations of the Commission was thoroughly discussed during 1966-72 by the Ministry of Education, Ministry of Agriculture, Planning Commission, Indian Council of Agricultural Research [I.C.A.R.] and other allied institutions. Finally, the ICAR mooted the idea of establishing Krishi Vigyan Kendras [Agricultural Science Centres] as innovative institutions for imparting vocational training to the practicing farmers, school drop-outs and the field level extension functionaries.

During the course of the implementation of the scheme, it was felt that the vocational training alone would not be useful unless it is followed by front line demonstration in the farmers' fields to demonstrate latest technology for enhancing agriculture production.

Accordingly front line demonstrations on important crops of the district were added to the mandate of the K.V.K. During Eight Plan period the mandate of the K.V.K. was further reviewed.

During Eleven Plan Period, it was further decided that apart from basic mandates of the KVKs, i.e. technology assessment, technology refinement and technology dissemination, as mentioned in the Eight Plan Period, each KVK will act as "District Level Knowledge Centre" providing one-Stop solutions to the Farmers and giving various value added Services like Weather Forecasting, Plant Disease Diagnosis, Soil and Water Testing, Plant Clinics etc.

To sum-up, the basic objective of the K.V.K. is to carry the technological

advancement relating to agriculture to the farms scattered over the country in phased manner to enhance agriculture production through the techniques of vocational training, front line demonstration and on farm testing in the spheres of agriculture and its allied sectors including the subjects like fishery, animal science, home science and training of rural youth for creating avenues of self-employment as well. The phased development of the district is supposed to be achieved by adopting limited number of villages for intensive efforts, the flow effects of which is supposed to influence the cluster group of villages around the periphery of adopted villages. The idea, therefore, is to gradually spread positive effects of technological advancement in the field of agriculture and its allied sectors either directly through adoption of villages or indirectly through identification of cluster group of villages around the adopted villages through the spread effects of knowledge and its positive results in adopted villages. It is worthwhile to mention here that in every district there exists a network of government institutions relating to agriculture and its allied activities working more or less on the lines of K.V.Ks. The K.V.Ks. are therefore supposed to function in liaison with such district functionaries to avoid overlaps and repeat performances in areas already having interventions by government functionaries [Centre for Rural Development and Environment (2005)].

The primary mandate of ICAR is research. Its extension programmes should be limited to reinforcing the research activities to make them more demand-driven and farmer centric. During the Eight Five year plan, the extension activities through 261 KVKs, were drawing away about 12 per cent of the ICAR Plan funds. This was hugely increased further as the ICAR strived to establish one KVK in every district by the end of the 9th Plan. Efforts were made towards the end of the 8th Plan to transfer the financial and administrative responsibilities of KVKs to their respective state governments, which could not materialize because of the severe resource constraints faced by the states. Hence, Krishi Vigyan Kendras would continue to operate in pro-active mode, retaining their allegiance with ICAR, for project implementation activities. Apart from focusing on production related issues, ICAR research would adequately address different components of marketing and make available need based packages in consonance with the changed/ changing agricultural marketing scenario. Links with KVKs will be strengthened at the district level through institutions such as Agricultural Technology Management Agency (ATMA).

Under the present arrangement the ownership and mainstreaming of KVKs with the state extension mechanisms has been weak. KVKs, set up as Centres for location specific, adaptive research, if effectively organized to

achieve their primary objective of refinement and validation of local technologies could play a strategic role in linking the research and extension systems particularly in the area of farming systems based technologies. It is likely that State Governments will be more willing to own and mainstream KVKs once their relevance as district level technology refinement institutions integrated with the extension machinery is demonstrated rather than as just another vocational training organization, which they are largely perceived as at present and of which there are several others at the district level [Department of Agriculture and Cooperation, Govt. of India (2011)].

The function of KVK, essentially, is helping farmers to progressively improve their efficiency in farming. For this purpose, it has to relate useful, practical technologies to the needs and opportunities of the farmers, on one hand, and encourage them to consider, try and adopt such technologies if found acceptable, on the other. Hence there is a greater chance now for the KVKs to bridge the gap between technical know-how and farmers' do-how among large section of farming community who do not have any access to information so far. Therefore, Training as strategic tool would focus on demand driven and farmer oriented training Programmes. Also, farmers need to be drawn around a commodity or on common interest and imparted training through commodity interest groups for effective dissemination of technology. This is very important because training of the practising farmers, farm women and rural youths is one of the basic mandates of the KVKs.

The Concept of KVKs as perceived by Planning Commission of India in different Plan Periods

The KVKs, thus are the down-to-earth institutions committed to vocational training, transfer of latest technologies, on farm research and thus, serving as the light house for overall rural development in the district. On the basis of "India-2002", there were 578 rural districts spread over the country and this figure has further been raised to 602 districts as per the latest data available on the internet report of NIC.

Perception of KVKs in the Tenth Five Year Plan (2002 ñ 2007)

In view of continuous increase in the number of districts, it is agreed to have one KVK in each district by the end of Xth. Plan. Realising the importance of technology assessment, refinement and transfer, the Planning Commission has allocated Rs. 500 crores specifically for the establishment of new KVKs during Xth. Plan period. The Deputy Director General (Agricultural Extension) [DDG (AE)], Indian Council of Agricultural Research (ICAR) during the 11th. EFC meeting of Xth. Plan, held in New

Delhi on 30th Sept. 2003 outlined the importance of two issues in the context of the present scenario of agriculture in India- (i) the technologies have to be assessed and refined before their transfer and (ii) a programme approach involving various technology components relevant to the farmers in varying farming situations will be required for a perceptible change. The concept of technology assessment and refinement is based on participatory mode ensuring greater scientists-farmer linkage and access to agricultural technologies generated by research systems to the farming community. For this, the roles of KVKs are of immense importance for overall agricultural and rural development through its various research and technology transfer mechanisms (Source: - <http://icarzcu3.gov.in/kvk.htm>).

The Tenth Five Year Plan also envisaged that the ICAR would be associated in agriculture extension activities through its 314 KVKs all over the country. The Planning Commission at that time suggested that the interaction of KVKs' activities with the State / district extension machinery would be strengthened. It was also planned to strengthen linkages between research and extension to improve quality and effectiveness of research and extension system. The Planning Commission opined that the extension system would be revitalised and broad based through KVKs, NGOs, farmers' organisations, cooperatives, the corporate sector and Agri-clinics / agri-business centres. They decided that the KVKs and ICAR/SAUs units would be designated nodal agencies for quality certification including organic products, bio-fertilisers, and bio-pesticides.

The Tenth Plan also suggested that efforts would therefore, be made for capacity building of manpower at different levels such as gardeners, supervisors, managers and entrepreneurs through specialised training programmes to be implemented through ICAR Institutions, KVKs, SAUs, NGOs and institution like the Indian Institutes of Management (IIMs), National Institute of Agriculture Extension Management (MANAGE) etc. The knowledge of personnel employed in State Government departments would also be upgraded periodically through structured training modules and programmes. The Planning Commission also noted that the linkages between KVKs of ICAR and State/ district extension services should be strengthened together with that of private sector /NGOs involved in agriculture extension and the utilisation of infrastructure available with KVKs/ICAR Institutes and SAUs should be strengthened for providing input support services to the farmers, including testing and certification of inputs and farm produce. [Source: - Tenth Five Year Plan (2002 - 2007), Agriculture, Chapter 5.1, Planning Commission (Government of India) 2003].

The Perceived Roles of the KVKs in the Eleventh Five Year Plan (2007 ñ 2012)

In the Eleventh Five Year Plan (2007-2012), the Government of India decided to set up a Krishi Vigyan Kendra (KVK) in each rural district (578) in the country. When the Eleventh Five Year Plan Document was being prepared, at that time over 537 KVKs have been established. The Planning Commission further opined that these Kendras would disseminate Farm Technologies to the farmers and provide Training to enhance productivity and enhance the income earning capacity of the farmers.

Eleventh Five Year Plan approached KVK in the following manner

1. Since all the districts have Krishi Vigyan Kendras (KVKs), generally one per district, the mandate and functioning of KVKs should be clearly defined, and KVKs and ATMAs must complement activities of each other and should avoid duplication. Synergy between these institutions should be clearly promoted.
2. KVKs should play a key role in support of the Mass Media and Information and Communication Technology (ICT) initiatives in each district. The Community Radio Centres may be established at each KVK so as to provide location specific information to the farming community.
3. For decentralized decision-making, effective coordination, monitoring and concurrent evaluation of centrally sponsored Programmes, Zone level coordination units similar to Zonal coordination unit of KVKs need to be established.
4. **Integrating Research-Extension-Farmer-Market linkages: -** Research-Extension Farmer and Market Linkages are being undertaken by KVKs in a routine manner in the present context. Though, there is interaction between extension and farmers seldom there is interaction between research and extension; and between research and farmers. This area demands greater focus, as technology generation has to take into account the farmers' needs, context and the opportunities available. The integration of Research, Extension, Farmer and Market linkages, need to be addressed by undertaking research and extension activities through the participatory technology development mode, creating a Research-Extension-Farmer and Market coordination committee at KVK / District level to take necessary policy initiatives to enable and establish linkages.

At Zonal level institutions like Zonal Research Stations and line departments need to prepare a Zonal Agricultural development strategy through consultative approach. At district and below level, the key institution like KVK and farmers' organisations need to have a close linkage with each other for technology assessment, refinement and to create a platform between farmers' organization and market opportunities. The research and extension agenda of the district is set by multi disciplinary team involving scientists, extension workers, farmers and other stakeholders who would ensure R-F-E-M linkage.

In this regard, the KVKs should keep in mind the observations of National Commission on Farmers stressing the relevance of linkages as "Farmer participation and feedback should become an integral part of agricultural resource and technology transfer. Considering that majority of our farmers are small and resource poor and depend heavily on public good technologies and information, the public sector agricultural extension men and women should be empowered and sensitized to meet the demands particularly by forging research-extension-education-farmer-market linkages.

5. **Farming System Approach:-** The KVK recommended technologies should include not only production practices of single crop but also should take into account of components like soil, water, crops, livestock, labour, capital, energy and other resources, cropping system and post – harvest technologies etc. The farming system approach would emphasize the research and extension agenda determined explicitly by farmers' needs through an understanding of the existing farming systems rather than perceptions by KVK research scientists and extension functionaries.
6. **Convergence of Research and Extension Services:** - There are many research and extension service providers in the field, providing different kinds of useful services like research outputs, information and service support to farmers. They are state, central government agencies, agri-business companies, agripreneurs, input dealers, input manufacturing firms, NGOs, farmers' organizations and progressive farmers apart from the KVKs. There is duplication of efforts with multiplicity of agents attending research and extension work without convergence. There should be coordinated attempt to synergise and converge these efforts at the district and below to improve the performance of various stakeholders.

It is essential to route all the state and Central Government extension fund through single agency like ATMA for effective utilization of crucial resources.

7. **Decentralised Decision Making and Coordination at Zonal Level:** - Centrally sponsored scheme on Macro Management of Agriculture has been operationalised for supplementation / complementation of state government efforts through work plans by integrating 27 schemes and approved pattern of assistance under agriculture, horticulture etc. A system may be put in place for effective coordination, monitoring, concurrent evaluation, corrective measures and decentralized decision making at Zonal level. This would also help in dovetailing Agro-climatic Zonal Planning with operational working plans and strengthening Research-Extension-Farmer-Market (R-E-F-M) Linkages, which may conceptually be similar to the KVK Zonal Coordination Institutions.
8. **Training as Strategic Tool focusing on Demand driven and Farmer oriented Training Strategies:-** National Sample Survey Organisation (NSSO - 2006) survey indicates that 60 percent of the farmers do not access any source of information for advanced agricultural technologies. As a result, there is a wide adoption gap among farming community to achieve the vertical increase in production through optimum resource utilisation [Planning Commission (2011)].

Criticism

The Eleventh Five Year Plan also made an observation that over the years the Department of Agricultural Research and Extension (DARE) through its co-ordinated trials had helped the nation to improve the varieties of Sugarcane, Rice, Wheat, Maize, Sorghum, Groundnut, Mustard etc., considering the ecological variations with respect to each crop. The Planning Commission also took a note in this respect that one glaring feature was obvious to be found. The point was that the productivity achieved on farms had fallen short of those in the field trials. They commented that clearly the KVKs that had the mandate of Technology Validation and transfer had not delivered their full potential.

[Source:- Eleventh Five Year Plan (2007 - 2012), Agriculture, Chapter 1, Planning Commission (Government of India) 2008].

The Perceived Roles of the KVKs in the Twelfth Five Year Plan (2012 ñ 2017)

The Twelfth Five Year Plan (2012–2017) placed importance and emphasis on the concept of “Farmer FIRST” regarding the KVK activities. In order to make technology delivery process more effective through the existing

630 Krishi Vigyan Kendras, this new initiative will enhance farmers–scientist contact through multi-stakeholders’ participation to move beyond production and productivity to privilege the complex, diverse and risk prone reality faced by most farmers. The extension system of State agricultural departments is the weakest link in the chain between research and the farmer. Large number of vacancies of extension workers in the State Agriculture Department was one of the gravest concerns expressed by the Eleventh Plan document. During the Eleventh Plan, efforts were initiated to improve extension services by extending Central support to State extension reforms. This has resulted in 604 Agriculture Technology Management Agencies (ATMAs) to be established across the country with 21,000 new posts sanctioned with Central assistance at State, district and block levels. Also, since a continuous problem plaguing extension has been lack of organic link between the research system and the extension machinery, R&D linkage guidelines were jointly brought out by the DAC and ICAR and sent to all States and SAUs. The basic thrust of these guidelines were to get ATMAs and KVKs to work together at the district level and below, keeping in view the priorities reflected in Comprehensive District Plans. Although neither has delivered full results, there is now much greater acceptance that things must be done together [Source:- Twelfth Five Year Plan (2012–2017), Economic Sectors, Vol. II, Planning Commission (Government of India) 2013].

KVKs ñ Current Status

Agricultural research and extension in today’s Indian context, includes all those agencies in the public, private, NGO and community based initiatives that provide a range of agricultural advisory services and facilitate research for appropriate technologies, technology application, transfer and management. While public sector line departments, mainly the Department of Agriculture was the main agricultural extension agency in the 60’s and 70s, the last two decades have witnessed the increasing involvement of private sector, Non Governmental Organizations (NGOs), community based organisations and media. With the external support drying up with the end of the Training and Visit (T&V) system of extension in the early 1990s, states have been left to fund their extension machinery and this has led to considerable weakening of public sector extension.

The situation assessment survey of farmers conducted during the 59th round of the National Sample Survey (NSSO - 2005) provided valuable insights into reach of extension services across India. The data collected from 51,770 households in 6638 villages showed that sixty percent of farmer households

did not access any information on modern technology that year. For the farmers who accessed information, progressive farmers and the input dealers were the main source of information. Broadcast media was also used a great deal to obtain information, which included radio, television and newspapers. The public sector extension worker was a source of information for only 5.7 per cent of farming households interviewed and the Krishi Vigyan Kendra (KVK) accounted as an extension source for only 0.7 per cent of the sample farmers. Private and NGO extension services were accessed by only 0.6 per cent.

The farmer household assessment surveys conducted by the International Food Policy Research Institute (IFPRI) in 5 states during recent years have also shown the importance of input dealers as an important source of information. But the IFPRI studies revealed that a significant number of farmers are also accessing public sector extension, especially the staff of the Department of Agriculture. For instance, in Tamil Nadu, the main sources of agricultural information in 2010 was the input dealer (68.6 per cent), followed by the state department of agriculture extension staff (51.2 per cent). In Karnataka, of the 966 farmer households surveyed in 2006, only 22 per cent had at least one contact with a government extension worker during the past year. In Uttar Pradesh, only 18 per cent of households used extension (from any source, public or private) in the past year. Of these, only 7 per cent were from state extension officers. Other public-sector extension sources put together (that is the KVK, All-India Radio, university extension, and plant protection unit) were used 18 per cent of the time. The remaining 75 per cent of extension help comes from the private sector (Babu *et al.*, 2012). All these reveal the wide diversity in extension provision and the wide variation in the way farmers access various extension sources in different states.

Linkages: - To date only research–extension (R”E) linkages have been emphasized and measures to improve them have not yet yielded positive results (Kaimovitz, 1991). After two decades of efforts to foster linkages, information flow are still mostly top-down (Macklin, 1992) with feedback too weak to catalyze the fundamental changes required in the prioritization of on-station research (Jha and Kandaswamy, 1994). Department of Agriculture and Cooperation (DAC) have recently devised fresh guidelines for establishing R”E linkages under the Innovations in Technology Dissemination (ITD) component of National Agricultural Technology Programme (NATP). But even these are the product of the linear, mechanistic model of innovation that has outlived its utility and are unlikely to change the situation on the ground, especially for the vulnerable.

Understanding the need for a holistic system and of actor-oriented approach to innovation continues to elude policy makers (for discussions of the linear vs systems model of agricultural innovation see Biggs, 1990). Even within the R”E system, linkages between organisations working in the same subject area are weak and this severely constrains the performance of the system as demonstrated by recent case studies from the Indian horticultural research systems (Hall *et. al.*, 2001) Inter and intra-departmental co-ordination for programmes in both ICAR and SAUs are weak. (ICAR, 1996). But various past studies have showed that the linkage between KVKs and State DoAs has been less than satisfactory and the DoA continues to ignore other organisations that have entered the research and extension arena in selected regions and enterprises that could complement or supplement its efforts.

Linkages between public-sector research and extension and institutions whose policies have a direct bearing on KVK research and extension – input supply, credit and marketing systems – are virtually non-existent. Nor can KVK research and extension influence policy on investment, research prioritization, infrastructure, public administration, or technical education. KVK research and extension thus continues to be a passive recipient and often a victim of decisions taken in these systems.

The number of KVKs (Krishi Vigyan Kendras) funded by the ICAR has increased during the last few years. Presently, 637 KVKs are established in the country. KVKs have the mandate of promoting technology application through on-farm trials, demonstrations and training. These activities are implemented by a multi-disciplinary team. Performance of KVKs varies widely. The effective reach of KVKs in most cases is marginal mainly due to its inadequate linkages with other development agencies. Staff shortage, limited operational funding and a narrow mandate has also led to sub-optimal utilization of KVKs. KVKs can do better if its technical expertise is linked to the facilitation support and reach of the DoA/ATMA.

While KVKs being district level organization with much better grasp of ground situation, can improve and support research and extension services with aspects related to technology backstopping, integration and management, KVKs are not formally mandated to do this and instead they concentrate more on organizing its own training programmes. Each KVK has a provision for one programme co-ordinator, 6 subject matter specialists and 3 programme assistants. Currently more than 4500 technically qualified staff that can potentially provide technical support to field extension is available with the KVKs. Though joint guidelines recently issued by the Director General, ICAR (Secretary, DARE) and the Secretary (Agriculture),

emphasizes much stronger support by research to extension at different levels, its implementation is uneven.

Lack of interest to support extension arises mainly from the lack of recognition of this important task in the personal evaluation of scientists. KVKs are funded separately by ICAR and their contributions are evaluated based on the number of on-farm trials, front-line demonstrations and trainings conducted by them. Many KVKs don't have the mandated number of staff, adequate training facilities and operational funds. Lack of adequate number of scientists in the research centers, especially in the regional stations and lack of adequate operational funds [with both research and extension] to support regular and need based field level experimentations and interactions further constrain provision of technical support for extension [Das and Hansra (1999)].

KVKs ñ Some Ground Realities

1. Maximum KVKs do not obtain opinion of all the line departments while selecting the beneficiaries to impart them the vocational training in KVK activities. Since the KVK activities are mostly dependent on the line department cooperation, hence their cooperation and opinion is very important.
2. While selecting the site for FLD and OFT activities of the KVKs, some studies revealed that a sizeable portion of the KVKs do not obtain the opinion of the line department regarding this activity. The FLD and OFT are the important activities of the KVKs, the cooperation of the line department must be secured so that the farmer could also be impressed with these activities.
3. It has been found through the study that about 85 percent of the surveyed KVKs need the line department while formulating the action plan.
4. The Scientific Advisory Committee (SAC) meeting is one of the key organizational functions of the KVKs. Some studies revealed that majority of the KVKs organized the SAC

Meeting once in a year only, which seems to be insufficient, because in the SAC meeting the function of the KVKs are assessed as well as the suggestions of the line departments are also reflected in this meeting regarding the activities of the KVKs. It is, therefore, suggested that this meeting must be held at least twice in a year as per ICAR guidelines; one before making preparation for kharif crop and another before the Rabi

crop so that the suggestions of the line department could be kept in view, while implementing both the cropping season patterns. It was also observed from the Study that maximum numbers of the Line Department Officials are absent in the SAC Meeting.

5. While extending the improved agricultural technique through the KVKs it is found that the scientists of all the KVKs felt their responsibilities in providing these techniques, but in the 50 percent KVKs the scientists feel that still more efforts in this direction is to be done. For this purpose both the budget and staff of the KVKs should be increased. If the staffing patterns in the KVKs is not possible to be increased, the KVKs may be permitted to appoint some technical persons / passed out unemployed students of Agriculture collages on contract basis with a view to enhance the activities of KVKs, because at present in a district only one KVK is working and looking to the vast area of a district, the staff provided at present to the KVKs is too much insufficient. For this purpose only the budget of the KVKs could be increased. In the surveyed 50 percent KVKs they felt the need of additional staff.
6. At present the linkage of the scientists of the KVKs with the line departments is found to be satisfactory but they should be asked to interact more sincerely in the activities of the line department so that the importance of the KVKs could be established as like as mini Agriculture University in the district.
7. As regards the propaganda and publicity of the activities of the KVKs it is suggested that through the local print media and the T.V. channels, the activities of the KVKs could be broadcasted every monthly. The scientists of the KVKs could be encouraged to publish their activities in the local news paper frequently, so that more and more farmers could be benefited with the activities of the KVKs. The Zonal Coordinator of the ICAR could be given the responsibilities to keep a watch on the scientists of the KVKs.
8. As regards inclusion of marginal farmers, small farmers and farm women in KVK activities, sometimes they do not participate in these activities due to reason more than one, either they remain busy in some of the other economic activities or in some socio-cultural- economic activities. It has also been found that the KVKs also do not make sincere efforts to motivate the farmer properly due to shortage of staff. Since this is one of the important activities of the KVKs, serious efforts should be done to find out the proper reasons behind

this. Provision of some cases incentives could also be thought out to enhance the presence of the poor farmers in their activities.

9. During the course of Study, it has been found out that the Programme Coordinators of the KVKs told that the district level Govt. functionaries do not give much importance to the activities of the KVKs. While at discussions most of the district level officer of the various department told that the KVKs don't consult them properly before launching their activities. It seems that there is too much gap in the understanding in between the KVKs and the line department, which could be avoided. In this direction some sincere efforts would be welcome [Centre for Rural Development & Environment (2005)].

Strengthening Research and Extension Provision through KVK

As agricultural research and extension in India transforms itself into a more diversified farming systems approach from its present simplistic accent on yield enhancement by increasing some limited inputs, farmers will be required to adopt a wider range of inputs and practices and develop skills in their more efficient use. So, the task of KVKs will become more challenging in the wake of post WTO era, which demands a system of market led research and extension with specific focus on diversification, post harvest management and export orientation. This will present a more complex role, but simultaneously requiring a flexible approach allowing specific information to be customized for different farmer-groups. A strategy of institutional innovations in extension will be evolved which optimizes the strengths of the public-private sectors to service the needs of the farming community. Some of the potential ways forward for strengthening KVK research and extension provision in India could be summarized under the following four points:

1. **Promote pluralism and partnerships:** Considering the poor reach of KVK activities currently and the limited investments in research and extension, India needs more public, private and NGO research and extension and better co-ordination among them. Some of the public funding should be used to expand pluralistic research and extension arrangements by way of contracting and developing joint programmes. The KVKs should take a lead in connecting these different research input and extension providers and enabling effective communication that can foster partnerships. Identifying potential partners and developing working relationships among the different agencies should be the main task of the KVK managers at the district

level. Development of research and extension policies and operational guidelines to promote pluralism and partnerships at the District level would go a long way in reforming extension and enable public-private partnerships (PPPs).

2. **Increased funding, support to convergence and inculcating co-ordination:** Research and Extension needs more resources from public (central as well as state) and private sector. It also needs funding support from NGOs and producers and producer groups. KVK is emerging as a platform for bringing convergence among different programmes, co-ordination among different actors and funding support by different agencies. If at least 10 per cent of the resources under different agriculture and related schemes of the Govt. of India should be spent on research and extension through KVK, this would go a long way in enhancing research and extension support and ensuring sustainability of KVK in the long run. KVK and the private sector should come together to design specific research and extension interventions in a project mode to provide integrated technical support to producers. There is a need to develop an overarching policy framework that defines the role of the private sector in the agricultural sector at the macro level.
3. **Focussing Research Agendas on the Small Farming Needs:** Finding better ways of reaching the small and marginal farmers and tenant farmers especially those in the rain fed and difficult regions and providing them with integrated technical support would continue to remain as a major challenge for extension. Extension needs much stronger research support to develop and promote context specific, disaggregated technological solutions in these regions having huge variation in natural resource base, farming systems and socio-economic conditions (WGAE, 2011). More number of meetings and interactions among research and extension personnel alone are not going to address this problem. Regional research stations (ICAR and SAUs) and the KVKs should take a lead in providing research support to extension by way of more decentralized adaptive research and trainings. Farmers' knowledge and practices also needs to be integrated while designing appropriate technological solutions. Reforms should also focus on addressing the issues that currently constrain provision of this research support.
4. **Integrated Agricultural Development Management:** To remain relevant and to deal with the contemporary changes in agriculture and the wider support needs of farmers (organisational, marketing,

technological, financial and entrepreneurial) research and extension activities of the KVKs have to broaden its mandate and should have a much wider range of expertise. The debate should move beyond technology dissemination and research-extension linkages to ways of promoting innovation and enhancing capacity for innovation. KVK research and extension needs professional support, for embracing new frameworks and approaches such as innovation systems and innovation management. It needs professional assistance to experiment and evaluate new policies and extension delivery models appropriate to each district or block.

All the KVKs should have to develop a Human Resource Management Plan at the District level to figure out capacity gaps, bringing new expertise and enhancing capacities of existing human resources. The potential of ICTs also needs to be explored to enhance coverage and effectiveness. Research and extension need new manuals and guidelines on operationalising many of these new approaches. A new culture focusing on experimentation, learning and change needs to be inculcated in the KVK organization so that it continues to modify, improve or fine tune its approaches and strategies based on continuous learning. Perhaps introducing this learning-derived institutional change is going to be the most difficult aspect of the Integrated Agricultural Development Management Process.

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Groundwater Quality in West Bengal: Challenges for Drinking Water Security

Pulak Kumar Patra

Water is life. The provision of water, sanitation and improved hygiene is intrinsically linked to livelihoods, environment and agriculture. There is little hope of achieving food security and overall wellbeing without ensuring basic water security. During the colonial period, the development of water resource by British-India Government was limited to irrigation projects only and the affairs of domestic water was left to individual or community endeavour. The Government has undertaken various programs since independence to create infrastructures for water resource development. The phenomenal development has successfully met the demand of water for many of the diverse uses in the country. The National Water Policy gives first priority to drinking water supply and the Government is committed to ensure that the village communities have access to safe and reliable water supply. Since the beginning of the planned era of development, huge investment of about Rs. 72,600 crore has been made in the rural water supply sector under both State and Central Plans up to 2009. Though, initially, the emphasis was on development of surface water resources, with growing population and increasing water demand, the utilisation of groundwater has been encouraged since 1970s. Groundwater is less susceptible to pathogenic microbial contamination than surface water, and hence is considered safe as drinking water. Besides, groundwater is naturally more resilient to drought conditions i.e. more likely to be available even when the surface sources dry up in summer. Thus the exploitation of ground water has increased often in a unsustainable way. West Bengal has also witnessed similar trend in water resource development. Now, the reliance of drinking water supply in the State is mainly on ground water, which meets more than 80 and 50% of

drinking water needs in rural and urban areas respectively. Ground water use in irrigation is also increasing exponentially. However, the ever-increasing exploitation of ground water has caused not only depletion of the resource, but more significantly, the deterioration of its quality. The enrichment of arsenic and fluoride in ground water has now taken a catastrophic shape. It has added enormously to the existing problems of water scarcity by removing large volumes of water from the available supply. Groundwater pollution is more serious than surface water pollution as contamination is slow to dilute and purification measures are costly.

Ground Water Resources in West Bengal

West Bengal with a population of 91.3 million is endowed with 7.5 per cent of the water resource of the country. Main source of water in West Bengal is rainfall, the annual average receipt of which is around 1762mm. Of this 76% is received in the monsoon months and the rest in the non-monsoon period. 21% of the rainfall infiltrates through the soils and recharges the ground water and 49% goes back to the atmosphere as evapo-transpiration. The net annual water resource generated from rainfall in West Bengal amounts to 51.02 billion cubic metre (bcm) (WBPCB, 2009). Annual replenishable ground water in the state is estimated to be 30.36 bcm, out of which 27.46 bcm is termed available. There exists a wide variation in topography, climate, rainfall and availability as well as quality of water resource across the state.

In 1959, minor-irrigation projects were started in the state in collaboration with the Exploratory Tube-well Organization of the Union government. During eighties, to prevent cholera and typhoid menace from surface water bodies that were extensively used by the population to meet their daily needs, UNICEF advocated using groundwater. When bore well culture was introduced in West Bengal, it became shot in hand for the farmers since bore-well irrigation started giving the farmers comfortable life and they were able to rise crops through-out the year. This feel-good factor encouraged extensive bore-well irrigation and the number of bore wells increased from about 20,000 in 1976 to 5,50,000 in 2001 irrigating 64 per cent of 54640 square kilometres of cultivable land in the state by tube wells that tap groundwater. Since then this number is growing beyond expectation. Thus bore-well irrigation practice made the rural population to exploit groundwater without any control. The state is now exploiting only 42% of the available ground water, the net draft being 11.65 bcm (CGWB, 2006). However, the threat of pollution, particularly arsenic and fluoride contamination is removing large volumes of water from the available supply.

Ground Water Quality Issues

Ground water was considered as the cheapest source of potable water in West Bengal except coastal belts until the findings of dreaded pollutants like arsenic and fluoride in ground water. The contamination of groundwater in the state is mainly geogenic, though the situation is aggravated by unplanned exploitation of groundwater. Arsenic, fluoride and iron are the major pollutants which are enriched in the aquifer through rock-water or soil-water interactions. Out of total 5448 drinking water quality affected habitations of the state, 2119 and 873 are arsenic and fluoride affected respectively. The ground water in coastal areas of Haora, East Medinipur, N-24 Pargana, S- 24 Parganas is saline in nature due to salt water intrusion. High salinity is also noticed in some localities Bankura district. Nitrate pollution from excess use of nitrogen fertilisers has been reported sporadically from Bardhman and Bankura districts.

Arsenic: Arsenic in ground water is the major quality problem in the State. The arsenic contamination of groundwater and its epidemiological impact was first detected in early 1980s. The arsenic levels in 8 of West Bengal's 19 districts routinely vary between 10 to 300 µg/L, above the World Health Organization (WHO) guideline of 10 µg/L. Arsenic occurs beyond permissible limit in 79 blocks (out of total 341 blocks) in the lower Gangetic plain areas in eastern part of the state (Table-1). Arsenic in ground water is mostly confined to shallow aquifer zones within 20-100 feet below ground level. Arsenic is a killer element. Drinking arsenic-contaminated water over a long period is hazardous as arsenic is a documented carcinogen. Symptoms of arsenic poisoning include depigmentation; it can also cause skin or internal cancer, which may lead to death. Since it is tasteless, millions drink such water unknowingly and succumb to its poisonous effect. Now diseases related to arsenic from groundwater are affecting third or fourth generation in West Bengal. About 26 million people are now at risk and even the city of Kolkata is not out of the danger zone.

Table 1: Arsenic Affected blocks in West Bengal

Districts	Blocks (79 arsenic affected blocks)
Bardhaman	Kalna –I, Katwa –I, Katwa –II, Purbasthali –I, Purbasthali –II
Hooghly	Balagarh,
Howrah	Shampur-II, Uluberia –II
Malda	English Bazar, Kaliachak- I, Kaliachak- II, Kaliachak- III, Manickchak, Ratua –I, Ratua -II
Murshidabad	Lalgola, Beldanga I, Beldanga II, Berhampur, Bhagwangola I, Bhagwangola II, Domkal, Farakka, Hariharpara, Jalangi, Murjiaganj, Nowda, Raghunathganj I, Raghunathganj II, Raninagar I, Raninagar II Samsheganj, Suti I, Suti II
Nadia	Chakdah, Chapra, Hanskhali, Haringhata, Kaliganj, Karimpur I, Karimpur II, Krishnaganj, Krishnanagar I, Krishnanagar II, Nabadwip, Naksipara, Ranaghat I, Ranaghat II, Santipur, Tehatta I, Tehatta II
North 24 Parganas	Amdanga, Baduria, Bagda, Barackpore II, Barackpore I, Barasat I, Barasat II, Basirhat I, Basirhat II, Bongaon, Deganga, Gaighata, Habra –I, Habra –II, Haroa, Hasnabad, Rajarhat, Sandeshkhali II, Swarupnagar
South 24 Parganas	Baruipur, Bhangar- I, Bhangar- II, Bishnupur –I, Bishnupur –II, Budge Budge II, Joynagar I, Mograhat II, Sonarpur

Arsenic that was found only in the groundwater earlier has now entered the food chain through irrigation practice. A large number of bore wells operate continuously pumping groundwater from different depths to rice fields. A recent study (Bhattacharya et al, 2009) has revealed that paddy crop has maximum concentration of arsenic scavenged from groundwater. Besides rice, the vegetable cultivated through irrigation also have high levels of arsenic.

Fluoride: Though fluoride pollution had been detected from other states of India, even prior to independence, it is a relatively recent phenomenon in West Bengal. It was reported from Birbhum district in 1997 for the first time. However, since then 43 blocks of eight districts have been found to contain fluoride in ground water beyond permissible limit of 1.0 mg/l (Table-2). The occurrence of fluoride in natural water is affected by the type of rocks, climatic conditions, nature of hydrogeological strata and time of contact between rock and the circulating ground water. Chronic ingestion of Fluoride contaminated water causes Fluorosis, a dreadful crippling disease mainly affecting our teeth & bones. Fluoride toxicity is also linked with many other non-skeletal health problems. Fluoride has more risk than arsenic to enter in food chain through paddy crop (Chakrabarti et al, 2013)

Table 2: Fluoride affected blocks in West Bengal

Districts	Blocks (37 fluoride affected blocks)
Bankura	Bankura – I, Borjora, Chhatna, Gangajalghati, Jaypur, Khatra, Kotulpur, Onda, Patrasayer, Raipur, Ranibundh, Sarenga, Simlapal
Bardhaman	Purbasthali – I*, Kulti, Raina – II, Raniganj
Birbhum	Dubrajpur, Khoyrasol, Mayureswar – I, Mayureswar – II, Mohammad Bazar, Murarai – I, Nalhati – I, Rajnagar, Rampurhat – I, Suri – I, Suri – II
Dakshin Dinajpur	Bansihari-I, Gangarampur, Kushmundi
Murshidabad	Farakka*
Paschim Medinipur	Sankrail
Purba Medinipur	Nandigram – II
Purulia	Bagmundi, Barabazar, Bundwan, Hura, Kashipur, Jhalda - I , Manbazar – I, Neturia, Para

*also have arsenic

Iron: Iron is a common constituent in soil and ground water. It is present in water either as soluble ferrous iron or the insoluble ferric iron. Water containing ferrous iron is clear and colorless because the iron is completely dissolved. When exposed to air, the water turns cloudy due to oxidation of ferrous iron into reddish brown ferric oxide. The concentration of iron in natural water is controlled by both physico chemical and microbiological factors. It is contributed to ground water mainly from weathering of ferruginous minerals of igneous rocks such as hematite, magnetite and sulphide ores of sedimentary and metamorphic rocks. The permissible Iron concentration in ground water is less than 1.0 mg/litre as per the BIS Standard for drinking water. High concentration of Iron (>1.0 mg/l) in ground water has been found in many parts of West Bengal

Monitoring and Mitigation of Groundwater Quality Problems

Various steps have been taken to monitor and mitigate the problem of arsenic and fluoride in groundwater in the state. Different central and state level agencies such as Pollution Control Board, Ground Water Board, Public Health department, Rural Development department are monitoring the water quality independently across the state. The data published by them regarding the extent of contamination including the list of affected districts, blocks and habitations do not match each other leading to confusion. Public Health and Engineering Departments is in charge improvement of water quality standards vis a vis various types of pollutants infiltrating ground water that is used for drinking (arsenic, fluoride, and saline infiltration).

WHO has termed arsenic problem in West Bengal and Bangladesh as global problem and several scientific bodies are seeking solution to it. West Bengal has now become a field laboratory with several international organizations working on this problem. A few of the organizations include: Royal Institute of Technology – KTH, Stockholm Sweden, Government of the Netherlands, Commonwealth Science Council/ Science and Technology Division, University of Karlsruhe, Germany, UNICEF, CARE, WHO, Dainichi Consultants Japan, London Arsenic Group, University of California, Berkeley, USGS, British Geological Survey and several institutes from India.

In August 1999 UNICEF and the government of West Bengal initiated a comprehensive \$3 million joint plan of action with the support of DFID (Department for International Development) for dealing with the unfolding arsenic situation in the state. Under the plan, the arsenic affected villages are provided hand-pumps which are installed on extra deep wells tapping aquifers free of excess arsenic, horizontal-roughing/slow sand filters and home-based/ hand-pumps attached arsenic removal filters. UNICEF also is involved to assess fluoride level safety conditions and implement mitigation programmes. Some of the key areas of intervention have been in the strengthening of water-quality monitoring systems, facilitating research and development of household water treatment systems and advocating alternative water supplies when necessary. Education is the key to UNICEF's strategy, with emphasis on grass-root implementation of water safety procedures. Awareness is generated amongst people in affected areas about adverse health effects and preventative measures. People are advised to drink water only from certified safe sources. Training of personnel in the use of the field test kits and the filters also constitutes a major part of the programme. Presently, a programme of testing of all the tube wells in identified blocks is being carried out under Joint Plan of Action with UNICEF.

The first Steering Committee was constituted by the Govt. of West Bengal in 1988, which conducted the multicentric study to find out the cause of the arsenic problem. This study was supported by Rajiv Gandhi Drinking Water Mission. Thereafter a number of Task Forces were constituted by the State Govt. during the 90s and the present reconstituted Task Force is functioning since 2005. Almost all academic and research institutes working in Arsenic and ground water quality related problems are represented in the Task Force and the State Govt. has developed a master plan for long term mitigation for the problem in consultation with the Task Force, which is presently in the process of implementation with financial support from the Ministry of Drinking Water Supply, Govt. of India. Similarly, the state government has constituted a Fluoride task force which is functioning since 2007.

There are several technologies to remove arsenic from drinking water. Some of these are reverse osmosis, precipitation and flocculation and solar oxidation. Many technologies have also developed to filter out fluoride from water. But these are costly and unfeasible to implement and practice by the rural population. The State Govt. is now implementing the master plan and it has taken steps to cover all the arsenic and fluoride affected villages by clean potable drinking water under the “Bharat Nirman” programme by the year 2011. The action plan envisages 349 nos. of Piped Water Supply Schemes to cover 3413 villages benefitting a design population of 16.6 million. It has been observed that a large number of arsenic affected people both in rural & urban areas have recovered after consuming arsenic free safe drinking water.

In high salinity affected areas, the water is supplied from non-saline aquifers and sometime by drawing water from non-saline area through pipelines. Pond based water supply arrangement with proper treatment is also being encouraged. Membrane based desalination plant has also been installed in North 24 Parganas District. PHE Department had taken up 262 rural piped water supply schemes in the saline belt of North 24 Parganas, South 24 Parganas, Purba Medinipur and Howrah Districts.

Through the West Bengal Ground Water Resources Management, Control And Regulation Act (2005), the Water Investigation & Development Department (SWID) is developing systems to manage, control and regulate indiscriminate extraction of groundwater in West Bengal, develop solutions towards controlling widespread contamination of water, devise methods to conserve the ground water resources by way of recharging, replenishing, recycling or reusing, in a co-ordinated manner, and encourage modern technologies and age-old practices of water harvesting and recharge to ensure ground water availability

Challenges and Possible Solutions

The national goal of achieving universal access of the rural population to adequate potable drinking water at a convenient location at all times is a daunting task. In this regard upgrading, Department of Drinking Water and Sanitation to a separate Ministry in 2011 is a right step. The proposals as envisaged in revised National water policy, 2012 to make available all hydrological data in public domain and to set up a National Water Informatics Center should be implemented in true spirit. Providing safe drinking water to rural communities is an integrated effort, which requires engaging skills of hydrologists, engineers, medical experts and non-governmental organisations.

In water sector lot of new technologies are coming in the market. Selection of appropriate technologies plays an important role and extends benefit at optimum level. A technology that is selected should be sustainable; cost effective, simple, immune from monopoly and easy to operate and maintain. Its operation and maintenance should be such that community can afford. Removal of arsenic and fluoride from ground water is a costly affair and should be used as a last alternative. There is no viable long-term panacea except harnessing surface water to mitigate the drinking water problems. Effort may be given on use of surface water from river, pond etc., and conservation of rainwater using several rainwater harvesting methods. The challenge should be met by using surface water as far as possible. The recharging of groundwater by rainwater harvesting seems to be the best option. Making the project completely transparent would take care of the problem to a great extent: the data generated should be made available in the public domain. Academic institutions and the state public works departments should collaborate in the endeavour.

The ever-increasing dependence on ground water for irrigation and drinking has led to the decay and abandonment of age-old surface water management system of Bengal, which needs to be revived. Decentralised rainwater harvesting can be attained by community participation and with the aid of low capital investment ventures. The major shift of paradigm should be reduction of over-dependence on ground water and that is to be utilised within the rechargeable limit. The water-intensive crops are to be replaced with drought-resistant crops as far as practicable. Finally, the community should continue to be the custodian of water.

Drinking water security can be best ensured by building capacity of local communities to monitor and measure their water resources, prepare water budgets and take steps to self-regulate demand for water from irrigation and industry. Therefore, aquifer management plans by villages and panchayats should be an integral part of ensuring drinking water security especially in water stressed and quality affected areas. There is an urgent need to strengthen the institutional structure in the states by setting up a multi-disciplinary organisation, Rural Water and Sanitation Management Organisation to bring in holistic planning, implementation and management of schemes. It should have personnel with suitable academic qualification and experience to oversee work relating to water security planning, water conservation and recharge, construction of civil and engineering works, community mobilization, financial planning & management, accounting, mass communication, training, etc. Sustainability of drinking water sources has to be ensured by convergence with MNREGS, NRDWP and IWMP.

Tackling the arsenic and fluoride problem also requires changing people's mindsets. Since the chemical does not affect humans overnight, there is always a tendency to procrastinate on solutions. Mindset and will to change is what is needed to tackle this problem failing which generations may get affected in future. The state groundwater organisations and public health departments should take the help of grassroots bodies in raising people's awareness in the affected areas.

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25

A Pestle Approach To Integrated Water Management System In Kurseong Town Of Darjeeling District

Sanjay Prasad

This report introduces the work of the Urban Planner of Kurseong Municipality on water scarcity within the Kurseong Integrated Water Management Project. In Part I, after introducing Kurseong and the structure of the overall project, we use a PESTLE (Political, Economic, Socio-Cultural, Technological, Legislative, and Environmental) framework for analysing the situation in Kurseong at this phase and setting forth our recommendations. In addition to the PESTLE analysis, in Part II we include detailed summaries of our notes on and experiences with different aspects of our on-site visit to Kurseong. Finally, Part III offers tools for both understanding and



implementation on the path forward. The purpose of this report is to synthesise diverse forms of information gathered from our backgrounds, formal education, other integrated water management projects, and on-site experiences into an interdisciplinary perspective on the current situation and way forward for sustainable water systems in Kurseong.

Part I: Context and PESTLE Analysis

Background

Kurseong is a sub-division of Darjeeling district situated between Darjeeling and Siliguri in West Bengal, India. The town is located 1 458 m above sea level in the foothills of the Himalaya. It is surrounded by tea gardens and is famous for its boarding schools.

The population of Kurseong as per a 2001 census is 40 067, whereas in 2011 it is estimated to be more than 70 000 [1]. Urbanisation and increasing population are exerting a great amount of stress on water systems and increasing the need for proper waste management.

Existing reservoirs and water distribution systems in Kurseong constructed during the British rule (60 to 80 years ago) have hardly been upgraded to meet the present demands. Shrinking water resources further increase the gap between demand and supply. At present, water is supplied on alternate days for thirty minutes to an hour – by pipe connections to homes or unofficial access points in public – to the inhabitants of Kurseong during dry season.



Businesses and households store as much of this water as possible in order for it to last over the following day. Nonetheless, the majority of households and businesses in the town are dependent on unofficial private water suppliers or illegal tapping of the system to meet their daily water requirements. Additionally, the quality of both the delivered and purchased water is compromised, and residents are at risk for related health problems.

Methodology

Our study and contribution to the Kurseong Integrated Water Management project was realised in three distinct steps. The first step of our contribution began on March 14th, 2012, and finished on April 1st when several group members departed for India. The second and on-site step of the project began on April 10th when all group members arrived in Kurseong and concluded on April 19th when we departed. The third step consisted of writing the final report, both for the SED requirements and a more detailed report for the larger Kurseong IWM project. This section will outline the activities that took place during the three steps of this project.

Step 1: Preparatory Phase

The preparatory step of this project took place in the weeks leading up to our departure for India. The purpose of this phase was to familiarise ourselves with the project background, understand integrated water management issues and case studies and prepare for our on-site step. The following activities were carried out during Step 1:

- Review of reports and observations from Phase 1 of the Kurseong Integrated Water Management Project;
- Review of various case studies and integrated water management projects;
- Initial contact with local and Sweden-based partners;
- Familiarisation with the local cultural, political, environmental and economic contexts;
- Preparation and request for translation of a water survey; and
- Study of local municipal data, maps, and documents.

Step 2: On-site in Kurseong

Step 2 was the on-site portion of this project. We spent a total of nine field days working with local partners and a select group of civil engineering

students from the Darjeeling Polytechnic Institute. Along with our project supervisor, Murat Mirata, we spent our days – at times together and at times individually – exploring and learning about broad and specific issues related to water management from a variety of perspectives and disciplines. It must be noted that throughout this step the local students, Mr. Johan Sandberg (IVL – Swedish Partner), Mr. Sanjay Prasad (Municipal Urban Planner), and Mr. Manoj (Municipal Sub Assistant Engineer) were an integral part of much of the conversations, meetings, field visits, interviews and surveys.

The centrepiece of our activities and exploration during this step was the *water profile survey* conducted in households and businesses in Ward 15. Kurseong's Board of Councillors selected this ward to be the future location of a small-scale pilot project because it has a representative population size (of the 1 200 residents), a roughly equal number of males and females, domestic and commercial leases, and ethnically and religiously diverse residents. The objective was to understand the qualitative and quantitative aspects of water usage in this particular ward. This served to create water profile of those living in Ward 15 and an understanding of their relationship with water – and ultimately how their lives are impacted by the current water scarcity.

With the help of Mr. Henry, Councillor of Ward 15, we were able to meet and interview a representative population from the various communities in the culturally diverse Ward 15, including members of the Nepali, Muslim, Bihari, and Marwari communities. Of particular interest for this project are the women of these communities, as it is women who have the most meaningful and deterministic relationship with water. The four women of the team (from Darjeeling Polytechnic) added a separate survey addressing



women's issues. These female-specific interviews evolved into a narrative understanding of women's water issues.

Beyond the water profile survey the following activities were carried out during Step 2 of this project:

- Meeting with and collaborating with the local students, Murat Mirata, Johan Sandberg, and local partners;
- Meeting with local stakeholders including the municipal Chairman, local schools, doctors, councillors, shop-owners, and more (please see the list of interviewees for a more complete picture);
- Visiting and inspecting water infrastructure including mains, reservoirs, and pipelines;
- Visiting Ward 15 whilst the water was turned on and accessible during the morning;
- Conducting a small sample of comparative surveys of upstream Wards 5 and 8; and
- Undergoing water sampling training with the local students at the Pollution Control Board in Siliguri.

The culmination of the on-site step was a water forum that we hosted with the residents of Ward 15. The purpose of this forum was to share our work, observations, and implications for the project moving forward. Furthermore, it gave community members another opportunity to voice their experiences with water and to express their hopes or reservations for this project. We were also able to convey the message that such a complex problem will not change overnight and that this process has begun, but is far from finished.



Finally, it gave us an opportunity to thank the community for welcoming us into their homes and sharing their stories with us.

Step 3: Report Writing

The final step of this project was the preparation and writing of our report for the requirements of the Strategic Environmental Development (SED) course. This, rather, is the expanded report that contains not only the material from the SED report (Part I), but also further recommendations, reference to case studies, analyses, documentations and information relevant to the future of this project (Parts II and III).

PESTLE

PESTLE is a framework for clearly analysing the current state of, and possible futures, for complex systems from six different perspectives: political, economic, socio-cultural, technological, legislative, and environmental. It was originally developed in the late 1960s for use in a business context, but can be utilised for multiple scenarios, including strategic and organisational planning (3). The team chose this framework because of the interdisciplinary angle and the concise, understandable format of the output. The following section details the outcome of the team's PESTLE analysis and recommendations.

Political

The functioning of the political system in Kurseong Municipality is relatively recent, with the democratically elected representation forming an operational government just two months ago. There is a councillor to represent each of the twenty wards, and the Board of Councillors is headed by Chairman Sameer Deep Blon. Mr. Sanjay Prasad is the town's urban planner and is a key actor in the reformation of water management. Essential to the dynamics of the current water system is the position of *pipe-fitters* – government employees who link both official and unofficial connections to the piping system and are politically appointed for life.

The Municipal Development Plan (4) is essential for guiding the direction of political action. The current Development Plan was set for 2008 to 2013; and although it includes a segment on water, it is somewhat disconnected from the reality of local water mismanagement. Mr. Sanjay Prasad intends to update the Development Plan for the following five years with more accurate information about a focused vision for water management. But it is important to note that there is an urge among politicians to take immediate, *quick-fix* actions that are politically reactive in the short-term, but interfere

with the implementation of a true integrated water management system in the long-run. An example of this is the proposal to pump water up from a neighbouring river, even though there is sufficient water at the sources.

Another aspect affecting water politics in Kurseong is the municipality's relationship with Public Health Engineering (PHE), the West Bengali state department responsible for delivering water to rural areas and to municipal borders and the Darjeeling Gorkha Hill Council (DGHC) sub-division. As often occurs within hierarchal political bodies, there has been non-compatibility between the two levels of government that manifests in difficulties approving water development projects and time delays when repairing damage to the infrastructure. At times the two levels of government blame each other for the lack of progress or action taken on the water system, furthering the complications.

An interesting shift in this relationship is the proposed establishment of the Gorkhaland Territorial Authority (GTA), which would replace the DGHC and act as an autonomous political body, able to retain a certain level of power and financing. It is unknown how (or if) this will affect water management practices in Kurseong.

Political recommendations:

- Establish an independent professional water body to manage the financing, sources, distribution, and development of an integrated water management system. As seen in the Phnom Penh, Cambodia case in Biswas and Tortajada [5].
- The independent body should be mandated by the government, but de-politicised, meaning that it would operate independently and more like a professional entity.
- Integrate solid waste and waste-water management as an integral aspect of an integrated water management system.
- Redefine the pipe-fitter position as a non-political working position, hired through the independent body with outlined responsibilities and liabilities.
- Create an updated Kurseong development plan that includes a more accurate representation of the current situation and realistic aims for future water development.
- Create strategic partnership and collaborate with PHE to synergise plans for improved monitoring, delivery and quality control.
- Create a broader-scale water action plan with DGHC or GTA.

Economic

The current financial aspects for drinking water are as follows: a small fee included as an unknown portion of the quarterly property tax, fees charged for new (legal or illegal) connections to the piping system, and the market sale of privately sourced water. It is unclear how (if at all) this money is managed within the municipality, and sometimes even payment for a new connection does not yield a connection.

The result is that municipally delivered water is considered *free*, whereas privately bought water has an associated cost – and psychologically, citizens do not connect these two sources of water. For example, when considering how much they could afford to pay each month for clean, reliable water from the municipality, residents do not naturally relate their answers to how much they are already paying each day for private water. Another result is *the tragedy of the commons* insofar as people seek to obtain and hoard water wherever and however they can without consideration for the water supply to other households.

This set-up has economic consequences, as well. A significant amount of money flows to the private sellers, who profit on people's shortage of municipal water. Some of these sellers are obtaining water directly from the municipal pipes known as *pepsi lines* – thus setting their own prices to a commodity that is



otherwise without charge. This practice is not clearly illegal under current laws, and given the inadequacy of the municipal system, the government is forced to accept private water as a means of distribution. Further, households and businesses alike face indirect water expenses: fuel for boiling water, time to collect and transport water, and medical treatment for water-related illnesses.

Thus Kurseong residents are indeed paying for water in a number of dispersed forms – all of which have the potential to be translated into a water tax for safe water delivered to their homes. This is especially important for understanding the wealth divide among households, because in the current

system the wealthier families can invest more to obtain and purify water, even though they face fewer water shortages than their downstream neighbours.

Economic recommendations:

- Set a graduated monthly water tax so that (to some extent) the wealthy subsidise water for the poor.
- Illustrate the current cost of water (fuel, municipal fees, private purchase), relative to a new fee structure.
- Collect the funds from the water tax in a water account managed by the independent water body.
- The initial water infrastructure and establishment of an independent water body should be funded through SIDA, Asian Development Bank, state government schemes, and any other relevant investment agencies.
- Identification and application for such funds should be managed through the project's contact at Artamus.

Socio-Cultural

“Water, water everywhere. Not a drop to drink.”

- Kurseong Elder quoting the Rime of the Ancient Mariner

There are a variety of socio-cultural stakeholders within Kurseong, including households, schools, small shops, tourism bureaus, and tea gardens to name a few. Schools and tea gardens in particular have the potential to be influential parties throughout the process of a changing water infrastructure, as they are large stakeholders. As some of the tea gardens are seemingly disengaged from the municipality's current initiatives, it is particularly important to engage them. An advantage to future water management is the location, willingness, and expertise of the Darjeeling Polytechnic Institute students and faculty within Kurseong.

It became evident from our interviews in Ward 15 that people feel alienated from the political process (likely due to



the former lack of representation). This disconnection manifests in a general lack of awareness concerning water. These gaps in awareness include: the overall water system, reasons for the current scarcity, connections between waste and water, and downstream effects. Already, residents note a better understanding since the appointment of councillors to the wards.

Within households there exists a clear dissatisfaction with the water system. This can be in relation to quality, timing of water availability, consistency in the system's operations, and quantity and quality available. People are concerned about not only the safety of drinking water, but also sanitation overall (due both to health threats and cultural/religious practices) and must use water to cleanse their bodies, clothing, and homes.

Few of the men in the community are aware of the amount of water used for cooking, washing and every day activities at household level. They do, however, recognise the need for a continuous water supply to avoid conflicts with neighbours over water. Many of them have seen the gradual decrease of supply and deteriorating infrastructure in Kurseong and mentioned how water scarcity has negatively impacted their lives.

Women, who are ultimately responsible for water management in the home, report that they are anxious to the extent of spending sleepless nights worrying about water collection and conservation. Sometimes women fight over access to water from public taps and leaks from exposed pipes. Further, women's positional opportunities within society are compromised by the water situation. Managing water is taking time away from their chores, and this interferes with the possibility of expanding their activities beyond chores.



However, it is important to note that women also help each other, and there is an informal support network for water. Women can borrow water from other households, get help identifying sources of water, and share their worries and challenges with each other.

Socio-cultural recommendations:

- Sponsor an information campaign to improve water awareness that clearly focuses on the water system.
- Create a relationship with KTV (the only local Kurseong news source) to run the information campaign. An example of the discussed forms includes a *water week*, wherein water is reviewed from different angles each day for a week.
- Establish a field-based seminar in which polytechnic students can enroll. The aims of this would be to further connect Kurseong Polytechnic Institute to the water project, better inform students about their local situation, and offer practical engineering experience. Further, this line of education could develop into a local water testing laboratory to improve the municipality's water management capacity.
- Formalise a women's water support group with a representative female leader from each of the wards.
- Elect one or several of these women to represent female community member on the local stakeholder group or the advisory board might be set up within the proposed independent water body.

Technological

Just the initial visual impression of Kurseong's water distribution system is enough to ensure an understanding that it has been very poorly managed – in fact, grossly neglected. The main lines were established during British rule some 65 years ago and have not been renovated since. Instead, a plethora of narrow iron pipes have been joined in parallel with others every time someone new needs a connection until every street edge is spilling over with a conglomeration of (some functional, some not) rusting, bent, and leaking pipes.

There are numerous issues with the piping system besides the chaotic plenitude. Some of the most significant include: placement above ground with easy access to the general public and susceptibility to breakage; abandoned, unused pipes clustered among the functioning ones; leaking during water flow; lines tapped into holes in the mains to draw extra water, including pepsi lines; heaps of garbage piled on top of eroding pipes; and running the pipes through the open air storm water drain channels.

Exacerbating the problems of the distribution system is the fact that the reservoirs are damaged and not used to full capacity. And although they are equipped with filtration systems, none are operational. Another complication for quality is at the delivery point, where because delivery is neither constant nor daily many households store water in 500 to 1000 Litre tanks. The cleanliness of these tanks, mixing of water types, and the storage time both threaten water quality when it is then drawn out.



At the heart of the problem is the lack of any comprehensive technological plan. Not only has this impeded the maintenance of the system, but it has also allowed for un-checked proliferation of both pipes and contamination.

To supplement water from the sources, some households and businesses are collecting rainwater to use for activities of less demanding quality such as cleaning floors and flushing toilets. However, there are not associated technologies for filtering the water to drinking water quality.

Technological recommendations:

- Develop a detailed, holistic technological plan for both distribution within Kurseong and management of the sources and delivery to Kurseong by the proposed independent water body. This should incorporate both aspects of maintenance, repairs, and long-term development. Some fundamental changes would include moving the piping underground and forming a loop, rather than linear branched distribution system.
- Recompose standards for how the system is branched, including appropriate lengths and diameters for piping.
- Execute system-wide repairs of leakage and unofficial connections.
- Include a focus in the plan on encouraging or subsidising rainwater collection and filtration systems and overall increasing the town's rainwater collection capacity.
- Address in the plan how to supply water to public taps such as drink-

ing fountains, toilets, or official access points for those who do not yet have a connection to the municipal distribution system.

- Install water meters at key locations around the town in order to improve usage monitoring capacity.
- Offer education and training to schools and tea gardens on larger-scale rainwater harvesting systems, as they have significant roof capacity.
- Evaluate the possibilities for, and logistics of, extracting unused iron pipes and selling them as scrap iron to help fund the process.

Legislative

It is difficult to analyse a legislative system that is not yet in place. Currently, there are effectively no bylaws and no binding requirements concerning the quality and quantity of water delivered to consumers. There are national standards for water quality, but sub-levels of government lack the capacity to monitor and enforce these standards.

Although PHE is mandated to deliver water to rural areas and to municipal borders, the effectiveness of delivery is compromised by rural demand for water and consequential tapping – a behaviour which has thus far been allowed for the sake of ensuring rural access to water, as per PHE's mandate.

Policing is also an issue within Kurseong, where people are not interfered from tapping municipal lines and extracting extra water, whether for personal use or private sale. Nor are those who do not pay taxes (including the small amount within the property tax) held liable for tax evasion.

Legal recommendations:

- Compose legal documents that outline the legal responsibilities of the independent water body.
- Establish legally-based government support of the independent water body, i.e. it should not be subject to political tides.
- Design and pass water laws and standards for quality and quantity that are clearly linked to the goals set forth in Kurseong's revised development plan.
- All operators, including private water sellers, must be required to comply with the legally established quality standards.

Environmental

Kurseong is nestled among the foothills of the Himalaya and experiences a temperate micro-climate. The area is subject to high levels of rainfall, with precipitation over four months and monsoon weather over an additional two months.

Our conversations with the local populations revealed that there are noted changes in climate and precipitation, especially changes in precipitation patterns to more intense rainfall over less time (for example, the monsoon season used to last three months).

Other anthropogenic changes are impacting the environment as well. Deforestation in the catchment is a serious concern for the long-term sustainability of water sources. Non-organic tea gardens practice heavy application of pesticides, which negatively affects water quality downstream in the basin. Both deforestation and tea cultivation promote soil erosion, which interferes with water retention and instigates landslides. Residents who are already dealing with a chaotic water system express concern over how these environmental changes will further affect their access to clean, sufficient water.

Within Kurseong municipality, the lack of municipal solid waste and wastewater management currently imparts grave environmental damage – especially water contamination within, and downstream from, town. Its environmental dynamics and water cycle are thwarted by the lack of any trees, parks, or green belt in the town centre.



Environmental recommendations:

- Include municipal solid waste and wastewater management as essential aspects within the overall water plan. These should be integrated into water management as they both impact water quality.
- As recommended in the technological section, encourage and subsidise rainwater collection systems to relieve pressure placed on singular sources.
- Organise regular water quality monitoring, both at the sources and in

the municipality. The Pollution Control Board, administered through the West Bengal government, is already an enthusiastic partner and is applying to establish regular testing at two of Kurseong's sources.

- Cooperate with the Forest Department to commence the practise of reforestation in forested areas.
- Work with tea gardens to encourage permaculture practices to increase biodiversity and decrease use of pesticides.
- Establish riparian zone conservation in the water catchment to help buffer water events, improve water quality, reduce erosion, and provide faunal habitat.

Part II: Notes and Experiences

Surveys

The survey questions were originally designed to obtain an understanding of quantitative water usage, but were later expanded to include a section on women's perspectives and altogether were decided to be open-ended so as to include further discussion on qualitative water usage. The resulting survey thus led to water usage "narratives" and enabled us to understand the people of Kurseong's relationship with water, as well as their quantitative water usage profiles (see quantitative results in next section). The final version of the water survey is available in Appendix A. It should be noted that the Darjeeling Polytechnic students translated the text into Nepali so as the survey could be conducted in the native language.

Quantitative Outcome from Surveys

Below, we present the results of the quantitative segment of the water surveys. The results are outlined in four graphs, two for each gender. This is due to the fact that they survey teams were divided by gender and thus conducting the questionnaires separately with women and men. For unknown reasons, women and men cluster water usages together differently and note different activities (i.e. combining water usage for cooking and drinking, amounts needed for cleaning house). Therefore, we have decided that for the sake of accuracy, the different genders' results are better displayed independently. We would like to note that excessive water usage does not appear to be a problem, and that household water practices appear to be in line with expected standard usage according to the World Health Organization (WHO) [6]. These results thus dispelled the notion that perhaps residents were wasting water and that conservation should be a focus area.

Outcomes of the interviews conducted in ward 15 are presented in the graphs below. Separate interviews were conducted with men and women in order to understand their perspectives on water usage. These interviews were designed with the aim of understanding daily water requirement of people staying in ward 15. We made an attempt to cover people belonging to different socio-economic and cultural background to perceive broader picture. Results of the interview have been displayed in the form of bar charts.

Figure 1 shows the how water used in the houses and what percentage is used for different purposes from women's perspective. It is clear that majority, almost 50%, of water is used for bathing and cooking in all cases. Depending on the water availability and ability to buy water the water usage pattern in ward 15 changed. Water other purposes like gardening and commercial purposes are negligible.

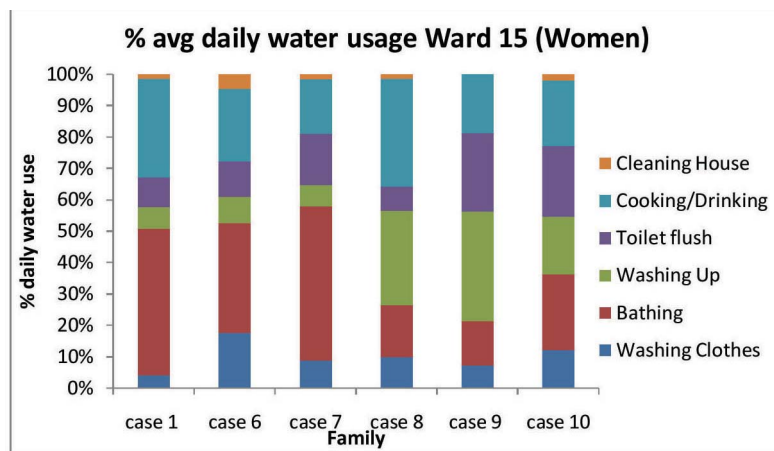


Fig. 1: % average daily water usage in ward 15 Women's perspective

After calculating the per capita daily average water usage shown in Figure 2, case 7 & case 8 came up with higher per capita water usage (around 50 lpd) as compared to other cases. One of the main reasons behind this could be economic condition enabling these families to buy water from private sources. However, per capita water consumption is on lower side for ward 15. It was evident from the interviews that women were very cautious about their water usage and made sure that they are not wasting water in summer when there is a scarcity.

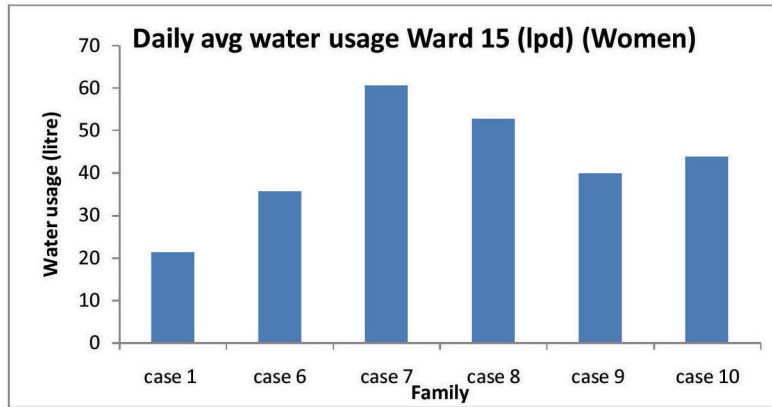


Fig. 2: Daily average water usage in ward 15 Women's perspective

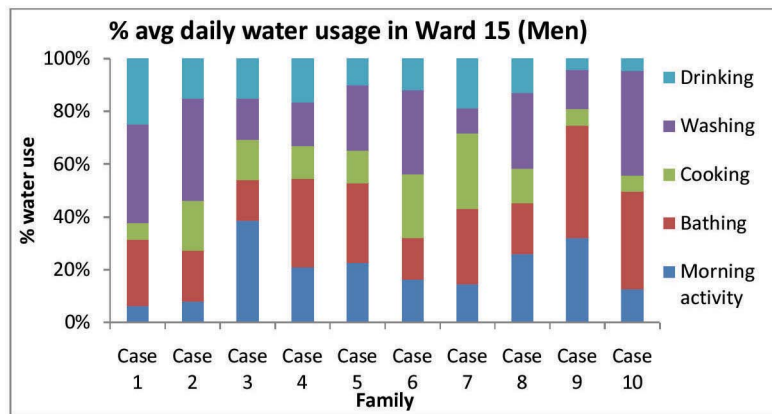


Fig. 3: % Average daily water usage in ward 15 Men's perspective

Interviews with men gave similar results (Figure 3) however, their understanding of water used for cooking, washing clothes and utensils was limited. Often they had to guess or ask women in the house about the water used for cooking and washing. Many men expressed that, they often prefer giving clothes to laundry instead of washing them at home due to water scarcity. Water used for bathing and washing clothes changed with the changing socio-economic and cultural background of the interviewee.

Figure 4 explains the present daily per capita water usage in ward 15 through men's perspective. Present per capita water usage is relatively on lower side for most of the families interviewed. Water consumption was extremely high for cases 9 & 10 who belong to the high income group and from

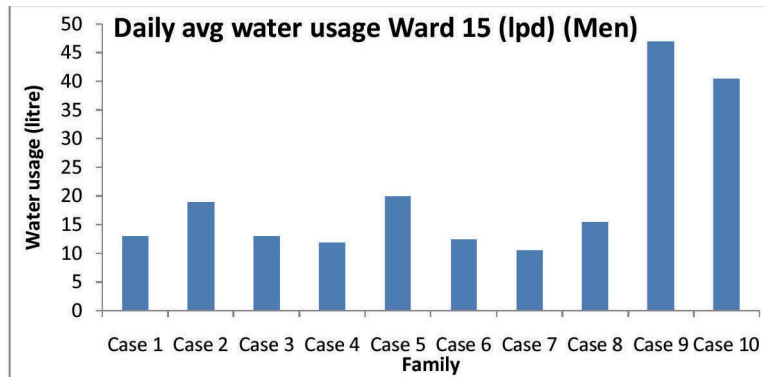


Fig. 4: Daily average water usage in ward 15 Women's perspective

Marwari community in ward 15. We, therefore, conclude that the average per capita daily water usage in ward 15 is highly dependent on the economic status and cultural background. People with better economic condition are able to buy water from private water suppliers. On the contrary, people belonging to lower economic group are highly dependent on the Municipal water supply to meet their water demands.

Information Campaign

One component that we suggest for the project moving forward is improved public education and awareness. Given that part of the success of integrated water management relies on conscious behaviour from consumers, an improved understanding of water in Kurseong is needed. Naturally, such a change can only occur gradually over the long run and is subject to confusion and misinformation. However, this project could be part of moving water awareness in the right direction. This could initially be broached by developing an information campaign that is easily understandable and accessible to most of the residents of Kurseong. In this way, people can start to develop an idea of where their water is coming from, where the water continuing past their homes goes, where it goes after disposal, how the system works, and how they can play a part in communication and conservation.

During the on-site research session in the weeks prior to our visit (consisting of Mattias Alisch, Robert Dahlström, and Johan Strandberg), reporters for KTV - Kurseong's local televised news station - followed the team during their activities in order to inform the community about their visit. Thereafter, the local students informed our team that KTV is the most effective way to reach members of the community. By adding impromptu questions to our survey about how households are obtaining local news, we were able to

determine that KTV is indeed the most utilized news source. This holds true even for those who do not own televisions, as they are receiving KTV news by word-of-mouth from their friends and neighbours.

On the afternoon of 16 April 2012, Prasad, Lara and Mr. Sanjay Prasad held a meeting with several reporters at KTV to discuss the possibilities of an information campaign running parallel to the project. During this meeting, they described to us how the news station is set up. KTV is a station that was created based solely on the passions and initiative of local residents, none of whom have any formal training in this area. KTV is the only media that specifically covers news in Kurseong, and every morning at 7:30 p.m. they broadcast news reports. They currently have about 260,000 viewers (which includes viewers from other towns).

In regards to running an information campaign, they were fully enthusiastic. They tempered their interest only with the reservation that any news piece should be approved by the Chairman before they would be willing to broadcast it (which Mr. Sanjay Prasad confirmed would not be a barrier). We specified that it is of utmost importance that the reporters themselves keep in mind the long-term nature of the project and that the news items should focus on water issues (such as rainwater collection and water conservation) rather than the project. We also highlighted that the news should not be a matter of rural versus urban water, but instead should look at water in Kurseong as well as the entire basin.

During the meeting, several ideas were put forth for how an information campaign might proceed. One idea was that KTV could host a *Water Week*, during which there would be daily stories that connect to water issues. Another idea was that they could utilize their regular *five questions* quiz. KTV uses this to check viewer's knowledge after the news: they ask five questions about what was reported, and if the viewer answers all of them correctly, he or she receives a prize. In this case, the five questions would relate to water. All of these ideas fell under an overarching concept that the news should be presented with a slogan such as *Water Is Life*. The reporters further offered that they could hire a female reporter to specifically report on women's issues relating to water.

Overall, the meeting was a success, and the reporters at KTV were eager to receive any updates from the project and are ready to start working. We recommend that, in order to proceed, one or two Darjeeling Polytechnic Institute students with an interest in communications should partner with the municipality, the project, and KTV to develop the information campaign. To kick off the effort, it would be beneficial to have a short orientation of

the project at that stage and ensure access to primers on the water issues. Largely, the details of the campaign and how it proceeds are subject to the passion of a select few and to the community's response to the effort.

Victoria School: Rainwater harvesting opportunities

On Monday, April 16th, Murat, Sanjay and Nicholas drove up to Victoria School and met with the principal. Victoria School is a government funded boarding school for boys that date back to the British times. Its sister school in Kurseong is the government funded Dow Hill School for girls. In addition to the 180 boarding students that live on campus, there are 120 students that spend the day on campus during the March to November school year. There are also an additional 100 staff members and families that live on campus.

The Victoria School campus is set in a beautiful location on the hillside overlooking Kurseong and the valleys below. It is a large campus full of mature trees and natural areas. There are several large building complexes, a church, and other building facilities that make up the main campus area. The buildings are in various states of disrepair, some are worse than others due to the fact that they are not currently in use. There is also a small community that has developed next to the campus to house the various teachers and employees that make up the Victoria School staff.

Victoria School has its own water supply from a private source 2 km uphill from the campus. There is a dedicated line that runs to the school from this source. The water is treated with a UV treatment and is stored at a central location then distributed throughout campus to localized storage and then again redistributed for specific uses. At this moment they use 30,000L per day for cooking, drinking, cleaning, bathing, and gardening. As with much of the mains outside the municipal borders, they have an increasing problem with illegal tapping of their line as communities settle around the lines; obviously this decreases both the quantity and quality of the water.

The quantity of water that the school receives is generally manageable. That being said, they could use more water between March and May when the students arrive back at school during this the dry season. When the monsoon arrives there is more than enough water. The quality of water decreases during the monsoon, and so during this period they add bleach to disinfect the water.

Victoria School seems to have an ambiguous relationship with the municipality as the campus is currently outside the municipal borders and has an interest in maintaining this to avoid paying property taxes, but they

still have a voting interest and are in some cases considered to be a part of Ward 1.

They maintain a good relationship with PHE and PHE helps them maintain their water line as much as possible. As we found out from PHE, however, it is not in their best interest to disconnect or discourage illegal tapping of the line as it is in their jurisdiction to provide water to the rural populations.

Several years ago the school submitted a proposal to PHE to increase rainwater harvesting capacity on the campus, but it was never realized. Given the location and amount of roofing on campus, it is obvious that Victoria School would be an ideal location for a rainwater harvesting project. The collected water could serve the school as well as the downstream community. There is ample space on campus to store water collected from the huge roof capacity on campus and the water could be used to augment the school's supply as well as within the municipal supply, as the entire municipality could be gravity fed from the campus. It was made clear, however, that this being a government school there would not be adequate funding from the school itself to support rainwater harvesting. Seeing as much of the water could be used for the community, the funding would have to come from elsewhere.

A rainwater project also provides Victoria School with a unique opportunity to use the rainwater system as a part of an environmental curriculum. There are many ways to engage students in a project as such, beyond just explaining to them what rainwater harvesting is and why they do it. Previously the school did have an environmental curriculum, but it was cut this year.

Water Sampling Education and Program

On Wednesday, April 18th, several people drove down to the Pollution Control Board (PCB) in Siliguri. Included in this group were:

Kurseong Municipality	IIIEE Masters Students	Darjeeling Polytechnic Students	Pollution Control Board
Mr. Sanjay Prasad,	Lara Hale, Nicholas	Apeksha Chhetri,	Ms. Sukriti, 2 more
Mr. Manoj Chhetri	Arsenault	Pratiksha Chhetri,	employees
		Shashank Gautam,	
		Deepam Rai, Pravakar	
		Gautam, Prashant	
		Chhetry	

The Water Sampling Training

The State Pollution Control Board (PCB) is a statutory organisation entrusted

to implement environmental laws and rules within the jurisdiction of West Bengal. It provides technical services to the Ministry of Environment and Forests. The PCB office in West Bengal has agreed to collaborate with the Kurseong Integrated Water Management project in two distinct ways. The first was to provide a water sampling workshop for the project partners and Darjeeling Polytechnic students and the second is to analyse the samples and report on the results.

The idea and ultimate goal for the training was to train the Polytechnic students in various water sampling methods so that they could conduct water samples in Kurseong over the next few months. The training session, led by Ms. Sukriti, Junior Engineer of West Bengal PCB, took place at three different locations in Siliguri. The first was a fairly urban river where the students took



samples by standing directly in the river. The second was a family well where the students learned a siphon technique to take samples. And the third was downstream of a hydroelectric dam where the students took samples from the concrete river banks. Of utmost significance during the training was conveying the importance of collection techniques in order to obtain the most accurate data from each of the samples. After the samples were taken we brought the water samples back to the lab where the PCB employees walked the students through some of the analysis techniques and introduced them to the laboratory equipment. Further to the sampling training and techniques, PCB also provided us with a field sampling manual that Mr. Sanjay Prasad has in both hard and digital copy.

During the training we were able to clarify the specific techniques that would need to be used for testing water directly from the piping system in Kurseong. Given that the oxygen balance of the piped water is not relevant in the same way as with a standing body of water, oxygen infiltration into the samples is not of high concern. What is most important is the sanitation of the sample collection methods. This entails using sanitized collection jars, funnels, tubes, and whatever other equipment is utilized. It also involves sanitizing the tapping point with flame to ensure that contaminants on the surface of the excess point do not contribute to the sample. Furthermore, it is essential that all of the samples are processed in a professional lab. It is insufficient to initiate an entrepreneurial lab. Beyond the matter of required

equipment, training, and staff, constant oversight and monitoring of the lab is needed. As such, we would recommend that until water testing capacity is dramatically expanded — an effort which would involve a sizeable amount of time, expertise, and infrastructure — the immediate testing should be conducted by PCB.

Reflections on the Sampling Training

We believe that the sampling training was successful in familiarizing the students with how to carefully sample water. I am not sure, however, that the students would feel overly comfortable taking the samples on their own at this point. Having said that, they are very astute and would likely be able to follow the manual and do a good job. Also, with some guidance from their professor, Mr. Anand Sharma, I believe that they could not only do a professional job, but also use it as an opportunity for learning — especially given that thus far their education has not involved any formal laboratory training.

An unfortunate aspect of the sampling training was that it was organised at the last minute so that members of our masters group could attend; and because of this, it does not seem that those providing the training were well informed about the motivations behind it. Therefore the training wasn't necessarily directed towards the students or the objectives of the project, and the intensity of focus on multiple methodologies and laboratory testing was perhaps intimidating to students without any former experience. Nor was it particularly focused towards sampling out of a pipe, as would need to happen in Kurseong. When Nicholas spoke about this with Ms. Sukriti, she mentioned that we should only be sampling at the sources and was fairly adamant about this, regardless of the explanation of our need to understand contamination that might occur through the pipe and at various points. She also mentioned that PCB has a proposal in place to begin sampling some of the sources in Kurseong. We believe that this needs to be clarified, and at the very least, coordinated.

A large barrier to beginning the sampling is the lack of equipment in Kurseong. PCB provided us with a list of the equipment necessary for sampling, transport, disinfection, etc., and the Polytechnic students possess this list currently. Another barrier to sampling is the logistics involved in getting the samples to Siliguri in good time. In order for some of the parameters to be properly analyzed, they need to get to the lab within six hours of the samples being taken. These logistics need to be organized and properly communicated beforehand in order not to spoil the samples.

To Do List for Sampling (not comprehensive, but a good starting point):

- Sample training in Kurseong and refresher for those having participated in PCB training
- Organize supervision of sampling process
- Purchase gear
- Identify spots
- Plan sampling schedule
- Plan sample transport logistics

Materials needed for water sampling:

- Plastic bottles of 1lt quantity.
- Glass bottles (100ml)
- Blue stoppered bottles (100ml)
- Bucket, nylon ropes, funnel, mug.
- Thermonmeter
- Glass stoppered B.O.D. Bottles (300ml)
- Glass bottle for reagent (50ml)
- Tray
- Ice box
- Tissue papers
- Field Protocol Papers
- Rubber tube for syphoning.

Further information regarding water sampling can be found at www.emis.wbpcd.gov.in

To conclude about the water sampling, we would like to re-emphasize that water sampling and testing is an integral part of building a complete understanding of where problems are occurring most intensively throughout Kurseong. It will also be important for establishing baselines that can be compared against after changes are made to the system — this is a fundamental method of demonstrating the extent of success of measures taken. We believe that the Darjeeling Polytechnic students are ideal candidates for training for and conducting the water sampling so long as

this is done in a thoroughly planned, well-supervised, precise manner. PCB will make a valuable partner in moving forward, but it will require clear communication of intended outcomes. Not only would the students' sampling benefit Kurseong's immediate efforts with their water system, but it would also expand the students' education; and perhaps stimulate an institute-wide interest in incorporating water engineering further into the Darjeeling Polytechnic Institute's operations. Thus, for water sampling to be as meaningful as possible, organised partnership with Kurseong Municipality, PCB, and Darjeeling Polytechnic Institute is invaluable.

Managing Expectations: Water Forum

On 18 April 2012 we organised an informal Water Forum, held in the Marwari Community Hall of Ward 15 and open to anyone in the community who might be interested. The councillor of the ward Mr Henry invited some of the influential and important leaders from ward 15 who can communicate the proceedings to the members of the community. We specifically invited some of the families that we had interviewed and community leaders. Dr. Murat Mirata, Mr. Sanjay Prasad, Mr. Manoj and the local students participated, as well. Our motivation for holding the Water Forum was simultaneously (1) to clarify for the community what our work over the preceding week and its purpose had been and (2) to manage the community's expectations for not only the immediate outcome from this visit, but also the overall project partnership.

It had become clear to us during our work that not everyone had a sufficient understanding of why we were there and what our work involved and that a basic understanding of the project's timespan was lacking. It seems that some residents expected that "the Swedes" would fix the water situation, perhaps even by bringing water from Sweden. The Water Forum gave us an opportunity to describe the purpose our on-site visit and the household interviews and also to explain the time frame for the project. In this way we could not only clarify our position within the project, but we could also emphasise that the residents of Kurseong have ownership of their system and that it is essential that they seek to become informed and to work with their ward representatives.

After this segment of the forum, we were then able to hear and respond to questions and comments from the audience. We had the overall impression that people were pleased to have a time and place in which to discuss the situation and were happy that we had come to Kurseong. We then also had the opportunity to thank everyone for welcoming us not only into the town, but into their homes and for making us feel so comfortable speaking and

working with them. Although the Water Forum had only a limited audience, we hope that those who were there are able to pass on the message via word-of-mouth to others in the community.

Geographic Information System (GIS) Recommendations

Currently, the available GIS data within the Kurseong municipality is very limited. There is not enough data for further analysis or to build water models in order to understand the complexity of the issues. Within the Kurseong municipality, Mr. Sanjay Prasad is the only one person who can handle GIS. His current job is very demanding, not leaving him with the time or capacity to gather and process a comprehensive GIS. Furthermore, the Darjeeling Polytechnic Institute does not have GIS component or capacity within their programme.

Current GIS dataset within Kurseong:

- Line data: pipe lines, simplified drainage , road lines, railroad lines
- Polygon data: municipality boundary, ward boundaries, land use
- Point data- educational facilities, health facilities, slums, public toilets, septic tanks, street lamps
- Raster data- N/A

Type of analysis the municipality has done:

- Hillside analysis to identify elevation

Why use GIS for integrated water management?

GIS is a digital mapping tool with multiple applications within multiple areas, ie -engineering, municipal administration, meteorology, and physical information, which all contribute to making decisions in a multidisciplinary environment.

One of the advantages and strengths of using GIS is the ability to build and analyze multiple layers of information in one place. For example, the ability to see pipe line information and socio-economic information on the same platform. Another example is the ability to see physical information along with infrastructure information, which could give the municipality an idea where pipes are vulnerable to natural disasters, such as often occurs with landslides.

Moving forward with GIS in Kurseong

Types of GIS datasets that would benefit Kurseong:

1. *Socio-cultural*: would help understand how different cultural groups consume water
2. *Hot spots*: where pipes have been damaged due to landslides or other natural occurrences,
3. *Raster images*: this can likely be obtained at a national GIS data clearinghouse

Suggestion and action for future

In order to secure a sustainable water supply and move forward with integrated water management in Kurseong the following GIS information and work would be beneficial:

- GIS analysis can further integrated water management in Kurseong by integrating hydro-geological characteristics, precipitation and evapo-transpiration patterns within the water distribution system models.
- It would be beneficial if the municipality could obtain GIS datasets from the national GIS data clearinghouse, the state GIS data clearinghouse, and datasets from universities.

Geological Survey of India (GSI), Ministry of Mines, Government of India. All data isn't accessible on their website, but huge potential with their archived data including GIS metadata and published as well as unpublished paper maps.

National Informatics Centre (NIC) has Remote Sensing and GIS division where develops spatial database.

Potential raster data by West Bengal Forest Department.

Department of Remote Sensing and GIS, Vidyasagar University, West Bengal and IIT Kharagpur may have own GIS data.

- Collaboration with Academic institutions in gathering datasets and information, processing analysis, and teaching GIS to municipal workers.
- It would be beneficial for Kurseong to explore software beyond MapInfo, which they currently use. Open GIS, such as QGIS and GRASS are good alternatives. An advantage to Open GIS is that the online community can aid in any of the applications.

- Digitizing existing paper maps would be useful. It can be done inexpensively through contracted work.
- The integration of Global Positioning System (GPS) technology with GIS. The portable and inexpensive GPS device can allow gathering accurate information by engineers on site. In addition, having accurate and up-to-date information should help engineers, too. The 2-ways integration technique is good at data gathering and identifying accurate positions.
- The Kurseong municipality should consider obtaining and processing the following data:

Soil data

Slope data

Land use data

Comprehensive drainage data

Land ownership data

Socio-economic data

Remote sensing data

Non-revenue-water data

Hydrological modelling

Landslide modelling

Part III: Tools and Tales

Integrated Water Management: Planning Process

The following section outlines a planning framework based on SOPAC's guide [7] to assess the IWM planning process in Kurseong. Although this project has been following an initial planning process previously set out, this framework provides a tool to identify holes in the current process or areas that have been overlooked. Obviously, such a project is quite dynamic and the various elements don't always fall into the rigid categories set out by this framework. This analysis has been broken down into identifying the current state of the Kurseong IWM project based on the guidelines set out by this framework. We recommend that this framework and planning process be revisited before and after every phase of the project in order to remind the team of elements that have been executed or overlooked.



Adapted from SOPAC [7]

Phnom Penh Water Supply Authority: An exemplary case of an independent water body

We feel that it is important to give a little more background and expand on the idea of an independent water body, as we feel that it is the core of our recommendations and should be seriously considered before moving forward with other technical solutions. It is clear that the water problems in Kurseong are not only technical problems, but also resulting from poor governance. As the Third World Centre for Water Management states “a lack of money, scarcity, and so on – they’re all excuses. The Problem everywhere is bad management.” [8]

An exemplary case of how the establishment of an independent water body can make a huge difference is in Phnom Penh, Cambodia. In Phnom Penh the establishment of the Phnom Penh Water Supply Authority (PPWSA) has drastically changed the water situation. Before the PPWSA, the water infrastructure and governance was in disarray, much like the situation Kurseong. Although they are in very different political and cultural contexts, it is worth comparing the current situation in Kursoeng with that of Phnom Penh. Many of the problems are very similar and the solutions implemented in Phnom Penh are not unimaginable for Kurseong. [5]

	IWM Planning Process Details	Kurseong Situation
Policy	<ul style="list-style-type: none"> • Guiding principles and direction towards action • Political Commitment to sustainable management of water resources 	<ul style="list-style-type: none"> • Currently no policy that addresses water resources • No concrete commitment to IWM, more of a hope • Policy implementation would be ideal • Need guidance
Awareness	<ul style="list-style-type: none"> • IWM must bring together diverse stakeholders and raise awareness to a level where they value, understand and want to participate in IWRM. • Not all stakeholders will have an understanding • Stakeholder identification and potential contribution, influence and importance 	<ul style="list-style-type: none"> • Stakeholders have been identified and gathered • Stakeholder group has been formed and will be meeting regarding water • Awareness is being raised and the stakeholders are gaining better understanding • They don't necessarily understand that the solutions are long-term
Consultation	<ul style="list-style-type: none"> • Current problems • Strength and weaknesses in the systems (institutional, laws, infrastructure) • Identification of priorities 	<ul style="list-style-type: none"> • Consultations have been made and are ongoing • The problems are known on various levels. • Strengths: <ul style="list-style-type: none"> • Adequate water supply at the source • Political willingness • Community willingness • All partners are committed to the project • Weakness: <ul style="list-style-type: none"> • Infrastructure • Management • Incentive to change • Funding models • Water policy • Understanding of water usage • Priorities are somewhat confused and not unified. Depends on perspective (municipality, project partner, community)

Contd.

	IWM Planning Process Details	Kurseong Situation
Institutions	<ul style="list-style-type: none"> • Resourcing the process (Manpower, meetings, papers, awareness) • Analysis of options (financial, environmental, political feasibility) • Establishing initial institutional bonds 	<ul style="list-style-type: none"> • The process has been well resourced and there have been many meetings • Resources for planning seem to be strong • Resource and capacity for implementation • Options for implementation are being considered now • Financial and political aspects of these options should be further considered • Institutional intentions should be made more clear (ie – municipality has large expectations that the problem will be solved by the Swedish project)
Information/ Assessment	<ul style="list-style-type: none"> • You can't manage what you can't measure • Current assessment of water resources and land use • Framework for monitoring and assessment • Identification of data based on priorities 	<ul style="list-style-type: none"> • Measurement of water resources is not totally accurate, understood or planned. • Sampling is in the process of being planned • Survey's have provided some sense of usage baseline, but many parameters can only be estimated • Land has been observed in the catchment and clearly has an effect on the water supply and quality • A framework for monitoring and assessment must be designed and implemented
Coordination	<ul style="list-style-type: none"> • Establish new or use existing inter-sector coordination mechanism • Communication plan • Coordinate and monitor activities within stakeholders, agencies, orgs, and communities • Coordinate establishment of key IWRM characteristics and acceptance by stakeholders 	<ul style="list-style-type: none"> • Stakeholder group plans to meet every 4 years. • Activity monitoring can occur through these four meetings a year of the stakeholder group. • There seems to be an ongoing establishment of good coordination within the project partners and municipality • Expectations, however, must be managed better • Communication of the implementation plan and

Contd.

	IWM Planning Process Details	Kurseong Situation
Monitoring and Evaluating	<ul style="list-style-type: none"> • Progress Assessment (prevent failures, solve problems) • Draft Plan Reformulations (Periodic review, incremental approach) • Testing the Waters (review of plans) 	<p>municipalities role could be better</p> <ul style="list-style-type: none"> • Progress assessment was completed after the first phase from the Swedish side • Unclear if there has been a progress assessment from the folks in Kurseong • Plans have not been explicitly seen, but tasks for the various phases have been drafted. A master plan would be a good steering tool • Assessment of trajectory should be conducted after every phase • Needs to be done now that the situation and stakeholder expectations are better understood.

	Phnom Penh, Cambodia(before PPWSA, pre 1993)	Kurseong, India(current situation)
Infrastructure Actions	Disrepair Patching up problems as they occur	Disrepair Patching up problems as they occur or No actions
Functioning Connections % of Non-Revenue Water (given away, lost, stolen) Alternative Sources	1/5 th of the residents 72% Purchasing water, stealing water, purchasing stolen water	Worse or not much better(only when water is on) 100% Purchasing water, stealing water, hoarding water
Staff	Under qualified, underpaid, unmotivated, and inefficient. Too many employees	Seemingly unmotivated and inefficient. Part of the problem of illegal tapping. Lack of responsibility and liability Too many employees(pipe fitters) Threat to public health No metering
Water Quality Metering Reference	Threat to public health Poor or no metering Biswas & Tortajada (2010) [5] <i>The Economist</i> (2011) [8]	

The following table presents a fairly simple comparison between several water related aspects of Phnom Penh and Kurseong before the establishment of the PPWSA:

The PPWSA was able to turn around the water situation in Phnom Penh with the following outcomes:

- Non-revenue and unaccounted for water less than 6%
- From 65,000 to 300,000 cubic meters a day
- Water revenue system that provided water to both the wealthy and the urban poor
- Recruitment and maintenance of engaged and reliable staff
- High quality of water
- Metering and use based fee structure
- Reliable infrastructure
- No need to purchase water or illegally tap the pipes [5]

PPWSA was able to achieve these outcomes with a long-term vision and hard work. It certainly did not happen overnight, but it has proven to be a long-term sustainable solution, both environmentally and economically. The PPWSA did seek out international funding (Asian development bank, etc.) for the original infrastructure overhaul and the implementation of metering [5]. This step requires patience, but doing it properly is beneficial in the long-term. Although PPWSA is a government owned utility, it has been de-politicized and runs more like a private entity. In fact, it makes profit and pays taxes. Functioning like a private entity has allowed PPWSA to rid itself of much of the inefficiency that was debilitating the old water system, such as the corruption and inefficiencies within the employees. [5]

Although we wanted to present this section for your further understanding of the types of independent water bodies that are exemplary, this overview does not give an entire view into the inner workings and establishment of the PPWSA. For a detailed overview please refer to Biswas & Tortajada (2010).

A Fictional Story of a Water Reality in Kurseong, India

The following story is a fictional creation based on the team's learning of individuals' challenges to collecting sufficient water in Ward 15 of Kurseong. None of the details are an exact replication of any single person's interview, and any similarities of name are purely coincidental.

Sarita Khadka wakes in the morning at 4:30am before the sun rises over the brim of the Himalayans. She pads softly – barefoot – across the room and slides the lid off of a pot containing water carefully conserved from collection two days ago, the last time the pipes delivered anything. She delicately scoops palms of it over her face and the backs of her hands and lets the water run from her body into a shallow container. Even though she washed up before sleeping, it runs off of her skin as a greyish colour. She uses a cupful more to brush her teeth and then moves quietly to dress herself in a sari and warm sweater.

Outside, the centre of town is deserted, with corrugated metal gates locked tight over the shop entrances. The only other activity is a pair of ragged dogs nipping at each other's tails, two men setting fire to a swept up pile of mixed garbage, and other women emerging from their multi-coloured doorways, carrying large plastic containers for collecting water. Sarita pulls a deep breath of the cool, hazy air and starts through the abandoned market, hauling her own buckets – one 10- and one 15-liter tank – at her sides. Like a tiny insect creeping through the pellets of dirt, a trickle of water slides down the path; and in an instant, Sarita is in a panic. The water means that the pipes are running now, at 5:10am instead of the anticipated 5:30am tap opening, and in a flash, Sarita gathers up her skirts and runs up the alley, her empty water buckets thumping painfully against her legs.

A pile of multiple narrow pipes with the collective circumference of a Banyan tree trunk lies slumped against the side of the stairway leading up to the other communities. There, water comes gushing forth through jagged breaks and clean-cut holes in the iron pipes. This is what she and other residents call the “public” tap. Already, a crowd of anxious women squeezes in amongst each other, trying to dip the mouths of their containers under the generous spill. So much water spurts forth from so many tiny openings that the women cannot possibly collect it all, and in lieu of their efforts, a wide, thin river flows downhill, pulling up sewage and clothing dyes and fragments of garbage along its journey to the drains. Sarita tries to push her way to one of the running leaks, her sandals making wet slapping noises, until an elbow slams into her side. “You get back! I need this water!” But Anita calmed the other woman and insisted that Sarita, too, should be able to fill her two small buckets before the water shuts off, which could happen at any moment. Every morning Anita poises among the women, having assumed the responsibility of keeping the peace during the tense negotiations over water collection.

At home again, Sarita now has 25 litres of water, enough to cover cooking and drinking for one day for her, her husband Sunil, and their 12-year old daughter Vanita. But still, she must find another 25 litres for cooking and drinking tomorrow since the taps most certainly will not run two days in a row, in addition to 30 litres for bathing (which they will have to forgo today). She has not yet washed

their clothing this week and dreads finding the further 50 litres needed for that. These numbers sear like branding irons on Sarita's mind, burnt into her thoughts from her repeated failures to collect enough to care for her family. Today she will visit Dhobi Kola to take water directly from the source, but this will mean walking back and forth carrying the water herself at least four times. She lets her mind go blank as she sets the morning's water on the lit kerosene stove to boil. She seizes the brief ten minutes to forget about water while it purges.

Before going to Dhobi Kola since the timing is right, Sarita checks at the railway station for the water that runs freely when the trains pass through – but already a gang of women cluster around the taps, and this time there is no one to mediate. Discouraged and sticky with dust and sweat, she starts off towards the reservoir. A man steps in her way and grabs her arm, tugging her towards his truck. "Why walk all over the place for water? Why struggle with those others? Come, and we will take hundreds of litres back to your home." She wrenches her arm away from him. "Nahi, sir, I cannot afford to buy water. And last week my neighbour's daughter got sick from your water, even after it was boiled," she says accusingly. "Well then get off! I don't need to waste my time on sewer rats," and with that, he spits on the rails and turns away.

In the darkening room in the evening, Sarita sets herself down on a sagging mattress and takes her left foot into her hands, pressing her fingers into her sore heels and arches. In between preparing meals, cleaning the house, sweeping out front, and caring for Vanita, she just barely found the time to make the several trips to the reservoir. Still, tomorrow she must make time to wash clothes, and she pictures in her mind being bent over a deep pan, the skin on her hands cracking from scrubbing in the soapy water. But how will she find time to visit Dhobi Kola again the day after? Vanita's teacher has requested to meet with her, and she will have to walk up the long hillside to where the school is perched over the green slopes.

She lies down, stretches out, and directs her eyes to the bulge in the ceiling where termites have eaten away the structure. Her elder cousin and his wife live close to Vanita's school, and their house-connected tap runs for a full hour-and-a-half every other day. Would they be willing to lend Sarita water to carry back down the hill to her little home? Last time she asked for help, they turned up their noses and told her she should not be so lazy and should work in Sunil's shop if she needs money. But it's not about money at all – it's just water she needs. Outside she can hear the pigeons cuddling and croaking. She tries to shut off her mind, but it keeps wandering up pipelines. Up drains. Up creeks and up rivers. Up to where the Himalayan pinnacles cry clean water from their icy eyes. And as her dreams wash over her, she drinks.

Conclusion

From the observations made during the visit and in-depth understanding gained from the interviews conducted we have identified that the water issues in Kurseong are a result of weak governance, inefficient water management, and a failing infrastructure. The newly elected Chairman and the Municipal Board of councillors are committed to bring about changes in

the existing system in collaboration with the Indo-Swedish Integrated Water Management project. However, it is evident that the municipality is heavily dependent on this particular project to ensure safe and secure water supply to the local population. The core of our recommendations for the future is to depoliticise the water management system by establishing an independent water body to govern the water system and infrastructure. This independent body should be mandated by the government, but operate independently and more like a professional or private entity. There are many examples throughout the world that could guide this process and transition including the case from Phnom Penh, Cambodia [5]. We also recognised the need to consolidate the common vision for the IWM Project, as it involves various partners having different roles and expertise. The consolidation of these visions should consider the various aspects and recommendations made in this report. Certainly there is an opportunity to manage the water scarcity in Kurseong with stakeholder cooperation and concerted efforts of the project partners. Having said that, we do not believe that the project should move forward solely because there is funding to do so. The livelihoods of an entire community depend on the joint efforts of the project partners and the local stakeholders, and it could be detrimental to this community if the IWM project is not properly carried out. As the project moves forward there should be considerable measures taken to assure that all stakeholders are engaged and have the capacity to sustain a safe and secure water supply for generations to come.



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List of people interviewed

- Mr. Sanjay Prasad, Kurseong Municipality, Urban Planner, 12th April 2012
Mr Manoj Kumar Chhetri, Kurseong Municipality, Sub Assistant Engineer, 12th April 2012
Mr. Sameer Deep Blon, Kurseong Municipality, Chairman, 12th April 2012
Mr. N. K. Sharma, Executive Engineer, Public Health Engineering Department, 13th April 2012
Mr. Raja Banerjee, Makaibari Tea Estate, Owner, 14th April 2012
Mr. Ramesh Subba, Kurseong Municipality, Sanitation Inspector, 16th April 2012
Mr. (Unknown Name), Victoria School, Principal, 16th April 2012
Dr. Angsuman Das. Kurseong Municipality, Health Officer, 16th April 2012
Sister (Unknown Name), Saint Helen's School, Kurseong, 17th April 2012
Mr. A. K. Agarwal, Principal, Bellevue Secondary School, 17th April 2012
Mr. Mahipal Singh, Project Manager, Darjeeling Tea Research Board, 17th April 2012

Appendix

Appendix A: Quantitative and qualitative survey questions

General Questionnaire

How many people live in your household?

Adults -----

Children -----

1. General Water Use

What is the source of water you use at home?

How is the water connection established in the beginning?

Do you use any other water sources other than the source at home? If yes, from where?

Where and how do you store water in the house? If you use storage tanks how often do you clean them? How many tanks?

Do you mix water coming from tap and water bought from private supplier?

Do you boil water before drinking? What fuel is used to boil water?

Is water always available at your home? What time of the day and for how long you receive water at your home?

What is the most important water use in your home?

If any, what are your main complaints about water?

2. Morning Activities

How much water are you using for morning activities (incl. brushing teeth, toilet use) per person?

- 1.5 - 2 liters
- 2 - 2.5 liters
- 2.5 -5.0 liters
- 5.0 - 10 liters
- more than 10 liters

Do you have a toilet? What kind of toilet? What happens to the sewage?

3. Bathing

How much water is used for bathing per person per day?

4. Cooking

How much water do you use for cooking food each day?

5. Washing Clothes and Cleaning Utensils

Do you use household water for washing clothes or cleaning utensils? If not, what is the water source to wash clothes?

If you use household water, approximately how much water you use for washing clothes and utensils per day?

6. Clean Up After Outside Work

Do you wash up (clean hands and legs) after coming home from outside? If yes, approximately how much water do you use each time?

How many times per day do you wash when coming inside?

7. Drinking Water

How much water do you estimate that you drink each day?

8. Garden

Do you have a garden? If yes, how often do you water the garden?

Is there any other use of water in the house? Approximately, how much water is used for other purposes?

Are you satisfied with the amount of water that is delivered to your house? If not, please explain what kind of improvement you would like to see?

Do you throw 'old' water to fill up vessels/tanks everyday?

Are you satisfied with the quality of the water reaching your house? If not, please explain why? Also tell us what kind of improvement you would like to have?

Is there any conflict with neighbors concerning water?

How do you think clean and plentiful supply of water through-out the day will be good and improve life style?

How much would you be willing to pay for sufficiently clean drinking water?

Average water usage per household per day -----

Women's Perspective

(Only conducted with women by women, in private)

1. What are your household responsibilities concerning water?
2. How many hours per day do you spend collecting and transporting water?
3. What would make working with water (washing dishes and clothes, cooking) more convenient and easier?
4. Do you ever worry about having enough water?
5. Do you talk about water problems with other women, friends or family?
6. What would it mean for your free time to have water delivered throughout the day?
7. How would having safe and clean water delivered by pipe to your home change things for you and your family?
8. How would you want the water system to be different for your children?
9. If you had to choose (clarifying that this is hypothetical), would you prefer to have more quantity of water or better quality of water?
10. Are you aware of the water project ongoing in your community?

Appendix B: Activities performed in Kurseong

Day and date	Task/Activity	Outcome
Tue, April 10	Arrival, In the evening meeting with local students Apeksha Chhetri, Pratiksha Chhetri, Shashank Gautam & Deepam Rai	Bonding with the local students and to understand their views on the issue
Wed, April 11	Casual walk in the town and observing the overall situation Plan the week and decide the steps to be taken Meeting with Johan Sandberg and Murat Mirata	Better understanding of the project needs and expectations from us as a group
Thu, April 12	Morning meeting with Sanjay Prasad, Lunch meeting with students to finalize interview surveys, Introduction to Manoj Chhetri (SAE), Meeting with chairman	Understanding Indian administrative structure around water issues and roles of PHE & State bodies. Insights into role of Municipality and its responsibilities in water management
Fri, April 13	Samir Deep Blon, Meeting with Johan Sandberg to plan the week Starting household surveys with men and women groups	The interviews helped in qualitative and quantitative assessment of water usage in ward 15
Sat, April 14	Visit to the Makaibari Tea Estate Interviewing people in ward 15	Rain water harvesting by the Makaibari Tea Estate Interviews further revealed the value/importance of water and water awareness amongst the people in ward 15
Sun, April 15	Visiting ward 15 early in the morning to observe the situation when water is distributed Organization of data generated through surveys	Observations in the morning consolidated the fact that there is no shortage of water. Large amount of water is wasted during distribution
Mon, April 16	Visiting the pipes upstream of ward 15 and interviewing people in ward 5 & 8 Conducting interview with the restaurant owners in ward 15 to understand their water usage	Typical upstream mentality in ward 5 & 8 For restaurants water is important and they don't have any commercial legal connection
Tues, April 17	Meeting with PCB, water testing training (incl. Students),	Schools are not motivated or encouraged to harvest rain water. There is a weak possibility to engage Tea research board in the project due to bureaucracy. Learning water sampling.
Wed, April 18	water forum, Meeting Mr Anand Sharma in Darjeeling Polytechnic Institute report writing	Water is an important issue for everyone in the ward 15 and they are looking forward to the IWM project to receive water in future.
Thurs, April 19	Departing	

26

SHGs and Women Empowerment: A Village Study

**Madhurima Kundu, Daya Shankar and
Pranab K. Chattopadhyay**

The need of the hour is sustainable development and this can be achieved only if women are economically and socially empowered and the society makes a move forward to gender equality. In present day context, violence against women, illegal human trafficking for forced prostitution is rampant because women are not equipped either with proper education or health to fight their situation and lead a life of dignity. Majority of the world's women are still suffering in the clutches of poverty. Of the world's poor 70% are women. Most of the women continue to be a part of the informal labour group. In this era of advanced technology, women still die due to childbirth. Women's role in politics is also very less, which might be the reason for lack of policies favouring gender equality and women empowerment. We can easily conclude that the situation of women is vulnerable in the 21st century.

The publication by the International Labor Organization "Status of Women" describes this situation:

They produce half the world's food supply and account for 60% of the workforce but comprise only about 30% of the official labour force, receive benefit of only 10% of the world's economy and surprisingly own less than 1% of the world's real estate. They have little access to productive resources and negligible control over family income.¹

The economic situation of women is improving, but not at the desired rate. With introduction of microfinance, women are gaining more control over economic resources, which impact their social lives positively to a certain

¹www.ilo.org/public/english/region/asro/bangkok/library/download/pub96-01/Chapter2.pdf

extent. Microfinance is a major step towards women empowerment. *Micro Finance refers to a collection of banking practices built around providing small loans (typically without collateral) and accepting tiny deposits.*² Studies have found that micro finance programs increase self-confidence and self-esteem of women. Women's financial contributions help them to earn greater respect from family and society. It leads to increased decision making power and increased involvement in political institutions. Self-help groups (SHGs) are a type of micro-finance institution predominant in India.

National Bank for Agriculture and Rural Development (NABARD) coordinates the micro-finance between Self-Help Groups (SHGs) and the financial institutions such as banks, Regional Rural Banks (RRBs). SHGs in India are dominated by women. SHGs help women both economically and socially.

This report puts forward the state of SHGs in the village of Loba in the Birbhum district of West Bengal, and the effect of these SHGs on the women's economic condition, and also the level of capacity building triggered by these SHGs among the women of this village.

“Women Empowerment” is defined initially. The need for women empowerment comes with the state of women in India and in West Bengal. SHGs and the case study of the village of Loba is given thereafter.

Women empowerment

Empowerment is a buzzword of the present time. It is a process by which the powerless gain control over their lives through control over material assets, intellectual resources and ideology. People are said to be empowered when they have the right and freedom to take decisions and make choices. Some define empowerment as a process of awareness, of conscience building and of capacity building leading to transformative actions. With respect to women, empowerment involves building an equitable power relation between both sexes. This power relation has to be evolved at multiple levels- family, community, market and state level and especially at the psychological level of women so that they can assert their ability and decision-making power within the society dominated by patriarchal thoughts and gender-biased roles.

²http://shodhganga.inflibnet.ac.in/bitstream/10603/3936/11/11_chapter%205.pdf

According to the “Guidelines on Women’s Empowerment” given by the United Nations Population Information Network:

*Women’s empowerment has five components: women’s sense of self-worth; their right to have and to determine choices; their right to have access to opportunities and resources; their right to have the power to control their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally.*³

This definition for women’s empowerment given by the UN holistically defines all the aspects of women empowerment. Women empowerment is not just helping women improve their economic situation, but also changing the present social structure which undermines women and their work in a way that they get status and respect in this world equal to their male-counterparts. Women can be rightly said to have been empowered when all discriminations against women ends.

Indicators of women empowerment

The Beijing conference of 1995 had agreed upon certain qualitative and quantitative indicators of women empowerment. These are as follows:

Qualitative

1. Increase in self-esteem, individual and collective confidence;
2. Increase in articulation, knowledge and awareness on health, nutrition reproductive
3. rights, law and literacy;
4. Increase a degree in personal leisure time and time for childcare
5. Increase on decrease of workloads in new programmes,
6. Change in roles and responsibility in family & community;
7. Visible increase on decrease in violence on women and girls;
8. Responses to changes in social customs like child marriage, dowry and discrimination against widows;
9. Visible changes in women’s participation level, attending meeting, participating and demanding participation;

³Guidelines on Women’s Empowerment www.un.org/popin/unfpa/taskforce/guide/iatfwemp.gdl.html

10. Increase in bargaining and negotiating power at home, in community and the collective;
11. Increase access to and ability to gather information;
12. Formation of women collectives;
13. Positive changes in social attitudes;
14. Awareness and recognition of women's economic contribution within and outside the household;
15. Women are decision-making over her work and income

Quantitative Indicators

- A.** Demographic trends
 - Maternal mortality rate
 - Fertility rate
 - Sex ratio
 - Life expectancy at birth
 - Average age of marriage
- B.** Number of women participating in different development programmes,
- C.** Greater access and control over community resources/government schemes-crèche, credit cooperative, non-formal education,
- D.** Visible change in physical health status and nutritional level,
- E.** Change in literacy and enrollment levels,
- F.** Participation levels of women in political process.

Condition of Women- A World view

The status of women differs from country to country and region to region; sometimes depending even on religion, caste and creed. But the overall scenario remains the same. The "Guidelines on Women's Empowerment" given by the United Nations Population Information Network describes the situation of women to a great extent:

*The Programme of Actions further recognizes that in all parts of the world, women are facing threats to their lives, health and well-being. They receive less education than men and are over-reputed among the poor and powerless.*⁴

Threats to a woman- physically, psychologically, socially and economically, cut across boundaries of countries, regions and religions.

Women, since long, have been resisted from forming a part of the workforce. This resistance has come from fathers, husbands and the men in the workforce. Husbands were apprehensive about their wives getting employment as it would hamper their status inside as well as outside the household; it would even lead to a change in the social structure and responsibilities would change hands. Consider a husband who is the sole earner of his family. He is supporting the family through his hard-earned money. He can easily discard bearing the household responsibilities including child rearing and other household chores, and thrust all these responsibilities on his wife, who is earning nothing. Now, if this wife gets a job, she will be committed to her work. She, now, will have a justification of not doing the housework fully. Even she, like her husband would come home tired from her work. The husband would not be able to discard his household responsibilities. There would be a share in all spheres- inside and outside the home. Reduced services from women and increased work at home due to women's employment made men feel threatened. Jobs made women independent, increased contacts at workplace and autonomous earning capability. Standards set by society demanded that women remain unemployed, so that a husband retains his power over his wife. Though a wife's income would increase family earnings, but still, husbands opposed her being employed since it would diminish his power over his wife and also his status within and outside the family. But, financial needs of families made women go out and seek employment during the 19th century. Men would then prefer their wives to get low paid, low status jobs as it would preserve their sense of dignity. Male workers also resisted entry of women in the workforce as they felt that women narrowed their opportunities of getting employment. They also argued that women's employment would reduce their moral and natural sensibility. Women faced resistance from all spheres.⁵

⁴Guidelines on Women's Empowerment www.un.org/popin/unfpa/taskforce/guide/iatfwemp.gdl.html

⁵<http://www.nyu.edu/classes/jackson/future.of.gender/Readings/DownSoLong—Economy.pdf>

The questions surrounding women's empowerment, the condition and position of women have now become critical to the human rights based approaches to development. The Cairo conference in 1994 organized by UN on Population and Development called attention to women's empowerment as a central focus and UNDP developed the Gender Empowerment Measure (GEM) which focuses on the three variables that reflect women's participation in society – political power or decision-making, education and health. 1995 UNDP report was devoted to women's empowerment and it declared that if human development is not engendered, it is endangered, a declaration which almost became a leit motif for further development measuring and policy planning. Equality, sustainability and empowerment were emphasized and the stress was that women's emancipation does not depend on national income but is an engaged political process.

Human development report since 1999 demonstrate that practically no country in the world treats its women as well as men according to the measures of life expectancy, wealth and education. Developing countries present especially urgent problems where caste and class result in acute failure of human capabilities of women. Women in this part of South East Asia lack essential support for fully functioning human lives. Within the country there are many issues to be addressed closely.

Condition of women in India

Status of women in India since ancient times

The history of the status of women in India is very interesting. During the Early Vedic Age, women enjoyed equal status as men, took active part in the social and political life, married at a mature age, and were allowed to choose their husbands. Widows were allowed to re-marry. The Vedic culture gave women high regards. The feminine forms of the Hindu Goddesses had taken form during this era. The Goddesses came to represent different qualities and powers; for example, goddess Lakshmi is the goddess of fortune, Saraswati- the goddess of learning, Durga- the goddess of power and strength. Women were encouraged to be educated. Women could undergo the sacred thread ceremony if they desired so; but this practice is meant only for men at present times. Women could perform sacrifices and had equal share in performing religious rites. The respect given to women during the early Vedic period can be understood from the different works of literature of this age.

"Women must be honored and adorned by their fathers, brothers, husbands, and brothers in law, who desire their own welfare. Where

women are honored, there the gods are pleased; but where they are not honored, no sacred rite yields rewards. Where the female relations live in grief, the family soon wholly perishes; but that family where they are not unhappy ever prospers. The houses on which female relations, not being duly honored, pronounce a curse, perish completely, as if destroyed by magic. Hence men who seek (their own) welfare, should always honor women on holidays and festivals with (gifts of) ornaments, clothes and (dainty) food.” (Manu Smriti III.55-59)

The status of women declined in the late Vedic period. Women were banned from attending social assemblies. Child marriage became common. Education for girls was no longer a priority. Women could no longer perform religious rites. Women have been classed with wine and gambling in the Yajurveda. The status of women started declining.

The status of women declined further with the successive invasions by the Greeks, the Scythians, the Parthian, the Kushans and others. Men were required to wage wars. Women needed to be protected from abductors. Thus, boys were desired in the family. Freedom of women was curtailed in order to protect them. Early marriage was adopted as a measure to protect girls. The social structure started deteriorating as a result of war atrocities and political turmoil.

The practice of *sati*, child marriage and a ban on widow re-marriage became common practice during the Medieval period. *Jauhar* was practiced among the Rajputs of Rajasthan to protect the honour of women. Polygamy was prevalent among the Hindu Kshatriya rulers. The advent of the Mughals brought in the *purdah* system. Women were restricted to the *Zenana* areas of the house in many Muslim families.

During the British Rule, many reformers fought for the betterment of women. Raja Ram Mohan Roy's efforts led to the abolition of *sati* in 1829 in the Bengal Presidency by the then Governor General William Bentinck. Efforts by Ishwar Chandra Vidyasagar to improve the condition of widows led to the Widow Remarriage Act of 1856. Rani Lakshmbai, queen of Jhansi, led the Revolt of 1857 against the British. Begum Hazrat Mahal, co-ruler of Awadha had also led this revolt. In 1917, the first women's delegation, supported by the Indian National Congress met the secretary of state to demand women's political rights. Many women took part in India's struggle for independence. Some of them were Dr. Annie Besant, Vijayalakshmi Pandit, Aruna Asaf Ali, Sucheta Kriplani, Kasturba Gandhi. Netaji Subhas Chandra Bose had formed the Rani of Jhansi regiment within his Indian National Army, which consisted only of women. Women were coming

forward even in the field of education. Kadambini Ganguly and Chandramukhi Basu were the first women who obtained a bachelor's degree in 1884 after much resistance from the society and college authorities. Peary Charan Sarkar, a former student of Hindu College, Calcutta, and a member of "Young Bengal", set up the first free school in 1847 in Barasat. Women's participation in political life saw an increase during the British Raj. Also, the efforts of many reformers led to an improvement in their social life.

Status of women in India at present times

After Independence, the Constitution framers guaranteed the Right to Vote to women, a right which was restricted only to men. India established Universal Adult Suffrage at a time when even many European countries didn't guarantee this right to its women citizens. The Constitution of India guaranteed the Right to Equality between both sexes.

In spite of this constitutional right, women are treated as subordinates in the Indian society. Considering girls to be "porerdhon", parents do not spend much on their education and nutrition. Girls are still considered to be a liability and boys an asset. This thinking and attitude leads to rampant female infanticide and female foeticide. Women are married off at an early age to preserve "her virginity and family honour". The extent of discrimination on the basis of sex also varies depending on the caste of the women. Lower caste women are often subject to higher level of discrimination; upper caste men commit crimes such as rape, molestation against them on the pretext that the upper caste has a right on the lower caste.

*Though the constitution has provided equality of both the sexes man and women but biological condition of the female and developed sense of subordination demand extra protection for them. The reason is that "women's physical structure and the performance of certain functions place her at a disadvantage in the struggle for subsistence and her physical well-being becomes an object of public interest and care in order to preserve the strength and vigour of the race. Thus the law and justice demands additional privileges and safeguards for maintaining proper socio-legal status of women in the society."*⁶

⁶Empowerment of Women and Law by Dr. C. L. Patel <http://www.indiankanoon.org/doc/1830547/>

Thus, many women-specific and women-related laws were legislated were with this view. Some of these are as follows:

Women-specific laws

1. The Immoral Traffic (Prevention) Act, 1956
2. The Dowry Prohibition Act, 1961 (28 of 1961) (Amended in 1986)
3. The Indecent Representation of Women (Prohibition) Act, 1986
4. The Commission of Sati (Prevention) Act, 1987 (3 of 1988)
5. Protection of Women from Domestic Violence Act, 2005
6. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

Women-related laws:

1. The Married Women's Property Act, 1874 (3 of 1874)
2. The Child Marriage Restraint Act, 1929 (19 of 1929)
3. The Pre-Natal Diagnostic Techniques (Regulation and Prevention of misuse) Act 1994
4. The Medical Termination of Pregnancy Act, 1971 (34 of 1971)
5. The Hindu Marriage Act, 1955 (28 of 1956)
6. The Hindu Succession Act, 1956
7. The Maternity Benefit Act, 1961 (53 of 1961)

Many measures such as *Kanya Vidya Dhan*, free uniforms, mid-day meal, school attached crèche, mothers' meetings have been taken up to increase the literacy rate among girls; but the female literacy rate stand at a mere 65.46% (Census 2011 report). The sex ratio (no. of females per thousand males) is 940 (Census 2011 report) inspite of strict laws against sex selection.

India's declining sex ratio caused through female foeticide, female infanticide and neglecting attitude of community requires urgent and comprehensive action. It is well evidenced that low literacy, endemic under nutrition and social inequality are closely related issues of gender inequality.

This deep-rooted gender inequality leads to various crimes against women. According to National Crime Bureau Report 2013, there were 244270 registered cases of crime committed against women in 2012⁷. According to a survey conducted by Trust Law, India is the worst place to be a woman among the G20 countries.⁸

Condition of women in West Bengal

West Bengal has caught the attention of the country recently by topping the chart in crime against women.⁹

The entire discussion can be summed up by stating that in the current constitutional framework and enactment of various welfare measures, still women considered to be most vulnerable group. The crime against women, low level of nutrition among women, gender discrimination in different sectors etc are cross cutting issues but directly associated with the empowerment of women. The self help group one of the most important programme to address these issues.

Self-Help Groups

Self-Help Groups (SHGs) are informal groups of 5-20 persons of the same low level of economic condition, belonging to the same locality or hamlet. Open and voluntary membership, democratic control of members, participation of members in economic activities of the Group, autonomy and independence, education, training and information, cooperation amongst different groups and concern for the community — all the seven Co-operative Principles do exist in these Groups.¹⁰

Primary Agricultural Co-operative Credit Societies (PACS) programme has largely utilized SHG's as an empowering instrument. More than 80% of these are exclusively for women. The fifth national synthesis report (Draft) reports that official perception has changed as SHG's are firmly raising voices and SHG's are being used to achieve RTI awareness:

- Women members are elected as Panchayati Raj Institutions (PRI) representatives.
- SHG/PRI are regularly organizing Gram Sabha as a forum for public appraisal.

⁷<http://ncrb.gov.in/>

⁸www.trust.org/item/?map=poll=canana-g20-country-to-be-a-woman-india-worst/

⁹<http://ncrb.gov.in/>

¹⁰<http://coopwb.org/self-help-group.php>

Incidence of Crime Against Women in India, 2012

Si. No.	Crime Head	Incidence	Rate of Crime
1.	Rape (Sec. 376 IPC)	24923	4.26
2.	Kidnapping & Abduction (Sec.363-369,371-373 IPC)	38262	6.54
3.	Dowry Deaths(Sec.304B IPC)	8233	1.41
4.	Cruelty By Husband or his Relatives (Sec.498A IPC)	106527	18.20
5.	Assault on Women with intent to outrage her modesty (Sec.354 IPC)	45351	7.75
6.	Insult to the modesty of Women (Sec.509 IPC)	9173	1.57
7.	Importation Of Girls from Foreign Country (Sec.366B IPC)	59	0.01
8.	Commission of Sati Prevention Act, 1987	0	0
9.	Immoral Traffic (P) Act, 1956	2563	0.44
10.	Indecent Representation Of Women (P) Act, 1986	141	0.02
11.	Dowry Prohibition Act, 1961	9038	1.54
12.	Total	244270	41.74

Note: Female population (in lakhs): 5851.89

Source: Table 5.2 (Incidence Of Crime Committed Against Women During 2012), Crime in India 2012, National Crime Records Bureau, Ministry of Home Affairs ncrb.gov.in

Incidence of Crime Against Women in West Bengal, 2012

Si. No.	Crime Head	Incidence	Rate of Crime	Percentage Share
1.	Rape (Sec. 376 IPC)	2046	4.65	8.21
2.	Kidnapping & Abduction (Sec.363-369,371-373 IPC)	4168	9.47	10.89
3.	Dowry Deaths(Sec.304B IPC)	593	1.35	7.20
4.	Cruelty By Husband or his Relatives (Sec.498A IPC)	19865	45.13	18.65
5.	Assault on Women with intent to outrage her modesty (Sec.354 IPC)	3345	7.60	7.38
6.	Insult to the modesty of Women (Sec.509 IPC)	556	1.26	6.06
7.	Importation Of Girls from Foreign Country (Sec.366B IPC)	12	0.03	20.34
8.	Commission of Sati Prevention Act, 1987	0	0	-
9.	Immoral Traffic (P) Act, 1956	109	0.25	4.25
10.	Indecent Representation Of Women (P) Act, 1986	7	0.02	4.96
11.	Dowry Prohibition Act, 1961	241	0.55	2.67
12.	Total	30942	70.30	12.67

Note: Female population (in lakhs): 440.15

Source: Table 5.2 (Incidence Of Crime Committed Against Women During 2012), Crime in India 2012, National Crime Records Bureau, Ministry of Home Affairs ncrb.gov.in

Anecdotal accounts suggest that women are economically empowered; those suffering domestic violence are given legal reference and awareness to prevent child marriage, promote girls' education and prevent dowry marriage and alcoholism.

Self-help groups have emerged as an important strategy for empowering women and alleviating poverty. SHGs are based on the idea of small dialogic groups, which shall function at developing collective consciousness. Linked with micro credit, these groups are able to access credit and subsidy to meet crisis needs as well as developmental needs reducing their dependence on money lenders. There is a fair amount of evidence to suggest that PACS' SHGs have successfully ensured people's entitlements including women.

STATEMENT - I - A**Progress under Microfinance - Savings of SHGs with Banks
Agency-wise position as on 31st March 2012**

(Amount ₹ lakh)

Sr. No.	Name of the Agency	Total Savings of SHGs with Banks as on 31 March 2012		Out of Total - Under SGSY		Out of Total - Exclusive Women SHGs	
		No. of SHGs	Saving Amount	No. of SHGs	Saving Amount	No. of SHGs	Saving Amount
1	Commercial Banks	4618086	415298.04	1231524	96581.37	3753064	339979.55
2	Regional Rural Banks	2127368	130013.93	691304	30194.22	1698705	103229.53
3	Cooperative Banks	1214895	109829.49	200192	12749.22	846917	67223.84
	Total	7960349	655141.46	2123020	139524.81	6298686	510432.92

Source: Status of Microfinance in India 2011-12 (NABARD)
<http://www.nabard.org/english/..%5CPublication%5CSMFI2012.pdf>

STATEMENT - I - B**Progress under Microfinance - Bank Loans disbursed to SHGs
Agency-wise position during 2011-12**

(Amount ₹ lakh)

Sr. No.	Name of the Agency	Loans disbursed to SHGs by Banks during the year		Out of Total - Under SGSY		Out of Total - Exclusive Women SHGs	
		No. of SHGs	Loans disbursed	No. of SHGs	Loans disbursed	No. of SHGs	Loans disbursed
1	Commercial Banks	600807	994204.49	103865	132221.27	531292	861285.02
2	Regional Rural Banks	304809	502605.15	67873	98224.12	263478	455458.33
3	Cooperative Banks	242262	156667.23	38041	33910.83	128462	96458.98
	Total	1147878	1653476.87	209779	264356.23	923232	1413202.32

Source: Status of Microfinance in India 2011-12 (NABARD)
<http://www.nabard.org/english/..%5CPublication%5CSMFI2012.pdf>

STATEMENT - I - C

Progress under Microfinance - Bank Loans outstanding against SHGs
Agency-wise position as on 31 March 2012

(Amount ₹ lakh)

Sr. No.	Name of the Agency	Total Outstanding Bank Loans against SHGs		Out of Total - Under SGSY		Out of Total - Exclusive Women SHGs	
		No. of SHGs	Loan Outstanding	No. of SHGs	Loan Outstanding	No. of SHGs	Loan Outstanding
1	Commercial Banks	2617199	2581028.86	643100	490351.65	2275274	2187835.21
2	Regional Rural Banks	1293809	861357.81	476063	259879.86	1069035	734845.10
3	Cooperative Banks	443434	191613.51	97165	55251.72	305099	123848.10
	Total	4354442	3634000.18	1216328	805483.23	3649408	3046528.41

Source: Status of Microfinance in India 2011-12 (NABARD)
<http://www.nabard.org/english/..%5CPublication%5CSMFI2012.pdf>

STATEMENT - I - D

Progress under Microfinance - Non Performing Assets of Banks against SHGs Loans Outstanding - Agency-wise position as on 31st March 2012

(Amount ₹ lakh)

Sr. No.	Name of the Agency	Non Performing Assets of Banks against SHGs Loans Outstanding - Agency-wise			Out of total - Bank loans O/S & NPAs against SGSY SHGs		
		Bank Loans Outstanding against SHGs	Amount of NPAs	Percentage of NPAs to Total loans Outstanding	Bank Loans Outstanding against SHGs	Amount of NPAs	Percentage of NPAs to Total loans Outstanding
1	Commercial Banks	2581028.86	165541.56	6.41	490351.65	44594.48	9.09
2	Regional Rural Banks	861357.81	42634.18	4.95	259879.86	16382.70	6.30
3	Cooperative Banks	191613.51	13097.44	6.84	55251.72	4763.77	8.62
	Total	3634000.18	221273.18	6.09	805483.23	65740.95	8.16

Source: Status of Microfinance in India 2011-12 (NABARD)
<http://www.nabard.org/english/..%5CPublication%5CSMFI2012.pdf>

Progress under Microfinance ñ Savings of SHGs with Banks

West Bengal

Commercial Banks		Regional Rural Banks		Cooperative Banks		Total	
No. of SHGs	Saving Amount	No. of SHGs	Savings Amount	No. of SHGs	Savings Amounts	No. of SHGs	Savings Amount
350641	23145.43	199733	6505.83	135074	8043.15	685448	37694.40

Source: Status of Microfinance in India 2011-12 (NABARD)
<http://www.nabard.org/english/..%5CPublication%5CSMFI2012.pdf>

National Bank for Agriculture and Rural Development (NABARD) was established as an apex development bank of the country, on 12 July 1982, by an act of Parliament, with its Head Office at Mumbai and Regional Offices in each of the states¹¹

¹¹parbhani.gov.in/htmldocs/nabard.html

Among its many other developmental projects, NABARD has taken up the “SHG Bank Linkage” Programme. Through this programme, NABARD facilitates SHGs, which have established themselves and have a good capital base along with the goodwill of timely repayments, are given loans from banks to help them start their own enterprise.

Results and Discussion

Birbhum at a Glance

Description	Year	Unit	Particulars
Administrative set up			
District Head Quarters			Suri
Sub-division	2008	Number	3
Police Station	2008	Number	18
Inhabited Villages	2001	Number	2256
Mouza	2001	number	2473
Municipality	2008	Number	6
Block	2008	Number	19
Panchayat Samity	2008	Number	19
Gram Panchayat	2008	Number	167
Gram Sansad	2008	Number	1610
Area	2001	Sq. km	. 4545.00
Population	2001	Number	3015422
Density of population	2001	per sq.km	663
Percentage of population			
Male	2001	per cent	51.29
Female	2001	Per cent	48.71
Rural	2001	Per cent	91.43
Urban	2001	Per cent	8.57

Source: District Statistical Handbook, 2008, Birbhum

The study undertaken in the Loba village, Dubrajpur Block, Birbhum district, West Bengal, to understand the impact of the SHG for women empowerment in the Loba village. The role played by SHGs in women’s lives has been analyzed here. For this purpose, the village of Loba of the Birbhum district of West Bengal was chosen as the target area. 404 women of the village were surveyed on the basis of the following characteristics:

- i) Age
- ii) Educational Status
- iii) Marital Status
- iv) Caste
- v) Type of family

- vi) Family Size
- vii) Occupation
- viii) Size of family landholding
- ix) Land ownership
- x) Other assets owned
- xi) Material possessions of family
- xii) Family income
- xiii) Profit utilization pattern
- xiv) Control over income contributed by the respondent towards her family
- xv) Control over family income
- xvi) Saving Pattern
- xvii) Access to credit
- xviii) Non-financial benefit enjoyed by respondents after taking up IGA
- xix) Constraints for empowerment

1. AGE

Most SHG members are between the age group of 20-30 years and 35-40 years (a total of 57.43%); but a lesser proportion of women in the age group 35-40 years are part of SHGs. Thus it can be seen that women are most active during their youth (20-30 years) and actively taking part in SHGs for their own development and also for helping their households financially. In the higher age group, the proportion of non-SHG members is more. Women of older age do not take part in SHGs. One of the observations is that they feel that at such an age it is of no use for them to learn something new through SHGs or they may not feel the financial necessity to take part in them. One of the impressions of the non-SHG members is that it takes longer time to get the benefit and they want immediate visibility of the profit. Hence, non-SHG members prefer for not opting the SHG membership.

The concept of SHG needed to be percolated at the lowest more intensely with the correct spirit of the self help group. Community made to understand its financial and non-financial benefits for their own development and community as a whole. Better knowledge about SHGs might lead to a

Table 1: Distribution of Respondents according to their age

	Below18	18-20	20-25	25-30	30-35	35-40	40-45	45-50	50+
SHG member	0 (0%)	0 (0%)	56 (27.72%)	29 (14.36%)	22 (10.89%)	31 (15.35%)	12 (5.94%)	18 (8.91%)	34 (16.83%)
Non-SHG member	0 (0%)	0(0%)	31 (15.35%)	26 (12.87%)	26 (12.87%)	34 (16.83%)	27 (13.37%)	19 (9.40%)	39 (19.31%)

Source: Field Survey

greater involvement of women in such programmes. Involvement of more women in SHGs will lead to the betterment of society in terms of reduced domestic violence, reduced alcoholism as women will get a platform to gather and discuss their common problems and find a roadmap towards solution of the issues. SHGs help women in enhancing their economic capabilities. Women from all age needs to participate in SHGs.

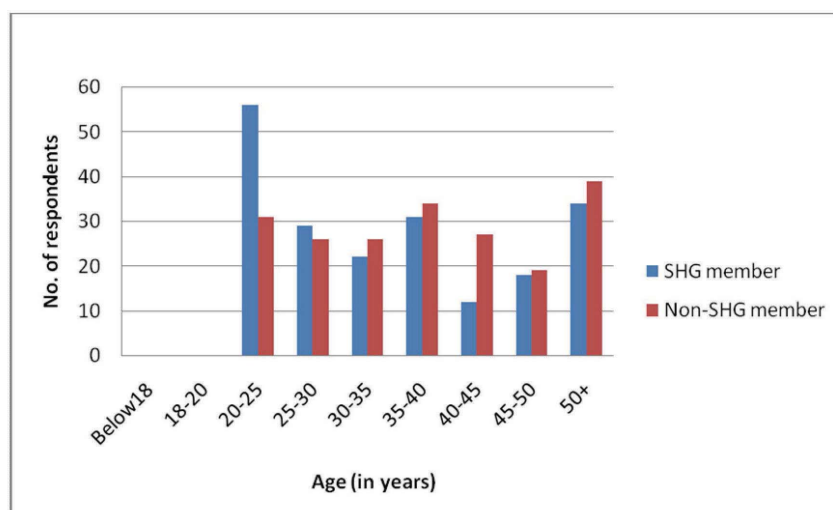


Fig. 1: Distribution of respondents according to their age

Note: Data from Table 1

2. Educational Status

Table 2: Distribution of Respondents according to Educational Status

	Illiterate	Functionally literate	Primary school	Middle school	Class X	Higher secondary	Graduation/ PG
SHG member	133 (65.84%)	5 (2.48%)	29 (14.36%)	24 (11.88%)	10 (4.95%)	0 (0%)	1 (0.50%)
Non-SHG member	97 (48.02%)	11 (5.45%)	25 (12.38%)	42 (20.79%)	13 (6.44%)	13 (6.44%)	1 (0.50%)

Note: Adding the percentages (in bracket) may not lead to exact 100% due to rounding off.

Source: Field Survey

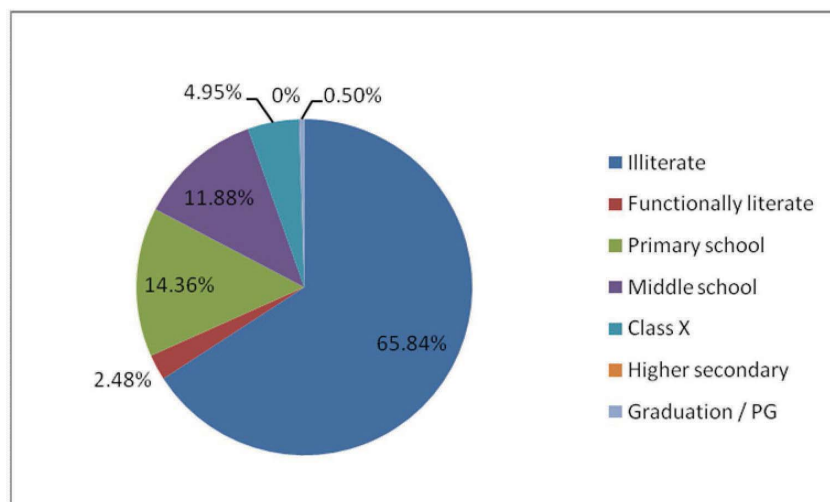


Fig. 2a: Educational status of SHG members

Source: Data from Table 2

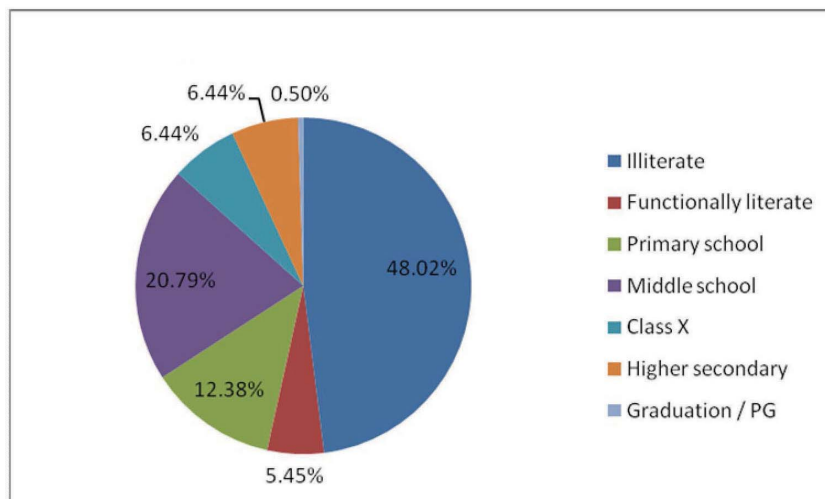


Fig. 2b: Educational status of Non-SHG members

Source: Data from Table 2

The table shows that 65.84% SHG members and 48.02% non-SHG members are illiterate. The literacy rate of Non-SHG members is 51.98%, whereas the literacy rate is 34.16% for SHG members. The proportion of respondents who have attended only primary school is higher among SHG members, but the proportion of respondents who have attended middle school and

have passed class X is significantly higher among Non-SHG members. Also about 6.44% of the Non-SHG members have completed their higher education whereas the percentage is 0% for SHG members. The table reveals that self help group programme has been able to reach to the illiterate women. It is indicating that majority of illiterate women joins in the programme.

The programme has been able to reach to the less educated women and they are part of SHGs today. SHGs form a source of livelihood for their families as it generates employment for the women through capacity building and also a source of easy loan in times of emergencies. It might be that the women with less education find it harder to get some source of income and thus join SHGs for a steady income.

3. Marital Status

Table 3: Distribution of Respondents according to Marital Status

	Unmarried	Married	Widow	Separated
SHG member	3 (1.49%)	160 (79.21%)	31 (15.35%)	8 (3.96%)
Non-SHG member	53 (26.24%)	105 (51.98%)	39 (19.31%)	5 (2.48%)

Source: Field Survey

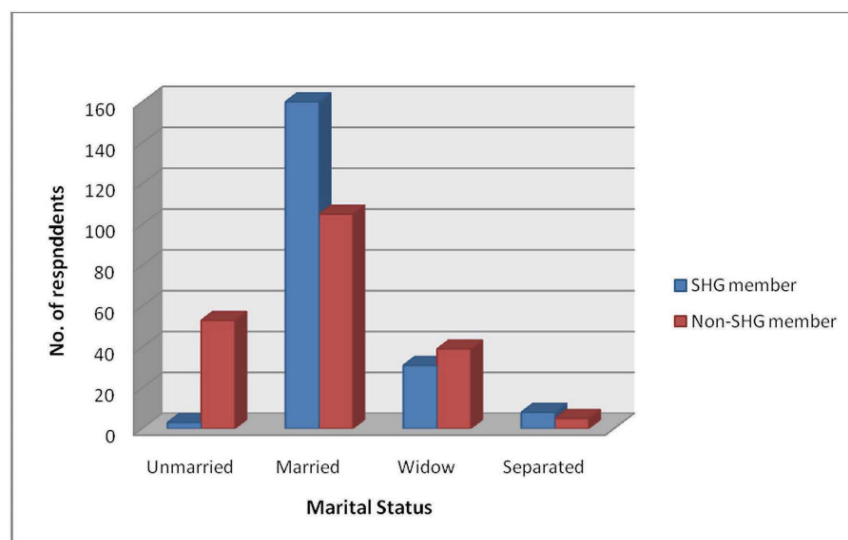


Fig. 3: Marital status of respondents
Source: Data from Table 3

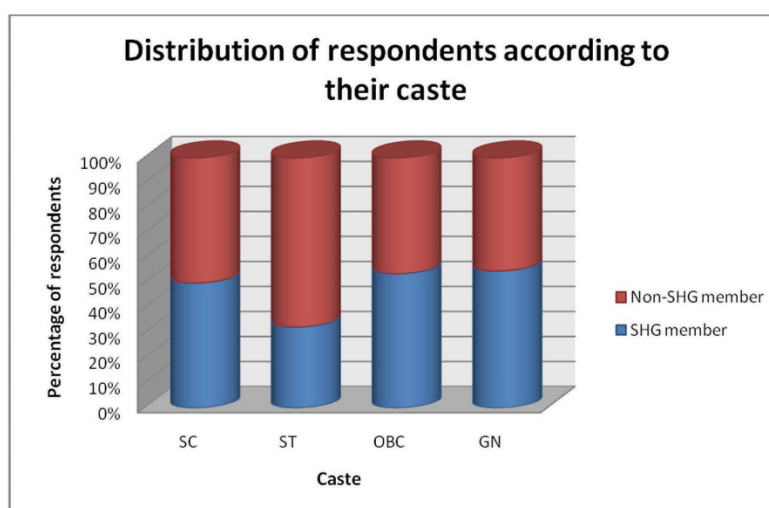
The data reveals that among the married and separated, the proportion of SHG members is higher than the proportion of non-SHG members. Not many unmarried and widows take part in SHGs. Married women need to help the family by giving financial support as income from one source (from the husband) is not enough most of the times. Separated women need to take care of her own financial needs and her children, and thus join SHGs to meet her economic needs, often by starting her own enterprise with the help of loan received from the SHG or by training herself in some specific work through the SHG. Old-age widows often have their sons to take care of them and unmarried girls have their parents to take care of their financial needs, thus they don't feel the need to join SHGs. It can be concluded that economic necessities force women to join SHGs. It's seen only as a source of income. The idea that SHGs have the capacity to change the society for the better should be widely propagated. It is necessary to link with the women who are alone as well as potentially entrepreneur women for their own support.

4. Caste

Table 4: Distribution of Respondents according to Caste

	SC	ST	OBC	GN
SHG member	116 (57.4%)	11 (5.6%)	29 (14.3%)	46 (22.7%)
Non-SHG member	116 (57.4%)	23 (11.3%)	25 (12%)	38 (19.3%)

Source: Field Survey



Distribution of respondents according to their caste

Source: Data from Table 4

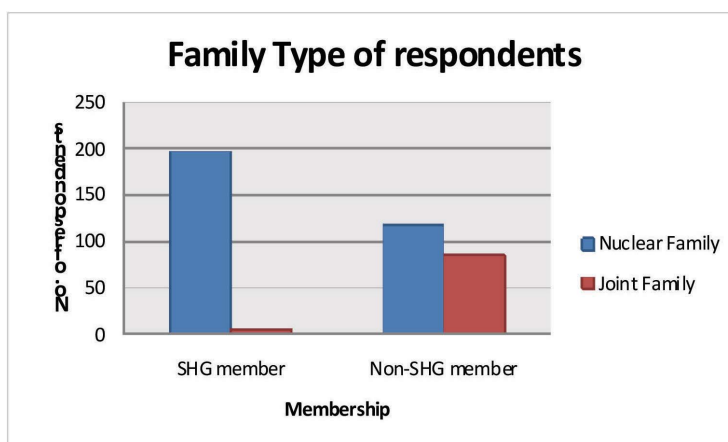
The proportion of SHG and Non-SHG members are equal among the Scheduled Caste. Proportion of SHG members is more in both the OBC and GN caste. But among the Scheduled Tribes, the proportion of SHG members (32.35%) is less than that of Non-SHG members (67.65%). The difference in the proportion of SHG and Non-SHG members (35.30%) is also large among the STs. Awareness among STs about SHGs is very minimal. It also might be the case that they are not allowed to take part in these institutions due to prevailing social norms. As a result, people of this caste remain isolated with the programme and hence losing opportunities for both economically and socially enhancement. Women are the worst hit due to inaccessibility of opportunities. Their condition is even more pitiable. More and more ST women should be informed and encouraged to form SHGs. The society should be awakened against this prevalence of caste based differentiation. Initially some SHGs consisting of only ST women should be formed so that they can themselves understand their economic and social problems and work towards achieving their goal. Once they are economically equipped, they can themselves fight their way for social inclusion. Women from all sections of society need to get the benefits offered by SHGs for overall development of the society.

5. Family Type

Table 5: Distribution of Respondents according to Family type

	Nuclear	Joint
SHG member	197 (97.52%)	5 (2.48%)
Non-SHG member	117 (57.92%)	85 (42.08%)

Source: Field Survey



Source: Data from Table 5

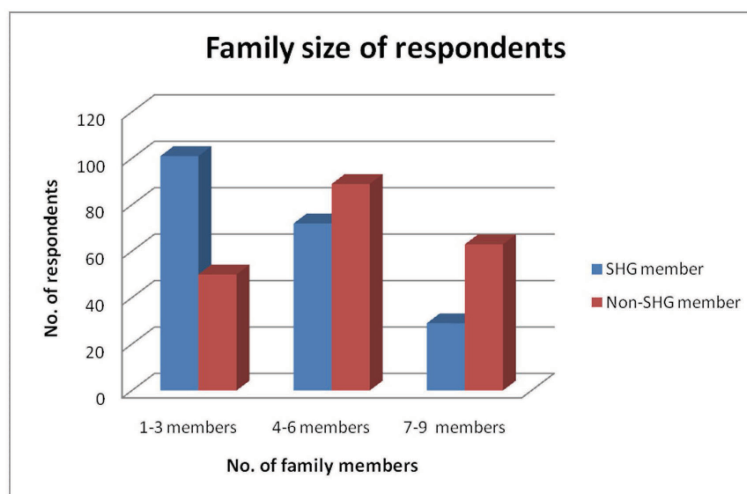
A majority of SHG members (97.52%) belong to nuclear families. A very small percent of just 2.48% SHG members belong to Joint families. It is interesting that non SHG members [42.08%] still living in joint family. The in-laws, especially the mother-in-law and father-in-law, often, in the name of family honour don't want their daughter-in-law to go out of the house and work. They restrict them to the household chores. As a result, those women do not join SHGs. In nuclear families, the women often get a say in what she wants to do. Also, economic needs demand that women earn money alongside their husbands. Family restrictions are less in nuclear families. Another information came from the discussion that joint family has been able to fulfill the needs of the family members collectively and members in the nuclear family have to depend on the bread earner whereas in the joint family multiple source of income help them financially. From the table, it can be conclude women of the joint family keep themselves isolated due to family pressure and on the other hand expenses had been sharing by many members in the family. It is important to note that nature of family influences on choices of joining the self help group.

6. Family Size

Table 6: Distribution of respondents according to family size

	1-3	4-6	6-9
SHG member	101 (50%)	72 (35.64%)	29 (14.35%)
Non-SHG member	50 (24.75%)	89 (44.06%)	63 (31.19%)

Source: Field survey



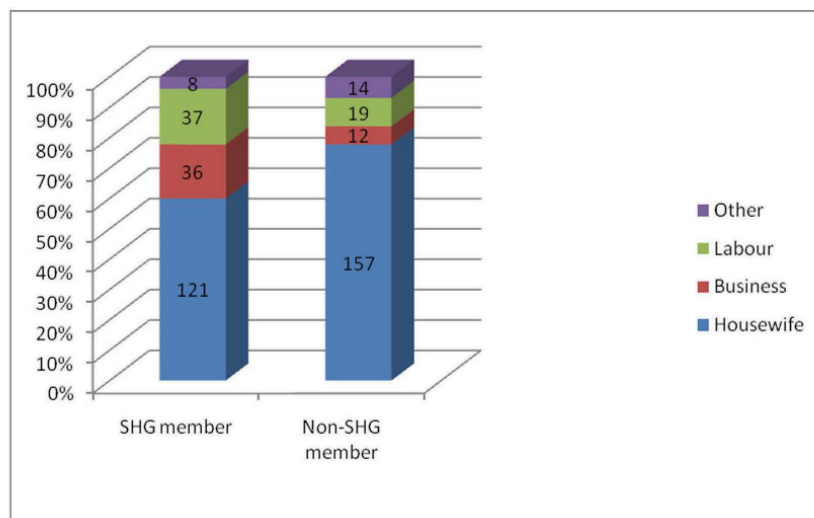
Source: Data from Table 6

Half of the SHG members have small families consisting of 1-3 members. As the number of family members increases, the level of participation in SHGs decreases. Increased number of members leads to increased household responsibility and thus the woman of the house is not allowed to go out and take part in institutions like the SHGs. Another outcome observed from the discussion that women of SHG are more aware than the non-SHG members regarding family planning and family welfare schemes. The SHG members accepted that all knowledge gather during interaction with the other SHG members as well as in the capacity building programmes. The clear impact has been noticed regarding better knowledge level in comparison to the non-SHG members.

Table 7: Occupation

	Housewife	Business	Labour	Other
SHG member	121 (50.90%)	36 (17.82%)	37 (18.32%)	8 (3.96%)
Non-SHG member	157 (77.72%)	12 (5.94%)	19 (9.41%)	14 (6.93%)

Source: Primary data obtained by surveying the women of Loba



Source: Data from Table 7

The table clearly shows that 50.9% housewife joined in the SHG and 17.8% SHG members having business of their own. It is very encouraging to note that housewife had joined in the programme and enhancing their family income through undertaking various activities. It is

7. Family Landholding

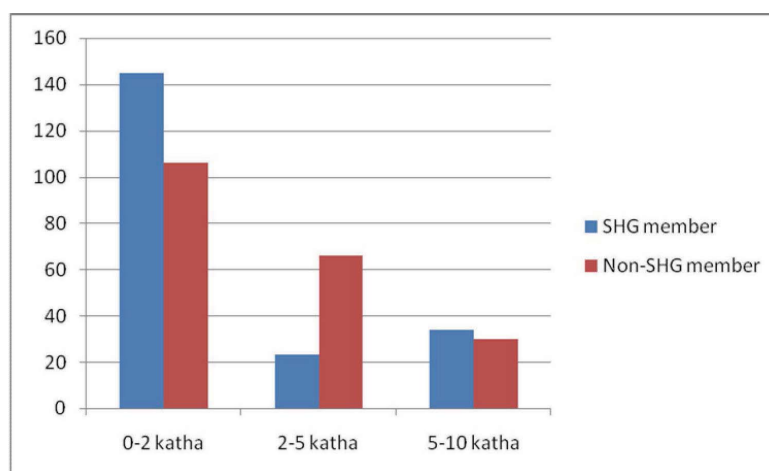
Table 8: Distribution of respondents according to family landholding

	0-2 katha	2-5 katha	5-10 katha
SHG member	145 (71.7%)	23 (11.3%)	34 (17%)
Non-SHG member	106 (52.4%)	66 (32.6%)	30 (15%)

Source: Field Survey

71.76% of women from families owning land of 0-2 katha area are associated with the SHG whereas 52.4% non-SHG members lies in this group. The table shows that majority of the respondents having very less land and this is one of the factor of joining SHG programme. Another interesting outcome is that 17% respondents having 5-10 katha of land also jointed programme. Their opinion is that more financial stability is needed for survival.

Thus, it can be again seen that women join SHGs mainly to meet their economic needs. Some women even manage to earn a fairly good amount of money over the time and they buy assets such as land with the money.



Source: Data from Table 8

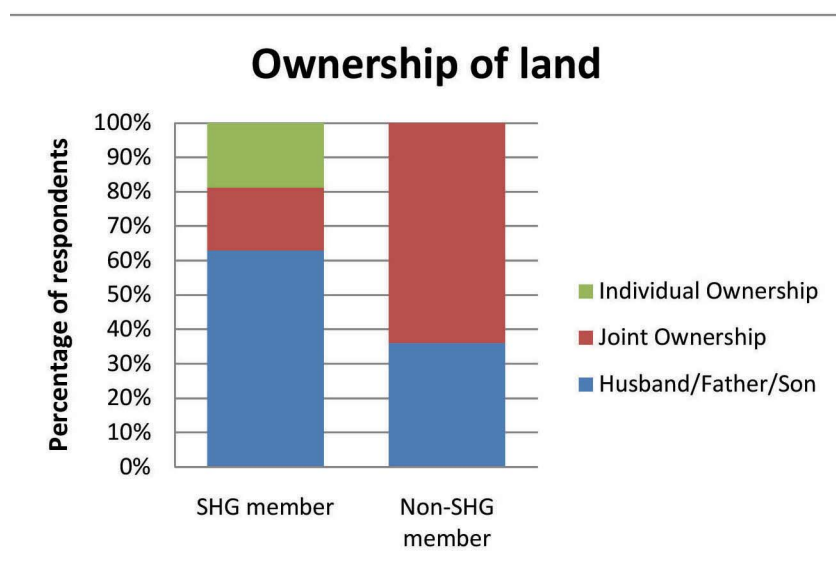
8. Land Ownership

Table 9: Distribution of respondents according to land ownership

	Husband/Father/Son	Joint Ownership	Individual Ownership
SHG member	127 (62.87%)	37 (18.32%)	38 (18.81%)
Non-SHG member	73 (36.14%)	129 (63.86%)	0 (0%)

Source: Primary data obtained by surveying the women of Loba

Among SHG members, the husband/father/son of 62.87% respondents owns the land, whereas joint ownership is maximum in case of non-SHG members. The 38 respondents out of 404 respondents who have individual ownership of landholdings are SHG members, whereas not a single Non-SHG member own land. SHG members gain the financial capability and independence over time to own land. The table reveals that 18.81% women are holding asset [land] ownership due to their participation in the decision making process as well as indicating the impact of SHG programme. The non-SHG members preferred ownership with the other individual. It is clear that SHG programme enhancing the capacity of the women.



Source: Data from Table 9

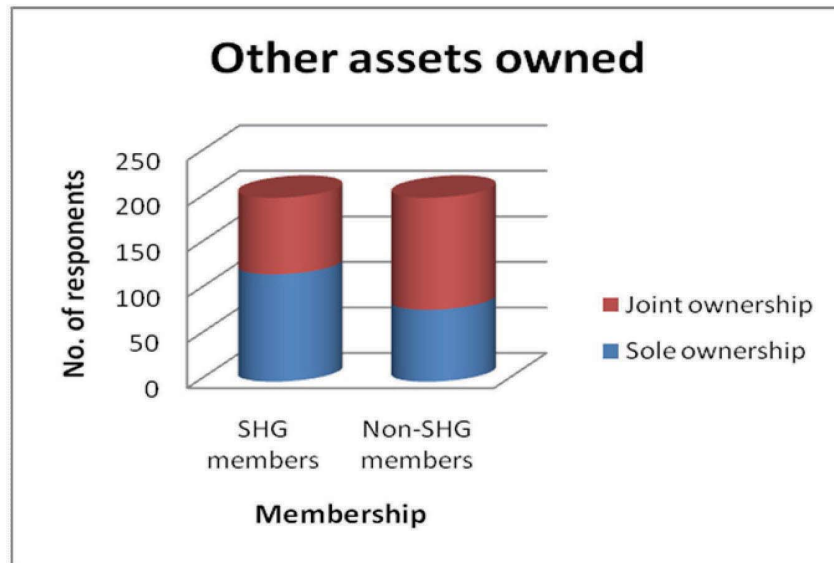
9. Other assets owned

Table 10: Distribution of respondents according to their ownership of other assets

	Sole ownership	Joint ownership
SHG members	118 (58.42%)	84 (41.58%)
Non-SHG members	79 (39.11%)	123 (60.89%)

Source: Field Survey

58.42% of SHG members have some asset to their own name, while only 39.11% of non-SHG members have sole ownership of assets whereas 60.89% respondents having joint ownership from the non-SHG members. The table shows that higher percent of SHG respondents owns assets in comparison to non-SHG. The association with SHG helped members to gain access and ownership of the assets.



Source: Data from Table 10

10. Material Possessions of family

The table reveals that SHG members having higher percent of agricultural items whereas less percent of agricultural items. The SHG members having less number of Radio and Television. It is indicating that non-SHG members are economically better off and they spend their money on such items but SHG members spend their money in developing machinery.

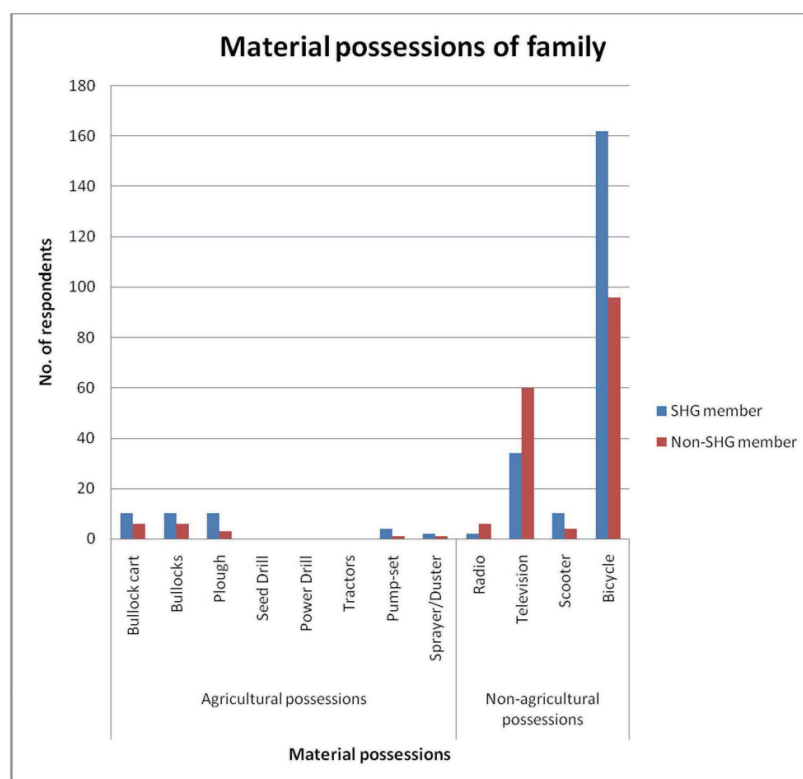
This table also indicates that how both groups incurring expenditure. SHG group increasing their asset and non-SHG members increasing their preference towards radio, television. The discussion with the members strengthens observation that SHG members are able to prepare their own priority to solve their own issues.

Table 11: Distribution of respondents according to material possessions of family (multiple responses)

	Agricultural possessions							Non-agricultural possessions				
	Bullock cart	Bullocks	Plough	Seed Drill	Power Drill	Tractors	Pumpset	Sprayer/Duster	Radio	Television	Scooter	Bicycle
SHG member	10 (4.10%)	10 (4.10%)	10 (4.10%)	0 (0%)	0 (0%)	0 (0%)	4 (1.64%)	2 (0.82%)	2 (0.82%)	34 (13.93%)	10 (4.10%)	162 (66.39%)
Non-SHG member	6 (3.28%)	6 (3.28%)	3 (1.64%)	0 (0%)	0 (0%)	0 (0%)	1 (0.55%)	1 (0.55%)	6 (3.28%)	60 (32.79%)	4 (2.19%)	96 (52.46%)

Note: Adding the percentages (in bracket) may not lead to exact 100% due to rounding off.

Source: Primary data obtained by surveying the women of Loba



Source: Data from Table 10

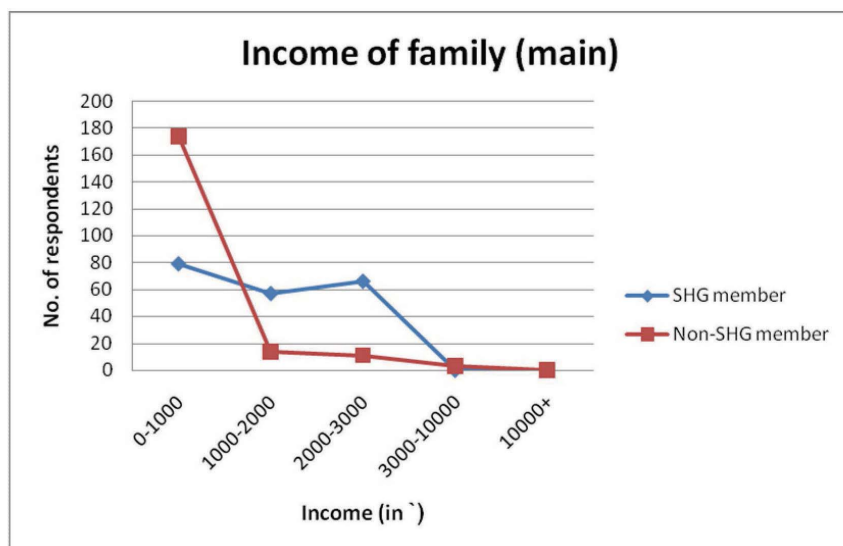
11. Family Income

Table 11a: Distribution of respondents according to monthly income of family (main)

	0-1000	1000-2000	2000-3000	3000-10000	10000+
SHG member	79 (39.11%)	57 (28.22%)	66 (32.67%)	0 (0%)	0 (0%)
Non-SHG member	174 (86.14%)	14 (6.93%)	11 (5.45%)	3 (1.49%)	0 (0%)

Source: Field Survey

The table reveals that 39.11 % SHG members belongs in the income range of Rs.0-1000 whereas 86.14 % non-SHG belongs to this group. 32.67 % SHG members earning in the range of Rs.2000-3000 per month whereas 5.45 % non SHG belongs to this group. About 28.22 % of SHG earns between Rs.1000-2000 per month. It is necessary to share that after joining in the group, the members increased their income whereas the non-SHG members are not able to increase their income. The motivation and support from the group enhancing their confidence and motivating to undertake income generating activities.

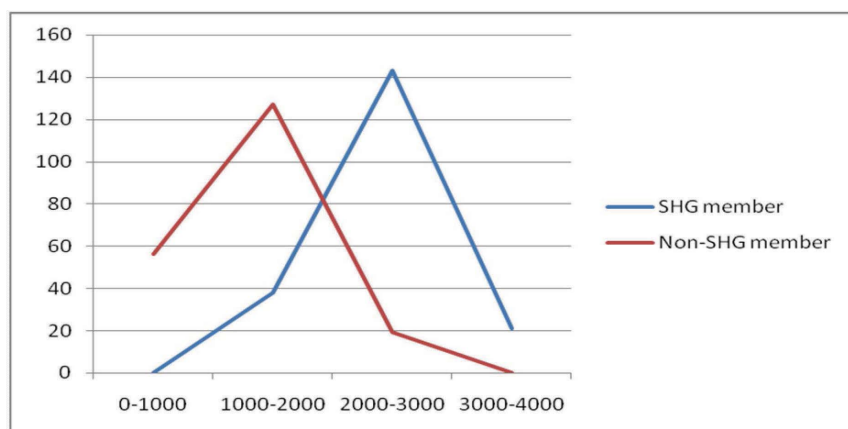


Source: Data from Table 11a

Table 11b: Distribution of respondents according to monthly income of family (Subsidiary)

	Rs.0-1000	Rs.1000-2000	Rs.2000-3000	Rs.3000-4000
SHG member	0 (0%)	38 (18.81%)	143 (70.79%)	21 (10.40%)
Non-SHG member	56 (27.72%)	127 (62.87%)	19 (9.41%)	0 (0%)

Source: Field Survey



Source: Data from Table 11b

The table shows that 10.40% respondents are earning [Rs.3000-4000] from subsidiary activity from the SHG whereas no one in the group from the non-SHG. About 27.72 % respondents earn in between Rs.0-1000 per month. Majority of respondents from SHG earn between Rs.2000-3000 per month. This shows that majority of the SHG member earns more than the non-SHG members from the subsidiary income. This is very clear from the table that SHG programme supports in developing their business through training, orientation and credit linkage. It is very clear that SHG members earning more than the non-SHG members.

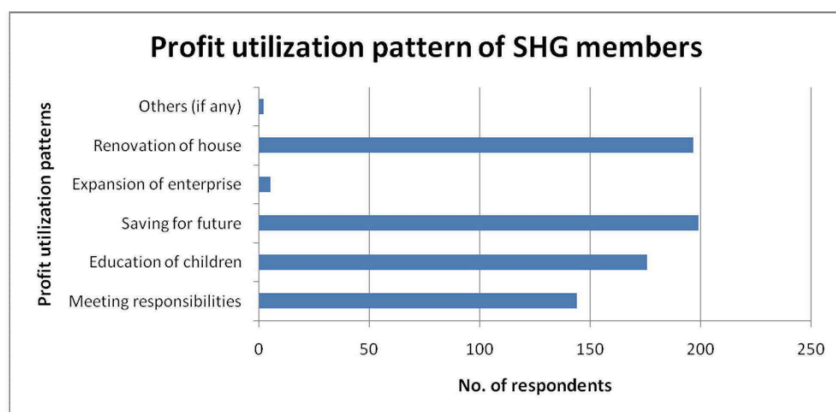
12. Profit-utilization pattern of respondents

Table 13: Profit utilization pattern of SHG members (multiple responses)

Profit utilization pattern	No. of respondents
Meeting responsibilities	144 (19.92%)
Education of children	176 (24.34%)
Saving for future	199 (27.52%)
Expansion of enterprise	5 (0.69%)
Renovation of house	197 (27.25%)
Others (if any)	2 (0.28%)

Source: Field Survey

The table reveals that majority of the SHG members utilized money for savings for future days. 27.52% of the responses were in favour of saving for future, 27.25% responses in favour of renovating of house, 24.34% responses were in favour of educating the children and 19.92% responses were in favour of meeting responsibilities. These are the main profit utilization pattern of the respondents. It is a good indicator that 176 out of 202 SHG members use their profit in educating their children and hence incurring expenses on education of their children. People have started understanding the importance of education. Saving for future is also very important because no social security programme is available for support in time of crisis. A safe and secured shelter is also very necessary. About 197 out of 202 SHG members use a part of their profit in renovating their house. A lot of SHG respondents also use their profit in meeting various household responsibilities. SHG members know their priorities well. It can be summed as SHG members are able to prioritize their needs and also incurring expenses for their own development.



Source: Data from Table 12

13. Control over income contributed by respondent to her family

Table 14: Distribution of respondents according to control over income contributed by her to her family

	No control	Partial control	Full control
SHG member	17 (8.42%)	21 (10.40%)	164 (81.19%)
Non-SHG member	68 (33.66%)	105 (51.98%)	29 (14.36%)

Source: Field survey

Among the SHG members, 81.19% have full control over their own income, whereas only 14.36% of the Non-SHG members have full control over their income. Only 8.42% of the SHG respondents didn't have any control over their income, while the percentage was 33.66% among Non-SHG members. SHGs, besides providing for financial support, also provide with a sense of independence which women assert even in their individual lives. This leads to true empowerment of women in their social and personal lives.

It is clearly showing that SHG members (81.19%) having full control over their own income and the control over their income, members are able to prioritize needs as well as involving in the decision making process in the family matters. This leads a positive development towards participation and accessibility of services by the women.



Source: Data from Table 13

14. Control over income of family

Table 15: Distribution of respondents according to control over income of family

	No control	Partial control	Full control
SHG member	18 (8.91%)	20 (9.90%)	164 (81.19%)
Non-SHG member	141 (69.80%)	47 (23.27%)	14 (6.93%)

Source: Field Survey

Even in matters of controlling family income, SHG members have an upper hand. 81.19% of SHG members have full control over the family income, while the percentage is just 6.93% among Non-SHG members. More than half of the Non-SHG members do not have any control over their family income, while the percentage is less than 10% for SHG members. The active participation in the financial issues enhancing the capabilities of the women and this was possible due to the involvement in the SHG programme.



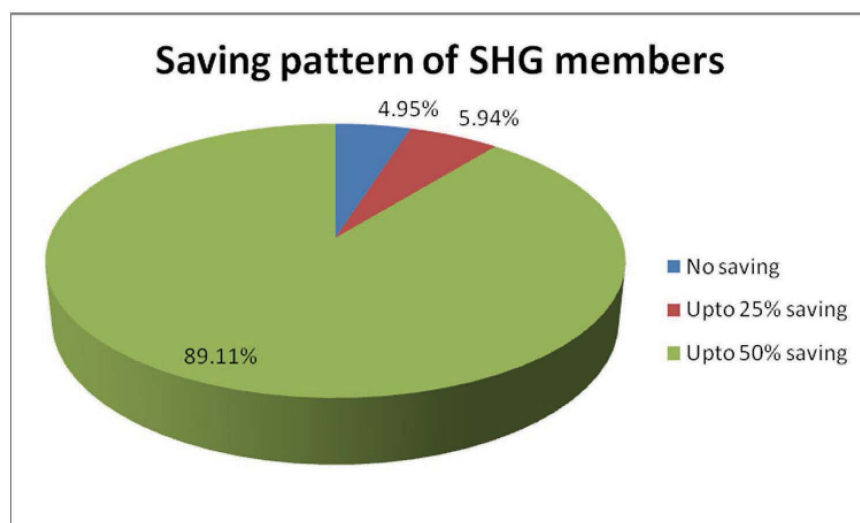
Source: Data from Table 14

15. Saving Pattern

Table 16: Distribution of respondents according to their saving pattern

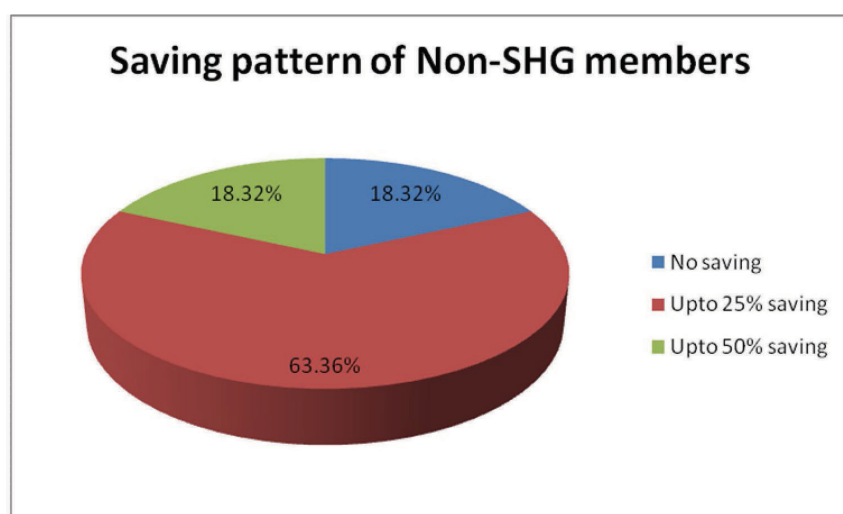
	No saving	Upto 25% saving	Upto 50% saving
SHG member	10 (4.95%)	12 (5.94%)	180 (89.11%)
Non-SHG member	37 (18.32%)	128 (63.37%)	37 (18.32%)

Source: Primary data obtained by surveying the women of Loba



Source: Data from Table 16

Majority of SHG members (89.11%) save upto 50% of their earning. This is possible as they have an income enough to meet their daily needs, and also save for future. Less than 5% of SHG members are not able to save anything. But in case of Non-SHG members, the saving pattern is different. Only 18.32% of Non-SHG members are able to save upto 50%. The rest can either save nothing or manages to save upto 25% of their earning. SHG members earn enough to save for their future; SHGs also give the members to understand the necessity of saving. SHG members put their earnings to proper use. It is very clear that SHG programme increases their financial capacity as well as enhancing financial management for their family.



Source: Data from Table 15

16. Access to credit

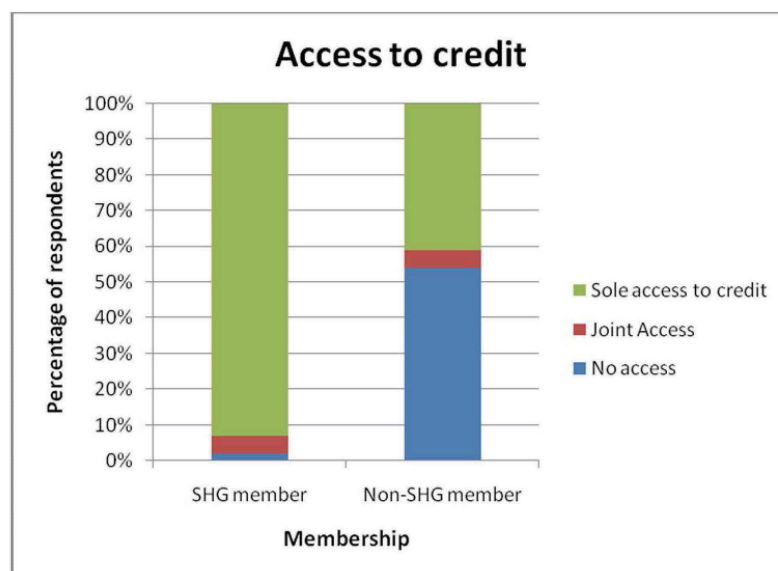
Table 17: Distribution of respondents according to access to credit

	No access	Joint Access	Sole access to credit
SHG member	4(1.98%)	10 (4.95%)	188 (93.07%)
Non-SHG member	109 (53.96%)	10 (4.95%)	83 (41.09%)

Source: Primary data obtained by surveying the women of Loba

93.07% of SHG members have sole access to credit. They get credit easily through loans from the SHG itself. Only 41.09% of Non-SHG members have sole access to credit; but they get credit mainly through informal sources by keeping assets such as jewels as collateral with them (*bandhak*).

Less than 2% of SHG members do not have any access to credit, while more than half of the Non-SHG members have access to credit. Credit from SHGs comes to the help of its members at times of emergency, which is beneficial to the women. They do not have to run door to door for loans nor do they need a huge number of documents for applying for credit from banks. The accessibility of credit to the SHG members helped women to plan their own trade as well as develop entrepreneurship to meet their financial and social needs.



Source: Data from Table 16

17. Non-financial benefits of IGA

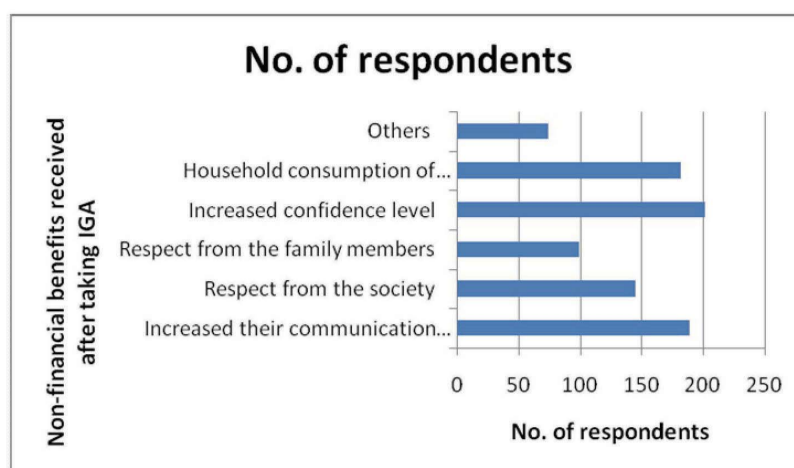
Table 18: Non-financial Benefits enjoyed by Respondents after taking IGA (Multiple responses)

Non-financial benefits	No. of respondents
Increased their communication skill	189 (21.24%)
Respect from the society	145 (16.29%)
Respect from the family members	99 (11.12%)
Increased confidence level	201 (22.58%)
Household consumption of product	182 (20.50%)
Others	74 (8.31%)

Source: Field survey

Respondents who have taken IGA enjoy certain non-financial benefits, besides enjoying the financial benefits. In 22.58% responses, women said

that their confidence level has increased. 21.24% responses from women said that their communication skill has increased. Only 16.29% respondents said that respect received from society and family members had increased. The non-financial benefits are limited to the personal level of the women. It is very clear that non-financial benefits SHG members are getting in different forms but still there is wide gap to get respect from the society to these small entrepreneurs.



Source: Data from Table 17

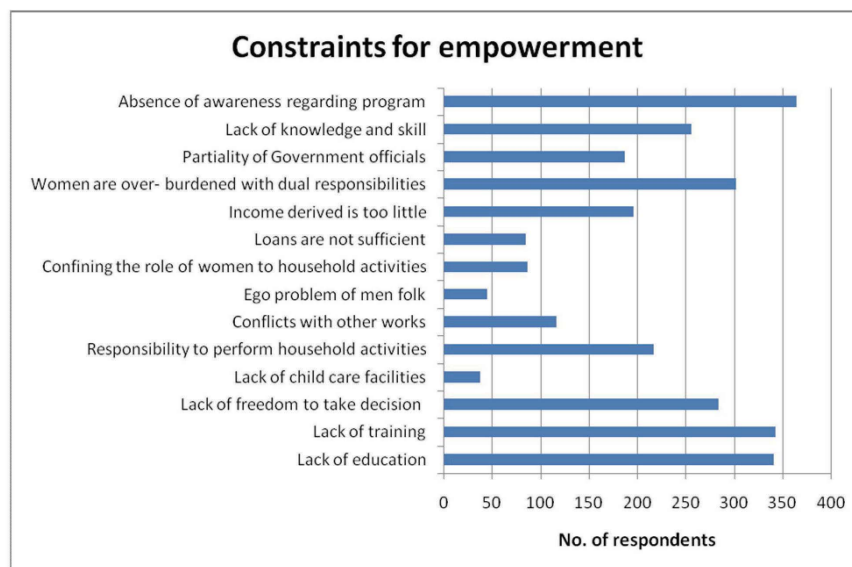
18. Constraints for empowerment

Table 19: Constraints for Empowerment (multiple responses)

Constraints	No. of Respondents
Lack of education	341 (11.91%)
Lack of training	343 (11.98%)
Lack of freedom to take decision	284 (9.92%)
Lack of child care facilities	38 (1.33%)
Responsibility to perform household activities	217 (7.58%)
Conflicts with other works	117 (4.09%)
Ego problem of men folk	45 (1.57%)
Confining the role of women to household activities	87 (3.04%)
Loans are not sufficient	85 (2.97%)
Income derived is too little	196 (6.85%)
Women are over- burdened with dual responsibility of managing household and economic activities	302 (10.55%)
Partiality of Government officials	187 (6.53%)
Lack of knowledge and skill	256 (8.94%)
Absence of awareness regarding program	365 (12.75%)

Source: Primary data obtained by surveying the women of Loba

The table shows clearly that SHG members pointed certain constraints for empowerment. The primary constraints for empowerment, as said by the respondents is lacking of education among the women and training. Nearly 12.75 % women accepted that they are not aware about so many welfare programmes. Nearly 10.55% women agreed that over-burdening women with dual responsibilities of managing household and economic activities is one of the reasons for not participating in programmes because they don't get any time for such activity. The benefit from SHGs cannot be enjoyed by their members fully because of these constraints. In the survey, it was clearly seen that the level of education among women is very low. Low level of education leading to problems in decision making. In spite of all these hurdles, women expressed their confidence to get over such issues with the support of agencies.



Source: Data from Table 18

Suggestions and Recommendation

The study concludes by stating the following suggestion and recommendation for the effective SHG programme to achieve the goal towards collective empowerment of women.

- Skill identification of SHG members and high income generating activity suitable for rural women
- The SHG members to be linked with the educational programmes organized by Government or voluntary organizations.

- To undertake comprehensive awareness regarding the benefits of the joining SHG
- To provide extensive support to the newly joined women
- To provide regular training and exposures about the management and organization of their self help groups.
- Involvement of women of older age to be increased. They are left out in the programme.
- The involvement and participation of widow and separated women needs to be increased. It has been seen that only 19.31 % are attached to the programme. This could be one of the major support for the widow and separated women.
- Steps to make SHG members aware about rules and regulations and provide support to all stage.
- Comprehensive awareness among community about the availability of facilities and concessions for rural women.

Conclusion

The study, it could be seen that women join SHGs mainly to improve their economic condition. SHGs do provide training, but not at the desired level. Women become economically empowered, and to some extent socially empowered, but still they do not receive respect at par with men. SHGs are helping women financially, but the workings of SHGs need to be extended to help women meet the social challenges faced by them in their everyday lives.

The study can be concluded with the following observations

- The SHG member's enhancement of income levels and control over income leading to greater level of economic independence.
- The availability and accessibility of information and possibilities for undertaking different economic and social roles
- The change in the perception of women's contribution to household income and family welfare, active role and participation in household decision and expenditure, ownership of asset and incurring expenditure on family welfare.
- The change in the perception of community towards women's role in the household and community.

The government has a role to play here. Spreading awareness regarding SHGs is an important way of ensuring that more and more women are entitled to the benefits provided by SHGs. More girls need to be ensured proper education. Adult education programs need to be spread on a larger scale. Education is that light which can remove all darkness.

If you educate a man, you educate a man. If you educate a woman, you educate a generation.

-Brigham Young

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27

Infants and HIV/AIDS

Gargee Basu

According to UNICEF, 30,000 babies are born HIV positive each year in India. Children are our future. We need to protect our future from HIV/AIDS. HIV/AIDS causes a complete deficiency to the immunity system and damages the whole system. It leads to disability. So, it is extremely essential to prevent our children from this disease. If we do not take initiative and start working to reduce the lack of awareness, our future will become disabled. HIV positive mothers should be thoroughly informed to prevent the transmission of HIV to their infants during pregnancy, labour, delivery and breast feeding.

For people infected and affected by the epidemic, HIV is not only a medical experience. It is also a social and emotional experience that profoundly affects their lives and their futures. For children who are the most vulnerable group, it is important to respond to the development programmes arranged by different organizations to prevent social, economic and emotional consequences of the disease on children, their families, and communities that support them.

Children who have HIV in their family may be stigmatized and discriminated socially. Many children lose their parents due to HIV at young age and become orphans. Some people including the children become care giver of their HIV affected family members; they suffer from equal stigma and discrimination by the society.

According to the Universal Declaration of Human Rights, “Childhood is entitled to special care and assistance” this care and assistance being designed to promote and provide for, among other things, the “full and harmonious development of his or her personality” and “that the child be fully prepared to live an individual life in society.”

What is HIV/AIDS?

HIV (Human Immunodeficiency Virus) is a virus that weakens the immune system by depleting the supply of specialized white blood cells (T-cells) that help the body fight infection. The virus can also cause illness by directly infecting the brain, intestines, kidney, heart or other organs. As HIV weakens the immune system, the individual becomes susceptible to secondary infections typical of AIDS. The onset of AIDS is usually diagnosed by the presence of opportunistic infections or other specific conditions.

The onset of AIDS is usually diagnosed by the presence of opportunistic infections or other specific conditions. Pneumocystic Carinii Pneumonia (PCP) is a common opportunistic infection affecting children. PCP occurs in about 40 percent of children with AIDS and is a major cause of death among these children. Hepatitis and renal disease are other complications occurring in children with AIDS.

What are Opportunistic Infections?

When the immune system becomes weak, different opportunistic infections can cause diseases. These diseases are indicative of advanced HIV disease and are thus known as AIDS- defining diseases. Based on the type of disease, the patient is categorized under a different stage of advanced HIV disease.

Parent-to-Child transmission

An HIV-infected mother is likely to transmit the infection to the baby in three phases: during pregnancy, during labour or post-natally while breast feeding. Therefore, only prenatal detection of the HIV infection is insufficient. A woman should be tested when she is pregnant to prevent risk of transmission to the child. In order to avoid additional marginalization of women, the National AIDS Control Organisation decided to change the name of the mode of transmission from mother-to-child to parent-to-child transmission (PTCT).

Symptoms of HIV/AIDS

A person infected with HIV may not show any symptoms for many years after becoming infected and they may not even know they are infected. During this time, the person with HIV may look and feel very healthy and may not need any special care or accommodations. If a child with HIV has no symptoms, the child care setting, including exposure to common childhood illnesses, will pose little risk to her or his health. However, “because the

immune systems of children born with HIV not fully developed, they many begin to show the symptoms of infection much more quickly than adults do.” When the HIV infection becomes symptomatic, it can manifest itself through many types of symptoms, including ear infections; frequent and persistent diarrhea; joint infections; inability to gain weight and to thrive normally; gland, spleen, or liver enlargement; or developmental delays.

Children under one year old are among those most vulnerable to HIV and AIDS and traditionally among the least served. Evidence demonstrates that early initiation of antiretroviral treatment in infants with HIV can save lives. Yet very few children under age one are currently receiving such treatment.

Recent studies find that the median age at which children with HIV begin antiretroviral treatment is between five and nine years old. This has serious repercussions: most of the time in rural areas the one third of HIV-infected children without access to antiretroviral treatment die by the age of one year, and half by age two.

Children are affected by HIV/AIDS in ways that can diminish their childhoods and as a result limit choices and opportunities for successful survival throughout their lives. Children suffering from HIV/AIDS throughout India are affected directly or indirectly by social stigma and discrimination. Most of the children get infected from their mothers directly. HIV/AIDS may contaminate through any bodily fluid. Such as, pregnant mother to fetus, from breast milk etc.

More than ninety percent of HIV infected children acquired the virus from their mothers. According to the American Academy of Pediatrics, 80 percent of women with AIDS (approximately 80,000 women) are in their childbearing years, and more than 25% of women with AIDS are from smaller cities or rural areas.

HIV/AIDS leaves its impact on children indirectly when: poverty pushes families, often unaware of the risks, to send children into the work forcefully or to hand them over to recruiters promising jobs in distant places where, children are forced into a childhood of harsh labour and sexual abuse.

Schools and media do not step forward to simplify the way of informing on HIV/AIDS especially to children. The illness or death of parents or guardians because of HIV/AIDS can push a child of the emotional and physical destruction. Barriers grow out of ignorance and social attitudes. Fear of discrimination leads to families keeping secret the knowledge of HIV infection and AIDS within the household rather than seeking help.

The number of children being affected by the disease called HIV/AIDS throughout the country may be reduced to some extent. But to achieve that goal the common people must be aware enough. Not only about the disease and its precaution measures but also to remove the stain of social stigma and discrimination especially to save and protect children of our society.

According to the latest statistics released by the National AIDS Control Organisation (NACO) and UNAIDS, India has an estimated 2.5 to 3.1 million people living with HIV (PLWH) including children under 15 years and those aged 50 and beyond. The adult HIV prevalence is 0.36% and the majority of HIV infections are in men aged 15 to 44 years. Nearly, 40% of PLWH in India are women. It is estimated that some 70,000 children below the age of 15 are infected with HIV and 21,000 children are infected every year through mother-to-child transmission.

The country has an increasing population of children living with HIV and those who have lost either one or both parents to an AIDS related illness. However, there are no official estimates available on children affected and orphaned by HIV and AIDS in India. Some of the HIV high prevalence states in India such as Karnataka, Tamil Nadu, Andhra Pradesh, Maharashtra, Manipur and Nagaland are grappling with increased numbers of children infected and affected by HIV and AIDS. There is an emerging trend of child-headed households and increasing number of children caring for sick parents and siblings. An increasing number of street and working children over the last decade could also be a reflection of the emerging AIDS crisis.

Over twenty-five years into the AIDS epidemic, the children in its path remain at grave risk. In 2008, 730,000 children under 15 years of age were estimated to be living with HIV and in need of treatment; 38 percent were receiving treatment. Millions of children live in communities heavily burdened with disease, where it is not uncommon for a child to have lost a parent, both parents, or caregivers to AIDS. Without proper support, many of these children may experience poverty, school drop-out, indignities or early death.

HIV and AIDS compromise children's rights to survival, education and health care. They jeopardize children's right to protection from discrimination and abuse and sexual exploitation, including through trafficking and child labour. They rob children of their rights to grow up in a family environment and to develop to their fullest potential.

Many children and young people now living with HIV face particular challenges: accepting their HIV status and disclosing it to family, peers and others; maintaining adherence to treatment and overall medical care; and coping with feelings of isolation and stress.

Families are the first line of support and defense for children. Even in the most resource-deprived settings, families and communities have critically important strengths. Around the world, millions of children have lost one or both parents to AIDS, and millions more live with sick and dying family members. The profound trauma of losing one or both parents has devastating long-term implications, not only for a child's well-being and development, but for the stability of some communities.

All children need loving care, nurturing, guidance, and a safe environment in which to thrive. Children with HIV have exceptional needs for these elements of care. Although the medical profession has established that transmission of the HIV virus does not occur through casual contact like preparing food, sharing eating utensils, hugging, kissing, or diapering, a great deal of unwarranted fear and anxiety still remain about transmission of the virus. Regrettably, people with HIV or AIDS are the ones who suffer most as a consequence of this public fear. It is not uncommon for children with HIV to be isolated from casual contact and stigmatized because of the mistaken belief that they pose a threat to others. When this happens, these children can lose out on much of the loving care, nurturing, social contact, and early education that they need and deserve in order to thrive.

Parent-to-child transmission can be prevented by adopting four strategies

A. Providing antiretroviral drugs

Currently, the "single dose approach" with nevirapine is used in India. An HIV-infected mother is administered a 200mg tablet of nevirapine during labour, and the newborn is given a single dose of nevirapine syrup, in the dosage of 2mg per kilo of body weight. This reduces the risk of transmission by about 40%. Other more effective strategies to reduce the transmission of the HIV infection to the baby are also available, such as, the use of more than one drug, and the use of a three part regimen- which covers the antenatal period, labour and part of the post-natal period. However, all of these are based on zidovudine which requires the hemoglobin levels to be higher than 8gm. Recently, there have been concerns that this "single dose approach" with nevirapine may lead to the development of nevirapine-resistant mutations, which will also be resistant to efavirenz. This may limit the therapeutic options for the mother when she needs ART. Hence the administration of zidovudine and lamivudine to the mother on a 12-hourly basis for seven days after delivery is being advocated. Every HIV infected pregnant woman in India is expected to be offered a CD4 test to assess her HIV disease stage. If her CD4 count is < 350 cells, she is to be referred to the ART centre for initiating ART.

The use of three drugs is known to reduce the risk to less than 2%. Efforts are being made in India to assess the feasibility of providing the recent WHO regimen that envisages use of more than one anti-retroviral drug among women whose CD4 counts are above 350 cells.

B. Mode of delivery

An elective C-section is known to reduce the risk of transmission, compared to vaginal delivery and even an emergency C-section. However, C-sections are known to increase morbidity among mothers. C-sections reduce the risk significantly when mono-therapy is adopted for PPTCT. If more than one drug is used to reduce Parent-to-child transmission an elective C-section should not be offered.

C. Obstetric intervention

Episiotomies and the application of forceps should be avoided as far as possible. Non-invasive approaches to deliver should be promoted.

D. Infant feeding

The mother may choose breastfeeding or formula feeding for her child. But if she opts for breastfeeding, she should be told that she should exclusively breast feed for a period of four to six months, and that she should wean the baby within a month's time thereafter.

If she chooses formula feeds, she must be told to give it using a cup and spoon and not a bottle. Maintaining the cleanliness of the utensils must be emphasized. She must be told to consult a pediatrician as the child gains weight, to increase the formula feed.

An AIDS-free generation means a generation in which all children are born free of HIV and remain so for the first two decades of life, from birth through adolescence. It also means that children living with and affected by HIV have access to the treatment, care and support they need to remain alive and well. For the first time in the history of the HIV epidemic, the global community has accumulated the knowledge, experience and tools to achieve an AIDS-free generation. So, let's start caring for our future, our babies, the fetus, who are yet to come in this world. Let's join hands; let's make this world a better place for everyone. The statistics we found has already published or came to light. But, there are several cases which are still in the dark due to stigma and discrimination.

Early infant diagnosis and early access to care and treatment must be part of a broader approach to HIV care and treatment, including routine monitoring and adherence support. They must also be fully integrated into

the broad spectrum of child survival and based on a comprehensive package of care – including optimal infant feeding, growth monitoring, immunization and other essential child survival interventions – as well as good-quality HIV-specific care that offers drugs routine monitoring and adherence support. The push to place greater numbers of HIV-infected infants on treatment means an increased need for the development of more and cheaper antiretroviral treatments suitable for the youngest populations.

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Socio-economic Condition of Rural people of Aloorbari, Darjeeling: A Case Study

Sunny Rawat

Rural area means areas which are dominated by extensive land uses such as agriculture or forestry or by large open space of undeveloped land; which contains small, lower-order settlements, demonstrating a strong relationship between building and surrounding extensive landscape. It is perceived as rural by most residents which are thought to engender a way of life characterized by a cohesive identity based on respect for the environment and behavioral qualities of livings as part of an extensive landscape. All the above mentioned phenomena are grouped under the livelihood pattern of rural community. To understand the rural livelihood pattern, the study of people, place and environment in rural areas with special reference to society, economy, politics and culture is urgently needed. The word 'livelihood' can be used in many different ways. The following definition captures the broad notion of livelihoods: 'A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.'

Agriculture and allied activities support livelihoods of nearly 70 per cent of India's rural population. In recent years, land based livelihoods of small and marginal farmers are increasingly becoming unsustainable, since their land has not been able to support the family's food requirements and fodder for their cattle. As a result, rural households are forced to look at alternative means for supplementing their livelihoods.

The rapid changes at the macro level that India witnessed since the early nineties has contributed to the instability of the livelihood systems of the

poorer section of both rural and urban households. While the benefits of globalization process have largely accrued to the urban sector growth the rural sector has been left behind. Slowdown in agricultural growth and productivity, changing cropping patterns, increase in distress migration, changing consumption patterns, government policies favoring industrial houses, among others have seriously undermined the food and livelihood security of the poorer households. An integrated, multidimensional and holistic approach to poverty eradication efforts is crucial to preserve and enhance the livelihoods of the poor.

Majority of the rural families are dependent on agriculture for their livelihood. However, due to denudation of natural resources, sub division of their land holdings and fluctuations in climatic conditions, the income from agriculture has been dwindling steadily. Furthermore, introduction of new technologies and farming practices have given tremendous benefits to resourceful and educated farmers on one hand, while depriving the small land holders of such benefits on the other hand.

While farming is certainly an important factor in rural economies, rural areas contain a wide range of economic activities. It is only in recent years that a new paradigm of rural development emerged that takes a broader view on the rural economy, incorporating economic activities other than farming, while highlighting the broad diversity of rural development processes. Generally this is referred to the diversification of the rural economy. Rural men and women, especially in poor households engage in diverse and multiple activities to improve their livelihoods by maximizing income generating activities, while minimizing vulnerability and risk and achieving other household objectives (improved health, nutrition and education *etc.*). These activities may include farm, non-farm and other nonagricultural activities, often linked with other activities carried out by rural as well as non-rural households. The effectiveness and profitability of these diverse livelihood systems will vary depending on the general development environment, each household member's access to and control of the asset base, their productive and reproductive roles and responsibilities, their capabilities and their linkages with other rural and urban actors.

Livelihood as always more than just a matter of finding or making shelter, transacting money and preparing food to put on the table or exchange in the market place. It is equally a matter of the ownership and circulation of information, the management of social relationships, the affirmation of personal significance and group identity and the inter relation of each of these tasks to the other. All these productive tasks together constitute a

livelihood. For an anthropologist, livelihood is an umbrella concept, which suggests that social life is layered and that these layers overlap (both in the way people talk about them and the way they should be analyzed). This is an important analytical feature of the notion of livelihoods (Wallman, 1984).

Livelihoods are the means people use to support themselves, to survive, and to prosper. Livelihoods are an outcome of how and why people organize to transform the environment to meet their needs through technology, labour, power, knowledge, and social relations. Livelihoods are also shaped by the broader economic and political systems within which they operate.

Objectives of the Study

- i) To examine demographic and socio-economic structure of the inhabitants of Aaloobari..
- ii) To study the various activities in which rural people are engaged to run their livelihood.
- iii) To examine the role of Tea plantation in generating employment to the rural people.
- iv) To study the problems and prospects relating to the sustainance of rural people.
- v) To analyze the problems related with various occupational structure.
- vi) To understand the elements of the physical environments (topography, climate, soil, natural vegetation, Surface and sub-surface drainage condition) of the study area directly.
- vii) To find out the nature of landuse and any change in the pattern of land utilization.

Methodology

Both qualitative and quantitative information has been generated from the primary and secondary sources. For the collection of data and information, baseline field sample survey from one study area has been carried out by questionnaire method (socio-economic survey). The investigation was based on the information collected from one village i.e. Aaloobari and 50 families. Hence, the generalization of findings has been made based on the sample study. Simple statistical tools like mean, average, pie-charts, bar diagram, histograms, were used to analyse the data collected from primary and secondary sources. As database, District Gazetteer of Darjeeling, District Census Handbook of Darjeeling and other necessary information from books,

journals, research report published as well as unpublished including retrieved web resources have been consulted. Primary information regarding demographic and socio-economic structure of the village has been collected through rigorous field survey.

Darjeeling “The Queen of Hills” having a population of 1,842,034(2011 census) is a place composed of 61% of Rural areas and 39% of urban areas. The town is located in the Mahabharat Range or Lesser Himalaya at an average elevation of 6,710 ft (2,050 m) with 27°02’N and 88°10’ E longitude. As Darjeeling is famous for tea plantation, it too has been giving employment to many tea garden workers who are mostly dependent on it to run their livelihood. Livelihood implies the activities carried out for the sustenance of life in which the people find out their pleasure as they perform them according to their tactics that enables them to find out their enjoyment within. It comprises the capabilities, assets (including both material and social resources) and activities required for means of living. This paper will emphasize on the livelihood pattern of one rural area of Darjeeling i.e. Aaloobari.

Case study of Socio-economic conditions of Aaloobari, Darjeeling

Socio-economic condition means the prevailing condition of people in their society as well as in their family and also their engagement in economic activities. Some of the parameters that have been selected to analyze the socio-economic condition of people are:

- Literacy rate and Level of education
- Age of marriage
- Number of families
- People’s engagement in occupation and economic contribution to their family
- Types of occupation
- Gender specific right to decision making
- Condition of people
- Social problems

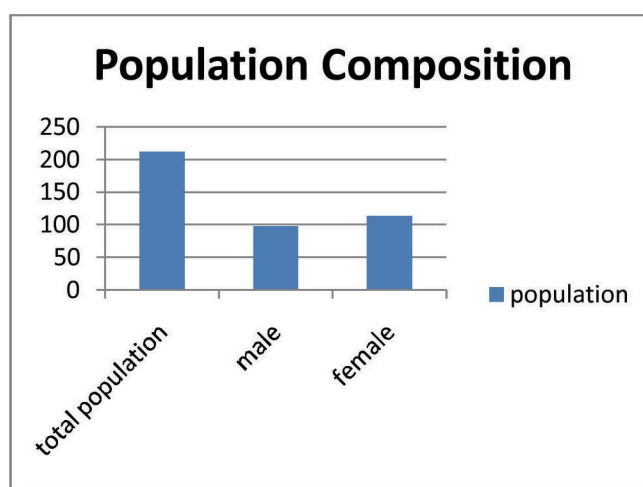
Location of the Study area

Alooari is a small area situated in Darjeeling pulbazar tehsil and located in Darjeeling district of West bengal. It is one of 47 villages in darjeeling pulbazar Block along with villages like Pandam Tea Garden and Badamtam Tea Garden. It is about 2 km from the town, the central location of Darjeeling with geographical coordinates of 27° 1' 36" North and 88° 15' 53" East. The valley is noted for its monastery and eco tourism. Alooari is also the place where initial tea plantation of the Darjeeling hills started in 1850s. These tea plantations are the major source of livelihood of poor people of Alooari. Jalapahar (1 Km) , Katapahar (1 Km) , Jorebungalow (1 Km) , West Point (1 Km) are the nearby Localities to Alooari.

Socio-economic conditions influencing livelihood of Rural people of Alooari

1. Population Composition

The total population of the area as studied consisted of 212 out of which 98 are male population with 40% child population, 38% working population and 22% senile population and 114 female population with 46% child population, 26% working population and 28% senile population. The findings revealed that dependents are large in number in both male and female while the working population is quite low.



N=50

Source: Field Survey 2013

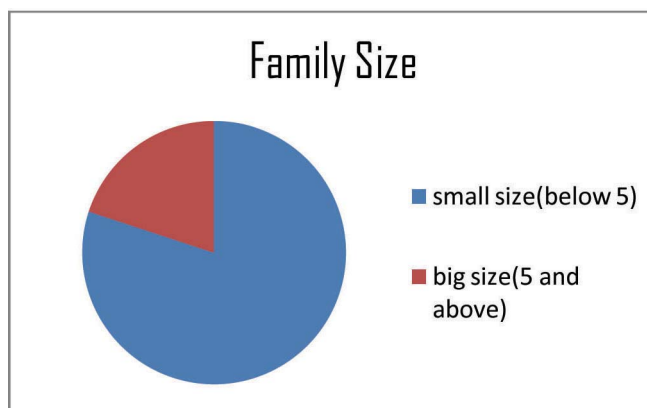
2. Family Size

The data presented in Table indicates that, majority (74%) of people belonged to small family and remaining (26%) belonged to large family size. The possible reason for finding small size families would be that, acceptance of small family norms by family to lead considered life with limited earnings and another reason might be due to awareness among people about problem of large family size.

Distribution of respondents according to their family size

(N=50)

Family size	Frequency	Percentage
Small size (Below 5)	40	80
Big size (5 and above)	10	20
Total	50	100

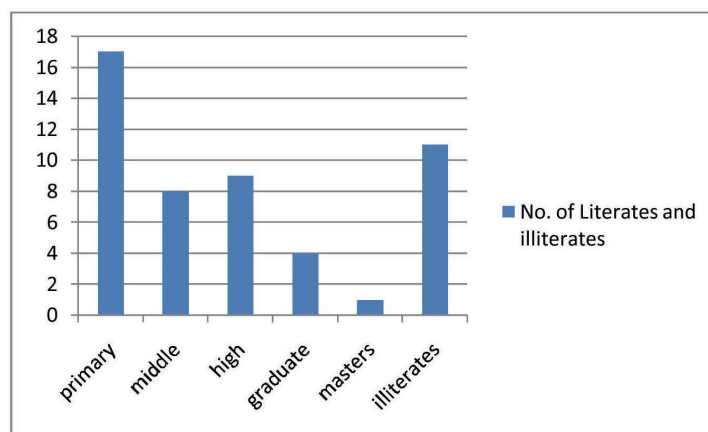


N=50

Source: Field Survey 2013

3. Education

The findings indicated that, considerable percent of the people (35%) were educated up to primary school, followed by illiterates (22%) and middle school (16%) level of education. This situation might have arisen due to low financial position of the beneficiaries and non-realization of importance of education. However, few people (17%) had education up to high school, (7%) graduate and (3%) masters.



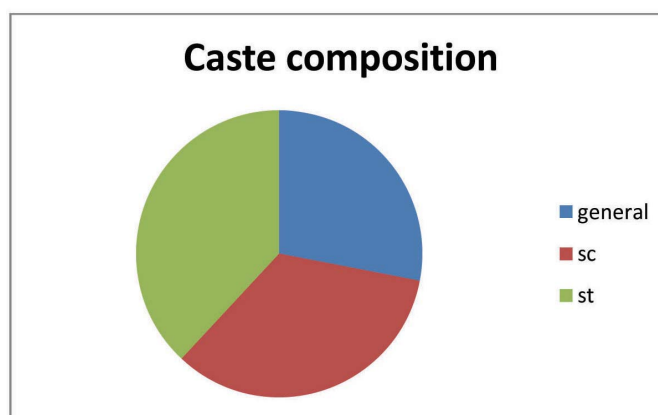
N=50

Source: Field Survey 2013

Literacy is the key element for socio-economic progress of the society. The findings revealed that the area still has high illiteracy rate. Around half of the people living in this area are illiterates. The literacy rate is very low among higher sections of the education levels. The literacy rate is low due to lack of awareness among poor people.

4. Caste composition of Population

The findings revealed that out of 50 families, 14 (28 %) belonged to general population and 17(34%) Sc and 19(38%) St population. Most of the general population were engaged in govt. jobs and business whereas most of the Sc and St population were engaged in tea industry, agriculture and rearing activities.

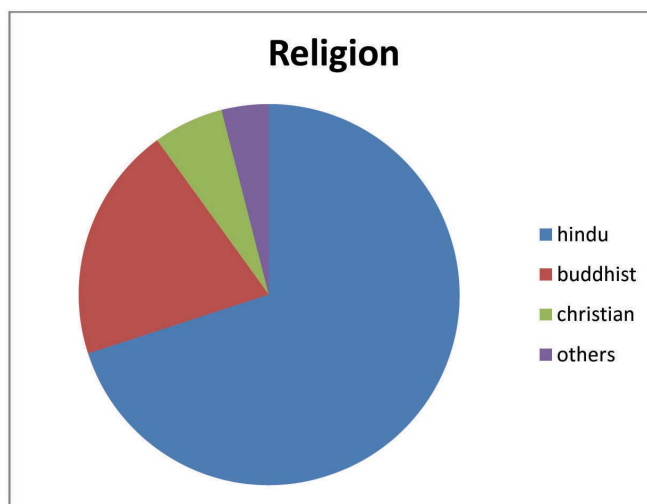


N=50

Source: Field Survey 2013)

5. Religion

The area is mostly dominated by Hindu Community with 70% of total population, 20% Buddhist, 6% Christian and 4% others. The presence of temples, Monastery mostly gompa reveals the fact.



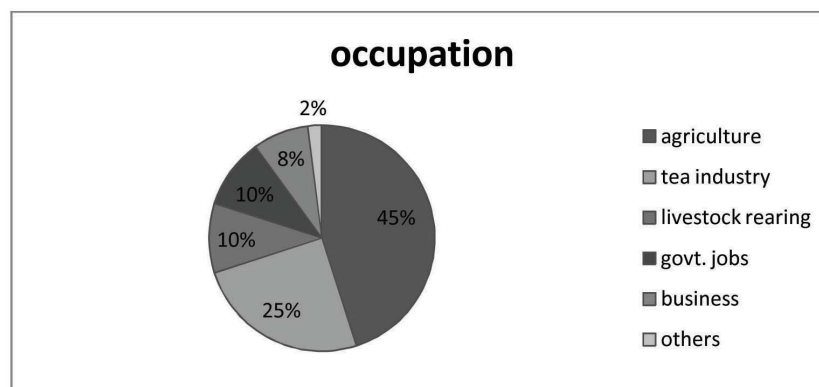
N=50

Source: Field Survey 2013

6. Occupation supporting Livelihood

The findings revealed that 45% of households depend upon agriculture, 25% on tea industry to sustain their livelihood. 10% of the households own farmlands, livestock and poultry. 10% of the household depends on government jobs. 8% depends on business and remaining 2% depends on other activities. The Subsistence farming and livestock rearing is the integral part for the livelihood of people of Aloobari. About 60% of households in the area own both land and livestock. There are few farmers with economic size of landholdings, who are growing vegetables, doing fish farming and tree planting. Some are enterprising by growing vegetables on leased lands. But only a few of the labor force are engaged in the off-farm employment activities. Most of the poor families are dependent on wages for income. And additional livelihood activities are teashops, tailoring and blacksmith works. The principal farm crops are potato, bean, ishquash, saag, etc. The major cash crops are sugarcane, , Daal (pulses), Dalle Khursani (round chilli), oranges and maize. These products are sold outside the area. Tea industries are also present in the area. Three tea estates namely Aloobari

tea estate, Pandam tea estate and Badamtam tea estate has generated lots of employment for rural people. Females has been the most wanted workers for these tea estates mostly as tea leaves picker. The area is ranked 11th among worst on development index, which is due to high level of poverty and deprivation. The income generation programmes that require less or no land such as bee keeping, basket-making, goat and poultry farming have become an important issue. A considerable number of households collect fuelwood, fodder for their own use and as a source of income. Tree growing in private lands, vegetable farming etc. is another non-traditional means of livelihoods of most of the people. Because of the uneconomic size of land holdings, lower productivity and excess of landless and marginal farmers, food production within the district is less than the subsistence requirements of the local people.



N=50

Source: Field Survey, 2013

4. Livestock and poultry farming

Livestock such as cattle, buffaloes and goats freely graze during the fallow seasons. There are about 41 cattle, 36 buffaloes, 28 goats, 26 sheep, 25 pigs, 32 fowls, 9 cows and 7 ducks in Alobari. Of the total households, about 10% of households own livestock. A considerable number of landless households own livestock (constitutes 7% of total area households, or about 3% of landless). The protection of tree seedlings and saplings against the freely roaming livestock, which are mostly planted along the bunds, ridges, and edges of agricultural land and along roadsides, is very difficult. As a result, the survival rate of seedlings planted on the farmlands is low. Two households are engaged in poultry farming.

6. Annual income

The survey revealed that out of 50 sample households, 26 respondents had the annual income below Rs.4800 before the implementation of TRYSEM. After receiving the benefits from the programme 21 respondents of the total sample households crossed the poverty line. About 14.00% households belonged to semi- medium income group. Nearly 13% of the households belonged to low income group. Mostly 19% households belonged to medium income group. Very less per cent (4%) of the household belonged to high income group.

5. Fuels used by rural people

The types of fuel used by rural people of Aloobari includes firewood, cow dung, kerosene, coal and L.P.Gs. Most of the households use L.P.Gs. for cooking. People living under poverty use firewoods and cow dungs.

N=50

Types of fuels used	Number of households
L.P.G.	32
L.P.G./Wood/Kerosene	10
Kerosene/Wood	8

Source: Field Survey, 2013

6. Sanitation

- In 2003-04, most of the members did not have proper sanitary system at their home.
- The drainage condition of the locality was poor.
- This affected their health condition leading to various diseases like – warm infection, urine infection, viral fever, skin infection, malaria, etc.
- With the upliftment of income over years and change in their lifestyle, the sanitary system also improved.
- In 2011-12, almost all the members could afford low cost safe sanitation at their home.

Conclusion

The case study on the socio economic condition of rural people of Aloobari area reveals that the overall condition is miserable. Low level of education,

early age of marriage, hard works to earn money, and also violence against women indicate lower socio-economic status of people. Aged people are deprived of getting proper treatment and compelled to do hard work to earn money. So, to improve the condition, more stress on literacy, steps to organise self help groups for employment purpose are necessary at first. It is also necessary to control incidence like early age marriage or domestic violence with strict hands.

Livelihood is the dynamic term with respect to time and place, its meaning vary from place to place and depend upon availability of resources in particular geographical area, people culture and practice. The livelihood sources are changes in behavior are known as coping strategies. If coping behavior is constantly necessary, then the livelihood strategy becomes a survival strategy, leading to erosion of assets. Poor households in risky environments adopt coping strategies to protect their livelihoods. It shows that one of the most favored mechanisms is that of diversifying into non-farm activities and seasonally migrating to other areas. Diversification into non-farm activities is of a temporary and permanent nature depending upon the severity of the situation. Like the present situation, the households that are badly hit are those of small, marginal farmers, landless households are diversifying first. The better-paid of non-farming works and concluded that there are constraints on access to non-farming employment in Alooari. The case study on the socio economic livelihood status of rural people of Alooari area reveals that the overall condition is miserable. Low level of education, landless farmers, poverty, hard works to earn money, low per capita income, unemployment, food insecurity, illiteracy, lack of primary health care facilities has been seen causing severe problems for the rural people. Aged women are deprived of getting proper treatment and compelled to do hard work to earn money. . Moreover, awareness of people and their intervention to control the problems like dowry system or consumption of alcohol is required. Mass media may take major role to increase awareness among people about these matters.

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29

Present Scenario and Future Prospect of Ecotourism –A Case Study of Ramdhura, Kalimpong

Aditya Subba

Ecotourism is a type of “Rural Tourism”. The term “Ecotourism” is perhaps the most misunderstood term in travel and tourism industry. So, to understand the concept of ecotourism, the word must be first defined. So, ecotourism is defined as “*responsible travel to natural areas that conserves the environment and improves the well-being of local people*” (TIES, 1990). For example; travelling and visiting a particular forest or a village is not termed as ecotourism unless the visit benefits the environment and population of that particular place.

Ecotourism is a solution to environmental preservation only if it is carefully thought out and regulated. To do otherwise is to further endanger the natural areas and indigenous cultural attractions, not protect them as envisioned.

As per the fundamental principle, the ecotourism should be: (i) nature-friendly (ii) ecologically sustainable (iii) environmentally educative (iv) ecologically beneficial to the local community. It should also offer satisfaction to the tourists. (Newsome *et al.* 2002; Page and Dowling 2002)

Objectives

- i) To analyze the current scenario of ecotourism of the study area.
- ii) To show the future prospect and possibilities of ecotourism of the study area.
- iii) To explore sustainable tourism practice which not only provide income-generating activities but also conserve natural and cultural heritage.
- iv) To review tourism development in the village.

Study Area

The study area i.e. Ramdhura is a small hamlet located under Kalimpong sub-division of Darjeeling district. The area lies in Mahabharat Range or Lesser Himalayas in the state of West Bengal. This village derives its name from the God "Ram". It consists of 96 families and comes under Burmaik Cinchona Plantation, which comes under the jurisdiction of Munsong Cinchona Plantation, Kalimpong. This plantation was started in 1901 by the British.

Geographically the area lies at a longitude of 27°9'41"N and latitude of 88°33'48"E. The elevation of the study area varies between 5000 to 5500 feet and is located 17 kms away from Kalimpong town. Temperature varies between 2°C-8°C in winter to maximum of 16°C – 23°C in summer. This village is surrounded by attractive natural landscape and the entire region is endowed with natural flora and fauna, which attracts a large number of tourists in the peak season from October-November and from January-April.

Socio-Economic Profile

This area has a cluster of 96 households. The major part of the households is dominated by the **Rai** community. Other communities include **Tamangs**, **Sherpas**, **Bhutias** and **Limbus**. The society reflects mostly agrarian type of society with 60% of people working as plantation labors and the remaining 40% either work outside the village or are involved in some petty business. Apart from that, people are also earning their livelihood by practicing floriculture, horticulture and animal husbandry. People here mostly live below the poverty line and are dependent on land and local natural resources. The major religion followed by the villagers is **Hinduism**. Though, a lot of them follows **Yumanism** and **Buddhism**.

Methodology

For the present case study a particular method of qualitative research was used. Datas were collected in following ways;

- i) Primary data was collected in January 2014. A semi-structured interview was conducted with 3 people who were the owner of some homestays* and around 15 local people of the village. People were basically asked about the present and future prospect of ecotourism in that particular village and the changes that have brought to the village after the implementation of ecotourism. Apart from that they were also asked about their knowledge on ecotourism and their interest towards this kind of rural tourism.

- ii) Apart from primary data secondary data was also collected through different journals, publications, reports, articles, internet resources and organizational websites.

**homestays are small houses, mainly in rural areas, for tourists to which offers both fooding and lodging and gives a kind of homely feeling.*

A Brief History of Ecotourism in Study Area

As mentioned above this area is a cinchona plantation area owned by the government. This area was a mere plantation area before 2010 but after the introduction of ecotourism by Mr. Sebastian Pradhan in the nearby villages like Sellery, Ecchey forest and other areas a new phase started in this village too. So, taking inspiration from these villages Mr. Arun Khaling too started homestays in his small four bedroom house. Thus, in this way ecotourism was started in this village.

Today this area does not only boost of six more homestays but is considered as a major ecotourism hotspot in this area. According to Mr. I.B. Rai, an owner of one of a homestay, *“tourism has now become the main source of income for the villagers. Visitors, too, are happy to come here and spend a day or two. Most of them tell us that their stay has been very pleasant.”* Thus, ecotourism have given a sort of new lease of life for the local unemployed people to earn their livelihood.

Results and Discussion

Introduction of Ecotourism

Ecotourism was introduced in the village by Mr. Arun Khaling, who also owns a homestay. He established his homestay in 2010, after coming back from Dubai, where he used to work. Though, in the nearby villages ecotourism was started before 2010. According to him, now after introducing ecotourism he is earning more money in his own village, staying with his own family compared to the sum he used to earn while working abroad.

After him six other people too have started homestays in this area and few other homestays are under construction. According to one of the owner the ecotourism not only have changed their financial condition but also have highlighted their village in national as well as international scenario.



Mr. Arun Khaling, the first person to start ecotourism in the village

Present Scenario of Ecotourism in The Village

As mentioned above, today there are as much as 6 homestays having 18 rooms owned by six different people. The inflow of tourist is also really good in the village. In fact, according to the owners more than 700 tourist have visited the village in the last 2 years from various parts of West Bengal, Mumbai, Delhi and Chennai. A few tourists from U.K. and U.S.A. have also visited the village.

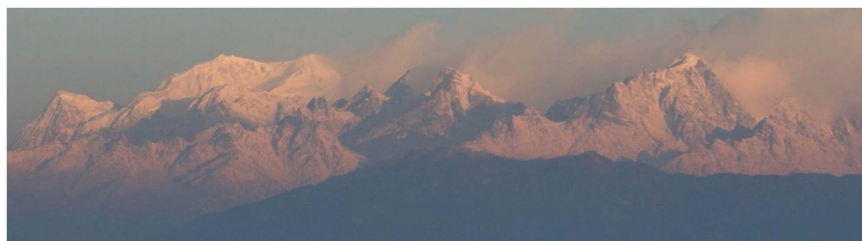
The homestays boost of serving the guest with total organic vegetables that is grown in local area as well as local cuisine, 24 hours running water, camp fire, hot water, sightseeing, trekking etc. To entertain the guest sometimes programs related to the local culture folk dance, folk music etc. are also held.

Reasons Behind The Inflow of Tourist in The Village

After conducting interviews I found out the below given reasons behind the inflow of tourist in the village:

- i) Great panoramic view of river Teesta, Kanchenjunga; the third highest peak of the world, Sikkim and Darjeeling. This area in fact is considered the only area in North Bengal from where one can have a view of the mountains and the river at a time.
- ii) The village is surrounded by interesting tourist attraction like Sellery and Ecchey forest; other two ecotourism hotspots, Deolo, Jalsa Bungalow, Burmaik Mahadev Dham, Sikkim, Lava, Kaffer, Algarah, Pedong, Munsong, Reshi, Damsang Gadi, Ramitey viewpoint etc.

- iii) Availability of different varieties of natural flora like Pine, Orchids, Ezeliya, Black Cardamom, Broomstick, Cinchona, Rubber plant, *kokomhendo*; a small deciduous tree, poinsettia etc.
- iv) Availability of different varieties of fauna like deer, bear, leopards and different varieties of birds like pheasants, cuckoos, minivets, flycatchers, bulbuls, orioles, owls, partridges, sunbirds, swallows, swifts and woodpeckers. In fact, according to some tourists this place could be a great birding spot in future.
- v) Good trekking routes from the village to Sellery, Ecchey Forest, Algarah, Pedong and Munsong.
- vi) Beautiful and unexplored natural environment.
- vii) According to some tourist they prefer this place instead of overcrowded Darjeeling because of its quiet and peaceful nature.



View of Kanchenjunga from the village



View of river Teesta from the village

Changes after Implementation of Ecotourism in The Village

Though ecotourism in the village is only around three years old but after its implementation a lot of positive changes have occurred in the village; as mentioned below,

(i) Job Creation

After the establishment of ecotourism in this area a lot of jobs were created not only in the field of homestays and catering but also in transportation, retailing, and in information/heritage interpretation. A few restaurants which serve local cuisine have also been opened.

(ii) New Business Opportunities

Ecotourism has generated new business opportunities for the villagers. The villagers who are not involved in the tourism industry directly has also benefited after developing close relationships with tourist facilities where local food and wine can be used as part of the tourism offering in the locality. Moreover, the villagers have to no more go to the local market to sell their vegetables because all their vegetables are retained by the people involved in hotel and catering business, thus saving their transportation cost.

(iii) Opportunities for Youth

There are lots of youths residing in these areas who are either unemployed or working in nearby towns like Kalimpong or Gangtok but after the initiation of ecotourism a lot of opportunities have suddenly cropped up for these youths. Career options are enhanced as trainer, tourist guide or running tourism business. Today a lot of local youths are involved in the tourism sector in one way or other.

(iv) Change in The Mindset of The Local People

A lot of people residing in this area are simple-minded, illiterate and conservative but after the inflow of tourists from different communities the mindset of the local villagers are changing. They have become more open to an alien person and a huge sense of self confidence has enhanced their personality. The locality too has changed and the people have become more open minded and tourist friendly.

(v) Environmental Improvements

After the introduction of ecotourism in this village a lot of improvements have taken place in terms of roadways and other areas due to political pressure from the tourist authorities. Constructions of small roads are also taking place within the village through the scheme of MGNREGA. According

to some of the local people a plan of creating an eco-park has also been approved by the government in the village.

(vi) Self – Dependent

The villagers have become more self dependent after the tourism industry was initiated. They no more have to depend upon their meager government salary or other government funds because they can earn more money through the tourism sector. A lot of women are forming self – help groups and making local handicrafts to sell.

Future Prospect of Ecotourism in The Village

A lot of things need to be done and changed to boost up the tourism sector in the village. So, after interviewing the owners of the homestays and the local people of the village, if the following things are implemented, the future of ecotourism in the village could be better

- i) Introduction of adventurous sports like Rock-climbing, Para- gliding, Mountain Biking, Hiking, Trekking, Camping etc.
- ii) Construction of an eco-park where the local flora and fauna could be conserved for their sustainability.
- iii) Construction of a heritage centre through which local culture and authenticity of the place can be showcased.
- iv) Since, 60% of the villagers are plantation workers earning a meager salary of Rs. 4000-5000 monthly and other 40% are either unemployed or working outside the village so if some funds is allotted to this unemployed people it would be better for the local people as well as the tourism sector of the village. According to most of the villagers I interviewed, they were really interested in ecotourism but due to financial scarcity they could not set up their business venture.
- v) The ecotourism in the village is totally based on personal funding so, if the Government and Cinchona department help the local people in some way or other the ecotourism would definitely flourish in future.
- vi) Very little is known about this area. So, to attract the local as well as foreign tourists, the advertisement of the study area in every possible way is necessary.
- vii) Tourism information centre, public transport enhancement, scenic road construction training in hospitality skills can be done for the enhancement of ecotourism.

- viii) Only about 20% of the population of the village is related to ecotourism right now. So, community involvement is necessary to lessen the conflicts between visitor interests and local interests, and can contribute towards the authenticity of rural holidays which many visitors seek.
- ix) Residents of the community lack the training necessary to provide for tourist so training programs are necessary.
- x) A lot of improper infrastructure and lack of safety provisions for the tourist has been observed. So, it is mandatory to curb these problems.
- xi) The villagers are totally dependent on natural water sources; no one knows when this water source goes kaput. So, it is mandatory to install a water reservoir keeping in mind the future of the villagers as well as the tourism sector.

Sustainable Ecotourism

After a brief stay in the village it has been found out that the local villagers to earn their livelihood are practicing hunting, poaching, deforestation and various other activities which could hamper the natural environment and tourism sector of the village. Not only adults but small kinds were also seen running after birds with catapult in their hands for their personal interests. So, to maintain a sustainable ecotourism following methods may be applied

- i) Workshops and seminars by government and different NGOs to educate the people about environmental sustainability and biodiversity conservation.
- ii) As mentioned above construction of eco-parks and heritage centre to conserve the local flora, fauna and authenticity of the place.
- iii) Development of visitor services which enhance the local heritage and environment.
- iv) Minimizing the use of fossil fuels, conserving local plant and wildlife and blending with the environment.
- v) Hunting, poaching, grazing of animals and other similar activities which damages the environment should be immediately stopped.
- vi) Rules related to landscape conservation should be created because landscape is crucial to ecotourism for heritage conservation.
- vii) Preservation, protection and enhancement of the quality of the resources, which are the basis of tourism.

- viii) Emphasis on high quality research keeping in mind the future possibilities of ecotourism.
- ix) Protection, in – situ and ex – situ conservation and monitoring of flora and fauna.
- x) Solid waste is a big issue, so, keeping the environment free of solid waste.

Feedback from Some of The Tourist

Mr. Arnab Chaudhary of Dhakuria has described his brief stay in the village in following words, *“we visited the place accidentally and to our pleasant surprise this place turned out to be one of the best places in North Bengal. The hospitality of the host and his family was excellent. We had never seen such a view of Kanchenjunga range if the weather is good. Hope to visit this village as soon as possible.”*

While Mr. Mithun Chakroborty, an avid traveler of Kolkata said that this area has the potential to become one of the best ecotourism hotspot not only in North Bengal but whole of India because of its location and the view of Kanchenjunga and Teesta River.

(Source: feedback register, khaling homestay)

Final Thoughts and Conclusion

Ecotourism is meant to enhance the business, income and to create employment opportunities for the local people without affecting the environment of the area. This kind of rural tourism can be important source of jobs for rural communities. It not only offers business opportunities to local residents, but it can also enhance the local quality of life. Tourism can also support local culture in rural areas by encouraging restoration of local and regional historic sites.

And since the concept of ecotourism is new to this area and in fact unknown to maximum people residing in this village. It seems that ecotourism is here to stay, but this place is still at a very early and delicate stage in its growth. So, to educate the local people about the importance of ecotourism NGOs, local body, government and the educated youths of the society should take efforts to teach the people about ecotourism and environmental sustainability. Apart from consciousness among the people, ecotourism is also depended on different natural resources. So, management of these resources has become one of the issues and very step considered important should be taken as soon as possible.

This place has a great potential to turn into an ecotourism hotspot like, Sellery Forest, a nearby village which has turned dramatically into a great tourist spot from an uncivilized remote village after the introduction of ecotourism. But the task of changing the place into an ecotourism hotspot is not easy. For that the people who are involved in this business should not only look upon this business as a financial venture but also should make real and important contributions to conservation of natural environment and development of disadvantaged communities. Because, if there is no natural environment, there is no ecotourism.

Acknowledgement

The author records due acknowledgement to Mr. Arun Khaling; the owner of Khaling Homestay, Mr. Mahendra Rai; Principal, Mount View Nursery School, the owners of other homestays and the local people for guiding and co-operating during the interview process and collection of primary data.

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Rural-Urban Labour Migration; A case study of Darjeeling Town

Ashish chhetri

Darjeeling has a long history of migration, in fact the prolonged evolution of town is the outcome of the various aspects of migration. The town though bit small in its geographical scale has a diverse pattern of livelihood, whose way of living is directly or indirectly related with the Rural-Urban Migration. The Rural-Urban labour migration is the significant factor that is regulating not only the demographic scene but also influencing the entire socio-economic status of the town. Darjeeling, the first town to be lighted with electricity all over the country, the establishment of 'toy train' and more significantly the introduction and rapid extension of tea plantation in the hill required huge amount of cheap labours at the initial stage and which was well fulfilled by not only from the surrounding areas but also from the neighboring countries.

Migration: Across the world millions of people are moving from one place to another in search of better jobs and better standard of living, such movement is called as Migration. The term *Migration* literary means, *the movement of people from one place to another, without any restriction on the distance involved in the movement.* Migration is the most significant and a dynamic phenomenon that dominates the entire *cultural diffusion* and *social-integration* over the world. Migration may be of various kinds on the basis of motivation, distance, and time. Mainly the migrations based on economic and political motivations are more common in the history of human civilization.

Rural-Urban Migration: The quantitative aspects of the movement of people from rural areas to the urban centers are literary called as rural-urban migration. It is the result of the combined effect of both push and pull factors. The rapid urbanization and industrial growth in the developing

countries usually generate migratory tendencies among rural people living in the countryside. In rural areas less employment opportunities, low and uncertain wages and lack of other facilities for education, health, recreation and other services frequently discourage people to live in the rural areas and as a result they migrate to the growing urban centers. Whereas, on the other side the pull factors of the urban centers, like lucrative employment opportunities, regular and higher wages, better educational and health facilities, and other attractive socio-cultural facilities encourage people to migrate in the urban areas.

Labour Migration; The processes of movement from one place to another in search of employment, specially for manual work is called as 'labour migration'. People are moving over the world and doing jobs ranging from menial labour such as carrying luggage to computer programming. The flow of labour migration is increasing rapidly across the world after the introduction of the principles of *Globalisation* i.e. *the free flow of labours and technologies among the nations*.

“Migrant”: The term refers to a person who moves from one place/region to another to live and usually to work, either temporarily or permanently. Migrants may move to take up employment, or to be reunited with family members. Many move for a combination of reasons such as employment, education, etc.

“Labour Migrant”: Labour migrant is someone who arrives in the host country or region with the intention of employment, specially in the manual working sectors. According to the Migrant Workers' Convention, migrant worker is “a person, who is to be engaged, is engaged or has been engaged in a remunerated activity in a State of which he or she is not a national” (Article 2.1). In the era of globalization migrant labourers have become an increasingly visible social group within the developed and even developing countries of the world.

Global Scenario of Migration

According to the World Migration Report (WMR) 2010, the number of international migrants in the world today has exceeded 214 million, which is unprecedented compared to just 191 million in 2005. If the pace of migration continues at the same rate as in the last 20 years, the number of international migrants worldwide could exceed 405 million by 2050. If internal migrants, estimated at 740 million are also taken into account, the total number of migrants would be nearly 1 billion worldwide today. With the increase in number, there is a greater diversity of migrants in terms of ethnicity, language,

culture and religion. There has also been greater participation of women. Regarding destinations and origin places of migrants, new markets are emerging not just in Asia and the Gulf but also in Latin America and Africa.

In South Asia, India is the main country of destination in the region and also a major country of origin. The Indian Diaspora (Jewish communities) consists of 25 million worldwide with 10 percent found in the United States alone. Bhutan has the largest estimated number of international migrants in South-Central Asia, representing a share of 5.7 percent of the total population of Bhutan. Bangladesh, Pakistan, Afghanistan, Nepal and Sri Lanka are other major countries of origin. The biggest demand for Sri Lankan male and female workers is in the Middle East countries, mainly Saudi Arabia, Kuwait, the United Arab Emirates, Jordan and Qatar accounting for 86 percent of migrant employment. The Sri Lankan Ministry of Foreign Employment Promotion and Welfare published the National Policy on Labour Migration last year aimed at ensuring the protection of the interests of its migrant population. (Nepal Migration Year Book 2010)

Objectives of The Paper

The main objective of the study is to explore qualitatively ‘the trends, patterns and nature of Rural-Urban labour migration and its impact on the socio-economic condition of the town as well as the rural areas in Darjeeling hill’. The more specific objectives are-

- a) To examine the major source regions of rural-urban labour migration existing, in Darjeeling town.
- b) To study the factors that regulates the rural to urban migration in Darjeeling.
- c) To examine the background and the standard of living of the labour migrants in the hill.
- d) To analyze the working index and the division of works among the labour migrants in the town.
- e) To explore the impact of the rural-urban labour migration in the development of the town as well as the surrounding rural areas.

Methodology / Approach

The paper uses primary data collected through the sampling survey of grass-root level on 102 individuals in the town and its surrounding rural areas. For the collection of data, baseline field sample survey was carried out by questionnaire method. In course of field work a number of labourers from

the sample area were interviewed in order to know the actual scenario of labour migration and livelihood of the labour migrants in the town. Secondary information are collected from the relevant articles and journals.

Study Area

Darjeeling is a small hilly district of west Bengal, situated in the northern part of the state. The pleasant climate, natural scenic beauty with a toy train and awesome flavor of tea has made it famous all over the world. The name '*Darjeeling*' has been derived from Tibetan words, '*Dorje*' meaning *thunderbolt* and '*Ling*' meaning *place or land*. Darjeeling has been the ideal residential place where, none of the place is dominant by one particular class or caste or religious groups. The social hierarchy is hardly noticeable in the town, where people are not bound to pursue a definite way of lifestyle. This has resulted in a cosmopolitan way of livelihood, which is generally termed as Darjeeling way of life style i.e. the lifestyle of a classless and casteless society, where the people from one class or caste are ready to treat one from other class or caste as their brothers and sisters. This typical pattern of secular lifestyle is not the result of one day programme but the sources provide that this is the outcome of the prolonged rural-urban migration in darjeeling town.

Location

Darjeeling is located in the northern part of West Bengal covering the total area of 3,149 sq km of the foothills of Lesser Himalaya having an average elevation of 6,710 ft (2,050 m) with 26°27'2" N to 27°13'2" N latitudinal and 87°59'2" E to 88°53'2" E longitudinal coordinates. The town is about 86.5 km or 53 miles from Siliguri junction and is connected by the "National Highway 55". The district mainly comprises of rugged mountainous topography of sedimentary and metamorphic rocks of various kind which is dissected by several streams and rivers originated from the Himalayas in the great height. It shares territorial boundaries with Sikkim, Nepal and Bhutan which have been the significant source region of labour migrants in the town.

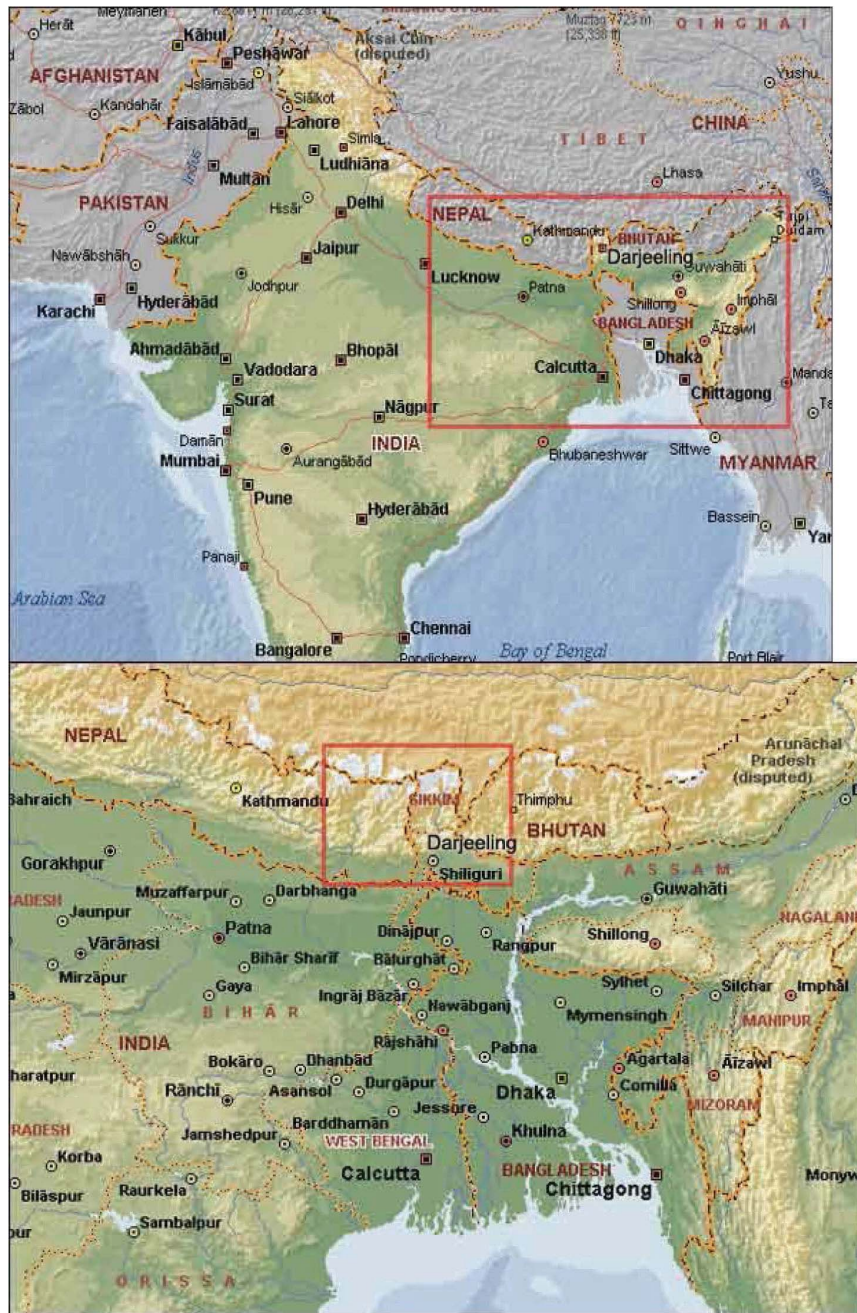


Fig: Location of Darjeeling within India Fig: location of study area within north-east India

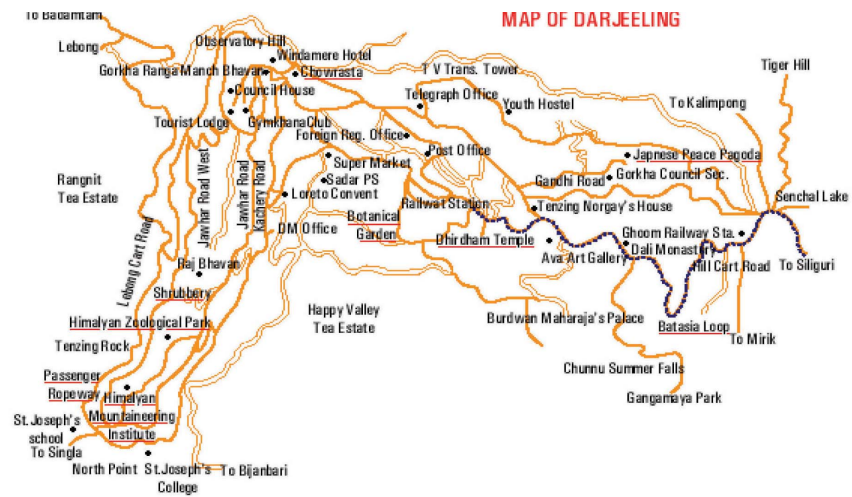
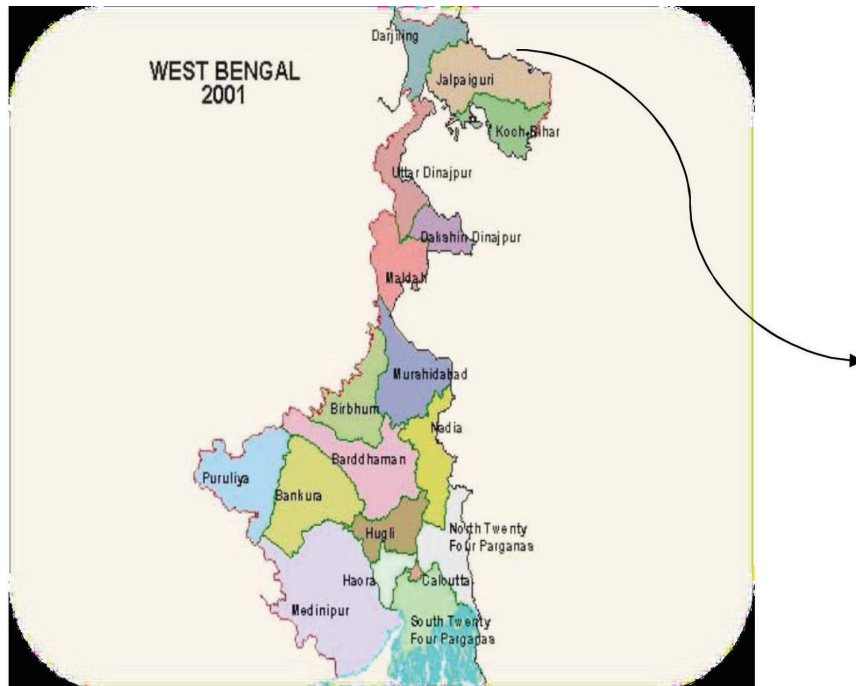


Fig. Showing location of study area in West Bengal

Population and Economy

The district is presently inhabited by 18,42,034 people of which male and female are 934,796 and 907,238 respectively with an average density of 580 persons/sq km. The sex ratio is 971 female per 1000 male which is highest in the state. With 79.92% literacy rate the district ranked 6th in terms of literacy rate in the state. Majority of the people in the town are gorkhas but people from other communities like Marwari, Bengali Bihari, Dukpa, etc also reside in the town.

Tea Industries and tourisms are the important economic base of the town. More than 75% of the total population is dependent on tea industries and about 20% on tourism and the rest few percent are engaged in government services and petty business.

History of Labour Migration in Darjeeling

Migration is as old as the evolution of town in Darjeeling hills and the gorkhas have a long history of migration. Since from the time of British rule in India, migration has never stopped in Darjeeling. Labour migration from Nepal and their livelihood in the hills are closely associated with the establishment and development of 'tea estates' and the 'town' in Darjeeling hills. Darjeeling has always been the center of attraction for labour migrants of its surrounding regions specially Nepal and Bhutan. As migration is a dynamic phenomenon, Trends and Patterns of labour migration in Darjeeling hill has undergone several changes with the advancement of civilization and technologies in the hills. Initially the labour migration in Darjeeling was solely based on the economic opportunities offered by the British East India companies in the Tea Gardens, as tea plantation was highly labour intensive during 18th century. The demographic structure of Darjeeling town is very much influenced by the intensity of labour migrants in Darjeeling. After the establishment of tea estates in Darjeeling, the East India Company started to bring Nepalese to work in the gardens. Hence the people of different casts and religion from East-Nepal began to settle in the hills of Darjeeling to earn their livelihood. In this way a *casteless society* was originated in Darjeeling. Gradually these people became the local resident of Darjeeling hill.

After the war between the Gorkhas and British East-India Company in 1814, British government in India started recruiting Gorkhas in their regiments. In this way the civilian migration also expanded in Darjeeling hills. Gradually the labour migration from Nepal started to dominate the entire scenario of social development in Darjeeling. Since then the rate of population growth in the hill became consistently high. The subsequent

growth of tea plantation in such a healthy environment offered easy living which also attracted migrants from the far areas such as a huge number of Tibetan refugees who fled from Tibet after Chinese invasion also settled in the hills of Darjeeling. These encouraged the Britishers to expand their trade in Darjeeling and the developments of roads and other communication facilities were gradually setup in Darjeeling. Later on after the independence of the country, tea gardens were owned by the Indians, and this also attracted some Indian communities to grow with them in the hills. In this way the labour migrants from Bihar, Orissa and southern part of west Bengal and east Bengal started to influence the economic scenario of Darjeeling.

Trends, Patterns and Nature of Rural-Urban Labour Migration in Darjeeling

As migration is a dynamic phenomenon, changes in patterns and trends of migration is the rule of every developing human civilization. The mode of rural to urban migration in Darjeeling is also very dynamic and changing in nature. Labour migration has maintained steady and strong trends among the people in Darjeeling. The scenario of rural-urban labour migration in Darjeeling town is more dependent on economic opportunities generated by various employment oriented activities in the town. Tourism being the backbone of the town, scope for the development of business in the town has been always acting as the magnet for attracting a bulk of rural labours in the town. In recent days labour migration has become more male oriented as the main motive of the migrants is determined by economic aspects. The population figures of the town along with the growth rate have been presented in the table below.

Table: Decadal change in population growth, Darjeeling Municipality (1951-2011)

Si.No	Year	Total population	Decadal change		% change in growth of population
1.	1971	42,873	1971-81	14730	32.60%
2.	1981	57,603	1981-91	13807	26.30%
3.	1991	71,410	1991-01	35787	44.70%
4.	2001	107,197	2001-11	13217	14.47%
5.	2011	120,414	—	—	—

Source: Census 2011 and Darjeeling municipality.

The above table shows that the total population of Darjeeling town in the year 1971 was 42,873 which have increased to 120,414 in the year 2011. The rate of population growth over the last five decades has been steady. The composition of people is diverse and the steady rise in the population is

attributed to migration of people from nearby places. More than thousands of labour migrants are entering the town every year, more from Nepal, Bhutan, doers region and some districts of central West Bengal and Bihar. There was the change of 14.47 percent in the population compared to population as per 2001. In the previous census of India 2001, Darjeeling District recorded increase of 23.79 percent to its population compared to 1991. The trend of population growth is relatively high in all decades, however population growth was comparatively low between “1981 to 1991” due to the political turmoil that Darjeeling witnessed. The political upsurge that existed in the hills during those period, created fear among the migrants, compelling them to stay in their native places.

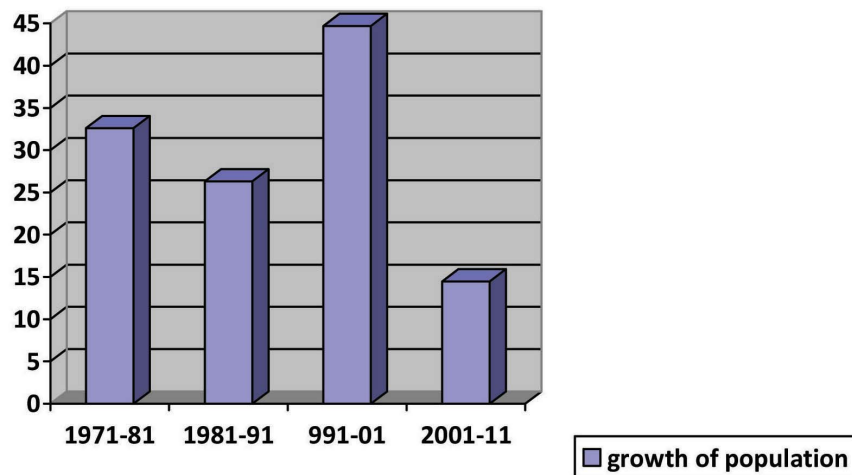


Fig: Showing the % change in decadal growth of population in Darjeeling municipality

Factors affecting Rural-Urban labour migration in Darjeeling

“Migration” is not the outcome of singular phenomenon, but it is the combination of multiple factors regulated by physical, political, cultural and socio-economic trends of the society. The division of labourers into skilled and unskilled workers also affects labour migration. On the basis of nature the causes of labour migration may be classified into two categories;

- a) Centripetal factors and
- b) Centrifugal factors.

Centripetal or pull factors usually include the opportunities and facilities that are prevailing in the destination region, while the centrifugal or push

factor is associated with the drawbacks of source region. As Darjeeling is a hilly area, the overall development of infrastructural facilities throughout the region is highly uneven. The maximum facilities are available only in the urban areas, while rural areas are completely deprived of modern infrastructural facilities. This has created economic disparities in the region, where people wish to settle in the urban areas. Such circumstances have given birth to a host of factors that are responsible for Rural-Urban Labour migration in the hill. Some of these factors include;

- a) Low employment opportunities and lack of small scale cottage industries in the rural hills.
- b) Appalling poverty, Scarcity of gently sloping arable land, lack of modern farm techniques and low productivity of soil in the surrounding rural areas.
- c) Lack of proper infrastructural facilities in rural corners related to lightening and transport-communication, health and nutrition, education and employment, etc.
- d) Old traditions and customs, conservative thoughts of the people and lower standard of living in the villages, frequently encourage youths to migrate into the modern societies of the urban lifestyle.
- e) Better employment opportunities, regular and higher wages, and fixed working hours prevailing in the urban areas attract huge number of rural folks in the town.
- f) Better amenities of living, modern facilities for entertainment and recreation makes urban lifestyle more attractive to the people migrated from remote corners.

Nature and trends of Rural to Urban Migration

The extensity of Rural-Urban labour migration in Darjeeling is increasing steadily with the expansion of trade and tourisms in the town. Both national and international rural immigration in the town is very high in case of rural to urban migration. The major source regions and the nature of labour migration has been presented below with the help of the following table;

Sl.No	Source region	Porters	Constructional workers	Workers at hotels and Restaurants	Household workers	Helpers at garages and workshops	Total
1.	Surrounding rural areas	6	9	14	1	2	32
2.	Remote corners of Nepal	18	9	4	-	-	31
3.	Rural areas of Doors region	-	14	6	-	3	23
4.	Remote areas of central districts of W.B and Bihar	-	9	3	-	4	16

Source: primary data obtained from field survey, Darjeeling, 2013.

According to the above table pertaining the data collected from the random sampling field survey, 2013, it can be seen that out of 32 labour migrants from surrounding rural areas of the district, maximum people i.e. about 45% are engaged in hotels, restaurants and shops. Most of these workers are literate and earning around Rs 3000 to Rs4000 per month. They are serving as waiters, sellers and few are also serving as cooks in the hotels and bakery shops. Next to this section about 25% of the rural migrants are working as constructional labourers, in the construction of buildings, walls, bridges etc. very low percentage of the labour migrants from the surrounding rural areas are engaged in the profession of porters and household servants. these source areas mainly include, Rimbik busty, bijanbari valley, pokhriabong busty, lebung valley, dabaipani busty etc.

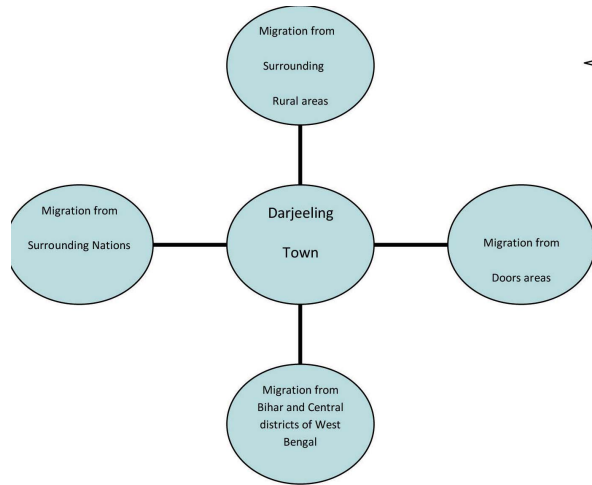


Fig: Showing major source region of rural-urban labour migration in Darjeeling Town fig: Showing surrounding source region of rural-urban migration in Darjeeling Town

The labour migration from rural Nepal to Darjeeling town dominates the entire scene of the porters in the town. More than 70% of the labour migrants from rural Nepal is working as porters. The open border between Nepal and India allows the free flow of labour migrants in the town. Maximum porters in the town have come from the surrounding hilly districts of Nepal such as Charikot(Dolkha), Ilam etc. migrants from these areas are mainly of long-term, some porters are even working in the town since last 10-15 years and they have their family with them. They usually carry luggage of tourist from the taxi stands to hotels, households goods, water etc. Maximum are also engaged in unloading and carrying of constructional materials like cement, bricks, sands, gravels etc. their earning varies according to the availability of work and ranges from Rs200 to Rs 300 per day. Only 20% to 30% of migrants from Nepal are engaged in other works such as working in hotels, restaurants, shops driving etc.

The remote corners of doars area have always been the chief source of labour in Darjeeling. Almost 72% of the constructional workers of various aspects such as building of multi-steroid houses, roads, bridges huge walls etc. are being carried out by the labourers from these areas. The major source region includes Kalchini, Dhubgari, Birpara, Malbazar, Gorubathan etc. their migration is usually short term and they come to the hills seasonally. Their members increase during dry seasons and decrease during dry seasons. The nature and trends of the migrants from remote areas of central districts of West Bengal and Bihar are also similar to the migrants of doars area. They are usually male members and they stay for short period of time. They engage themselves mainly in repairing roads, constructing bridges, and paintings etc. which are undertaken in the dry season.

Impact of Rural-Urban Labour Migration in Darjeeling

There are diverse opinions among the masses of and around Darjeeling regarding the impact of Rural-Urban labour migration in Darjeeling town, as well as its surrounding rural areas. The rural urban migration has not only benefited the town but it has played a vital role in maintaining the livelihood of the rural areas. There is no denying the fact that the town provides with employment opportunities of different kinds but the capital generated out of these opportunities is also helping in improving the basic standard of living among the rural folks. The major impact of Rural-Urban migration in Darjeeling can be listed as under;

- a) It helps in meeting the labour requirements of the town, thereby providing employment to huge mass of rural population.

- b) Some skilled from plain areas are playing vital role in improving the infrastructure of the town, as well as creating awareness among the rural population also, regarding the techniques required for the skilled work.
- c) Some labour migrants come along with their families to work in the town. As they reside permanently, their children will get the opportunity to avail the better educational facilities available in the town, that in turn improving their basic living standard.
- d) Labour migrants not only take money to their native places but they also carry new ideas and techniques. Which help in spreading awareness among the village folks, these are indirectly improving the social as well as economic condition of the village.
- e) Rural-Urban migration is also playing a vital role in flourishing business in the village also. The village commodities reach directly to the urban areas and they also find a reasonable price for their commodities. Hence rural- urban migration is affecting the spread of trade in Darjeeling hills.

Conclusion

Rural-Urban migration is a basic phenomenon, which helps in the urbanization of a place. Development again is a complex process which needs various Resources of which Human Resources are of utmost importance. The urban population only cannot meet the demand of labourers so in order to fulfill the demand, rural population makes a gradual move to urban areas, meeting the labour demand of the town as well as improving their economic condition. In the developing town like Darjeeling, rural to urban migration is mandatory to maintain the equilibrium of development in both the Rural and urban societies in Darjeeling hill.

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