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Journal of Rural Development

Vol.34 **July - September - 2015** **No.3**

CONTENTS

1. Assessment of Implementation of Tribal Sub-Plan in AP 265
Palla Trinadha Rao and M.Gopinath Reddy

2. Regional Rural Banks and Their Performance – An Empirical Study 285
R. Suresh

3. Economics of Buffalo Milk Production – A Case Study of Composite Andhra Pradesh 305
Gudipati Vijayudu

4. Multi-dimensional Poverty: An Empirical Study in Bankura District, West Bengal 327
Supravat Bagli

5. Role of Institutional Support System in Drought Management: The Case of Western Odisha 343
Mrutyunjay Swain and Mamata Swain

6. Achieving Self-sufficient Model Villages for Inclusive Growth: A Case of Ramchandrapur 371
Girijesh Singh Mahra, Om Prakash Mishra, Linda Majani, Aleksandra Janjic and Tiwonge Kanyenda

7. Cluster Development Initiative for Poverty Alleviation : A Case Study 391
Rinku Das

8. Capture Fishery and Rural Socio-Economic Development- 405
A Study Of Three Fishing Villages Of Cachar District, Assam
Pinki Purkayastha and Susmita Gupta

BOOK REVIEWS

1. India's Tryst with Bt Cotton-Learning from the First Decade 415
Dr. Siddayya

2. Tank Irrigation of Dry Zones in India: A Sustainable Livelihood 416
Dr. Siddayya

3. North South Divide - Lessons from the States and Regions 417
Dr. E.V. Prakash Rao

4. Agricultural Diversification and Food Security in the Mountain Ecosystem – 418
A Case Study of Uttarakhand
Dr. E.V. Prakash Rao

5. Indian Economy in Transition : Essays in Honour of C.T.Kurien 420
Dr. Ch. Radhika Rani

6. Microfinance India, The Social Performance Report 2013 423
Dr. N.V. Madhuri

7. Trend Magnitude and Dimensions of Inequality in Post-Reform India 425
Dr. N.V. Madhuri

8. Gender Issues in Water and Sanitation Programmes: Lessons from India 426
Dr. C. Dheeraja

Journal of Rural Development, Vol. 34 No. (3) pp. 265 - 283
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ASSESSMENT OF IMPLEMENTATION OF TRIBAL SUB-PLAN IN AP

*Palla Trinadha Rao**
and
*M.Gopinath Reddy***

ABSTRACT

This paper examines the evolution of tribal development policy and the Tribal Sub-Plan (TSP) Strategy in the State of Andhra Pradesh (erstwhile United Andhra Pradesh), and attempts to focus on the aspects related to the financial allocations as per Planning Commission guidelines, utilisation trends, strengthening of livelihoods and efficacy of institutions in the implementation of the Tribal Sub-Plan (TSP) during the year 2009-2010. This paper also makes an attempt to find out the benefits accrued by the individual beneficiary schemes as well as area benefit schemes under TSP, and its impact on the livelihoods of tribals in two selected districts, i.e., East Godavari district of Coastal Andhra and Adilabad district of Telangana Region. The conclusions in the paper stand as benchmark to the pre-legislation period of AP SC/ST Sub-Plan (Planning, Allocation and Utilisation of Financial Resources) Act 2012 that AP Government has brought in recently.

Introduction

The concept of Tribal Sub-Plan launched in the Fifth Plan aims to ensure integrated development of the various scheduled tribe communities in the country with the aid of all pooled financial resources of the Centre and the States, keeping in view their different economic and socio-cultural backgrounds (Planning Commission, 2006).

The decline in the financial allocations and the tardy implementation of tribal development programmes under the Tribal Sub-Plan (TSP) for the welfare and protection of the scheduled tribes is a cause for great concern. The TSP envisages the preparation of special plans and allocation of funds in proportion to the ST population, by each department every financial year, for their economic upliftment. Such allocations are made mandatory for all departments. However, most departments have not been making the budgetary provisions under the TSP. This shortfall in allocations has been running into crores of rupees. Furthermore, even the amount spent under TSP is not helping the

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tribals to improve their livelihoods, due to lack of commitment on the part of the implementing agencies. Although several committees have been set up to monitor the budget flow for the tribal development, the shortfall of huge allocations of funds has been the order of the day. The TSP funds are being diverted for the benefit of persons other than the scheduled tribes; this is also a major concern.

Evolution of the Concept of TSP

"The Sub-Plan must attempt, in broad terms, answers to the main issues facing the tribal communities in these areas. In many cases it may be necessary to look at the problem unfettered by the existing formal procedures or legal frame. The final course may be defined only after fully examining the impact of all the factors on the tribal life. The State must bring up these issues, where necessary, to the Union Government level so that they can be considered at the highest level before anything is allowed to stand in the way of fast development of these people" (Planning Commission, 2003).

The Fourth Plan met with certain inadequacies and shortcomings in the process of implementation. There was no appreciable progress due to the limited area of blocks, rigid adherence to the schematic pattern in the implementation of the programmes, and inadequacy of general sector outlays for these regions. It may be recalled here that the Dhebar Commission (1960) and Shilu Ao Committee (1961) recommended for socio-economic development of the tribals with an ultimate objective to integrate them with the rest of the people in India, within a reasonable time-frame.

The Task Force on Development of Tribal Areas (Government of India)(1972), headed by Professor L.P. Vidyarthi viewed that the efforts made for the socio-economic development of the scheduled tribes did not bring appreciable change in their condition in the preceding Five Year Plans. It emphasised on integrated tribal development.

The expert committee on tribal development (Government of India) headed by Dr. S.C. Dube (1972) also opined that individual welfare approach and schematic block development approach are inappropriate for tribal areas and an integral development approach should cover the entire tribal area in the country. The result of the deliberations of these Committees was the birth of the TSP Strategy.

In December 1973, the Planning Commission issued guidelines to the State Governments on the preparation of sub-plans for tribal regions within the State Plan. The scheme/programme and projects under TSP are implemented through Integrated Tribal Development Projects (ITDPs) which were set up in block(s) or group of blocks where the population of the STs is more than 50 per cent of the total population.

The twin objectives of the TSP approach are:

(i) Overall socio-economic development of the tribals and to raise them above poverty level.

(ii) Protection of tribals from various forms of exploitation.

The Scheme of Special Central Assistance (SCA) to TSP was introduced during the Sixth Five Year Plan. Under the Scheme, assistance is given to the State Government as an additive to the State TSP. The SCA forms a

part of the TSP strategy towards the larger goal of enhancing the pace of socio-economic development in most backward tribal areas.

The Essential Features of TSP

(i) To recognise that there is no uniform solution to the variety of problems facing tribal regions and tribal communities; and therefore, to accept the uniqueness, and formulate policies, programmes and schemes to suit each individual situation, especially for the vulnerable sections.

(ii) To evolve an appropriate frame for development with emphasis on tribal people at the National and State levels through TSP exercise, ensuring adequate quantification from the State and Central Plan funds, with budgetary mechanisms (separate demand / major budget heads, etc.) in order to ensure accountability, non-divertability, and full utilisation.

(iii) To accord the highest priority to protective measures for elimination of exploitation of the tribal people.

(iv) To restructure the administrative and institutional set-up so that it suits the local needs and aspirations.

(v) To supplement State efforts substantially by the Union Government through Special Central Assistance (SCA).

Although the Tribal Sub-Plans projected total investment, a clear perspective about the long-term strategy for the development of these areas with reference to their resource potential has not emerged.

In view of this, the following long-term objectives have drawn attention:

(i) To narrow the gap between the levels of development of tribal and other areas; and

(ii) To improve the quality of life of the tribal communities. Among the immediate objectives are elimination of exploitation in all forms.

The flow of funds from the State Plan for the TSP was worked out on the basis of the total population of the Sub-Plan area, the geographical area, the comparative level of development, and of social services. Therefore, the concerned Central Ministries should identify schemes for tribal areas which have relevance to the level of development of these areas and quantify the outlays accordingly (Planning Commission of India, 1982).

The Working Groups on the Development and Welfare of Scheduled Tribes during the Eighth Five Year Plan felt that in the sectoral implementation of the TSP, the schemes under which provisions are made, do not reflect the felt needs of the tribals and, therefore, do not create the desired impact. The report further identifies the different departments over which Tribal Development Department or Commissioner or Project Officers have no control at all.

In view of the above inadequacies and drawbacks in the formulation and implementation of the TSP, the Committee appointed by the Government of Maharashtra recommended in 1992 that the Tribal Development Department should be invested with all the functional powers of the Planning Department of the State Government as far as the work of preparation of Annual Plan in TSP

areas as well as for tribals outside the TSP areas is concerned.

In May 2003, the Ministry of Tribal Affairs issued fresh guidelines for the release and utilisation of Special Central Assistance (SCA) for TSP. Prominent among them are the tribal population living below poverty line, who should alone be covered under SCA-financed activities, with a special emphasis on raising their socio-economic status to that of the rest of the population in the blocks/district/State. Adherence to the provisions of the Panchayati Raj Act of 1992 and the Provisions of the Panchayats (Extension to Scheduled Areas) Act of 1996 in planning and implementation of TSP, including the SCA funds should be ensured in letter and spirit. Before sanctioning the SCA to TSP, it is a prerequisite to formulate specific schemes/programmes that have a direct bearing on the economic development of the tribals such that it is suitable to their social, economic and ecological situation.

The Prime Minister, while addressing the 51st NDC meeting held on 27 June, 2005 emphasised that "Tribal Sub-Plans and Scheduled Caste Sub-Plans should be an integral part of Annual Plans as well as Five Year Plans, making provisions therein non-divertible and non-lapsable, with the clear objective of bridging the gap in the socio-economic development of the SCs and STs within a period of 10 years".

However, the cumulative figures for the years 2002-2003 to 2005-2006 show that the total outlay provided for TSP was ₹ 3093.48 crore and the total expenditure was ₹ 2856.12 crore, which is 92.32 per cent of the total outlay. Furthermore, the total expenditure under the State Plan was ₹ 44060.90 crore and the expenditure under TSP was ₹ 2856.12 crore. The comparison shows that expenditure under TSP is 6.48 per cent of the expenditure under the State Plan (Ministry of Tribal Welfare, 2007).

Plan allocations earmarked for the SCs and STs in the union budget continue to be very low – far below what was promised in the Special Component Sub-Plan and the TSP norms of 16 and 8 per cent, respectively. The proportion of the total plan allocation for the STs was 2.80 per cent (2004-05), 3.80 per cent (2005-06), 4.29 per cent (2006-07), 4.89 per cent (2007-08), 4.21 per cent (2008-09), and 4.10 per cent (2009-10) (Mishra and Bhumika, 2009).

The Tenth Five Year Plan aimed for substantial empowerment of the dalit and adivasi communities over the Plan period 2002-2007, while the UPA Government in its National Common Minimum Programme committed to the welfare of SCs and STs. However, there is no visible attempt from the Government towards fulfilling such commitments. The magnitude of the allocations meant substantially for the development of SCs and STs is showing a decline from 2.26 per cent of the total Union Government expenditure in 2005-2006 RE to 2.23 per cent of the same in 2006-07 BE. This implies that lack of adequate financial resources provided by the Union Government poses a major obstacle in development of dalits and adivasis (CBGA, 2006).

The Eleventh Five Year Plan document admits that "it is disturbing to see that both these schemes (Special Component Plan and TSP) have not been implemented with a full sense of commitment and involvement, either by the Central or State governments". The Eleventh Five Year Plan also envisages the

realisation of 50 per cent of the total irrigation potential in tribal areas by the end of the Plan period and total potential by 2020 (CBGA, 2009).

Implementation of Tribal Sub-Plan Strategy in AP

The State of Andhra Pradesh has two distinct regions of contrasting ecological and topographic features. On the one hand, the State is endowed with plain landscape while on the other, there are high altitudes comprising hills and forests with elevated Eastern Ghats having cold climate. Andhra Pradesh is a traditional habitat for 35 tribal communities.

The total tribal population of Andhra Pradesh according to 2011 Census is 7 per cent of the total population of the State. The Scheduled Areas extend over 31,485.34 sq km, i.e., 11 per cent of the total area of the State, with 5938 villages distributed in Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, West Godavari, Khammam, Warangal, Adilabad and Mahaboobnagar districts.

This section evaluates the trends and patterns of allocation and the expenditure of the Tribal Sub-Plan funds by the Government of Andhra Pradesh during the period 2002-2011. Further, it analyses the allocations and expenditure of the TSP funds during the period 2009-2010. It also examines the role played by various monitoring committees set up for the implementation of the Tribal Sub-Plan Strategy for the envisaged objectives.

The Planning Department of the Government of Andhra Pradesh issued a GO Ms. No. 17 in the year 2005 enhancing the allocation of TSP funds in proportion to the tribal population in the State as per 2001 Census. It is important to note that after four years of census particulars were made available, this GO was issued. The most significant aspect of this strategy is to ensure flow of funds for TSP areas at least in equal proportion of the scheduled tribes population in each State and UT. On the basis of the above criteria, of the total budget, allocation of each sectoral department should be earmarked under non-divertible TSP programme by opening a separate sub-head in the budget of the respective department in the State (Ramana Rao, 1992).

TSP Allocations and Expenditure Patterns

The report of the meeting of State level nodal agency for TSP held on 5 November 2008, under the Chairmanship of the Minister for Tribal Welfare, states that as per the annual plan 2008-09, the total State outlay is ₹ 43191.61 crore and the TSP allocation is ₹ 3267.63 crore, comprising 7.7 per cent of the total plan outlay. As per the allocations in 2008-09, out of 131 departments, only 41 departments made the mandatory TSP allocations of 6.6 per cent and above, while 28 departments made TSP allocations of less than 6.6 per cent. As many as 62 departments have not made any TSP allocation, of which 35 departments have been identified as key departments that play a significant role in implementing the TSP, and account for 92 per cent of the TSP allocation.

The following Table presents the trends of TSP allocations during the period 2002-2011.

Table 1 : Trends of TSP Allocations and Expenditure During 2002-11

(₹ in crore)

S. No.	Number of Departments (Key and Other)	Total State Plan Outlay	Allocation Made	%TSP Allocation	TSP Exp.	% of TSP Exp. to Total Plan Exp.	Diversion/ Lapse of Funds
1	2002-2003	8553.19	639.27	7.47	508.35	6.11	130.92
2	2003-2004	10970.45	761.48	6.94	705.17	6.55	56.31
3	2004-2005	13291.2	777.46	5.85	856.93	7.48	-79.47
4	2005-2006	15650.76	915.26	5.85	776.97	5.78	138.29
5	2006-2007	20000	1184.85	5.92	1411.05	7.89	-226.2
6	2007-2008	30500	2454.82	8.05	2357.59	8.77	97.23
7	2008-2009	44000	3331.96	7.57	1690.8	5.12	1641.16
8	2009-2010	33496.75	2370.86	7.00	1527.58	5.14	843.28
9	2010-2011	36727.96.	2529.19	6.77	555.43	9.74	1973.76
	Total	176462.35	14965.15	8.48	10389.9	69.42	4575.28
	2011-2012	42915.54	2292.29	5.34			

Source: Compiled Data from TSP Budget Statements-Commissioner of Tribal Welfare Office, Hyderabad.

In fact, the Andhra Pradesh State Government has not followed the TSP Strategy. The following Table goes to show that the earmarked funds under the TSP are less than the proportion of the population of STs in the area, and the variance during the period 2002-2011. The Government diverted an amount of ₹ 4575 crore.

Table 2 : Trends of TSP Allocations and Expenditure During 2009-10

(₹ in crore)

S. No.	Number of Departments (Key and Other)	Total State Plan Outlay	Allocation Made	%TSP Allocation	TSP Exp.	% of TSP Exp. to Total Plan Exp.	Diversion/ Lapse of Funds
1	40 (Key Depts.)	29288.01	2240.48	7.65	1408.35	5.55	832.13
2	Other Depts.	4208.74	130.38	3.09	119.23	2.77	11.15
	Grand Total	33496.75	2370.86	7	1527.58	5.14	843.28

Source : Computed Data from TSP Financial Statements-Tribal Welfare Department.

The State's political and economic practices have been quite contrary to its utterances, and this is reflected in allocation as well as implementation of the programmes. For instance, the State Plan outlay for the year 2009-2010 was ₹ 33496.75 crore, while an

allocation of ₹ 2370.86 crore was made under the TSP which constitutes about 7.08 per cent. However, the expenditure under the TSP was of ₹ 1527.88 crore which amounts to 5.14 per cent only, which is against the mandatory benefit expected to be provided to 6.6 per cent of the tribal population of the State. The diversion of funds was as much as ₹ 843 crore, equal to the total tribal welfare annual budget of the State.

Table 3 : Status of Departments (40 Key) that Followed Mandatory TSP Allocations

(₹ in crore)

S. No.	Status-Departments TSP Allocation	No. of Departments	Total Plan Outlay	TSP Allocation Against Total Plan	%TSP Allocation	TSP Exp.	% of TSP Exp.
1	Less than 6.6%	18	6467.72	303.46	4.69	272.16	89.68
2	Above 6.6%	22	22820.29	1937.02	8.48	1136.19	58.65
	Total	40	29288.01	2240.48	7.64	1408.35	62.85

Source : Computed from TSP Financial Statements of Tribal Welfare Department.

Out of the 40 key departments, 18 departments allocated less than 6.6 per cent of the mandatory allocations, while 22 departments allocated more than 6.6 per cent. However, the pattern of expenditure is different: only 22 departments spent 59 per cent of the allocated funds, while 18 departments spent 90 per cent; the total 40 departments only spent 63 per cent of their total allocated funds. Among the 40 departments, six departments did not spend any amount, while two of them did not even make any allocation of fund. The often asked question is: If TSP allocations are not made as per the mandatory provision by the departments, what would remain for discussion before the committees to monitor the TSP Strategy? The TSP allocations during the Annual Plan for the year 2011-2012 also reflect the sheer neglect on the part of the State in following the Planning Commission guidelines. The amount being deposited under the TSP account head '796' is less than the mandatory flow of 6.6 per cent even as per the tribal population of 2001 Census. The total State outlay was ₹ 4291536.54 lakh, while the TSP allocation was only ₹ 229229.20 lakh which amounts to only 5.34 per cent, against the mandatory minimum of 6.6 per cent. Out of the 63 important departments, 22 departments even allocated the TSP funds of less than 6.6 per cent and the allocations by departments averaged between 1.49 and 5.79 per cent. With regard to the second objective of TSP, i.e., protection against exploitation of tribals, no department has spent any amount.

In fact, in the context of tribal areas, land alienation is the key issue, and non-tribals are exploiting the tribals to grab their land despite the existence of protective Land Transfer Regulations 1 of 70 which prohibits transfer of lands between tribals and non-tribals and also among the non-tribals. Although TSP allocation

of ₹ 5.32 lakh was made for land reforms, no money was spent on this.

Similarly, the role of the police and the ACB departments are vital in preventing the exploitation of the tribals and their resources. However, no mandatory allocations were made in this regard. According to the TSP Strategy, the Police Department had to allocate ₹ 333 lakh while the Anti-Corruption Bureau (ACB) had to allocate ₹ 19.80 lakh.

Committees' Lack of Commitment

Several committees have been constituted to ensure the effective implementation of the TSP. However, the committees hardly found time to sit and review the progress of the TSP strategies. The meetings do not take place on a regular basis. The number of sittings of the various committees set up in Andhra Pradesh is an indication of the commitment of the Government. As part of this State level Standing Tripartite Committee, which was constituted in 1999 under the Chairmanship of the Hon'ble Minister for Tribal Welfare, has met so far three times only, though the Committee, on 26-6-07, decided to meet once in three months and review the implementation of the TSP in all departments.

Another Committee, namely the State High Level Coordination Committee was instituted under the Chairmanship of the Chief Secretary to the Government to monitor the implementation of TSP in 1981. The Committee met four times between the 2004 and 2007. On the suggestions of the State Level Standing Tripartite Committee (SLSTC) during the meeting in March 2007, the Government of AP constituted district, municipal and mandal level committees to review the progress of TSP. However, these committees have not fulfilled their meeting commitments.

An 'Apex Committee', also constituted under the Chairmanship of the Chief Minister of Andhra Pradesh to monitor the implementation of SCSP and TSP in September 2007, decided to review once in six months the progress of TSP. However, the Committee has so far met only four times between 2007 and 2009.

The State Government also constituted a 'Nodal Agency' in November 2007 under the chairmanship of the Hon'ble Minister for Tribal Welfare to take up frequent operational reviews of TSP and to monitor the allocation, expenditure, and implementation of TSP once in every two months. However, till the year of November 2008 only two meetings were held.

Though several committees were constituted to monitor the implementation of TSP, the TSP funds are diverted for the benefit of persons other than the Scheduled Tribes. The TSP funds are not being allocated by the departments as per the mandatory allocation guidelines of the Planning Commission. Even the amounts spent under the TSP are not benefiting the tribals to improve their livelihoods.

TSP Allocations and Their Impact on Livelihoods of Tribals: Case Studies

This section examines the physical achievements of the Tribal Sub-Plan Strategy undertaken by the different departments. The cases of both East Godavari and Adilabad districts were studied to understand the status of implementation of the strategy. Individual interviews as well as focussed groups discussions (FGDs) were conducted to examine the physical achievements of the Tribal Sub-Plan, such as the implementation of economic development schemes for agriculture, sericulture, fisheries, etc., in addition to the area

benefit schemes such as construction of roads, bridges, etc. The secondary data were used for tracing the utilised and unutilised amounts of TSP allocated to the departments. Further, this section also examines the impact of the TSP Strategy on the livelihoods of the tribals and the gaps in implementation of the programmes. Primary data were collected through interview schedules, i.e., one for the village and the other for the individual beneficiaries covered by the TSP Programmes.

Most tribals depend on agriculture and allied sectors for their livelihoods. Hence, the study covered agriculture, sericulture, animal husbandry, fisheries and groundwater departments to track the improvement in the livelihoods of tribal individuals availing of the respective government schemes. Two departments, namely the Panchayati Raj and the Roads and Buildings (R&B) were selected to understand "area benefit schemes".

East Godavari District

The population of scheduled tribes is 3.9 per cent of the total population in the district. The tribal population in the district is mostly concentrated in 664 habitations in 608 revenue villages of 7 Scheduled Area Mandals and 4 Sub-Plan Mandals as per 2001 Census.

Total population in the Scheduled Areas is 2.16 lakhs, while ST population is 1.46 lakhs, which constitutes 67 per cent. The Scheduled Mandals are: Addateegala, Devipatnam, Gangavaram, Maredumilli, Rajavommangi, Rampachodavaram, and Y. Ramavaram. There are several tribal communities; the more prominent among them are Konda Reddis, Koya Doras, Konda Kammaras, Valmikis, Mannedoras, and Konda Kapus. Among these, Konda Reddis are classified as a Primitive Tribe Group (PTG). The tribal villages are mostly remote and interior, as access through usual means of transport is difficult. The tribal communities predominantly depend on cultivation of lands for their livelihood. The major problems in the area are lack of food security, land alienation, displacement, exploitation, erosion of tribal cultural values, lack of access to government programmes, and inadequate policies and laws in force.

Adilabad District

The Adilabad district comprises 52 mandals and 1743 villages of which 1557 villages are inhabited and 186 villages are uninhabited. The district is conveniently formed into five divisions: 1) Adilabad, 2) Nirmal, 3) Utnoor, 4) Asifabad, and 5) Mancherial.

The ITDA extends over 45 mandals covering 412 Scheduled Villages, 234 Non-Scheduled Villages (TSP), and 12 cluster villages in the district. The TSP area comprises 646 villages inclusive of 1747 habitations covering an area of 6353 sq km, which amounts to 38.13 per cent of the total geographical area of the district.The total tribal population in the district is 4.17 lakhs, which amounts to 16.74 per cent to the total population in the district. A number of different tribal groups, namely, the Gonds, Naikpods, Kolams, Pardhans, Koyas, Manne, Andhs, Thoties, Lambadas and Yerukalas, are living in the district. The Kolams and Thoties are the most backward and poorest, and are classified as Particularly Vulnerable Tribal Groups (PTGs) for special attention.

Table 4 : Summary of Findings from Case Studies in East Godavari and Adilabad Districts

S. No.	District	Individual Benefit / Community Benefit	Name of the Department	Name of the Schemes	Number of Sample Villages	Number of Beneficiaries Covered by Study	Average Finance Assistance to Beneficiary (in ₹)
1	East Godavari	Individual Benefit Schemes	Agriculture	Polambadi (Farmers' School):	2	20	629
				Green Manure Seed Production	3	12	2000
			Sericulture	Supply of mulberry samplings	2	4	4950
			Groundwater	Digging of borewells for irrigation	-0-	-0-	27000
			Fisheries	Supply of fish seed on 50% subsidy	2	5	5000
			Animal husbandry	Pasukranthi	2	11	30000
				Rashtriya Krishi Vikas Yojana	2	9	15000
		Community Benefit	Roads construction	Yerravaram to Vanthada	0	0	27.93 lakhs
2.	Adilabad District	Individual Benefit	Animal Husbandry	Supply of Milch Animals	1	10	23000
			Sericulture	Promotion of Mulberry units	3	6	24500

(Contd...)

Table 4 *(Contd...)*

S. No.	District	Individual Benefit / Community Benefit	Name of the Department	Name of the Schemes	Number of Sample Villages	Number of Beneficiaries Covered by Study	Average Finance Assistance to Beneficiary (in ₹)
			Groundwater	Drilling of borewells for irrigation	4	8	80,756
		Area Benefit Schemes	Roads and Buildings	Improvement to Road Utnoor to Asifabad	2	2850(ST) 650(NT)	122.63 Lakhs
			Panchayati Raj	Roads and Bridges	8	3090(ST) 2477(NT)	261.07

Individual Benefit Schemes

Sericulture: The field study in the sample villages Vathangi and Marripalem of East Godavari district reveals that the outcome of the implementation of Sericulture Programme in East Godavari district is not showing the positive benefits such as increase in economic levels of the tribal beneficiaries: Out of the four beneficiaries of the programme during the year 2009-10, only a single tribal from Vathangi was benefited, while the expected benefits were not felt by the others.

Similarly, the sericulture department grounded the programme without looking at the availability of water for sustenance of the sericulture crops in Adilabad district. The sericulture department provided six mulberry plantation units for the production of cocoons. Out of the six beneficiaries, only two from Thummaguda village are getting some income from the mulberry units.The rest, who are from Durgapur, Shivajiguda of Indravelly mandal, Utnoor mandal respectively, not getting any profit and are in fact, incurring loss due to failure of plantations.The Government did not provide any motor to facilitate water supply to the plantations, and no sprinklers or boxes were supplied.Moreover, the ability of the tribal beneficiaries to invest further on the cultivation is also an important factor.This point was found to be missing while grounding the programmes. There was no provision for 100 per cent subsidy to the tribals in the economic development programmes, which is also essential.

Agriculture: The field survey discloses that the Agriculture Department in East Godavari district, failed to avail of the *'polambadi'* programme for increasing awareness among the tribals. The expected beneficiaries from villages studied namely, Vadapalli and Nimmalapalem of Rampachodavaram mandal say that no kits or material were supplied to them and no meetings were conducted in their villages.

A partial benefit was however registered in the green manure production programme. The beneficiaries from two villages, namely Seetharam, Ch. Ramanaiahpeta of Devipatnam mandal secured a profit of ₹ 1000 per acre while the rest of the beneficiaries who are from D. Ravilanka village of the same mandal incurred a loss of ₹ 1000-1500 per acre as their fields are located in a low lying area and were affected due to the cyclone that occurred that year.

Animal Husbandry: The other livelihood development programme for animal husbandry was supply of milch animals to the tribals under Pasukranthi Scheme, Rashtriya Krishi Vikas Yojana programmes in East Godavari district. The beneficiaries from two villages, namely I. Polavaram and Marrivada of Rampachodavaram mandal under Pasukranthi programme report that out of 22 buffaloes distributed, two died, six were sold away while one went missing in forests. The beneficiaries on an average have to invest 40 to 50 rupees per day on a buffalo for buying feed and they get returns of ₹ 25 to 30 by sale of milk in the locality. The other beneficiaries in Folks pet and I.Polavaram of same mandal under Rashtriya Krishi Vikas Yojana Programme have similar experience in securing economic benefits. These programmes too failed due to lack of proper design in understanding the survival of animals in the given tribal environment as well as proper veterinary support to the animals. The savings of the beneficiaries from different sources are also eaten away by this programme as they are compelled to realise the loan amounts due to the banks.

However, the field study in Pulimadugula, a predominantly Lambada (ST) residing village, in Adilabad district shows that except one beneficiary of 10 are getting an average income of ₹ 123 per day on milch animals. However, the scheme was implemented only for land owning families – each beneficiary has an average of five acres of land, while the landless families in the village – there are 50 ST households that do not have land at all – were not selected. Hence, this scheme does not benefit the poorest of the poor.

Fisheries: The field study in Vathangi village from Rajavommangi mandal and I. Polavaram village from Rampachodavaram mandal of East Godavari district also reveals that there is no consistency in giving support to the tribal beneficiaries of fishery units. There is also need to increase the financial support in order to meet the other requirements for fishing activity. The family member of a beneficiary Nagaraju, says that after 25 years of initial support given by ITDA, the fisheries department in the year 2009-2010, on application, about ₹ 5000 worth of fish seed was supplied at 50 per cent subsidy.

In I. Polavaram village out of the four beneficiaries, no such beneficiary named Boraga Achiyamma, as claimed by the department, was found during the implementation of the scheme 2009-2010. One beneficiary (Ramaswamy Dora) left the village. The two other beneficiaries invested of ₹ 8000 (including subsidy portion of ₹ 5000) on half acre fish tank, and got a profit of ₹ 5000 for 10 months.

Groundwater: The failure on the part of the groundwater department is an example that shows that there is no proper planning for the implementation of the activities planned under the TSP. Of the total allocation of ₹ 4 lakh, ₹ 0.27 lakh was spent by the groundwater department in East Godavari district and did not benefit a single tribal, and the TSP amounts

allocated for increasing benefit to the tribal farmers were lapsed due to lack of coordination between the ITDA and the groundwater department. The groundwater department also failed to spend the budget within the Plan period. Thus, the study establishes the need to have a common action plan for all the line departments and the ITDA.

Similarly, the field study in Anarpally, Gouri, Marlavai and Burnur villages of Adilabad district reveals that there was no proper identification of beneficiaries under the programmes. The tribal beneficiaries were unable to meet their financial component and hence, they could not benefit from the scheme. The groundwater department spent money for drilling borewells for agriculture development, without assessing the availability of power supply at the site, as well as the financial ability of the beneficiaries to purchase engines to lift the water. Therefore, the outcome of the programme is not positive. Except two beneficiaries, the rest of the beneficiaries have no electric motors and as such the wells are not in use.

Thus, these are the shortcomings in the planning, grounding the programmes, identifying the beneficiaries, and implementing with convergence of other related departments. The schemes which are designed for the general population are implemented to the tribals under the TSP without taking into account the economic level of the tribals.

Area Benefit Schemes

In the case of area benefit programmes, the maximum beneficiaries should be tribals only. However, this provision was bypassed by the implementing agencies.

The field study in East Godavari district reveals that the Panchayati Raj department constructed a five kilometre black top surface road from Yerravaram to Vanthada, showing a tribal village Vanthada, which is at the fag end of the proposed road. In fact, the road is connecting the villages in which non-tribals reside. Thus, it is evident that the TSP funds were diverted for the benefit of non-tribals. The Task Force constituted by the Planning Commission recommended that "unless a scheme directly benefits STs, expenditure on it may not be classified under TSP" (Planning Commission, 2010).

Thus, the expenditure being shown under TSP for the benefit of non-tribals shall not be counted as the expenditure under the head.

The field study in Adilabad district also reveals a similar picture as far as the community benefit schemes are concerned. The field study reveals that the roads and building department in Adilabad district laid the road to Kankur, where there is no tribal beneficiary; about 65 per cent of the total beneficiaries are non-tribals for the Pippaladhari bridge work which was taken up with the TSP funds. Similarly, 52 per cent of the total beneficiaries were non-tribals whose benefit is ensured with the TSP funds by laying a road from Indravelly to Chrisdhara and Kanapur villages.

No planning exercise was made by the other departments to implement the TSP funds in consultation with the Tribal Welfare departments, or its agencies such as the ITDAs. The study also shows that no beneficiary is aware of the TSP Strategy and the role of of the Government's departments in the allocation of funds. The meagre amounts earmarked for TSP

are insufficient to ground the development programmes. No efforts are seen with the line departments to implement the development programmes tagging the funds from other departmental sources. The subsidy schemes, which have a set of norms for each development programme, are implemented in the tribal areas without considering the economic level of the tribals in fulfilling the norms, including their monetary contribution. This is one of the reasons for the failure in the implementation of the TSP schemes. So, only 100 per cent subsidy schemes are to be made part of the implementation of TSP schemes or make available TSP funds at the ITDA by giving a free hand to design tribal development schemes.

The Panchayats are not aware of the programmes, and their involvement is not seen in the implementation of the schemes. In very few cases, the involvement of the ITDA is seen. However, in most of the cases, the works are being executed by the departments without making available both physical and financial targets, as well as plan of action.

The information obtained from the departments reflects ignorance of the department heads even regarding the meaning of TSP. The Superintendent Engineer of Panchayati Raj Department, East Godavari district defines TSP as "Tribal Supply Plan". The District Panchayat Officer, Adilabad gave information under Right to Information Act saying that for the last 10 years "no" TSP funds were released from his office. This information raises a doubt as to whether no TSP funds were released, or the head of the institution has no knowledge about the TSP. Similarly, the Asst. Director of Fisheries of Nirmal, Adilabad district, informed under RTI that there was no allocation under TSP for the STs under the Normal State Plan for Adilabad district during 2009-2010.

Conclusion and Recommendations

The basic question is whether or not the Government is allocating TSP funds as per the guidelines of the Planning Commission. The study reveals the negative; it reveals the disobedience on the part of various departments in following the guidelines of the Planning Commission of India and the GOs issued for the implementation of the Tribal Sub-Plan Strategy with an objective to narrow the gap between the tribals and others, and the elimination of exploitation against the tribals.

The analysis of secondary data of allocation of the State outlay and the allocation of TSP funds show that there is a clear violation of the TSP strategy. The data show that the earmarked funds under the TSP during the period 2002-2011 are less than the proportion of the STs in the area. The variance amount of grant is ₹ 4575 crore. During the study period, i.e., 2009-2010, the State Plan outlay was ₹ 33496.75 crore and the allocation was of ₹ 2370.86 crore. However, the expenditure under TSP was only ₹ 1527.88 crore, which amounts to only 5.14 per cent, which is against the mandatory benefit, expected to be provided to 6.6 per cent of the tribal population of the State. The diversion of funds for ₹ 843 crore are more or less equal to the total tribal welfare annual budget of the State. In the case study districts also, the departments failed to utilise the allocated TSP funds for various livelihood development activities for the tribal beneficiaries. So it can be safely concluded that the TSP grants were either diverted or lapsed by the Government due to lack of commitment towards the tribals.

The departments are not taking into consideration the growth of the tribal population on an annual basis. The notional percentage of 6.6 is based on the 2001 Census. Since then, the same 6.6 per cent of allocation has been considered as mandatory, which is against the guidelines of the Planning Commission. Many departments are showing a notional provision of 6.6 per cent under TSP without concomitant physical targets, and most of them are failing to distribute the TSP budget district-wise, both in physical and financial terms. This is, in turn, responsible for the poor utilisation of the TSP grants at the field level.

None of the departments are distributing the TSP budget mandal-wise. No allocations are made in specific to free tribals from exploitation, the other objective of the TSP strategy. Some of the amounts spent on the subjects such as tribal land alienation, implementation of forest rights recognition act, etc., are only met under the regular State Tribal Welfare Budgets, and not under the TSP.

The other important basic question is whether the allocated TSP funds are utilised properly for the benefit of individual tribals and community, and whether there is any impact on their livelihoods. The following summary of the field level study reveals a non-affirmative picture.

Fundamental Failures

The fundamental failure is allocation of TSP funds against the mandatory provision from the State outlay. Even the allocated amounts are not fully utilised, and some departments are not at all allocating TSP funds. There is no change in the minimum percentage of allocation of funds as per the growth of tribal population in the State, and neither policy nor law has been brought into force to take action against the violations in allocation or diversion of funds. The study reveals that the allocated amounts are either diverted or lapsed. In some cases, it is also noticed that the budget grants are withheld by the head of the departments at the State level.

Furthermore, no mechanism for stringent monitoring or impact assessment has been put in place at the ground level, and the monitoring committees set up at various levels are not regular. The principle of allocation of TSP funds is irrational at the district level. There is no integrated approach in planning the tribal development programme, or consultations with the ITDAs prior to the implementation of various programmes dealt by other than the tribal welfare departments.

The norms guiding the implementation of general schemes of the departments are extended to the TSP programmes also which need a specific focus and strategy to implement such programmes in tribal areas. The study also highlights that it would be difficult to ground the programmes based on general norms while dealing with tribal beneficiaries who are unable to meet their required financial component in the implementation of the programmes. Hence, only the 100 per cent subsidy schemes are to be brought under the TSP programmes or the special programmes to be developed, keeping in view the socio-economic situation of tribal communities.

The study also shows that the TSP funds were utilised for the benefit of the non-tribals in the name of tribal development. Further, spending of funds for incidental costs without any outcome out of it are also met under TSP grants. It is inferred that the failure in

implementation of TSP strategy is due to lack of awareness about TSP among all the stakeholders, including the implementing agencies. There is absolutely no field evidence to say that the implementing agencies are implementing the PESA 1998 provisions before implementing the socio-economic development programmes in the Fifth Schedule Areas. Moreover, no specific allocations were made to meet the other equally important provisions under the TSP Strategy, i.e., protection against the exploitation of tribals. The Tribal Protective Land Transfer Regulations 1 of 70, Forest Rights Recognition Act 2006, AP Scheduled Area Money Lending Regulations 1960, for effective local governance PESA Act 1998 are very important constitutional legislations, which need special attention for implementation as part of the Tribal Sub-Plan Strategy in the Scheduled Areas of the State.

Recent Enactment

The State of Andhra Pradesh is first State in the country- India, bringing the legislation in relation to SC&ST Sub-plan namely, "The Andhra Pradesh Scheduled Castes Sub-Plan and Tribal Sub-Plan (Planning, Allocation and Utilisation of Financial Resources) Act 2013" with an object of ensuring accelerated development of SC&STs, by earmarking a portion, in proportion to the population of SCs & STs in the State, of the total plan outlay. However, there is no specific allocation for Particularly Vulnerable Tribal Groups for their development. This enactment is diluting the bottom-up approach in planning process ensured at Gram Sabha and Gram Panchayat level as the case may be under Panchayats Extension to Scheduled Areas Act 1996. The Government of Andhra Pradesh has also constituted a nodal agency headed by Minister of Tribal Affairs and a State Level Monitoring Committee, chaired by Chief Minister of Andhra Pradesh to oversee the implementation of the legislation.

It is too early to assess the impact of these fresh provisions of law in improving implementation of TSP schemes/programmes.

Recommendations

- Enforceable legislations should be enacted for mandatory allocation of TSP funds and their utilisation for tribal development and protection against exploitation.
- The unspent money pool should be made available to the nodal agency to take up further development initiatives without any diversion.
- Setting apart minimum percentage of flow of funds from the State outlay plan and further budget division as per the tribal population of the districts, mandal as a unit, is essential.
- Administrative costs should be minimum in the TSP budgets.
- Flow of funds to the TSP should be made department-wise without diverting the funds in the name of indivisible pool.

- Flow of funds from the State outlay should be as per the growth of the tribal population on annual basis in the State.
- The Gram Sabha, Gram Panchayat, and the concerned Mandal Praja Parishads at the mandal level should be involved in the planning and approval process of the budget and socio-economic development schemes.
- Committees should be constituted from Panchayats to the State level in order to track the flow of TSP funds and monitor the implementation of the planned activities.
- The line departments should make available with the budgets for the execution of the Integrated Tribal Development Plans at the ITDAs.
- Orientation camps on TSP Strategy should be organised to bring awareness among all the stakeholders.
- The vulnerability of tribal communities among the notified tribal communities in the State should also be taken into special consideration in preparing the budget action plan of activities under TSP.
- Budgetary provisions must be on priority basis for the implementation of special constitutional protections and special laws made for safeguarding land and forest rights, and tribal self-rule.
- The tribal beneficiaries of all area benefit schemes should be 50 per cent or above.
- The provisions of the PESA must be implemented in the implementation of the TSP Strategy.
- The Tribal Advisory Council must regularly monitor the implementation of the TSP Strategy.

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REGIONAL RURAL BANKS AND THEIR PERFORMANCE – AN EMPIRICAL STUDY

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ABSTRACT

Regional Rural Banks (RRBs) are formed to serve the needy rural poor for agricultural and allied activity and non-farm sector capital requirements. It is well known that the lenders are the sufferers from non-recovery of loans lent to wilful defaulters and cheaters. The banking system is the heart of any country's economy, striving to achieve growth and remain a permanent and dominating factor in the global competitive business environment. The major part of the Indian banking sector, the commercial and scheduled nationalised and private banks, and cooperative banks play a vital role. But this two-tier mechanism faced problems to satisfy the capital needs to the rural mass. To improve the rural credit mechanism and overcome the inadequate situation, led the Government of India to form a committee to find a feasible solution to facilitate easy rural credit satisfying mechanism through RRBs. In particular, the RRBs mainly focus on mobilisation of savings and supply of credit to the rural people. This paper attempts to study the performance of RRBs for the country as a whole for a period of thirteen years (2001-14). Indicators analysed for critical looks at the RRBs' performance are the following; No. of RRBs, branches, districts covered, and staff employed (Table 1); sources of funds (owned, borrowed, deposits and total) (Table 4); advances, investments and total applications (Table 7); advances, deposits and CD ratio (Table 9); total sources and total utilisation (Table 10). For the first three Tables mentioned above mean, SD, CV and CAGR are worked out for each indicator. Hypotheses are tested for significance. In the concluding section, suggestions for strengthening the working of RRBs are presented.

Introduction

The villages are the backbone of any country. As far as India is concerned, it is populated highly with rural mass that undertakes agriculture and allied activities as the major activity. The income from these activities occupies more in the Gross Domestic Product of India. Since India is an agrarian country that badly needs capital for

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agriculture activity, these requirements are satisfied to the needy poor through banks of India. The lending process in general to needy poor people is executed through banks like commercial banks, cooperative banks and RRBs.

It is well known that the banking system is the heart of any country's economy, striving to achieve growth and remain a permanent and dominating factor in the global competitive business environment. The major part of the Indian banking sector, the commercial and scheduled nationalised and private banks play a vital role. They are having a favourable growth, asset quality and profitability. The Reserve Bank of India and the Government of India are continuously making efforts and taking measures with notable changes in policies, procedures and regulations to strengthen the banking sector. It was felt that the flow of money through commercial banks to the rural mass was not sufficient and not up to the mark for the development of rural economy, because they are commercial in nature. To improve the rural credit mechanism, cooperative banking sector was also introduced earlier, and that was also not in a position to satisfy the rural needs in terms of the required funds. This inadequate situation led the Government of India to form a committee to find a feasible solution to enable easy rural credit satisfying mechanism. The Committee headed by Shri M. Narasimham in 1975 came out with its recommendation to form RRBs. In particular, the regional rural banks mainly focus on mobilisation of savings and supply of credit to the rural people. This paper attempts to examine the workings of RRBs for the country as a whole for a period of 13 years (2001-14) through a number of indicators. Improvement in the performance of RRBs will benefit rural population in their economic and social activities. Profitability of the RRBs will also be improved with the implementation of the suggestions brought out in this study.

Statement of the Problem

The most critical problems faced by RRBs are their economical non-viability, shortage in mobilisation of funds and low interest revenue. It is well known that there are lesser possibilities to the RRBs to earn greater profit when compared to the commercial banks, because their operations are mainly focused on rural areas. Even though the RRBs faced stiff competition from the commercial banks, most of them are doing well. As no study has been undertaken from this angle to analyse the activities of RRBs as a whole in the country for a certain period, the researcher planned to study this aspect of examining the performance of RRBs as a whole for a certain period to bring out relevant conclusions and suggestions.

Review of Literature

The studies that have been undertaken to analyse the workings of RRBs are very few. The literature on RRBs cited in the present study were obtained from the committee reports formed by Government of India, reports of the Reserve Bank of India (RBI) and National Bank for Agriculture and Rural Development (NABARD) and the reports of researchers.

The Kelkar Committee (1986) made comprehensive recommendations covering both the organisational and operational aspects. Some of them were incorporated in Regional Rural Banks Act, 1975 such as, enhancement of authorised capital of RRBs

from ₹ 1 crore to ₹ 5 crore and paid up capital from ₹ 25 lakh to ₹ 1 crore, appointment of Chairman of RRBs by the concerned sponsor bank in consultation with NABARD, providing assistance to RRBs by the sponsor banks to train RRB staff and giving financial assistance to them in their first five years of their operations, and provision to merge and amalgamate RRBs to protect them from loss.

NABARD (1986) published in its study "A study on viability of RRBs" stated that the viability of RRBs would essentially depend upon the fund management strategy, margin between resources mobility and their deployment, and the control exercised on current and future costs with advance. The proportion of the establishment costs to total cost and expansion of branches were critical factors, which affected their viability. The main suggestion was for the improvement of the infrastructure facilities and opening of branches in such areas where RRBs were already functioning.

Narasimham Committee suggested in the year 1991 that the RRBs should be permitted to engage in all types of banking business and should not be forced to restrict their operations to targeted groups. This recommendation became a turning point in the functioning of the RRBs, which uplifted their position. Simultaneously, prudential norms were introduced to maintain the standard of RRBs equivalent to international standard. Due to these recommendations-amalgamation/mergers, of RRBs in India were restructured. In addition to that, the Government of India and the Reserve Bank of India jointly worked to bring up the status of the RRBs to international standard and adopt the prudential norms in the year 1994, as prescribed to all the scheduled commercial banks in the year 1992.

Bhandari Committee (1994), recommended comprehensive restructuring of RRBs and greater devolution of decision-making power to the board of RRBs in the matter of business development and human resource matters. *Basu Committee* (1996) mooted the idea of liquidation or revamping of RRBs. *Thingalaya Committee* (1997) gave another similar suggestion that very weak RRBs should be viewed separately and the possibility of their liquidation may be recognised. They might be merged with the neighbouring RRBs. *Vyas Committee-I,* the expert committee on rural credit, gave its opinion that the sponsor bank should ensure necessary autonomy to their RRBs in their credit and other portfolio management systems.

Narasimham (1998) in his Committee Report stated that NPAs constitute a real economic loss to the nation in that they reflect the application of scarce capital and credit fund to unproductive uses. The money locked up in NPA is not available for productive areas, and to that extent the bank seeks to make provisions for NPAs or to write them off. It is a charge on their profits. NPAs in short, are not just a problem for the bank; they are bad for the economy. It also recommended that change in sponsor banks may in some cases help in improving the performance, namely, improve the competitiveness, work culture, management and efficiency of the concerned RRBs. In addition, it can also impart viability to the operations of RRBs.

Chalapathy Rao Committee (2003) recommended that the entire system of RRBs may be consolidated while retaining the advantages of these institutions. The sponsoring banks may include other financial institutions for the support. *Purwar*

Committee (2004) laid basement for the better performance of RRBs in the year 2004. It recommended the amalgamation of RRBs by way of vertical and horizontal mergers. *Sardesai Committee* (2005) gave its recommendation that to improve the operational viability of RRBs and take advantage of the economies of scale, the route of amalgamation/mergers of RRBs may be considered taking into account the views of various stakeholders.

The highlights of the empirical studies of various authors are as follows:

V. K. Ramachandran and Madura Swaminathan (2001) revealed that, "Rural Banking Policy in India discussed various issues in rural financing. They observed that every borrower is screened by the lender for his creditworthiness and lenders have a sharp-eyed assessment of the borrower's income and wage-earning capacity when they lend money. As a consequence, there has been a proliferation of different types of loans with respect to the terms and conditions attached to each loan.

Sanjay Sinha et al (2003) expressed that, "Profitability is very strongly correlated with pro-active and well-judged management, and only two of the five RRBs surveyed had these qualities. Programmes of capacity building and motivation among managers are likely to generate high returns".

Dilip Khankhoje and Milind Sathye (2008) in their article recommended that the existing policy of bringing down non-performing assets as well as curtailing the establishment expenditure through voluntary retirement scheme for bank staff and rationalisation of rural branches are steps in the right direction that could help these banks improve efficiency further over a period of time.

Rajaram, and Rajendar (2008) in their article said that, "Quality of loan asset is the most important factor for the basic viability of the banking system. Lower level of non-performing assets helps the banks in consolidating their position and give credence to efficiency of management. On the contrary, higher non-performing asset levels make their balance sheets weak and less competent.

Suresh, R. (2010), in his article highlighted that, "RRBs perform well only when they get more capital injection from the Government of India so as to reach the capital level on par with commercial banks for their business activity to lend to the needy poor persons involved in agriculture and allied activities, and non-farm enterprises".

Need for the Study

The studies on RRBs conducted till date have been largely based on profitability and financial performance of RRBs at individual, banks and district-wise and State-wise comparisons. It is felt necessary to conduct a study covering the whole range of banking activity of all RRBs in the country from the bankers' point of view and also customers' point of view. The method planned is analysis of secondary data by scanning the performance statements available in a published form from Reserve Bank of India and NABARD.

Objectives of the Study

The following are the objectives of the study:

1. To trace the origin and growth of RRBs of India;

2. To study the physical performance of the RRBs;

3. To study the business performance of the RRBs; and

4. To offer suggestions for further development of RRBs.

Methodology and Data Collection

This paper attempts to study and analyse the banking business performance and productivity of the RRBs in terms of branch-wise, district-wise, staff-wise and State-wise. The required details for the analysis are from 2001 to 2014 (13 years) and the data for these years were compiled as per the design of the study by classifying the 13-year period into pre-amalgamation period up to 2005-06 (5 years) and post-amalgamation period after 2005-06 (8 years). The data were collected from the reports of Reserve Bank of India and NABARD from their websites. The collected secondary data were analysed using various statistical tools such as mean, standard deviation (SD), coefficient of variance (CV), compounded annual growth rate (CAGR) and correlation. The hypotheses framed were tested with parametric tests like t-test, f-test, and ANOVA (Single factor). Diagrams have also been drawn for the data presented in five Tables (1,4,7,9 and 10).

Regional Rural Banks of India

The multi-agency approach to rural credit was meant to sub-serve the needs of the input-intensive agricultural strategy (Green Revolution), which had initially focused on "betting the strong". The Regional Rural Banks Act, 1976, succinctly summed up the overall vision of the RRBs to sub-serve both developmental and redistributive objectives.

The RRBs, popularly known as the small man's banks, have taken deep roots, and have become an inseparable part of the rural economy. It plays a vital and essential role in the rural institutional financing for agricultural credit in terms of geographical coverage, with a friendly approach and contributes more to the development of rural economy. There were only six RRBs with 17 branches covering 12 districts to begin with. At the end of the year 1980, there were 85 RRBs with 3,279 branches.

It was noticed in the year 1985 that there were 188 RRBs with12,606 branches. As on March 2001, it showed a greater growth in RRBs with a large number of branches in rural areas forming 42 per cent of the total branches of commercial banks. By March 2002, there were 196 RRBs with 14,390 branches covering 511 districts across the country. In view of the process of merger and amalgamation of RRBs initiated in 2004-05 to safeguard the interests of RRBs to overcome the picture of heavy NPAs by the Government of India with effect from September 2004, in terms of Section 23A of The Regional Rural Banks Act, 1976, the number of RRBs declined to 90 operating in 26 States across 594 districts with a network of 14,761 branches as on March 31, 2008. With further amalgamation, excluding the formation of new RRB in the Union Territory of Puducherry, the total number of RRBs declined to 86 as on March 2009 with a branch network up to 15,181. During 2010, 2011 and 2012, the number of RRBs came down to 82 banks with 15480, 16001 and 16909 branches covering 618, 620 and 638 districts, respectively. Later in 2013, the

number of RRBs suddenly came down to 64 having 17856 branches in 635 districts with a share capital of ₹ 19,700 lakh, share capital deposit of ₹ 597684.49 lakh. During 2014, the number of RRBs further declined to 56 having a branch network of 19082 with no change in the share capital of the previous year status. As per the report of the NABARD, the provisional financial results of RRBs for the year 2013-14, indicate that all 57 RRBs earned profits aggregating ₹ 2,833 crore as compared to 63 out of 64 RRBs earning aggregate profit of ₹ 2,275 crore in 2012-13. The proportion of RRBs that are sustainably viable, viz., earning profits and carrying no accumulated losses increased from 83 per cent (53 out of 64 RRBs) as on 31 March 2013 to 86 per cent (49 out of 57) as on 31 March 2014. The aggregate reserves of RRBs increased to ₹ 15, 736 crore and net worth increased to ₹ 21, 199 crore as on 31 March 2014. There were 8 RRBs with accumulated losses and their accumulated losses decreased by 17 per cent over the previous year. The recovery performance of RRBs improved marginally from 81.2 per cent as on 30 June 2012 to 81.9 per cent as on 30 June 2013. Nine RRBs had recovery of more than 90 per cent, 19 RRBs had recovery in the range of 80 to 90 per cent, 28 RRBs had recovery in the range of 60 and 80 per cent and one RRB had recovery of less than 60 per cent. The aggregate gross NPA of all RRBs declined from 6.1 per cent of gross assets as on 31 March 2013 to 4.4 per cent as on 31 March 2014.

Banking Activity Analysis- Results and Discussion

As the first step, the physical analysis is made by considering the number of branches and district coverage that include the State-wise distribution of RRBs. In India, till the inception of RRBs the commercial and cooperative banks rendered financing services to the rural mass. After 1975, the RRBs gained an adequate and tremendous growth in terms of number of branches in the districts of India. In this case, the RRBs faced crises in terms of sources of finance and they met with huge losses. This situation led the Government of India for amalgamating the RRBs which were loss making with those earning profit. This structural consolidation process was undertaken during 2005-2006. Due to this process, the number of RRBs went down from 196 to 133, 94, 90, 86 and finally to 64 and 56. Table 1 exhibits the details from 2001-02 to 2013-14 in terms of number of RRBs and their branches with districts covered and the staff employed during these periods. For each of the indicators, mean, SD, CV and CAGR have been calculated to understand the pattern and rate of growth over various periods.

Table 1 : No. of RRBs, District Coverage, Branches and Staff Employed

Year	RRBs	Districts covered	Branches	Staff employed
2001-02	196	511	14,390	69,875
2002-03	196	516	14,433	69,547
2003-04	196	518	14,446	69,249
2004-05	133	523	14,484	68,912
2005-06	94	525	14,494	68,624
2006-07	90	534	14,520	68,289
2007-08	90	594	14,761	68,005
2008-09	86	616	15,181	68,526
2009-10	82	618	15,480	69,042
2010-11	82	620	16,001	70,153
2011-12	82	638	16,909	74,291
2012-13	64	635	17,856	76,118
2013-14	56	NA	19,082	NA
Mean	111.31	570.67	15541.31	70052.58
SD	51.41	53.06	1520.14	2517.08
CV (%)	46.18	9.30	9.78	3.59
CAGR (%)	Negative	1.11 (up to 2012-13)	2.15	0.25 (up to 2012-13)

Source : Compiled from the Report of RBI & NABARD.

Diagram 1 : No. of RRBs and Their Branches

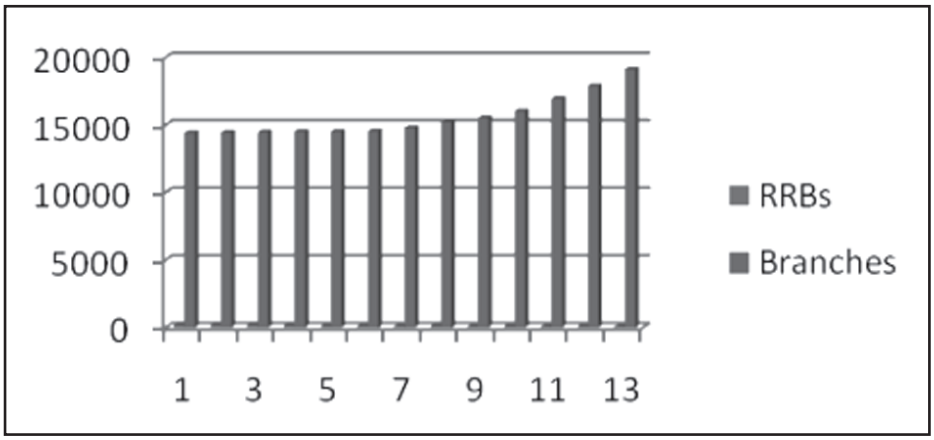


Table 1 reveals that there is negative growth in the number of RRBs due to amalgamation. It also reveals a meagre growth in number of districts covered, branches and staff employed. This throws a light on the fact that RRBs have not grown in a satisfactory manner. The decision of Government of India was to cut down the expenditure to enable RRBs to improve their earnings. However, the CV highlights lesser variation in the districts covered, branches and staff employed.

Null hypotheses are framed for the above facts for physical analysis as given below:

1. There is no significant difference between the number of RRBs and their branches in the development of RRBs.
2. There is no significant difference between the number of districts covered and number of employees in the development of RRBs.

A paired t-test was performed to test the hypotheses 1 & 2 for the data presented in Table 1. The results are exhibited in Tables 2 & 3.

Table 2 : t-Test: Paired Two Sample for Means

Details	RRBs	Branches
Mean	111.3076923	15541.30769
Variance	2642.564103	2310836.564
Observations	13	13
Pearson Correlation	-0.638272323	
Hypothesised Mean Difference	0	
df	12	
t Stat	-35.81276884	
P(T<=t) one-tail	7.18423E-14	
t Critical one-tail	1.782287548	
P(T<=t) two-tail	1.43685E-13	
t Critical two-tail	2.178812827	

Table 2 reveals that the calculated t-value is less than the t-critical value, and hence it is concluded that the framed null hypothesis-1 is accepted; that there is no significant difference at 5 per cent level of confidence between the number of RRBs and their branches in the development of RRBs. It is also identified that there is a negative correlation among these variables.

Table 3 : t-Test: Paired Two Sample for Mean-No. of Districts Covered and Staff Employed

Details	Districts covered	Staff employed
Mean (₹ Crore)	570.67	70052.58
Variance (₹ Crore)	2815.52	6335706.81
Observations	12	12
Pearson Correlation	0.53	
Hypothesised Mean Difference	0	
df	11	
t Stat	-96.69	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.80	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.20	

Table 3 reveals that the calculated t-value is less than the t-critical value 2.20, and hence it is concluded that the framed null hypothesis-2 is accepted; that there is no significant difference at 5 per cent level of confidence between the number of districts covered and number of staff employed in the development of RRBs. It is also clear from the above Table that there is a moderate positive correlation among the above two variables.

The second step of analysis goes to the business analysis. The funds sources of RRBs are owned funds that include share capital, share capital deposits and reserves and surpluses and the borrowed funds, deposits collected from the public for which the banks have to pay interest for these two items. These three items are put into the analysis to study the performance of banks. The application of funds includes advances lent to the customers, and investments made by the banks with commercial banks and the Reserve Bank of India for which it receives income by way of interest. Special focus on advances has been made by considering the gross loans outstanding of the banks for making analysis even though the sources will not be used only for lending purpose. Table 4 shows the sources of the RRBs for the periods attempted for the analysis. Table 7 exhibits the application of funds of the RRBs. For both the Tables mean, SD, CV, CAGR have been worked out for the variables covered in these Tables.

Table 4 : Sources of Funds of RRBs

(₹ in crore)

Year	Owned sources	% of owned sources to total sources	Borrowed sources	% of borrowed sources to total sources	Deposit source	% of deposits to total sources	Total Sources
2001-02	4,059	7.64	4,524	8.52	44,539	83.84	53,122
2002-03	4,666	7.88	4,479	7.56	50,098	84.56	59,243
2003-04	5,438	8.19	4,595	6.92	56,350	84.89	66,383
2004-05	6,181	8.37	5,524	7.48	62,143	84.15	73,848
2005-06	6,647	7.79	7,303	8.56	71,329	83.64	85,279
2006-07	7,286	7.27	9,776	9.76	83,144	82.97	100,206
2007-08	8,733	7.32	11,494	9.63	99,093	83.05	119,320
2008-09	10,910	7.59	12,736	8.85	120,189	83.56	143,835
2009-10	12,247	6.96	18,770	10.66	145,035	82.38	176,052
2010-11	13,840	6.70	26,491	12.82	166,232	80.48	206,563
2011-12	16,462	7.06	30,289	12.99	186,336	79.94	233,087
2012-13	19,304	7.18	38,268	14.22	211,458	78.60	269,030
2013-14	22,103	7.07	51,208	16.37	2,39,504	76.56	3,12,815
Mean	10605.85	---	17342.85	---	118111.50	---	146060.20
SD	5845.32	---	14954.15	---	65769.67	---	86273.42
CV (%)	55.11	---	86.23	---	55.68	---	59.07
CAGR (%)	15.19	---	24.36	---	15.88	---	16.71

Source: Compiled from the Reports of RBI & NABARD.

Diagram 2 : Sources of Funds of RRBs

(₹ in crore)

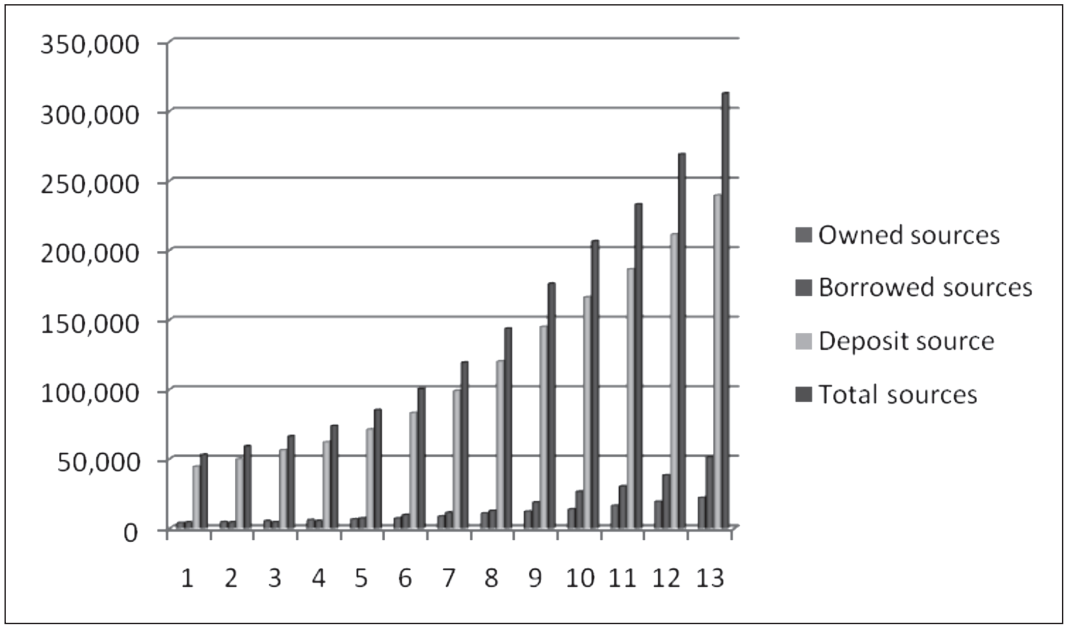


Table 4 displays that there is a steady growth in the ways of creating sources by the banks for their business activities. The coefficient of variation exceeds 50 per cent in all cases due to reasons of mobilisation of sources at a larger level when compared to the previous periods. Considering the sources of the RRBs, a hypothesis is framed as there is no significant difference between the owned, borrowed sources and deposits in the lending process of the RRBs that supports for the higher performance of the banking activity; and the same is tested with the statistical tool ANOVA one way classification. Correlation among these three variables was also computed (Tables 5 and 6).

Table 5 : Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	13	137876	10605.85	34167739.1
Column 2	13	225457	17342.85	223626738
Column 3	13	1535450	118111.5	4325650035

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit	Inference
Between Groups	94281158387	2	47140579193	30.86	1.69	3.26	Significant
Within Groups	55001334145	36	1527814837				
Total	1.49282E+11	38					

The calculated F-value is greater than the f-critical value. The formed null hypothesis is rejected, and concluded that there is a significant difference between the owned, borrowed sources and deposits in the lending process of the RRBs that supports for the higher performance of the banking activity. This may due to high level of participation of deposits in the sources of funds and highlight the major role played by the deposits collected from the public in lending activity. In addition, for these three variables, correlation was also worked out. Table 6 shows the relationship and indicates that these are having a high degree of positive correlation.

Table 6 : Correlation Analysis

Item	Owned fund	Borrowed fund	Deposits
Owned fund	1		
Borrowed fund	0.983881	1	
Deposits	0.996456	0.976833	1

Table 7 exhibits the application of funds of the RRBs for the periods taken for analysis.

Table 7 : Application of Funds of RRBs

(₹ in crore)

Year	Advances	% of advances in total applications	Investments	% of investments in total applications	Total Applications
2001-02	18,629	37.89	30,532	62.11	49,161
2002-03	22,158	40.13	33,063	59.87	55,221
2003-04	26,114	41.95	36,135	58.05	62,249
2004-05	32,870	47.21	36,762	52.79	69,632
2005-06	39,713	49.09	41,182	50.91	80,895

(Contd...)

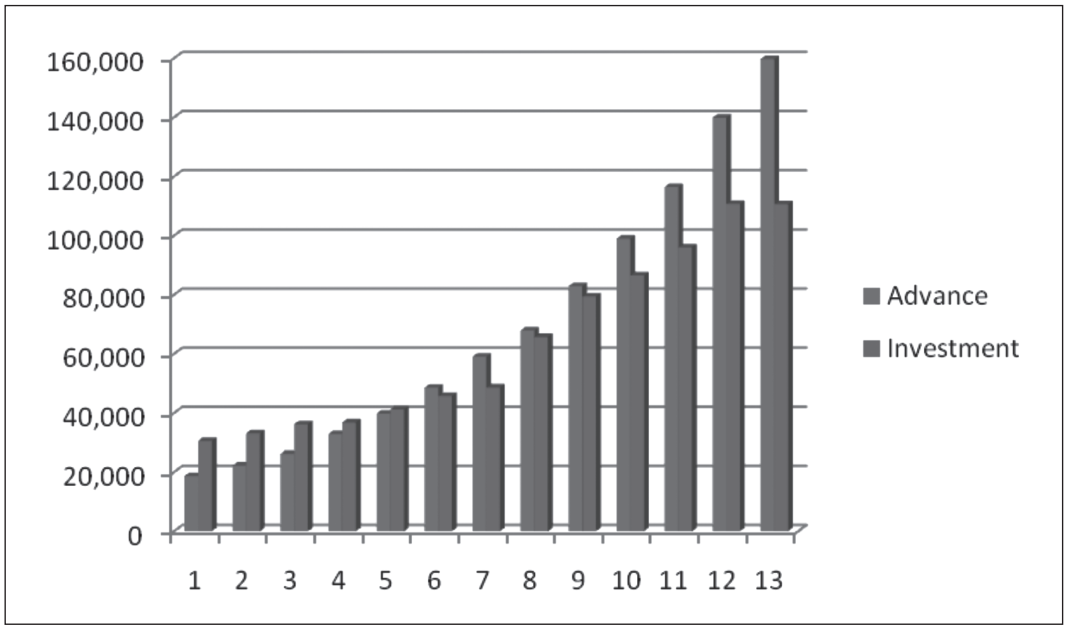
Table 7 *(Contd...)*

Year	Advances	% of advances in total applications	Investments	% of investments in total applications	Total Applications
2006-07	48,493	51.50	45,666	48.50	94,159
2007-08	58,984	54.85	48,560	45.15	1,07,544
2008-09	67,859	50.83	65,630	49.17	1,33,489
2009-10	82,819	51.06	79,379	48.94	1,62,198
2010-11	98,917	53.35	86,510	46.65	1,85,427
2011-12	1,16,385	54.81	95,975	45.19	2,12,360
2012-13	1,39,837	55.82	1,10,684	44.18	2,50,521
2013-14	1,59,660	59.10	1,10,514	40.90	2,70,174
Mean	70187.54	---	63122.46	---	133310.00
SD	46373.48	---	29988.85	---	76101.54
CV (%)	66.07	---	47.51	---	57.09
CAGR (%)	20.05	---	12.79	---	16.23

Source: Compiled from the Reports of RBI & NABARD.

Diagram 3 : Advances and Investments

(₹ in crore)



It is evident from coefficient of variation that advances and investment vary more due to faster application of funds for interest resources. The compound annual growth rate also shows a satisfactory position, but in case of advances outstanding, the banker should take precautionary steps to protect the banks from the occurrence of non-performing assets. A null hypothesis is framed that there is no significant difference in performance between advances and investments, and the same is tested with F-test. The results are exhibited in Table 8.

Table 8 : F-Test Two-Sample for Variances- Advances and Investments

Item	Advances	Investments
Mean (₹ crore)	70187.53846	63122.46154
Variance (₹ crore)	2150499740	899330875.1
Observations	13	13
df	12	12
F	2.391221963	
P(F<=f) one-tail	0.07256792	
F Critical one-tail	2.686637113	

Since the calculated F-value is less than the F-criterion value 2.69 at 5 per cent level of significance; the formed null hypothesis is accepted; and concluded that there is no significant difference in performance between advances and investments. It shows the application ways are almost equal. This is proved through correlation analysis that these two variables have a high degree of positive correlation.

The RRBs were formed to mobilise savings and develop the rural economy by providing credit and other facilities for the purpose of the development of the agricultural and allied activities of the targeted poor people. The credit deposit ratio of the bank indicates the creation of credit out of the deposits mobilised by the banks that are indicated in Table 9.

Table 9 : Credit Deposit Ratio of the RRBs

Year	Advances (₹ crore)	Deposits (₹ crore)	CD Ratio (%)
2001-02	18,629	44,539	41.83
2002-03	22,158	50,098	44.23
2003-04	26,114	56,350	46.34
2004-05	32,870	62,143	52.89

(Contd...)

Table 9 *(Contd...)*

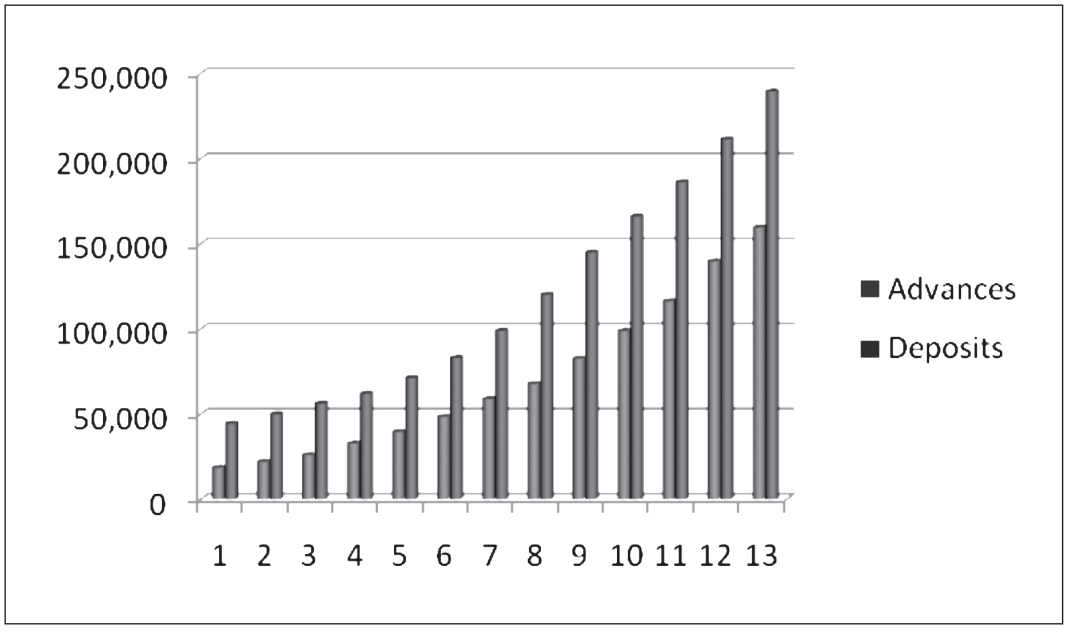
Year	Advances (₹ Crore)	Deposits (₹ Crore)	CD Ratio (%)
2005-06	39,713	71,329	55.68
2006-07	48,493	83,144	58.32
2007-08	58,984	99,093	59.52
2008-09	67,859	120,189	56.46
2009-10	82,819	145,035	57.10
2010-11	98,917	166,232	59.51
2011-12	1,16,385	186,336	62.46
2012-13	1,39,837	211,458	66.13
2013-14	1,59,660	2,39,504	65.41
	Correlation between Advances & Deposits =0.997286.		

Source : Compiled from the Reports of RBI & NABARD.

Table 9 reveals that the CD Ratio is showing a steady growth from 41.83 per cent to 66.13 per cent. It shows a positive performance of utilisation of funds from the source deposits, and both of them are having high degree of positive correlation.

Diagram 4 : Deposits and Advances

(₹ in crore)



It is also essential to consider the comparison of total sources and total utilisation of funds by the banks to identify the effective banking activity. Table10 shows the effective utilisation of sources.

Table 10 : Total Sources and Applications of RRBs

Year	Total Sources (₹ crore)	Total utilisation (₹ crore)	% of utilisation
2001-02	53,122	49,161	92.54
2002-03	59,243	55,221	93.21
2003-04	66,383	62,249	93.77
2004-05	73,848	69,632	94.29
2005-06	85,279	80,895	94.86
2006-07	1,00,206	94,159	93.97
2007-08	1,19,320	1,07,544	90.13
2008-09	1,43,835	1,33,489	92.81
2009-10	1,76,052	1,62,198	92.13
2010-11	2,06,563	1,85,427	89.77
2011-12	2,33,087	2,12,360	91.11
2012-13	2,69,030	2,50,521	93.12
2013-14	3,12,815	2,70,174	86.37

Source : Compiled from the Reports of RBI & NABARD.

The utilisation of sources during the entire study period is more than 90 per cent, except the year 2010-2011 when it is close to 90 per cent, and 2013-14 when it is still lower at 86.4 per cent. It is evident that the banks have performed well in their banking activity. A null hypothesis is framed that there is no significant difference in performance between total sources and utilisation which was tested by F-test. The results are shown in Table 11.

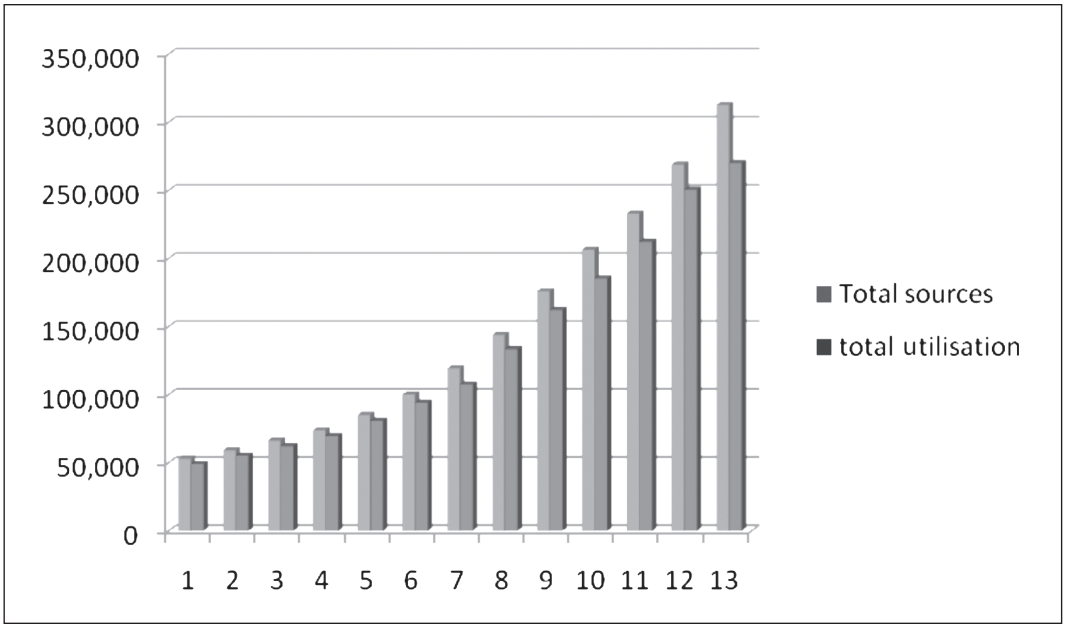
Table 11 : F-Test Two-Sample for Variances- Total Sources and Total Utilisation

Item	Total Sources	Total Utilisation
Mean (₹ crore)	146060.2308	133310
Variance (₹ crore)	7443103403	5791443758
Observations	13	13
df	12	12
F	1.28518962	
P(F<=f) one-tail	0.335386183	
F Critical one-tail	2.686637113	

The calculated F-value 1.28 is less than the F-criterion value 2.69 at 5 per cent level of significance. Hence the formed null hypothesis is accepted; and concluded that there is no significant difference in performance between total sources and utilisation. It shows that the utilisation is almost equal to sources. This is proved through correlation analysis that these two variables have a high degree of positive correlation.

Diagram 5 : Total Sources and Total Utilisation

(₹ in crore)



Concluding Remarks

The role played by the banking system of India since Independence has brought in decisive changes in the monetary system of the country. The performance of the RRBs since 1975 has been good, even though they faced so many crises and competition from other banks. The negative results shown in the above study do not mean that the banks did not perform well. The decline in the number of RRBs over years was due to the measures as downsizing and merger of the banks taken by the Government of India to protect the interest of RRBs. It is clear that the RRBs are competing with other banks with their limited resources and limitations. The plan of helping the RRBs to grow in their functioning like the commercial banks in the country without diluting their objectives and focus should be pursued at the earliest by NABARD and Government of India for their further development. Measures contemplated could be increasing the capital base, and introducing new deposit mobilisation and lending methods with sizable increase in the interest rate that may be lower than that of commercial banks.

Government of India may consider insisting on all the Government departments and other corporate sector enterprises to have banking transactions with RRBs, as a promotional measure. A few more remunerative activities should be placed under the purview of RRBs.

Nagaland State is not covered by RRBs at present. It is important that the entire country with the exception of major cities could be brought under the coverage of RRBs with focus on rural areas. In urban and semi-urban areas, RRBs may be involved in more remunerative transactions. Private sector banks could also be directed to sponsor RRBs in some districts. Modern banking facilities such as Automatic Teller Machine, Cash Deposit Machine, cash counting machines and other advanced practices could also be introduced in RRBs. Higher level of customer satisfaction is the goal of the entire banking system. RRBs being relatively small institutions have an edge over other banks in fulfilling this objective in the transparent way. Increased level of support given by RRBs to self-help groups and micro-finance institutions through flexible systems is another direction to be pursued in different parts of the country. Institutional development as pursued by NABARD in case of RRBs, including in the context of finding solution to the increasing non-performing assets (NPAs) is another important direction that needs special attention.

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ECONOMICS OF BUFFALO MILK PRODUCTION – A CASE STUDY OF COMPOSITE ANDHRA PRADESH

*Gudipati Vijayudu**

ABSTRACT

Milk production is a complex process involving a number of genetic and non-genetic factors. Variation in genetic potential, feeding and management practices influence the yield of milk for cattle and buffaloes. Costs and Returns of dairying are important concerns of dairy farmers. The results of the study presented in the paper examine the economics of buffalo milk production and productivity in three villages of different levels of agricultural development in Composite Andhra Pradesh. The districts covered from the three regions are: Guntur, Nalgonda and Kurnool. Analysis presented is in respect of three breeds of buffaloes – murrah breed, graded murrah breed, and non-descriptive/desi, and five categories of dairy households - agricultural labour, marginal, small, semi-medium and medium farmers. The results flowing from the Input-Output Analysis, Cobb-Douglas Production Function, χ^2 test, and Cost-benefit Ratio are presented district-wise and buffalo category-wise. Emphasis is on intensification of the drive for cross breeding of species, as graded murrah is considered highly remunerative in terms of yield of milk and adoption of scientific management practices.

Introduction

Dairying in India, over the years, witnessed a sea change from a largely unorganised activity into a booming organised industry, with the implementation of the Operation Flood Programme from 1970 and other dairy development programmes. National Dairy Plan (NDP) is a composite programme launched in 2012 in select districts. The programme consists of three components: (i) village-based milk procurement system, (ii) ration balancing programme, and (iii) fodder development programme. These efforts will improve the quality of milk. NDP needs to be extended to more districts in the next few years. The white revolution owes much to the Anand

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Pattern of Cooperative Dairying, with a three-tier system on cooperative lines at State, district and village levels. The institutional infrastructure developed at different levels has progressively eliminated middlemen, enabling interface of producers with processors. Cooperatives form part of the National Milk Grid which links producers with consumers throughout the country bridging the gaps on account of seasonal and regional variations in the availability of milk. The Anand pattern is a three- tiered structure in which the farmers organise themselves into dairy cooperative societies at the village level; these village level cooperatives are organised into a district level union; the district level unions federate into a State level cooperative organisation. At the national level, the National Cooperative Dairy Federation of India (NCDFI) coordinates the efforts of all State level cooperative dairy federations.

In the light of the liberalised competitive environment, the milk producers are scaling up their production capacities and adopting dairy farming on commercial lines to tap market opportunities. As a result, many commercial dairy farms and private dairy processing enterprises have come up in the country, particularly in milk surplus States. Dairying in India continues to be a small holder's enterprise, particularly of landless labourers, and marginal and small farmers. Organisational efforts are being made to expand the cooperative network to enable farmers to get better earnings through increased milk production with the help of scientific breeding, feeding and adoption of scientific management practices. The paper dealing with economics of buffalo milk production is presented in two sections. Section I presents the status of milk production in the country and review of studies on milk production; section II covers the results of the case study on economics of buffalo milk production in three districts of Composite Andhra Pradesh - Guntur from the Coastal Andhra region, Kurnool from Rayalaseema region, and Nalgonda from Telangana region. Coastal Andhra and Rayalaseema regions constitute the present Andhra Pradesh State, after the State bifurcation on June 2, 2014, and the entire Telangana region covering 10 districts is now called Telangana State. Data presented for Andhra Pradesh State in the paper refer to Composite Andhra Pradesh.

Status of Milk Production in the Country

India has the distinction of being the largest producer of milk in the world with production level of 132.4 million tonnes (MT) in 2012-13. USA stands second with the production level of 91.6 MT, and China third with 47.6 MT in 2013. India's share in world milk production is 17.4 per cent in 2013, as compared to USA of 11.7 per cent, and China of 6.1 per cent (www.fao.org). Compound Annual Growth Rate (CAGR) for milk production during 2005-2013 works out to 5.1 per cent for China and 4.2 per cent for India. Per capita availability of milk in the country in 2011-12 is 290 gms per day compared to the world average in 2011 of 289 gms per day. Average annual growth rate of milk production for India in the recent years has been 4.2 per cent compared to the world production average of 2.3 per cent. Growth in recent years has been faster compared to the earlier decades in India. It has touched 5 per cent in 2011-12, and declined to 3.5 per cent in 2012-13. Average

annual growth rate in per capita availability of milk for India has been around 3 per cent in the recent years, faster than in earlier years (www.nddb.org/statistics). The average milk yield of indigenous cattle and buffalo is around 1.98 litres per day which is very low as compared to the yield of cross-breeds of 6.75 litres per day. This is due to the poor plan of nutrition, low genetic potential for milk production, and near absence of the genetic improvement programmes. Cross-breed cows and buffaloes are more income remunerative than local breed of animals, mainly on account of better milk yield, better productive traits, and considerable growth in income and employment due to increase in productive and reproductive performance of cross-breeds of animals (Ganesh Kumar, B. and Raj Vir Singh, 2008).

With all India milk production in 2012-13 as 132.4 MT, the contribution of leading States is as follows. Arranged in the descending order of milk production in 2012-13, the position of 13 major States with production in MT, and percentage share given in parentheses is as follows: Uttar Pradesh 23.3 (17.6 per cent), Rajasthan 13.9 (10.5 per cent), Composite Andhra Pradesh (Andhra Pradesh and Telangana States) 12.8 (9.6 per cent), Gujarat 10.3 (7.8 per cent), Punjab 9.7 (7.3 per cent), Madhya Pradesh 8.8 (6.7 per cent), Maharashtra 8.7 (6.6 per cent), Haryana 7.0 (5.3 per cent), Tamil Nadu 7.0 (5.3 per cent), Bihar 6.8 (5.2 per cent), Karnataka 5.7 (4.3 per cent), and West Bengal 4.9 (3.7 per cent). These 13 major States account for production of 119.11 MT (89.9 per cent). Seven other States with above 1.1 MT production level together account for 11.6 MT (8.8 per cent). These States arranged in the descending order with output in MT and percentage share given in parentheses are: Kerala 2.8 (2.1 per cent), Odisha 1.7 (1.3 per cent), Jharkhand 1.7 (1.3 per cent), Jammu and Kashmir 1.6 (1.2 per cent), Uttarakhand 1.5 (1.1 per cent), Chhattisgarh 1.2 (0.9 per cent), and Himachal Pradesh 1.1 (0.8 per cent). These 20 States together produced 130.7 MT, 98.7 per cent of all India milk production in 2012-13 (www.nddb.org/statistics).

Buffaloes are the largest genetic resource found in large numbers in a number of States, and form an important component of the livelihood of rural masses. Composite Andhra Pradesh stands second in the country in total buffalo population, and adult female as well as male buffaloes, with Uttar Pradesh (UP) as the number one State. In total milk production in 2012-13, out of the all India level of 132.4 MT, UP accounts for 17.6 per cent, Rajasthan second at 10.5 per cent, and Composite Andhra Pradesh stands third at 9.6 per cent. Compound Annual Growth Rate (CAGR) of milk production during 2007-13 for Composite Andhra Pradesh is 8.2 per cent (the highest), with Madhya Pradesh, Gujarat, and Rajasthan as second, third and fourth with the growth rate as 5.5, 5.4 and 5.2 per cent, respectively. All India average is 4.2 per cent. In per capita availability of milk in 2011-12, Punjab has the pre-eminent position of the number one State with 945 gms/day as against the all India average of 290 gms/day, and the world average of 289.31 gms/day. Composite Andhra Pradesh ranks sixth (391 gms/day), with annual growth rate of 7.8 per cent during 2007-12, the highest among States in the growth rate, as against the all India average of 3.6 per cent (www.nddb.org/

statistics). In India, buffaloes contribute 55 per cent of total milk production, though their population is less than that of cattle. Buffalo milk being rich in fat, there is greater demand for buffalo milk, compared to other categories of milk; and it commands a premium price in the market. Cattle contribute 41 per cent of milk, and 4 per cent is contributed by others (Balamuniswamy, D. and B. Parameswara Reddy, 2013).

Milk production is a complex process involving a number of genetic and non-genetic factors. Type of breed and ability for milk secretion by individual animals are the important factors. The important non-genetic factors influencing milk production include the quality of feed and fodder, labour, order of lactation, stage of lactation, etc. A number of research studies as presented later in the literature review have revealed that there is great variation in the relative economic efficiency of different breeds of milch animals reared by different categories of the herd size farmers due to variation in genetic potential, feeding and management practices. The problem is more acute as most of the milk producers are landless agricultural labourers, marginal and small farmers with very low herd size of one to two animals, and in some cases three to four, and lack scientific know-how to boost the animal productivity. This results in increased cost of milk production and lower returns. Besides the increasing cost of inputs, profitability of milk production also depends on the price received by the milk producer through the channel through which he/she sells milk. Analysis of costs and returns from dairying is an important issue affecting the livelihood of the vast majority of rural masses.

Review of Studies on Milk Production

The findings of a few research studies focusing on various aspects of milk production of buffaloes and cows are presented in this section.

Tanwar, P.S. et al. (2012), in their study of "Economics of Milk Production among Member and Non-member Families of Dairy Co-operatives in Jaipur District (Rajasthan)" covered 240 milk producers owning milch buffaloes (120 among members of 10 cooperatives and 120 non-members in the district). The results show that net return per buffalo per year was higher in member families than non-member families. This reflects that the members of dairy cooperatives kept not only superior breed of buffaloes but also followed better feeding and scientific management practices than their counterpart non-member families, which in turn enhances their profit by way of higher productivity of buffaloes. Further, the existence of dairy cooperatives, which offered higher price of milk to the members, resulted in increased income of the members. The study suggests that it would be beneficial for non-members to become members of cooperatives to take advantage of the facilities provided by the cooperatives to improve their earnings and status in dairy farming through well established linkages.

The overall gross maintenance cost per animal per year was higher in member families in comparison to non-member families. Maximum cost was on small farmers, and minimum was on landless farmers in both categories. The share of variable and fixed cost in total maintenance cost was almost the same for member and non-

member families. The cost of feed, fodder, and concentrate was the main component in gross maintenance cost. The overall cost per litre of milk was lower (₹ 10.47) in member families than non-member families (₹ 11.29). The size of landholding showed negative relationship with the cost of milk production. The overall net return per animal per year was higher in case of members in comparison to non-members. The overall net profit per litre of milk was ₹ 4.73 for members and ₹ 2.01 for non-members. The overall average income per rupee of investment was higher for members (₹ 1.45) than for non-members (₹ 1.18).

Michael Khovelo, L.L. et al. (2012) in their study of "Economics of Milk Production and its Constraints in two districts of Nagaland", namely, Kohima and Dimapur covered 120 milk producing households possessing cross-bred and local cows. Cooperative members and non-members were covered in the study for pinpointing the production and marketing constraints. Results of the study showed that the feed cost accounted for 78.3 per cent of the gross cost in cross-bred cows and 68.8 per cent in local cows where concentrate formed the major constituent of the feed cost. The share of labour was 12.8 and 21.1 per cent of the gross cost for cross-bred and local cows, respectively. The average daily milk yield of milch cross-bred and local cows was found to be 4.4 and 1.5 litres, respectively. The cost of milk production for milch cows per litre worked out to be ₹ 19.6 and ₹ 29.1 for cross-bred and local cows, respectively. The high per litre cost of milk could be due to the high feed cost associated with low milk yield in case of local cows. Therefore, efforts should be made to upgrade the germplasm of local zebu cattle in order to improve its productivity, thus, reducing the cost of milk production. The net return was found to be positive for cross-bred cows while it was negative for local cows across all categories of households. The study further observed low availability and high price of concentrate to be the major production constraint in milk production for both cooperative members and non-members, while low price of liquid milk was the major marketing constraint for cooperative members, and delay in payment by unorganised sector was the major constraint for non-members. Steps may be taken to strengthen the cooperative society infrastructure and payment of remunerative price of milk to the milk producers.

Avinash K. Ghule et al. (2012), in their study on "An Economic Analysis of Investment Pattern, Cost of Milk Production and Profitability of Commercial Dairy Farms in Ahmednagar district of Maharashtra" covered 40 commercial dairy farms of largely cows from 12 villages. Only three are mixed farms with cows and buffaloes. The dairy farms of varying herd sizes had average herd size for small, medium and large categories as 10.55, 14.11 and 34.66 milch animals, respectively. The average investment per farm was estimated to be ₹ 12.17 lakh; indicating that commercial dairy farming is a highly capital intensive business. The share of dairy animals in total investment ranged from 51.3 per cent (small farms), 55.2 per cent (medium farms) to 70.1 per cent (large farms). The average productivity of cross-bred cattle was 9.7, 9.6 and 9.5 litres of milk per day for small, medium and large category of commercial farms; while the cost of milk per

litre was ₹12.5, ₹12.6 and ₹ 11.5, respectively. The net return over cost per litre of cow milk produced was ₹ 2.2. All farms were financially viable earning a net profit of ₹ 1.9 lakh per farm per year. Commercialisation in dairy farming has contributed to increase in income levels of farmers through increased production. The productivity of cattle in terms of milk production per milch cattle per day as well as wet average was found to be higher in small commercial farms in comparison to medium and large farms in that order. Large farms have invested maximum share of fixed capital in the dairy animals whereas on the small farms relatively more investment was done on development of infrastructure. Commercial dairy farms had devoted a fairly large area of their operational holding for growing fodder crops to meet their fodder requirement with least dependence on purchased fodder. Feed represented one of the largest components of cost. The wet to dry animal ratio was better in case of cross-bred cattle farms as compared to buffalo farms. Poor wet to dry ratio led to increased cost and relatively low return on the large buffalo farms.

Aulakh, G.S and Rajbir Singh (2012), in their study on "Adoption of recommended management practices by buffalo owners conducted in three districts of Punjab", namely, Bathinda, Ferozepur and Sangrur on a sample of 180 buffalo owners from six villages examined the adoption of recommended management practices by buffalo owners. The study revealed that overall; the buffalo owners had medium level of adoption of recommended management practices. Adequate supply of water, and feed to buffalo, and udder cleaning before milking were the practices which were highly adopted, whereas separation of pregnant buffalo a few days before calving, wallowing in the ponds, and weaning of calves, practices were least adopted by the buffalo owners. The medium level of adoption was observed in case of practices like care of naval card of the calf, disinfection of the shed, dehorning of calves, and cleaning of animals before milking. The education level of the respondents was positively and significantly related with the adoption of management practices. The adoption of improved dairy practices becomes a prerequisite for sustained growth and development of dairy industry. The low productivity of buffalo is mainly due to lack of adoption of improved management practices.

Inderpreet, K. et al. (2010), in their paper "Pattern of Milk Production and Marketing in Ludhiana and Sangrur Districts of Punjab" present the findings of the study with focus on production and marketing aspects of milk in two districts, leading in milk production in the State. It is concluded that quantities of milk produced and milk retained for household consumption were positively correlated to the size of the herd. The large milch animal herd farmers dominated the supply side of the milk market. The sale of cow milk was more compared to buffalo milk in the study area. The most preferred mode of selling milk was the local vendor followed by cooperative societies, private milk plants, and direct sale to consumers. The large quantity of milk sold per household confirmed that the dairy farmers in the selected districts of Punjab were adopting dairy farming on a commercial scale, and the farmers'

experiences in selling milk revealed that organised milk marketing system is essential to enable the farmers to get remunerative prices, as the present system is inadequate.

Mallikarjuna Reddy, R. and S. Subramanyam (2002), analysed the gap between the potential and the realised yields of dairy animals maintained by the farmers. The decomposition of the yield gap into its contributory factors reveals that the sound management practices and increased input use (better feeding) are the factors responsible for the yield gap in cross-bred cows and Murrah buffaloes. The study examined feeding patterns of animals in both the situations. It is learnt that the deficiency of protein in the rations of the farmer-bred animals is the major factor responsible for the lower milk productivity of farmer-bred animals. Therefore, it is suggested that all the farmers should include protein rich feeds in the ration of their animals. Further, the addition of the micronutrients like mineral mixtures and vitamin supplements in small quantities improve the daily milk-yield and lactation length of farmer-bred animals.

Ganesh Kumar, B. et al. (2011), in their article "Economic Analysis of Buffalo Farming in Andaman & Nicobar Islands – A Micro level Study" studied the economics of buffalo farming, and estimated the average size of buffalo holdings of the farmers and economic traits of buffaloes such as the age at first calving, order of lactation, lactation period, dry period, inter-calving period, service period, lactation yield, and daily milk yield. It was found that with increase in herd size, the productivity and profitability increased, indicating economies of scale, and labour cost decreased, conveying optimal utilisation of family labour in buffalo farming. The major constraints identified include non-availability of fodder and land for the farming practices. It is concluded that buffalo farming in these islands is a highly profitable enterprise under the prevailing socio-economic conditions.

Rajesh Kumar et al. (2011), in their article, "Impact of Cross-breeding on Productive Performance of Cattle: A BAIF's Case", a study carried out in Bareilly district of Uttar Pradesh covered 120 cattle owning households of 12 villages comprising 50 per cent beneficiaries and 50 per cent non-beneficiaries of the Bharatiya Agro Industries Foundation (BAIF). The study focused on the Cattle Development Programme to assess the impact of cross-breeding interventions on the production performance and related variables of cattle and its relationship with income and employment generation. The cattle owning families availing the breeding services of BAIF and those not using the services of BAIF since the last five years were the respondents. The impact of cross-breeding was studied in terms of significant differences in the mean values of cattle production performance and related variables, degree of relationship of cattle production performance trait with income and employment generation, and the per cent change in cattle production performance, and related variables among beneficiaries and non-beneficiaries over the last five years. Cross-breeding interventions of BAIF's cattle development programme were found to be an effective tool for raising income and employment generation due to better productive and reproductive

performance of cross-bred cattle. The cross-breeding interventions could contribute to nutritional as well as livelihood security of rural families. Efforts should be focused not only on artificial insemination services but also to create awareness among the farmers to rear quality milch breeds.

Research Methodology

The cost of milk production from dairying is an important aspect for producers, consumers and policy makers to provide effective linkage between the milk producers and consumers, so that the producers get remunerative price for milk, and consumers get milk and milk products at reasonable rate. Estimation of costs and returns from milk production for different breeds of milch buffaloes maintained by different categories of sample dairy farmers is essential to understand the viability of the enterprise from various angles. This motivated the researcher to pursue the current study in three agro-climatic zones of Composite Andhra Pradesh.

Objectives pursued in the present study are two-fold:

(i) to examine the economics of buffalo milk production and productivity in the study region in Composite Andhra Pradesh, and

(ii) to suggest policy measures for improving productivity of the dairy sector.

In three selected villages of Composite Andhra Pradesh, representing different levels of agricultural development, the study examines the theme in respect of three breeds of buffaloes – murrah breed, graded murrah breed, and non-descriptive/desi, and five categories of dairy households - agricultural labour (AL), marginal farmer (MF-1), small farmer (SF), semi-medium farmer (SMF), and medium farmer (MF-2) who are engaged in dairying as the main or secondary occupation. As the coverage is in three districts of different economic regions, results are presented in respect of the individual districts, and category of farmers for each breed of buffaloes.

The three types of buffaloes covered in the study are:

(i) **Murrah Breed Buffalo:** Murra breed buffalo is black in colour, and horns are short and slightly curved in a spiral shape. It is a massive and stocky animal with heavy bones. Its height is 133 cm, and weight 650 kgs. It originated in Haryana State in November 1966.

(ii) **Graded Murrah Breed Buffalo:** Graded murrah or cross-breed buffalo emerges from systematic and frozen semen-based cross-breeding programme being practised in a number of States. This is yet to be adopted extensively in the country. A major advantage of cross-bred buffaloes is that they continue to produce milk in the summer season as well when the buffalo milk output drops by as much as 50 per cent.

(iii) **Non-descriptive Buffalo:** Non-descriptive buffalo rearing in India has a long history. It symbolises the long tradition of keeping buffaloes as part

of the household. This category of buffalo population is on the decline, giving place to cross-bred improved varieties. Greater popularity is for graded murrah breed buffalo.

For the study of economics of buffalo milk production, a sample of 275 dairy farmers from three villages of Composite Andhra Pradesh was covered through a multi-stage random and purposive selection process. Initially, three districts having the largest adult buffalo population in each of the three regions of the State were identified. After that, one mandal each, with the largest adult buffalo population in those districts, and subsequently one village each with the largest adult buffalo population in the mandals were specified. The criterion for selection of the study area is, thus, the area having the largest number of milch buffaloes of different categories of three years and above age group. The villages selected are Peteru in Repalle mandal of Guntur district (Coastal Andhra region), Ananthagiri in Kodad mandal of Nalgonda district (Telangana region), and Chapirevula in Nandyal mandal of Kurnool district (Rayalaseema region).

The 275 sample respondents of dairy households are classified into five categories: Along with the number and percentage, these are: AL 60 (21.8 per cent), MF-1 60 (21.8 per cent),SF 57 (20.8 per cent), SMF 51 (18.5 per cent), MF-2 47 (17.1 per cent). 275 respondents owned 358 adult buffaloes of three categories: murrah breed 39 (10.9 per cent), graded murrah 103 (28.8 per cent), and non-descriptive/desi buffaloes 216 (60.3 per cent). Care was taken to represent reservations in the sample of dairy farmers. Community-wise distribution of the respondents is as follows: backward classes (BC) 35.6 per cent, scheduled castes (SC) 11.3 per cent, scheduled tribes (ST) 2.6 per cent. The rest of 50.5 per cent are open categories (OC). The analysis attempted is in respect of the category of dairy households and type of buffaloes. Results presented of input-output, production function, and cost-benefit ratio analysis refer to these key aspects to pinpoint the distinguishing features of the three study areas. The districts covered in the study in order of level of development are: Guntur - agriculturally well developed, Nalgonda – next level of agricultural development, and Kurnool – lowest in terms of agricultural development, among the three districts covered in the study. The conclusions indicate the pre-conditions of success in regions of varying levels of development.

Among the statistical techniques adopted, mention many be made of the following: Input - Output analysis, Cobb-Douglas Production Function, and Cost-benefit analysis/cost-benefit ratio for three categories of buffaloes, five categories of dairy households, and overall picture district-wise. Chi-square (χ^2) test goodness-of-fit and test of significance were carried out for a number of features utilising the SPSS software. Using these tests, relationship or association was established between the socio-economic characteristics of the sample respondents and ten pairs of variables influencing buffalo milk production, and for identifying production and financial constraints affecting milk production.

Results and Discussion

Application of Chi-square Test and Test of Significance

Chi-square (χ^2) test and test of significance worked out for ten pairs of variables show that for four pairs, the result shows significance indicating that they exert considerable influence on improving milk production. The pairs are: gender and main occupation, literacy status and main occupation, educational qualification and main occupation, and main occupation and marital status. Six pairs where association is shown as insignificant are: religion and marital status, religion and main occupation, religion and secondary occupation, gender and secondary occupation, education qualification and experience in dairying, and various categories of dairy households and debt.

Production and financial constraints affecting milk production have been studied using χ^2 test. For six variables, the result showed significance. For one, the result showed insignificance. The milk yield and overall production of milk are linked in a significant way with variables such as quality of bulls, veterinary facilities, availability of land for fodder cultivation, availability of green fodder, proper shed facility, and availability of credit. Inadequate knowledge about balanced feeding has not been found to be significant.

Results of Input-Output Analysis

Table 1 presents the results of input-output analysis of milk production in respect of three types of buffaloes, district-wise and farmer category-wise. The overall picture given in Table 2 summarises the results of input-output analysis district-wise for three categories of buffaloes.

Table 1 : Input –Output Relation in Milk Production by Category of Buffaloes and Households

(Quantity in quintals per buffalo per annum)

Households	Input & Output	Murrah Breed			Graded Murrah			Non-Descriptive		
		Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool
AL	DF	13	10	18	18	19	13	18	19	15
	GF	24	70	34	38	29	32	27	24	51
	CT	1.4	2.3	4.5	2.0	1.7	2.2	2.0	2.3	2.0
	MR	28	40	33	30	29	29	29	56	37
	MY(Ltr)	1,492	2,040	1,680	1,352	1,470	1,772	957	916	1,090
	Calf	1	Died	1	1	1	1	1	1	1
	MP (B-kgs)	-	-	-	-	-	-	-	-	5.0
MF-1	DF	27	15	21	19	18	17	17	22	14
	GF	80	52	36	48	35	34	40	19	32
	CT	3.0	5.0	5.0	2.0	3.7	6.0	2.2	2.5	3.5
	MR	34	32	30	30	30	31	24	41	28
	MY(Ltr)	1,756	1,629	1,820	1,313	1,756	1,879	1,025	916	1,163
	Calf	1	1	1	1	1	1	1	1	1
	MP (B-kgs)	-	-	-	-	-	-	-	-	-
SF	DF	25	25	-	17	18	19	16	21	12
	GF	75	29	-	60	38	27	49	28	34
	CT	3.8	1.8	-	4.0	2.0	2.1	3.0	2.0	2.3
	MR	44	41	-	38	33	32	32	29	40
	MY(Ltr)	1,924	1,708	-	1,440	1,477	1,491	969	848	993
	Calf	1	1	-	1	1	1	1	1	1
	MP (B-kgs)	-	-	-	-	-	-	-	-	-

(Contd...)

Table 1 *(Contd...)*

Households	Input & Output	Murrah Breed			Graded Murrah			Non-Descriptive		
		Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool
	DF	35	31	15	19	27	20	30	20	21
	GF	34	16	-	27	24	41	45	20	54
	CT	4.3	4.3	-	4.8	3.5	2.3	3.6	2.0	2.4
SMF	MR	47	52	20	35	33	53	40	36	58
	MY(Ltr)	2,145	1,811	640	1,614	1,448	1,267	1,045	1,171	996
	Calf	1	1	1	1	1	1	1	1	1
	MP (B-kgs)	-	-	-	-	-	-	-	-	-
	DF	21	30	-	21	28	20	25	29	22
	GF	23	08	-	39	25	18	38	20	30
	CT	4.0	2.5	-	3.0	2.0	2.0	3.0	2.0	2.1
MF-2	MR	41	50	-	40	39	23	34	44	31
	MY(Ltr)	1,818	2,018	-	1,410	1,195	1,202	988	865	856
	Calf	1	1	-	1	1	1	1	1	1
	MP (B-kgs)	-	-	-	-	-	-	-	-	-
Inputs for all respondents (Qty)	DF	24	22	18	19	22	18	21	22	17
	GF	47	35	35	42	28	36	40	22	40
	CT	03	03	05	03	02	03	03	02	02

Note : Inputs in quintals are - DF: Dry Fodder, GF: Green Fodder, CT: Concentrates; and outputs are - MR: Manure in quintals, MY: Milk Yield in litres (Ltr), MP: Milk Product, B: butter (kgs), and Calf, Qty: quintals.

Source : Computed from primary data.

Table 2 : Overall Input – Output Relation in Milk Production, Buffalo Category-wise in Three Districts

(Quantity in quintals per buffalo per annum)

District	Input & Output	Murrah Breed		Graded Murrah		Non-Descriptive	
		Overall	Range	Overall	Range	Overall	Range
Guntur	DF	24	13 - 35	19	17 – 21	21	16 – 30
	GF	47	23 - 80	42	27 – 60	40	27 – 49
	CT	3	1.4 - 4.3	3	2.0 - 4.2	3	2.0 – 3.6
	MR	39	28 - 47	35	30 – 40	32	24 – 40
	MY (Ltr)	1,827	1,492 - 2,145	1,426	1,313 –1,614	997	957 – 1,045
Nalgonda	DF	22	10 - 31	22	18 – 28	22	19 -29
	GF	35	08 – 70	3	24 – 38	22	19 -28
	CT	3	1.8 – 5.0	2.6	1.8 – 3.8	2	2.0 – 2.5
	MR	43	32 – 52	33	29 – 39	41	29 – 56
	MY (Ltr)	1,841	1,629 – 2,040	1,469	1,195 – 1,756	943	848 – 1,171
Kurnool	DF	18	15 -21	18	13 – 20	17	12 – 22
	GF	35	34 – 36	36	18 – 41	40	30 – 54
	CT	5	4.5 – 5.0	3	2.0 – 6.0	2	2.0 – 3.5
	MR	28	20 – 33	34	23 – 53	39	28 – 58
	MY (Ltr)	1,380	640 – 1,820	1,522	1,202 – 1,879	1,020	856 – 1,163

Note: Inputs in quintals are - DF: Dry Fodder, GF: Green Fodder, CT: Concentrates; and outputs are - MR: Manure in quintals, and MY: Milk Yield in litres (Ltr).

Source: Computed from primary data.

The overall results given in Table 2 reveal that the milk yield per animal per annum is the highest in Murrah breed buffaloes in Nalgonda (1,841 litres), followed by Guntur (1,827 litres). Next comes the graded murrah buffalo from Kurnool (1,522 litres). For Kurnool, murrah buffalo's yield is only 1,380 litres, low compared to that of graded murrah of this district (1,522 litres). In Guntur and Nalgonda, graded murrah buffalo's milk yield falls in between that of murrah breed and non-descriptive categories. Non-descriptive buffalo's yield is the lowest in all the districts. Further analysis in the category of farmers and agricultural labour is as follows (Table 1): In Guntur in case of murrah buffalo, except in respect of AL, for all other categories the yield is quite high; the highest in respect of SMF (2,145 litres) compared to the overall figure of 1,827 litres. In respect of graded murrah buffalo, yield in case of SMF is the highest among the categories. In case of non-descriptive buffalo also, the yield for SMF is the highest. In case of inputs, heavy reliance is placed on green fodder, followed by dry fodder. Use of

concentrates is very low. For labour, the number of mandays is the highest in case of AL. In respect of Nalgonda, in case of murrah buffalo, as against the overall milk yield of 1841 litres, yield for AL, MF-2 and SMF is quite high, and low in others.

Sumit Mahajan and A.K. Chauhan (2011), in their article, "Resource Use Efficiency in Milk Production in Rural and Peri-urban Dairy Farms in Ludhiana District of Punjab", focus attention on analysis of input-output relationship and resource use efficiency in respect of the use of principal inputs that go into the production of milk. A number of genetic and non-genetic factors influence milk production. Important genetic factors are type of breed of the animal and ability for milk secretion by individual animals. The important non-genetic factors include quality of feed and fodder, labour, order of lactation, stage of lactation, etc. To realise maximum returns from milk production, all the scarce resources must be used optimally.

Milk production has been estimated by using Cobb-Douglas Production Function, for milking cross-bred cattle and buffaloes on rural dairy farms and milking cattle on peri-urban dairy farms using expenditure on feeds, and fodders, labour cost, and miscellaneous expenditure on dairying as explanatory variables. The study revealed that green fodder and concentrates have shown positive and significant effect on milk production in case of cross-bred cattle on rural dairy farms. Green fodder has turned out to be underutilised on rural dairy farms. There is scope to increase milk production by feeding more green fodder to the cross-bred cattle in rural dairy farms. Concentrates were optimally utilised on both the rural and peri-urban dairy farms. During the scarcity period of green fodder, the peri-urban dairy farmers were following the practice of making silage themselves; rural dairy farmers may also be encouraged to prepare silage during abundance of fodder. The findings of this review corroborate the findings of the present study of the researcher.

Analysis of Cost-Benefit Profile

Cost-Benefit analysis of dairy operations in value terms in the three districts covers three categories of buffaloes, five categories of respondents, and the overall picture. The cost is divided into fixed, variable, and total cost. Fixed cost covers depreciation on the cost of buffaloes and shed, and interest on fixed capital. Variable cost covers fodder cost, concentrates cost, labour cost, milk transport cost for milk from house to milk centre, and healthcare cost. Output values have been worked out for milk yield per animal per annum, calf, milk products, and manure. Difference between gross income (GI) and total cost (TC) gives net profit (NP). CB ratio has also been worked out from GI, and TC, using the formula GI ÷ TC. Table 3 presents the details in respect of three categories of buffaloes, and in each of them, three districts and five categories of respondents.

Table 3 : Cost-Profit Profile for Milk Production in Three Districts by Category of Buffaloes and Households

(Value in ₹ per buffalo per annum; CB is a ratio)

Households	CB Profile	Murrah Breed			Graded Murrah			Non-Descriptive		
		Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool	Guntur	Nalgonda	Kurnool
AL	TC	10,865	23,443	13,340	15,273	13,673	13,931	14,459	15,146	19,301
	GI	27,848	29,087	25,875	28,780	25,715	33,254	20,890	19,657	22,883
	NP	16,983	5,644	12,535	13,507	12,042	19,323	6,431	4,511	3,582
	CBR	2.6:1	1.2:1	1.9:1	1.9:1	1.9:1	2.4:1	1.4:1	1.2:1	1.2:1
MF-1	TC	19,600	16,556	13,736	16,283	13,246	18,305	12,489	13,328	13,739
	GI	29,697	30,487	34,127	28,780	36,143	31,076	21,332	19,235	21,167
	NP	10,097	13,931	20,391	13,507	22,897	12,771	8,843	5,907	7,428
	CBR	1.5:1	1.8:1	2.5:1	1.8:1	2.7:1	1.7:1	1.7:1	1.4:1	1.5:1
SF	TC	22,409	15,852	-	17,168	9,369	12,646	15,865	11,435	16,445
	GI	33,938	34,381	-	29,676	25,795	25,539	18,282	16,699	18,631
	NP	11,529	18,529	-	12,508	16,426	12,893	2,417	5,264	2,186
	CBR	1.5:1	2.2:1	-	1.7:1	2.8:1	2.0:1	1.2:1	1.5:1	1.1:1
SMF	TC	22,400	18,876	8,383	17,343	18,529	13,450	21,383	23,291	15,644
	GI	32,732	27,554	11,100	30,753	27,344	23,842	21,340	18,105	19,691
	NP	10,332	8,678	2,717	13,410	8,815	10,392	-43	-5,186	4,047
	CBR	1.5:1	1.5:1	1.3:1	1.8:1	1.5:1	1.8:1	1.0:1	0.8:1	1.3:1
MF-2	TC	20,878	18,301	-	15,561	13,006	11,096	18,654	21,245	12,964
	GI	35,434	27,720	-	38,086	22,240	25,108	21,244	17,219	16,662
	NP	14,556	9,419	-	22,525	9,234	14,012	2,590	-4,026	3,698
	CBR	1.7:1	1.5:1	-	2.4:1	1.7:1	2.3:1	1.1:1	0.8:1	1.3:1

Note: TC: Total Cost, GI: Gross Income, NP: Net Profit, CBR: Cost-Benefit Ratio

Source: Computed from primary data.

The overall Cost Benefit Ratio for the three districts in the three categories of buffaloes along with the range of ratios for various categories of respondents is presented in a summarised form in Table 4.

Table 4 : Overall Picture of CB Ratio for Three Districts, Buffalo Category–wise

District	Murrah Breed		Graded Murrah		Non-Descriptive	
	Overall	Range	Overall	Range	Overall	Range
Guntur	1.66	1.46 – 2.56	1.86	1.73 – 2.44	1.24	0.99 – 1.71
Nalgonda	1.60	1.24 – 2.16	2.02	1.47 – 2.75	1.07	0.77 – 1.46
Kurnool	2.00	1.32 – 2.48	1.99	1.69 – 2.38	1.26	1.13 – 1.54

Source: Computed from primary data.

Table 4 reveals that graded murrah benefited milk producers to a greater extent than the other two categories. Non-descriptive category gives the lowest ratio. Murrah breed has given the result lower than that of graded murrah in two districts and close to it in case of one district. Analysis category–wise (Table 3) reveals as follows: in Guntur for murrah breed, AL received a better result compared to the other categories; for graded murrah, MF-2 received a better result; and for non-descriptive, MF-1 received a better result. In case of Nalgonda, for all the three categories of buffaloes, the result of SF is better. The overall picture for all respondents reveals better performance for graded murrah. In case of Kurnool, for murrah breed which received the best CB ratio among the three districts, the result of MF-1 is better; for graded murrah AL followed by MF-2 received a better result; and in case of non-descriptive, MF-1 received a better result.

Analysis of GI, TC, NP and CB ratio district-wise, buffalo category-wise, and households category-wise reveals as follows: In Guntur, income and cost are the highest for murrah breed buffalo; next comes graded murrah buffalo; and the third is non-descriptive buffalo, which stands the lowest. The same pattern holds good for Nalgonda for all the three categories of buffaloes. However, in respect of Kurnool, income, cost and net profit for graded murrah are higher than those of murrah breed; and for non-descriptive buffaloes, the result is the lowest for all categories of respondents. For graded murrah buffalo, the overall CB ratio in all the three districts shows better performance (1.9, 2.0, and 2.0 in Guntur, Nalgonda and Kurnool districts, respectively). In Guntur, for AL the ratio is 1.9 and for MF-2 2.4. In Nalgonda, the ratio is 2.8 for SF, 2.7 for MF-1, and 1.9 for AL. In Kurnool, the ratio is 2.4 for AL, 2.3 for MF-2, and 2.0 for SF. In respect of murrah breed, the overall CB ratio for Kurnool is 2.0, and for MF 2.5. In case of Guntur, the overall ratio is 1.7, for AL 2.6, and for MF-2 1.7; and in case of Nalgonda, the overall ratio is 1.6, for SF 2.2, and for MF-1 1.8. Analysis of costs reveals as follows: the cost of green fodder has been high and that of dry fodder low. Depreciation on the cost of buffaloes and shed occupies bulk of the cost requiring from 37 to 46 per cent in case of Guntur, 35 to 42 per cent in case of Nalgonda, and 29 to

36 per cent in case of Kurnool. Concentrates account for the lowest cost. Labour cost and medical expenditure also account for a very low percentage of TC in all the districts.

The overall analysis of the picture of the three districts reveals that graded murrah yields better results, in view of the higher fat content and better price per litre. In the cost of inputs, green fodder expenditure is quite substantial, and cost of concentrates is quite low in all the districts. Expenditure on labour and healthcare is very low.

Cobb-Douglas (CD) Production Function

To ascertain the input - output relationship in milk production, in three villages and three districts selected for the study, multiple regression analysis was employed. The non-linear model, i.e., CD Production Function was found to be the best fit for the data of this type.

$Y= b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5+b_6x_6 \ldots. + b_tx_t$

$Y= \log b_1x_1 + \log b_2x_2 + \log b_3x_3 + \log b_4x_4 + \log b_5x_5 + \log b_6x_6 + \ldots.. \log bnxn$

Where

Y= gross returns from milk yield per buffalo per annum in rupees

X_1= cost of green fodder, X_2= cost of dry fodder, X_3 = cost of concentrates, X_4= cost of labour, X_5 = cost of medical expenditure, X_6= transfer cost for milk from home to milk centre

b_1, b_2, b_3, b_4, b_5, b_6 ---- b_n are regression coefficients of the respective variables.

All the variables are tested at 5 per cent level of significance.

In order to draw a comparative picture of the economic aspects of milk production for different species of milch buffaloes based on per day milk production, cost of six inputs (dry fodder, green fodder, concentrates, labour mandays, transfer cost for milk from home to milk centre, and medical expenditure), and revenue from four outputs (milk yield, manure, milk product, and calf) were considered. Multiple regression analysis was constructed for the cost of inputs and value of output. The value of output is the dependent factor, and different input costs are the independent factors.

Results of C-D Production Function

(i) **Murrah Breed Buffaloes:** Input variables proved highly significant are costs of labour, green fodder, dry fodder and concentrates. Medical expense was not considered. For murrah breed buffalo, receptivity in Guntur district is quite good, as the district is agriculturally well advanced. It is less in Nalgonda, and very low in Kurnool district. This high yield and remunerative breed needs to be popularised in these two districts.

(ii) **Graded Murrah Buffaloes:** All the input variables, except expenses on medical proved highly significant. – These are dry fodder, green fodder, concentrates and labour costs. Receptivity for this cross-breed is quite good in Guntur district. Nalgonda comes next where receptivity is lower. In Kurnool, familiarity is very low. This cross-breed variety which is less expensive and yield is better compared to murrah breed needs to be popularised in all

districts of different levels of development, to replace the non-descriptive buffaloes in a phased manner.

(iii) **Non-descriptive Buffaloes:** Popularity of this category of conventional buffalo in the three districts is quite good as dairy households have been rearing this buffalo over the years. In Guntur district, green fodder cost is significant. In Nalgonda district, dry fodder, green fodder, concentrates and labour costs are significant. In Kurnool district, dry fodder, green fodder, and labour costs are significant. Concentrates and medical expenses are not found to be significant. Medical expenses are not significant in all the three districts.

Suggestions

In the light of the findings and conclusion of the study, suggestions regarding measures to be taken by the government and other organisations to make dairying a profitable enterprise are listed here.

1. **Balance Feed and Fodder:** Research should be encouraged on high yield fodder seeds for supply to rural areas. Wastelands are to be developed as fodder grounds through participation of village panchayats. Quality feed concentrates are also to be supplied to the dairy farmers. Institutional support, including cooperative network can be of great help to the dairy farmers in this direction. At present, consumption of concentrates is quite low, as greater emphasis is laid on green fodder. Greater use of concentrates is to be encouraged through easier availability of concentrates and adoption of scientific management practices. The study suggests that milk producers may be encouraged to include protein rich feeds in the ration of their animals. The addition of micro-nutrients like mineral mixture and vitamin supplements in small quantities will improve the milk yield and lactation length of household–bred buffaloes (Mallikarjuna Reddy, R. and S. Subramanyam, 2002).

2. **Popularising Improved Breeds of Buffaloes and Adoption of Scientific Management Practices:** The study revealed that improved breeds of buffaloes are gaining popularity, but the adoption rate is quite low at present. Artificial insemination plays a major role in this direction. Gopala mithra scheme for artificial insemination is being implemented only in one of the three districts covered in the study, namely, Guntur. It should be pursued extensively with the involvement of Bharatiya Agro-Industries Foundation (BAIF) of Pune, which is operating in a number of States, including Andhra Pradesh. Among the improved breeds of murrah breed and graded murrah buffaloes, experience revealed that graded murrah breed has greater advantages. Government has to create awareness among the dairy farmers and agricultural labourers regarding this practice to genetically improve

the quality of breeds of buffaloes. Extension activities, training programmes, awareness camps, and demonstration of improved practices should be given greater importance in dairy development. Adoption of improved breeds and use of scientific management practices may be covered through these services. For improved breeds of animals, application of scientific management practices needs to be substantially improved, as care needed for them is quite high. Liberal credit from institutional sources may be made available to farmers, and livestock insurance may be encouraged. The cooperative network can facilitate these measures in respect of members of dairy farmers. Non-members also may need to be supported with a suitable structure (Aulakh, G.S and Rajbir Singh, 2012 & Ganesh Kumar, B. and Raj Vir Singh, 2008).

3. **Increasing the Herd Size :** Milch stockholding size continues to be an average of one or two buffaloes per household, and in some cases three to four. Stockholdings are to be enlarged through commercial holdings of viable herd size, with credit facility and market access. An intermediate holding size of 5-10 milch buffaloes, handy for the family to manage with household labour is to be encouraged. In addition, commercial dairy farms of a larger size may also be encouraged, as is the practice in States such as Punjab, Gujarat and Maharashtra. Studies which have indicated higher profitability and economies of scale for larger herd size farms/households include Ganesh Kumar, B. et al. (2011), Inderpreet, K. et al. (2010), and NDDB Annual Report 2012-13.

4. **Healthcare :** Disease forecasting, control and eradication measures have to be taken up regularly to provide an efficient animal health care. Immunisation programme must be effectively implemented. For providing veterinary services to dairy farmers, animal health clinics are suggested at suitable locations to serve a cluster of villages.

5. **Milk Procurement Infrastructure and Minimum Support Price for Milk :** Milk procurement infrastructure developed by cooperative and private processors is considered inadequate by milk producers. Facilities such as milk bulk coolers, electronic milk testing facilities need to be created and strengthened; and capacity of milk chilling centres and processing plants may need to be augmented. It is suggested that minimum support price may be fixed for milk of different qualities, as is the practice for agricultural crops at present. Export of dairy products needs encouragement through various incentives as milk production steadily increases (Satyanarayana Kanakala, 2013).

Conclusion

In the light of the increasing demand driven by the growing population, higher income and greater health consciousness, the dairy industry has to record faster growth. Based on the estimates of the National Dairy Development Board (NDDB), demand for milk in the country is likely to

reach 150 million tonnes (MT) by 2017, and 180 MT by 2022 from the level of 132.4 MT in 2013. To cope up with the growing demand, an average increase of 5 MT per annum over the next 10 years is envisaged – doubling of the average incremental rate achieved over the past 15 years. The demand for milk will be propelled due to the increasing middle class population with high disposable income along with the fast changing socio-economic and cultural values and health consciousness.

Millions of agricultural labourers, small and marginal farmers engaged in dairying who own two to three animals, and produce an average of 5 litres of milk per day comprise the critical portion of India's dairy industry. Livestock development in general and dairy development activities in particular are the key components of pro-poor development strategy as livestock distribution is much more equitable than land distribution. Thus, changes in the dairying environment have important implications for the smallholder farmers and for poverty reduction.

The two hypotheses examined in the study are: (i) the dairy sector growth is not significant; & (ii) economic efficiency of the dairy farm is associated with high breed buffaloes. Both of them have been validated through the results of the Composite Andhra Pradesh study as explained earlier.

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MULTI-DIMENSIONAL POVERTY: AN EMPIRICAL STUDY IN BANKURA DISTRICT, WEST BENGAL

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ABSTRACT

Poverty is a multi-faceted issue. Recently UNDP has recognised the Multi-dimensional Poverty Index (MPI) to measure poverty across the field of health, education and living conditions. This study explores the incidence and intensity of multi-dimensional poverty for the households in Bankura district, West Bengal. It also assessed the impact of income poverty along with some selected socio-economic traits on the probability of being multi-dimensionally poor. In order to construct MPI, we have considered ten indicators covering three dimensions viz. health, education and the living conditions. The logit regression model has been formulated for assessing the impact of income poverty along with some selected socio-economic characteristics on probability of the incidence of multi-dimensional poverty. This study used a primary data set collected from 580 households. It was obtained that 40 per cent of the sample households are income-poor while 52 per cent suffer from multi-dimensional poverty. Besides, 29 per cent of the non-poor households are vulnerable and may join the ranks of multi-dimensionally poor. The value of MPI for Bankura district is found to be 0.27. The logit regression analysis reveals a close connection of multi-dimensional poverty with the income poverty of the households. Incidence of multi-dimensional poverty varies significantly across the major occupational groups and castes. However, SHG-centric micro-finance programme and financial inclusion are less important to reduce multi-dimensional poverty in Bankura district.

Introduction

In the recent times, poverty is viewed as a multi-faceted issue. The notion of poverty is extended far beyond inadequate income–to poor health and nutrition, low education and skill, inadequate livelihood and living conditions. The money metric approach to poverty measurement fails to encompass these issues. It leads to the development of alternative measures that

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include the multiple dimensions of poverty and alleviate the limitations of money metric measures. A Report of Planning Commission of India (2006) explicitly adopted a 'multi-dimensional view of poverty' which is known as 'multiple deprivations' view. It interpreted the 2002 BPL not as a proxy means for income or expenditure poverty, but rather as a direct measure of multi-dimensional poverty that encompasses expenditure poverty and goes beyond it. However, income and expenditures based measures do not represent a real sense of the deprivations facing the poor (Sen, 1988, Dreze and Sen, 2002). As a result, the famous Human Development Index (HDI) pioneered by the UNDP appeared. We have got Human Poverty Index (HPI). The Gender Development Index (GDI) and the Gender Empowerment Measure (GEM) have also been developed to measure poverty in a gender perspective. These indices are now used to measure the average achievement for the country as a whole; such indices divert the focus from the poor. They do not take into account the distribution of human development within population sub-groups or households. Thus, these measures are not applicable to measure the incidence and intensity of poverty at the household level and at the individual level. Very recently, Alkire and Santos, (2010) introduced Multi-dimensional Poverty Index (MPI) to focus multi-dimensional deprivations among poor households. The first effort to implement a multi-dimensional measure of poverty has been in the UNDP Human Development Report, 2010, following methodology of Alkire and Santos, (2010). The MPI evaluates poverty based on a household's deprivation in three basic dimensions –health, education and living standards. The main advantage of MPI over HDI is that it is applicable at the country level as well as at the household level. The MPI helps identify the poor and design policies to address the interlocking deprivations of the poor households. Therefore, this approach is consistent with the household level empirical work which would be helpful for decentralised planning. This paper attempted to focus glimpses of the incidence and intensity of multi-dimensional poverty of the households in the district of Bankura, West Bengal.

Literature Review and Objectives

The concept of multi-dimensional poverty is grounded on capability approach to human development. According to Sen (1988), income represents the means to better living conditions but it is not the better living condition in itself. In order to alleviate poverty he proposed to reduce deprivations in living conditions or functionings that people can achieve. Income creates the ability to purchase commodities that help achieve some functionings but the conversion of commodities into functionings is not precise for all. Individuals/households differ in their ability to convert commodities into functionings due to a range of factors such as physical entitlement, nature of occupation, public actions, and social status. However, Sen (1988) did not propose any measure that captures multiple dimensions of deprivation or poverty. The first successful attempt to measure multi-dimensional deprivations was HDI in 1990 proposed by Mahbub ul Haq. It has been appearing as achievement index of the countries in Human Development Reports since 1990. The measure of HDI includes average income, longevity and educational attainment of the country. But

this measure is not applicable for the household level data. Alkire and Santos, (2010) were the first who computed MPI for 104 developing countries using household survey data. They considered ten indicators corresponding to same three dimensions as the HDI: Education, Health and Standard of Living. The MPI captures a set of direct deprivations that batter a person at the same time. In their working paper they explained the computational methodology and components in the MPI. They examined the relation between three income headcounts (using the $1.25/day, $2/day and national poverty lines) and deprivations in each of the three dimensions of the MPI, as well as with the MPI itself. They found that the headcounts with the two international poverty lines are highly correlated with the MPI, but correlations are much lower with the headcounts using the national poverty lines. However, they documented many examples of mismatches between the two poverty criteria. Following Alkire and Santos, (2010), UNDP Human Development Report published that most of the world's multi-dimensional poor live in South Asia and Sub-Saharan Africa. They calculated that 55.4 per cent of the population of India is multi-dimensionally poor. Intensity of multi-dimensional poverty among the Indian States is highest in Bihar (MPI=0.5) followed by Jharkhand, Uttar Pradesh, and Madhya Pradesh. It shows that the value of MPI of West Bengal (MPI=0.32), Odisha, Rajasthan and that of north eastern States belongs to the range 0.3-0.4 in 2008-9. Bagli (2013) developed a comprehensive index of housing deprivation (IHD) for each State in India. This index combines four indicators of housing condition viz. percentage of households having soil made house; percentage of households using unsafe source of drinking water; percentage of non-electrified households and percentage of households without improved sanitation facility. The IHD has been computed measuring the normalised inverse Euclidian distance of the deprivation index vector from the worse situation of deprivation. It has been reported that housing deprivation is highest in Odisha followed by Bihar, Jharkhand. Housing deprivation is least in the States of Delhi, Kerala, Goa and Haryana. The study obtained a close and negative association between IHD and HDI. However, this measure covered only the living standard dimension of poverty and is applicable in macro level study.

So far, these studies and reports did not provide district level MPI which is very important for decentralised planning. Even human development reports of the districts in West Bengal did not cover the issue of MPI. We know that the districts of Bankura, Purulia and West Midnapore are the most backward districts, which are called Jangalmahal, in West Bengal. They deserve separate plan for human development. However, for this purpose we need to understand the present situations of MPI and its components for these districts. With this end in view, we planned to study the nature and causes of MPI in the district of Bankura with the following objectives.

First, we study the incidence and intensity of multi-dimensional poverty for the households residing in the district of Bankura, West Bengal.

Second, we examine the impact of household income along with other selected household characteristics on the incidence of multi-dimensional poverty.

Methodology and Data Source

In order to study the multi-dimensional poverty for the households in Bankura district, we follow the methodology of multi-dimensional poverty index (MPI) proposed by Alkire and Santos (2010). It covers the overlapping deprivation across the field of health, education and standard of living. We have considered ten indicators in total for capturing the deprivation in the array of three dimensions viz. health, education and standard of living. The dimensions and indicators of multi-dimensional poverty with deprivation criteria and weights are presented in Table 1.

Table 1 : Dimensions and Indicators of Multi-dimensional Poverty

Dimension		Indicators	Weight
Health	1]	At least one member suffers from malnutrition	5/3
	2]	One or more child have died during last five years	5/3
Education	1]	No one has completed primary level education	5/3
	2]	At least one school-age child not enrolled in school	5/3
Living Condition	1]	No electricity connection at house	5/9
	2]	No access to safe drinking water	5/9
	3]	No access to improved sanitation	5/9
	4]	House has mud wall/floor	5/9
	5]	Household uses dirty cooking fuel (dung, firewood or charcoal)	5/9
	6]	Household owns at most one of: bicycle, motorcycle, radio, refrigerator, telephone/mobile or television	5/9

Source: Compiled from UNDP Human Development Report, 2010.

Equal weight has been attached for each dimension and each indicator within a dimension has also got equal weight. We assign value '1' for deprivation in each indicator and '0' otherwise. So, the maximum total deprivation score (d) is 10. The maximum deprivation score in each dimension is 10/3 since the MPI puts equal weight for each dimension. As the dimension of health has two indicators, each indicator with deprivation in the health dimension is worth 5/3. Similarly, each indicator of education dimension of deprivation takes score 5/3. The standard of living dimension has six component indicators, so each indicator with deprivation carries score 5/9. Now to measure the deprivation level of a household, we take the summation of the weighted deprivation score (WDS) obtained by the household in the range of all the dimensions and indicators. According to UNDP, a household (or all members of the

household) is said to be multi-dimensionally poor if it scores 3 or more. This study considered whether a particular household is multi-dimensionally poor or not as a measure of the incidence of multi-dimensional poverty.

Alkire and Santos (2010) already explained the justification behind the inclusion of these dimensions and indicators for measuring MPI. Their empirical study is, however, based on secondary data. Among the indicators the measure of malnutrition due to poverty is difficult one. Usually, the malnutrition status is measured following BMI for adults and weight for age for children. We follow these measures but it was not possible to follow these accurate measures for each household member due to absence of some of them and due to our time and technical constraints. We rather measure it by personal observations keeping the measures of BMI and weight for age of children in mind. For other indicators we simply gather the required information asking the respondents and from our observations.

One can compute the multi-dimensionally poverty head count ratio (H) as the proportion of the multi-dimensionally poor people to the total population. Therefore,

$$H = q / n$$

where, q stands for the number of multi-dimensionally poor people/ households and n is the total population/ households. It actually measures the incidence of poverty. The intensity of multi-dimensional poverty (A) reflects the proportion of the weighted component indicators, in which, on average, poor people are deprived of. Technically,

$$A = \sum_{1}^{q} c/qd$$

where, c denotes the total score of weighted deprivations the poor people experience and d stands for the total number of indicators in all the dimensions of deprivation. Finally, the multi-dimensional poverty index is obtained by multiplying the multi-dimensionally poverty head count ratio (H) with the intensity of multi-dimensional poverty (A).Therefore,

$$MPI = H \; x \; A$$

This measure replaces the Human Poverty Index which reflects aggregate deprivation in health, education and standard of living. The Human Poverty Index in reality suffers from the problem in identifying specific individuals, households or a specific group. The MPI addresses this shortcoming too. The measure of MPI is applicable at the country level as well as at the household or individual level to measure the deprivation in standard of living, health and knowledge. Not only that, we can segregate the measure by dimension to show how the composition of multi-dimensional poverty changes in incidence and intensity for different regions, castes or communities and so on. Therefore, the MPI is most appropriate for policy prescriptions regarding the poverty alleviation in the developing countries particularly for a region or community.

We have attached value '1' if the household is multi-dimensionally poor and '0' otherwise. It makes the incidence of multi-

dimensional poverty a binary variable. We, therefore, formulated a binary logit regression model to explore the impact of money metric poverty, occupation, participation in poverty alleviation programme, and caste on probability of the incidence of multi-dimensional poverty for the sample households.

This empirical study is based on a household survey conducted in two blocks, Kotulpur and Chhatna, of Bankura district during 2012-13. The district of Bankura is a backward district in West Bengal. Among the selected blocks, Kotulpur is relatively developed whereas Chhatna is relatively underdeveloped area in the district of Bankura. At the first stage we randomly selected two Gram Panchayats from Chhatna block and three from Kotulpur block. This study covered twelve villages taking at least two from each Gram Panchayat. Finally, after making a pilot survey for each village, sample households were selected randomly from the sample villages. It should be noted that the number of households in the sample from each village are not equal. It varied with total inhabitants and other socio-economic characteristics of the villages. Therefore, sampling for this study may be looked as a multi-stage stratified random sampling. During the field survey we recorded the relevant information of 580 households. Among them 320 households belong to Kotulpur block and 260 households belong to Chhatna block.

Empirical Findings and Discussion

This section is devoted to analyse the empirical findings. Table 2 describes the summary statistics of the indicators of multi-dimensional poverty of the sample households. We find that 37 per cent of our sample households have at least one malnourished member. Malnutrition problem is more severe in Chhatna block compared to Kotulpur block. Eleven per cent of the sample households reported that at least one child below five years died during the last five years. In this circumstance, position of the two sample blocks are almost same. In more than one-fifth of the sample households no one household member passed primary level education. In spite of the commendable expansion of educational infrastructure in West Bengal, still at least one child (up to 14 years) of one-third sample households are not enrolled in educational institutions at the time of survey. However, in terms of educational deprivation there is wide variation in between the sample blocks. In Kotulpur block, percentage of households with no one member having at least primary level education is only 10.93 per cent while in Chattna block this is 33.07 per cent. It is not surprising that 47.3 per cent of the sample households in Chhatna block school dropout children. Many households in Chhatna block reported that these school dropout children are engaged in several informal jobs like jewellery firm, embroidery industry, construction industry, agriculture, etc., for earning household livelihood. One-fifth of the sample households in Kotulpur block have at least one school-age child not enrolled in school. In Kotulpur block, almost all the sample school dropout children are involved in agricultural allied activity due to huge demand for agricultural labour throughout the year. Therefore, prevalence of child labour is rampant in Bankura district. Educational deprivation is a cause and consequence of the prevalence of child labour. Unhealthy work place and hard work

at the early age make the persons malnourished. It is, therefore, conclusive that educational deprivation and prevalence of child labour are the major contributors of multi-dimensional poverty in the district of Bankura.

Table 2 : Description of the Indicators of Multi-dimensional Poverty

Dimension/Indicator	Total Sample Households (%) 580 (100)	Households belonging to Kotulpur block (%) 320 (100)	Households belonging to Chhatna block (%) 260 (100)
Health			
At least one member is malnourished	215(37)	54 (16.87)	161 (61.92)
One or more child have died during last five years	66 (11)	37 (11.56)	29 (11.15)
Education			
No one has completed primary level education	121(21)	35 (10.93)	86 (33.07)
At least one school-age child not enrolled in school	190 (33)	67 (20.93)	123 (47.3)
Living Conditions			
No electricity connection at house	135 (23)	44 (13.75)	91 (35)
No access to safe drinking water	203 (35)	62 (19.37)	141 (54.23)
Household uses dirty cooking fuel (dung, firewood or charcoal)	435 (75)	238 (74.37)	197 (75.76)
House has mud wall/floor	405 (70)	189 (59.06)	216 (83.07)
No access to improved sanitation	398 (69)	181 (56.56)	217 (83.46)
Household owns at most one of: bicycle, motorcycle, radio, refrigerator, telephone/mobile or television	86 (15)	46 (14.37)	40 (15.38)

Source: Author's own computation based on sample observations.

It has been found that 23 per cent of the sample households are not electrified. It is not surprising that 35 per cent of the surveyed households drink unsafe water. It was observed that most of these households drink water heavily contaminated by iron. With respect to the access to electricity and safe drinking water, the position of Chhatna block is far behind the Kotulpur block. There is no significant difference in between the sample blocks in terms of used fuels for cooking. Three-fourths of the sample households use fuel like dung, firewood or charcoal for cooking. It indicates that households in the area under study have hardly access to modern fuel and energy for cooking. Housing condition of the sample households is not so good. It is observed that 70 per cent of the sample households live at house with completely mud wall/floor. Our

survey reported that more than two-thirds of the sample households do not have access to improved sanitation. It tells us that the households in the district of Bankura are not conscious regarding health and hygiene. Housing deprivation and no access to improved sanitation are more acute in Chhatna block compared to Kotulpur block. Thus, lack of concrete structure of house including safe drinking water and improved sanitation facility are the factors accountable to the multi-dimensional poverty of the households in Bankura district. Although no one has a car of their own, at was observed that majority of the sample households are not asset poor. A few households have refrigerator and landline telephone connection along with other assets. Ownership of bicycle, mobile, motorcycle and television are very common in the area under study. We find that only 15 per cent of our sample households do not own more than one of the listed assets under the dimension of standard of living. The picture of asset holding is more or less identical in both the sample blocks. The description of the deprivation indicators, therefore, shows that a large section of the sample households in the districts of Bankura are poor in terms of health, education and living conditions.

Table 3 : Percentage Distribution of the Attributes of the Households (N=580)

Selected Attributes of the Households	Number	Percentage
Landless households	85	14.65
Participation in Self-Help Group-Centric Micro-finance Programme	255	43.97
Participation in MGNREGS	183	31.55
Financial Inclusion (At least one member have at least one of: a bank A/C/post office A/C/Life Insurance/Health Insurance)	356	61.38
Cultivation as Major Occupation	257	44.31
Non-farm Self-Employment/Service as Major Occupation	125	21.55
Casual Labour as Major Occupation	198	34.14
Belonging to Scheduled Castes	195	33.62
Belonging to Scheduled Tribes	68	11.72
Belonging to OBC	136	23.44
Belonging to General Castes	181	31.20
Nuclear Family	475	81.90

Source: Author's own computation based on sample observations.

Table 4 : Descriptive Statistics of the Households Characteristics (N=580)

Selected Variables (Households Traits)	Mean	Std. Dev.	Maximum	Minimum
Family Size (Number)	3.86	1.17	8.00	1.00
Extent of Multi-dimensional Poverty	3.34	2.30	10.00	0.00
Duration of Participation in SHG (Month)	27.24	36.79	145.00	0.00
Highest Education Among Males (Year)	7.89	4.43	22.00	0.00
Highest Education Among Females (Year)	5.54	4.55	19.00	0.00
Landholding (bigha, 1 bigha=0.4 acre)	2.65	2.99	16.00	0.00
Worker Population Ratio WPR (%)	50.32	21.98	100.00	0.00
Annual Per Capita Income (₹ '000)	13.81	13.86	150.00	3.90

Source: Author's own computation based on sample observations.

Tables 3 and 4 present the socio-economic profile of the sample households. In order to measure the extent of multi-dimensional poverty of the households we consider the sum of the score obtained by the household in the range of all the dimensions and indicators. In this respect, average extent of multi-dimensional poverty is 3.34 which is greater than the cut-off value for the multi-dimensional poverty. During the field survey it was observed that the SGSY and MGNREGS are functioning to serve the poor in the district of Bankura. It has been reported that 44 per cent of the sample households participated in self-help group (SHG)-centric micro-finance programme under SGSY. The average length of participation of sample SHG-members is 27 months. Among the sample households, 31 per cent have job-card under MGNREGA. However, most of the job-cardholders under the sample reported that they got 35-40 days employment in average during the financial year 2011-12. The policies of SGSY and MGNREGS, therefore, fail to reach the vast section of poor in the area under study. Thus, there is a greater scope for further extension of these policies for improving the economic condition of the rural poor. At least one member of 61 per cent of the surveyed households have at least one of: a bank A/C/ post office A/C/Life Insurance/Health Insurance, while 54 per cent have access to formal credit. Thus, majority of the households in the area are financially included. In terms of major occupation, we have divided the households into three categories- cultivator, self-employed/service and casual labour. Among the sample households, 44, 21 and 34 per cent are cultivators, self-employed/service and casual labour, respectively. Our sample comprised 34 per cent scheduled caste, 12 per cent scheduled tribe and 54 per cent general caste/OBC households. Majority of the households are of nuclear type. In Table 4 we find that average household size in the sample is 4. Average education of the highest qualified male (female) member in the sample households is eighth (sixth) standard. Average landholding among the sample households is 2.65 bigha while 14 per cent of sample households are landless. The average annual household income is ₹ 13.81

thousand which is close to the poverty line income for the rural people in West Bengal. The statistics of worker population ratio tells us that the average worker population ratio of the sample households is 50.32 per cent.

In Table 5 we see that among the sample households, 52.5 per cent are multi-dimensionally poor, while 40 per cent are income poor in accordance with the poverty line income (₹ 643.20 per head per month) for the rural people in West Bengal (Government of India, 2012). It is indicative that multi-dimensional poverty is more acute relative to income poverty in Bankura district. We now look at the multi-dimensional poverty head count ratio for the sample blocks separately. In Kotulpur block, 19.06 per cent sample households are income-poor, but in Chhatna block, 65.76 per cent households are income-poor. We find that 43.6 per cent of the sample households in Kotulpur block while 74.6 per cent of sample households in Chhatna block are multi-dimensionally poor. Finally, the calculated value of multi-dimensional poverty index for the sample households is found to be 0.270. It is 0.151 for Kotulpur block and 0.416 for Chhatna block. Therefore, in terms of income and multi-dimensional poverty index poverty is severe in Chhatna block compared to Kotulpur block. Higher deprivations in nutrition, in education, in access to improved sanitation, in access to safe drinking water are the primary causes of the severe multi-dimensional poverty in Bankura district in general and in Chhatna block in particular.

Table 5 : Multi-dimensional Poverty for the Sample Households

Measures of Poverty	Total sample households	Households belonging to Kotulpur block	Households belonging to Chhatna block
Income-poor (%)	40	19.06	65.76
Multi-dimensional Poverty Head count ratio	0.525	0.346	0.746
MPI	0.27	0.151	0.416

Source : Author's own computation based on sample observations.

Table 6 : Extent of Multi-dimensional Poverty Among the Sample Households

Weighted Deprivation Score (WDS)	Level of Multi-dimensional Poverty	Total sample households	Households belonging to Kotulpur block	Households belonging to Chhatna block
7 < WDS = 10	Extreme	55 (9.45)	03 (0.93)	52 (20)
5 < WDS = 7	Moderate	69 (12.00)	16 (5)	53 (20.38)
3< WDS = 5	Poor	181 (31.20)	92 (28.75)	89 (34.23)

(Contd...)

Table 6 *(Contd...)*

Weighted Deprivation Score (WDS)	Level of Multi-dimensional Poverty	Total sample households	Households belonging to Kotulpur block	Households belonging to Chhatna block
2< WDS =3	Vulnerable (Non-poor)	79 (13.60)	55 (17.18)	24 (9.23)
0= WDS =2	Well-off (Non-poor)	196 (33.75)	154 (48.12)	42 (16.15)

Source : Author's own explanation.

In accordance with the sum of weighted deprivation score (WDS) of the indicators of multi-dimensional poverty we have categorised the households into five categories as shown in Table 6. We find that 10 per cent of the sample households are extremely poor. It is observed that extreme poverty in Kotulpur block is negligible, but 20 per cent of the sample households belonging to Chhatna block are extreme poor in the sense of multi-dimensional poverty. Only 5 per cent of the sample households residing in Kotulpur block while 20.38 per cent of the sample households residing in Chhatna block are moderate poor. The extent of poverty of 12 per cent of the total sample households is moderate. It has been seen that 31 per cent of the sample households are marginally poor. We already said that in total 52 per cent are multi-dimensionally poor. Besides, 13 per cent of the sample households, who are 29 per cent of the non-poor households, are vulnerable and may join the ranks of households experiencing multi-dimensional poverty. Vulnerability to multi-dimensional poverty is higher in the Chhatna block with reference to Kotulpur block. Therefore, our empirical study reveals that in accordance with the methodology of multi-dimensional poverty two-thirds of the households in Bankura district are either vulnerable or poor. Moreover, the extent of multi-dimensional poverty is severe in Chhatna block compared to Kotulpur block.

Table 7 : Estimates of the Incidence of Multi-dimensional Poverty (N=580)

Dependent Variable: Incidence of Multi-dimensional Poverty
Method: ML - Binary Logit (Newton-Raphson)
Convergence achieved after 6 iterations
Covariance matrix computed using second derivatives

Explanatory Variables (Socio-economic characteristics of the households)	Coefficient	Std. Error	z-Statistic	dy/dx evaluated at mean
Constant	1.884	0.405	4.65*	
Annual Per Capita Income (₹ '000)-0.149	0.023	6.35*	-.037	

(Contd...)

Table 7 *(Contd...)*

Dependent Variable: Incidence of Multi-dimensional Poverty
Method: ML - Binary Logit (Newton-Raphson)
Convergence achieved after 6 iterations
Covariance matrix computed using second derivatives

Explanatory Variables (Socio-economic characteristics of the households)	Coefficient	Std. Error	z-Statistic	dy/dx evaluated at mean
Major Occupation , (Cultivation =1)#	-1.163	0.266	-4.37*	-0.281
Major Occupation (Non-farm Self-employment / Service = 1)#	-1.116	0.330	-3.38*	-0.261
Financial Inclusion (Yes =1)#	0.252	0.258	0.98	0.062
Duration of Participation in SHG (Year)	-0.005	0.036	-0.13	-0.001
Caste (OBC=1)#	0.568	0.267	2.12**	0.141
Caste (Scheduled Caste=1)#	1.220	0.276	4.42*	0.295
Caste (Scheduled Tribe=1)#	1.401	0.412	3.40*	0.322

Summary Statistics			
McFadden R-squared	0.289	Log likelihood	-285.011
LR statistic [$Ch^2(8)$]	232.47	Probability (LR statistic)	0.000

y: Probability of being Multi-dimensional Poor Households (predict) = 0.477

dy/dx :Marginal effects after logit.

(#) dy/dx is for discrete change of dummy variable from 0 to 1,

Casual labour class is reference category for major occupations and General caste is reference category for Castes

* and ** stand significant at 1 per cent level and at 5 per cent level, respectively.

Source: Author's own computation using software STATA 9.2.

The logit regression analysis shows that the intensity of multi-dimensional poverty is closely connected with the income poverty of the households. The marginal change in probability of being multi-dimensional poor household tells us that one thousand additional per capita income reduces the probability of the incidence of multi-dimensional poverty of the households by 3.7 per cent points. Income increases the purchasing power which helps the households fight against multiple deprivation. Thus, income generation is a favourable instrument for alleviating multi-dimensional poverty. The coefficient of the major occupation (cultivation=1) and (Non-farm Self-employment /Service=1) indicate that cultivator and non-farm self-employed/ service holder households are relatively less poor compared to casual labour class. If a

household can move from casual labour to cultivator, the probability of being multi-dimensionally poor will reduce 28 per cent points. Therefore, land redistribution in favour of landless or poor is urgent in order for multi-dimensional poverty reduction. On the other hand, the probability of being multi-dimensionally poor will reduce 26 per cent points if a labour class household can shift to self-employment or service. Thus, occupation mobility from casual labour to cultivator or self-employment or service is needed to arrest multi-dimensional poverty of the households in Bankura district.

Our empirical estimation shows that financial inclusion measured by participation in SHG has no direct role to combat multi-dimensional poverty in the district of Bankura. It was observed that the coefficient of the duration of SHG membership is negative. It implies that higher length of SHG membership combat the probability of being multi-dimensionally poor. Our previous studies conducted in this district (Adhikary & Bagli 2012, Bagli & Adhikary 2013,) reveal that SHG-centric micro-finance programme successfully ensured access to affordable micro-credit of the rural people. SHGs reduce income poverty of the rural people. It can finance to smooth consumption throughout year, to purchase durable assets to facilitate drinking water to build sanitation, etc. So it was expected that the duration of SHG membership reduces the probability of the incidence of multi-dimensional poverty. Our empirical finding confirms this direction, but it is not statistically significant. The marginal probability of the incidence of multi-dimensional poverty reveals that in contrast to the general caste households, scheduled caste and scheduled tribe households are more likely to fall in multi-dimensional poverty. The probability of being multi-dimensionally poor for a scheduled caste (scheduled tribe) household is 29 per cent (32 per cent), higher than that for general caste households. The probability of the incidence of multi-dimensional poverty for OBC households is 14 per cent higher than that of the general caste households. Thus, the scheduled tribe households in Bankura district are most backward than other households in Bankura district.

Concluding Remarks

This study reveals that multi-dimensional poverty in the district of Bankura is a more serious problem than the income/consumption poverty. Income generation, no doubt, has some accelerating effect on reducing multi-dimensional poverty. In addition to income generation, we need to ensure the accessibility to other improved facilities like health care, safe drinking water, education, affordable housing, and sanitation that directly fight with multi-dimensional poverty. These are badly needed particularly for the socially backward people belonging to scheduled caste, scheduled tribe, OBC people and casual labour class.

This study claims upward occupational mobility towards cultivation or non-farm self-employment or service for reducing the pangs of multi-dimensional poverty. In order to speed up the occupational mobility, we have to take some further decentralised planning towards land redistribution and micro-entrepreneurship development which help poor people shift to cultivation or non-farm self-employment occupation. Some continuous employment generation plan/programme is also necessary. We have the experience that

immediate steps towards land redistribution towards poor have some socio-economic difficulty. Of course, we may follow the scheme like land purchase scheme for SC/ST women in Tamil Nadu. Under this scheme, landless women can purchase land for cultivation with a maximum project cost rupees two lakh. This scheme entails 50 per cent subsidy from Tamil Nadu Adi Dravidar Housing and Development Corporation Ltd. and remaining part comes as bank loan. Moreover, implementation of policies regarding non-farm self-employment or salary based employment generation is urgent. We have already MGNREGS for employment generation for the rural people. It is evident that this programme has been able to provide only 35-40 days job per year in the area under study. So, it is another casual employment system for the rural households. It implies that MGNREGS has done little for the poor and fails to change major occupation of the households in Bankura district. In order to generate incessant employment we actually need new industrialisation. For example, Chhatna block has an ample opportunity to develop eco-tourism based on Chota Nagpur plateau specially focusing the hilly terrain surrounding 'Susunia hill'. Herbal medicinal industry and food processing have also some prospects in this district. We also need modernisation of the traditional industries, like 'Terakota', Handloom, 'dogra' in this district. Juxtaposed with the industrialisation, we have to take some policies for rural entrepreneurship development. Tailoring, carpentry, animal husbandry, horticulture, sericulture, floriculture, medicinal planting, fruit processing, pisciculture and agri-business are the probable areas for rural entrepreneurship development in Bankura district. It can shift the major occupation of the casual labour towards self-employment or service. It was found that SHG-centric micro-finance programme has been functioning for rural entrepreneurship development in general and women entrepreneurship development in particular. During field survey it was observed that the performance regarding entrepreneurship development of this programme is, however, not commendable in position in Bankura district. A small number of the beneficiaries of SGSY in the area under study have undertaken self-employed activities like tailoring, business of readymade garments, animal husbandry, producing rope and bamboo product. We feel that the lack of management efficiency and social responsibility of the micro-finance institutions are the primary cause of the low performance. However, we find some negligible direct effect of this programme on reducing multi-dimensional poverty. In this study we see that minimum level financial inclusion gauged by having an account with any financial institution or having any kind of insurance policy is not important to affect multi-dimensional poverty. Therefore, financial inclusion policies are less important for reducing multi-dimensional poverty.

This study clearly shows that the scheduled caste, scheduled tribe and OBC households are more deprived in terms of multiple dimensions of poverty. Among the castes, the incidence of multi-dimensional poverty is relatively highest among the households under scheduled tribe households followed by scheduled castes, OBC and General castes. In order to reduce

multi-dimensional poverty of the ST households, we need further extension of local language based primary education facility, affordable sanitation and housing programme. We have the experience that compared to ST households, SC households suffer more from nutritional problem. We thus suggest launching special package for health care for SC households. Finally, to address the multi-dimensional poverty in Bankura district, the Governments should complete the universal sanitation and safe drinking water project. In addition to the income and employment generating policies, we recommend to implement a universal LPG connection programme in the district of Bankura. We can adopt a savings and subsidy linked credit programme for promoting affordable house or for improved sanitation or for safe water project for the poor.

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ROLE OF INSTITUTIONAL SUPPORT SYSTEM IN DROUGHT MANAGEMENT: THE CASE OF WESTERN ODISHA

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ABSTRACT

The paper assesses the major role played by the institutional support system such as government safety-nets, non-governmental and community based insurance mechanism in mitigating the drought risk and vulnerability in the region. Before assessing the effectiveness of the institutional supports, the paper critically analyses the factors that led to gradual refinement of drought management policies and programmes with special reference to western Odisha. The role played by Centre-State relationship and power equations in implementation of programmes for drought management has been critically examined. The study is based on secondary data analysis and the findings of a field survey on 139 households. The institutional support system to withstand drought in effective manner was found to be weak in the study region. Though a gradual improvement in drought management policies was observed and every major drought induced some qualitative improvement to the relief approach, the nature of Centre-State relationship and influence of pressure groups was found to play a key role in the sanction of funds and implementation of the development schemes for drought risk reduction. A large number of developmental programmes have been implemented in the drought-prone study region, but the benefits of these programmes reached very less proportion of rural households and these programmes have not sustained due to lack of long-term vision, poor quality of implementation and insufficient people's participation. Furthermore, the community based organisations were found to be more effective in earlier periods compared to the present.

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Introduction

Drought is a slow onset natural calamity that affects more people concurrently than any other weather hazard. The impacts of drought on rural livelihood and agrarian economy are diverse and complex. Drought results in extensive damage to crops and hydrological imbalances affecting different livelihood activities directly or indirectly. The rural households and their income generation activities exhibit a great deal of sensitivity to different drought risk factors such as insufficient and/or erratic rainfall, fodder non-availability, lower water table and less irrigation coverage. Their income, expenditure and savings and access to water resources are significantly affected. They endure several hardships on account of consumption shortfall and health related problems (Swain, 2010). To cope with the adverse effects and to reduce the level of their vulnerability, they adopt different strategies. However, drought is primarily a covariate risk and mitigating drought risks at individual level is a distant reality because of the fact that the cost of mitigation measures is relatively higher than the financial strength of majority of rural households in drought-prone region where poverty and backwardness are common phenomena. Mitigating drought risks requires a multi-pronged attack with a participatory approach that requires institutional support (Pattnaik, 1998; GoI, 2010).

Government has an important role to play in terms of promotion of community-based disaster mitigation measures such as development and renovation of community based water harvesting structures (WHSs), developing common property resource base, strengthening rural socio-economic infrastructure like education, health and financial institutions etc., and supporting the long-term income and crop diversification process. There have been marked improvements over the years in government's approach to mitigate drought both in terms of policy formulation and action (Samal et al, 2003). However, the steps taken so far are not enough for mitigating the drought risks. Agarwal (2000) says it is possible to banish drought completely within a decade if government applies its mind. Thus, the institutional approach to drought management needs to be refined further.

In this context, the study analyses the factors that led to gradual refinement of drought management policies and programmes with special reference to western Odisha. The role played by Centre-State relationship and power equations in implementation of programmes for drought management has been critically examined. Finally, the major role played by the institutional support system such as government safety-nets, non-governmental and community based insurance mechanism in mitigating the drought risk and vulnerability has been assessed in the context of Bolangir district of western Odisha.

Study Area, Data and Methodology

Bolangir district is one of the constituent districts of the undivided KBK (Kalahandi-Bolangir-Koraput) region in western Odisha, which has been at the

limelight for prevalence of chronic poverty, malnutrition, hunger and starvation death and periodic out-migration (Pattnaik, 1998). The geographical area of the district is 6,575 sq. km, and has a population of about 1.38 million (GoI, 2001). The proportion of rural population is much higher (88.46 per cent) in the district and so also in the entire KBK region (about 90 per cent). The proportion of scheduled castes (SCs) and scheduled tribe (STs) in total population was around 16.9 and 20.6 per cent, respectively. About 2.01 lakh families comprising 61.1 per cent of total are below the poverty line (BPL) in the district as per BPL survey conducted in 1997 (GoO, 2002). The district also suffers from acute economic, social and gender disparities, and very adverse socio-economic and human development indicators. Agriculture is the predominant source of livelihood for the people in the district. About 52.7 per cent of total main workers are agricultural labourers in the district (GoI, 2001). The district has been affected by droughts of different intensities in twenty out of last fifty years (1962-63 to 2011-12). The district including other districts of KBK region is almost at the bottom of the list of 250 Backward Districts identified by the Government of India for consideration of grant under Backward Regions Grant Fund (BRGF). The long-term and holistic development strategies are essentially required to bring this region closer to the other developed regions in the country.

The study is based on both secondary and primary data. The secondary data on irrigation coverage, crop insurance and funds flow for drought management etc., were analysed. In this study we used a purposive multi-stage stratified sampling method to select 139 sample households. At the first stage, we purposively selected Bolangir district of western Odisha as it is the most vulnerable to drought among all the thirty districts of Odisha (Roy et al. 2004). The entire district has been declared as the drought-prone by the Government of India. In the second stage, we selected three blocks Saintala (most vulnerable), Patnagarh (moderately vulnerable), and Titlagarh (least vulnerable) on the basis of degree of drought vulnerability . In the third stage, three villages, one from each of the identified blocks, were selected purposively considering their suitability for the study purpose and the degree of their representation for their respective districts in terms of socio-economic and biophysical factors. Finally, households (HHs) were sampled and chosen from each of the selected villages using a stratified random sampling approach covering twelve major livelihood groups .The reference year for the household survey was 2002 during which severe drought affected the entire study region.

In this study, institutional support system includes a network of organisations (governmental, non-governmental and community based) that supported drought affected rural households in reducing or mitigating their risks and securing their livelihoods through generation of income, employment and assets. The detailed institutional arrangement to manage drought at different levels are presented in Appendix I.

Nature of Drought Vulnerability in Bolangir

Drought is a recurring and single most insidious phenomenon in Bolangir district of western Odisha. The recurrent drought phenomenon in the region is mostly responsible for its 'chronic backwardness' and widespread seasonal out-migration (Pattnaik, 1998). The increasing frequency of occurrence of the hazard is one of the major factors behind the rising level of drought vulnerability in the region, which is mainly due to larger variability in rainfall from season to season, rather than deficiency in amount of annual rainfall (Sainath, 1996; Swain, 2006). Another major factor for increasing drought frequency and vulnerability in Bolangir is the low irrigation coverage and neglect of the traditional water-harvesting structures (Nayak, 2004; Roy et al., 2004). The irrigation coverage in the district hovers around 23 per cent and the major sources of irrigation are dug wells and other water-harvesting structures (Swain et al., 2009). Nearly four decades ago, water-harvesting structures (WHSs) built with community participation were irrigating about 33 per cent of cultivated lands in the area. But the conditions of these WHSs gradually deteriorated due to lack of maintenance and proper upkeep. This increased the drought vulnerability as there was no expansion of irrigation in the area to compensate the loss of irrigated area due to abandoning of the WHSs. Moreover, the forest cover of about 40 per cent during 1940s declined to about 20 per cent during 1960s. At present, forest cover is just about 14.5 per cent. The lower forest coverage also resulted in frequent rainfall aberrations. The disappearance of drought-resistant indigenous crop varieties due to promotion of HYVs also aggravated the drought situation in Bolangir. In the early 1960s, there were as many as 300 varieties of paddy seeds, which the farmers were cultivating and most of them were highly drought resistant. When some varieties were failing to adjust with moisture stress, some other varieties were escaping the drought impacts. As a result, farmers were able to harvest a reasonable amount of crop output. However, the number of paddy varieties decreased to just 71 in the year 1996 that raised the level of their vulnerability (Roy et al., 2004). Among farmer communities, the small and marginal farmers were found to be more vulnerable compared to large and medium farmers due to their low level of coping capacity due to poor resource base, limited access to credit and insurance, inadequate safety-net provisioning (Swain and Swain, 2009). Hence, the low irrigation coverage along with neglect of traditional WHSs, misuse and over-exploitation of natural resources like forests and minerals and the depreciation of agro-biodiversity in the region, chronic and mass poverty and inadequate institutional support are major causes of the rising levels of drought vulnerability in the region. We can thus say that it is largely human induced factors that seem to exacerbate the vulnerability to drought in the region.

Gradual Refinement of Drought Management Policies

It is essential that the existing policies be refined on the basis of past experiences so as to enhance institutional efficiency and manage recurrent drought more effectively.

Examining the drought management policies over a long period of time reveals that there has been a noticeable improvement to the approach of famine and drought management and every major drought/famine brought about some qualitative improvement to the relief approach. Though, there has been improvement in policy approach, the development programmes have not been implemented properly and they are found to reach a very small section of the target groups (see Table 1).

The frequency of occurrence of droughts was less during 18th and 19th century over 20th century. However, the intensity of scarcity and famine conditions was more severe (Bhatta, 1997). Particularly, the occurrence of great famine of 1866 in Odisha along with parts of Bengal, Bihar and Madras led the British Government to appoint the first Famine Commission in 1880, which suggested for providing of employment to the affected persons on the public works, extension of irrigation and improved methods of agriculture, improvement in communication and establishment of famine insurance fund to meet the expenditure on relief works. The second Famine Commission (1898), mainly recommended suspension and diminution of land revenue and payment of wages to the persons engaged in the public works subject to a minimum and a maximum daily wage. The third Famine Commission (1989) emphasised the need of having a well designed relief plan in advance of drought including the mitigation programmes. The Commission recommended cultivation of fodder crops, grant of loan, opening of cattle camps and relief to aged and destitute (Samal et al, 2003). After Independence, the word "famine" was replaced by the word "scarcity" and the famine relief codes of the erstwhile provinces (including Odisha) were replaced by the 'scarcity relief manuals', which describe scarcity as a marked deterioration in crop production due to rainfall deficiency, floods and crop damage due to pest attack resulting in severe unemployment and consequent distress among the agricultural labourers and small cultivators. The Odisha Relief Code (ORC) was the only disaster policy document in Odisha that contained the detailed norms for relief measures to be undertaken during or just after the occurrence of drought (GoO, 1990).

The qualitative improvements in drought management policy were observed with occurrence of every major drought. The severe drought of 1965-66 contributed to building up of reliable public distribution system to ensure food security to drought affected people. The periodic occurrence of drought during 1972, 1974 and 1976 forced the government to focus on the need for evolving massive employment generation programme with a view to enhancing the purchasing power of the people instead of providing subsidies and free ration to the affected population. This resulted in starting of Food for Work (FFW) programme in 1977. The drought of 1979 prompted the government to emphasise the need for creating durable community assets for enabling the people of the affected area to withstand future droughts with greater resilience. This gave rise to National Rural Employment Programme (NREP) and Integrated Rural Development Programme

(IRDP) in 1980. The consecutive drought of 1980, 1981 and 1982 resulted in kicking off the Rural Landless Employment Guarantee Programme (RLEGP) in 1983. Under NREP and RLEGP programmes, foodgrains were given to workers as a part of the wage component of the programme that aimed at providing food security to rural poor during drought situations. These two programmes were later merged to form Jawahar Rojagar Yojana (JRY)[5] in 1989 on 80:20 cost sharing basis between the Centre and the States. During drought period of 1987-88, the self-employment programmes, namely, Integrated Rural Development Programme (IRDP)[6], Development of Women and Children in Rural Areas (DWCRA), Training of Rural Youth for Self-Employment (TRYSEM)[7] were in operation which aimed at improving the economic condition of below poverty line (BPL) households by arranging productive economic ventures for them through a mix of bank credit and government subsidy (GoI, 2002). JRY, IRDP and TRYSEM were merged to form a new self-employment programme called Swarna Jayanti Gram Swarojgar Yojana (SGSY) with effect from 1 April 1999. In order to provide wage employment to rural poor, another scheme called Employment Assurance Scheme (EAS) was launched on 2 October, 1993 in 1775 identified backward blocks situated in drought-prone, desert, tribal and hilly areas of the country including the study district. The scheme provided about 100 days of assured casual manual employment during the lean agricultural season, at statutory minimum wages to employment seekers. In spite of implementation of a number of programmes during the 1980s and 1990s, the people in the study area suffered a lot due to frequent droughts throughout 1980s and 1990s.

Besides these developmental programmes, some long-term programmes were taken up by the government specifically for drought proofing among which Drought Prone Area Programme (DPAP) was a major one that was initiated in 1970-71. The programme aimed at gradual mitigation of drought impacts through an integrated development of the area by the adoption of appropriate technologies so as to promote overall economic development and improve the socio-economic conditions of the resource-poor and disadvantaged sections inhabiting in the programme areas. The emphasis under the programme was on soil and water conservation, land shaping, afforestation and pasture development. These inter-related programmes together affected favourably to the environment. The programme is in operation in 47 blocks of eight districts of Odisha including the study district (Bolangir). Another programme called Desert Development Progamme (DDP) was started in the year 1977-78 covering over 227 development blocks of 36 districts in seven States (Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka and Rajasthan) of the country. These two programmes (DPAP and DDP) were reviewed by Hanumantha Rao Commttee (GoI, 1994). The committee recommended a new criterion to identify the drought-prone blocks based on a Moisture Index. It recommended to adopt a watershed approach to treat land and water resources of a region for fueling all-round development with appropriate land use pattern encompassing cultivation of major crops,

horticulture, fodder, fuelwood and social forestry. The recommendations of the committee were accepted by the government.

After a decade of review by Hanumantha Rao Committee, the government constituted another technical committee named Parthasarathy Committee on DPAP, DDP and IWDP (GoI, 2006) to review the watershed programmes and to address the issues highlighted in the impact assessment studies and to reassess the criteria of moisture index and re-identify the blocks under DPAP/DDP for biotic and climatic changes during the period. The major recommendations by the Committee in the context of Odisha were (i) to merge National Watershed Development Programme (NWDPRA), DPAP and Integrated Wasteland Development Programme (IWDP) to form one programme; (ii) to emphasise community mobilisation, impact assessment and monitoring processes on a regular basis and (iii) to promote livelihood focused watershed programme as the next generation Watershed Development (WSD) programme.

As far as the Kalahandi-Bolangir-Koraput (KBK) region in western Odisha is concerned, a good number of special programmes have been implemented in the region for drought mitigation and poverty reduction. Since poverty level was acute during 1980s in the region, the Area Development Approach for Poverty Termination (ADAPT) programme was launched in Kalahandi-Bolangir-Koraput (KBK) region in 1988. Due to growing emphasis on long-term programme with participatory approach, a Long Term Action Plan (LTAP) for the three undivided districts of KBK was prepared in 1993 in consultation with the Central Government. The LTAP was conceptualised for a period of seven years from 1995-96 to 2001-02 with two objectives in view: (a) drought and distress proofing, and (b) poverty alleviation and development saturation. After a review in 1997-98, the State Government prepared a Revised Long Term Action Plan (RLTAP) which was envisaged for a period of nine years from 1998-99 to 2006-07 with an outlay of ₹ 6251.06 crore. The institutional arrangement for implementation of the project was also strengthened. The KBK region has been receiving Special Central Assistance (SCA) of ₹ 250 crore per year under RLTAP. Since 12th Five Year Plan, the SCA has been restructured for the region. Under the modified system, the eight districts of the KBK region are getting ₹ 120 crore from the Backward Regions Grant Fund (BRGF) and a grant of ₹ 130 crore under special plan for KBK.

Funds under the KBK programmes such as BRGF and RLATP are normally utilised to take up various programmes including watershed development, emergency feeding, tribal education, rural electrification and road connectivity. However, the implementation of these programmes has been affected because of the delay in the release of funds by the Central Government (Indian Express, 2013). The Planning Commission granted ₹ 187 crore out of ₹ 250 crore proposals for 2012-13, but there was delay in the release of entire amount by the Centre. During 2011-12, Centre had released ₹ 130 crore out of sanctioned amount of ₹ 250 crore resulting in curtailment of required investments. Odisha government

had formulated an eight-year perspective plan for the KBK districts from 2009-10 to 2016-17 with a projected outlay of ₹ 4,550 crore and the submitted proposal for the special package is also yet to be approved by the Centre.

For maintaining the momentum gathered under the Revised Long Term Action Plan (RLTAP) and up-scaling the public investment in the Koraput-Bolangir-Kalahandi (KBK) region, the State Government launched a new initiative, called the Biju KBK Plan under the State Plan over a period of five years effective since 2007-08. The Plan envisaged to take care of those critical gaps which are left uncovered under the BRGF. The State Government allocated ₹ 120 crore each year for operation of the programme. But the execution of the programme has not been satisfactory due to administrative negligence (Dash, 2012). The funds have not been utilised to the desirable extent during a period of 2007-08 to 2012-13. The funds utilisation in Bolangir, Koraput, Kalahandi, Rayagada, Nowrangpur and Malkanagiri was 63.1, 63.4, 57.4, 60.8 and 80.3 per cent, respectively during the corresponding period. The State Government also made a provision of ₹ 192.2 crore for implementation of Special Development Programme and ₹ 40 crore under the Special Problem Fund during 2013-14. Besides, ₹ 540 crore was proposed for implementation of Integrated Action Plan (IAP) in tribal and backward districts during the corresponding year.

In order to reduce the widening regional disparity between western Odisha districts and coastal districts and to accelerate growth in backward districts in western Odisha, the Western Odisha Development Council (WODC) was constituted under the Western Odisha Development Council Act, 1998 for undertaking developmental activities in 10 western Odisha districts. Different projects under roads and communication, minor irrigation, construction of check dams, installation of lift irrigation points, water supply schemes, sinking of tube wells, infrastructure grants to schools and colleges, rural electrification, assistance to urban local bodies for developmental works, etc., have been taken up by the Council. However, its performance over the years has been poor. It came out to fore that frequent changes in the projects by the MLAs and members of the WODC is one of the causes of low spending. Secondly, in the districts where Collectors showed keen interest, the spending was on a higher side. Thirdly, due to lack of coordination between the executing agencies, the spending rate was also affected (Anonymous, 2011).

Two issues emerged from the preceding discussions. First, the region has not received enough attention of Central Government over the years that has resulted in inadequate and delayed flow of funds to the region. Secondly, whatever funds have been received, the timely utilisation of these funds on the targeted activities in an effective manner has not happened. There has not been tangible change in the poverty stricken western Odisha even if huge money has been injected into it over a long period of time.

Even though the drought management policies have been refined over

the years and a large number of programmes have been introduced, it is imperative to examine the coverage and efficacy of these policies and programmes in development of these backward regions and in benefiting the lower strata of the society in these regions. It is equally important to examine the reasons behind the delay in funds flow or the sanction of inadequate funds or favouritism in funds sanctions. The next two sections address these issues in detail.

Political Economy of Drought

As revealed from the preceding discussions, the government policies and programmes for reducing drought risk have been refined with the experiences of successive droughts so as to enhance the effectiveness of the drought management programmes. However, the institutional performance in allocating resources and implementing the developmental programmes is observed to be influenced by a number of factors. The nature of Centre-State relationship and influence of pressure groups played a key role in the sanction of funds and implementation of the programme. Different forms of public action like research, media, judicial action and social activists have definitely influenced the government actions during calamity period. As Khera (2006) noted, the provision of drought relief is a matter of political survival because of the fact that the governments of different political affiliation have to face the electorate every five years and, to that extent, can be punished or rewarded for their performance.

The institutional arrangement for allocation of relief funds requires the coordination between different departments and between governments at the Centre and in the State. The coordination between the political parties in power is seen to be affected by different forms of conflicts among them. Such conflicts may be of two kinds, viz., vertical conflicts and horizontal conflicts. The vertical conflicts imply the conflicts between the governments of different political affiliations in successive periods. If a government starts a set of developmental programmes, the same set of programmes may not be allowed to operate by the next government of different political affiliation. On the other hand, with the horizontal conflicts, the governments of different political affiliation at the Centre and in the State may not cooperate with each other in the matter of formulation and implementation of different developmental programmes. Unfortunately, the State of Odisha, being the disaster capital of India, has been experiencing both kinds of conflicts over the years. As an example of vertical conflict, the Area Development Approach for Poverty Termination (ADAPT) programme was launched in Kalahandi-Bolangir-Koraput (KBK) region in 1988 during the visit of late Mr. Rajiv Gandhi, the then Prime Minister of India. He made special arrangements under this Centrally aided scheme so as to facilitate the funds flow directly to KBK region. But the scheme was discontinued when Janata Dal Government led by Mr. V.P. Singh assumed the office. The explanation for the termination of the programme within one and half year of its launch was that the programme would not have been sustainable in the long-run, which seems to be inaccurate (Das, 1996). There were no such significant differences between this

programme and other similar programmes which were in operation then. Moreover, the sustainability of these programmes is largely related to political commitment and people's participation which were found to be lacking in the study region.

The Drought Prone Area Programme (DPAP) was initiated in two districts of Odisha in 1970. It covered Bolangir district in 1982-83, nearly after 12 years. Though Bolangir was one of the most drought affected districts, such kind of diversion and delay in implementation of the programme in the district was believed to be due to political favouritism (Samal et al., 2003). The performances and leakages out of these programmes continued to be the major agenda during the election campaign. Political parties are interested in making allegations and counter allegations against each other and to take the credit of implementation of various public programmes and disbursement of funds without looking at periodic impact evaluation of these programmes at grassroot level.

Besides vertical and horizontal political conflicts, the third kind of political negligence, which of course a paradoxical situation, that Odisha faced, was that even if the same government was in power both at the Centre and in the State, the sorrow of Odisha was not wiped out. During the severe drought of 2002, the ruling party at the Centre and in the State was the same (BJP led National Democratic Alliance). The State Government had submitted a memorandum to Government of India (GoI) in August 2002 seeking assistance of ₹ 871.4 crore and 12.19 lakh tonnes of foodgrains for the drought mitigation works. The Central team headed by the Joint Secretary to GoI visited the State twice to assess the extent of loss and crop damage. By the time of second visit, Odisha Government had sent additional memorandum for ₹ 1676.8 crore and 10.7 lakh tonnes of foodgrain towards immediate requirement. But the Government of India disbursed a meagre sum of ₹ 5.43 crore out of its National Calamity Relief Fund (NCRF) and the foodgrain assistance of 4.22 lakh tonnes in the first phase which were quite inadequate to meet the demand (GoI, 2003). The total funds and foodgrains available to the State in that year was ₹ 422.9 crore and 7.64 lakh tonnes under all developmental programmes out of which 91 per cent of funds and 83 per cent of foodgrains were utilised. However, all these resources were not allocated for mitigating drought impacts alone. As presented in Table 1, the total amount allocated for drought mitigation in the State was ₹ 10.8 crore and 4.22 lakh tonnes of foodgrains. The allocation for Bolangir district was ₹ 4.43 crore out of which, about 80.5 per cent was meant for labour intensive works. Besides, 14.2 thousand tonnes of foodgrains was also allocated to the district for the labour intensive works for food for work component.

Table 1 : Provision of Funds for Drought Mitigation Measures in Odisha and Bolangir During 2002-03

(₹ lakh)

S. No.	Measures	Bolangir	% of State Total	Odisha
1	Labour intensive works			
	(a) Grain (MT)	14211.00	3.37	422000.00
	(b) Cash	356.25	4.30	8276.58
		(80.47)		(76.54)
2	Protective Irrigation	8.00	3.86	207.00
		(1.81)		(1.91)
3	Revival of LI points	33.00	4.03	818.21
		(7.45)		(7.57)
4	GR in kind	5.00	5.26	95.00
		(1.13)		(0.88)
5	TC for foodgrains	36.96	3.45	1071.09
		(8.35)		(9.91)
6	Emergency Feeding Programme	3.48	1.01	345.44
		(0.79)		(3.19)
	Total	442.69	4.09	10813.32
		(100.00)		(100.00)

Note: Figures in parentheses are percentages of total. GR implies Gratuitous Relief and TC stands for transport charges.

Source: GoI (2003).

The fund-flow to the KBK region for drought proofing and other developmental works has been interrupted many times. It is claimed by the Centre that funds are not being utilised by the State Government, while the State Government alleges that the Central Government is not disbursing the funds in time. A major proportion of the allotment is disbursed towards the end of the financial year, which becomes difficult to spend (Indian Express, 2013). Furthermore, most of the KBK regions are Maoist affected. Many a time Maoists create hurdles in the developmental work. Sometimes it becomes difficult for the administration to find contractors for government work. All these hinder the drought proofing and development of this backward region. There is a need for proper coordination of various stakeholders to ensure the drought proofing and development works on the right track.

Role of Institutional Support in Building Households' Resilience

Effective implementation of government programmes, improved credit and input

delivery system, well functioning public distribution system (PDS), good governance and village level institutions play a pivotal role in strengthening the resilience of rural households in withstanding drought impacts. An analysis of the extent of coverage and performance of the developmental programmes in the study area reveals many loopholes in their implementation. A few households had been covered under self-employment programmes implemented in the area. Table 2 shows that only 2.8 per cent of sample households were benefited by Swarnjayanti Gram Swarozgar Yojana (SGSY). The proportion of people benefited by TRYSEM was as low as 1.5 per cent of sample households. Only 0.22 per cent of sample households were benefited by the JRY programme. The proportion of people benefited by different programmes was about 12.1 per cent among sample households. While about 6.11 per cent households were benefited by the Indira Awaas Yojana (IAY), the people benefited under Drought Prone Area Programme (DPAP), which was a major programme in the drought prone area, was very low (2.8 per cent). Though the programme was undertaken with a watershed approach, there was no significant increase in irrigation through water harvesting in the region. The watershed programmes under different schemes including DPAP were also not very successful in increasing the cropping intensity or bringing about sustained changes in the cropping pattern. Though the programme was saturated in a study village (Samara), most of the sample households did not have any knowledge of the programme. The creation of durable assets and other long-term drought proofing activities were not taken up in true spirit and there was least participation of local people. Though the programme undertook vast array of activities, they were not properly integrated and did not serve the main objectives of the programme. Overall, the lack of effective implementation and poor people's participation in implementation of DPAP resulted in poor performance of the Programme in the region.

Notably, the self-help group (SHG) based activities gathered momentum in the region. About 27.6 per cent households were found benefited through SHGs. However, the proportion of households benefited by NGOs was only 2.1 per cent during the reference year. As far as the quality of impacts is concerned, SHGs also performed better in these areas with average rank value of 3.1 compared to that of NGOs (1.6) and government programmes (2.3).

Table 2 : Coverage of Developmental Programmes in Study Villages (till Drought Year 2002)

(% of sample households)

S. No.	Study Villages	% of Sample Households Benefited by:								Benefited through NGOs	Benefited through SHGs
		DPAP	IRDP	TRYSEM	JRY	SGSY	IAY	EAS	All govt. programmes		
1.	Samara	3.3	1.5	1.6	0.0	2.6	5.5	0.9	12.2 (2.8)	1.5 (1.6)	32.9 (3.4)
2.	Mundomahul	3.9	1.3	1.1	0.0	2.1	6.6	1.1	11.3 (1.7)	2.3 (1.4)	30.9 (2.7)
3.	Bijepur	1.2	2.1	2.0	0.7	4.1	6.8	1.9	15.4 (2.2)	2.5 (1.7)	19.2 (3.2)
4.	All	2.8	1.6	1.5	0.2	2.9	6.3	1.3	13.0 (2.3)	2.1 (1.6)	27.6 (3.1)

Note: Figures in parentheses show the average score on a rating scale from 1 to 5 where 5 stands for 'excellent' impacts (highest) and 1 stands for 'very poor' impacts (lowest).

The institutional sources of credit apparently failed in fulfilling the credit needs of vulnerable households. It may be seen from Table 3 that it declined by 67.9 per cent for agricultural households and only by 1.2 per cent for non-agricultural households. Among agricultural farm households, the proportion of institutional credit availed by small and marginal farmers was reasonably low. Mainly large farmers and elite groups could avail more of institutional credit with subsidised interest rates, whereas the small and marginal farmers had to resort to private moneylenders with exorbitant interest rates. The household level analysis reveals that the proportion of institutional credit increased to 81.9 per cent in the drought year from 76.9 per cent in the normal year for large farmers whereas the marginal farmer households could get only 19.9 per cent of its total credit from institutional sources in the drought year.

Moreover, many small and marginal farmers did not get the subsidised government loans due to diversions caused by the influence of political people (Swain, 2010). They not only suffered due to poor economic condition, but also were humiliated due to not having political influence. As a result, they failed to avail the benefits of a large number of developmental programmes those were specifically meant for them. Higher strata of the society were able to siphon off the resources originally meant for the poorer section. The only alternative left for the landless and marginal farmers was to repeatedly visit the large farmers' or moneylenders' doorstep to get the linked loans at exorbitant interest rates accepting large-scale exploitation. Overall, the institutional credit did not help the farmers to the desirable extent to cope with the drought in the region.

Table 3 : Access to Various Sources of Credit (Drought Year Vs Normal Year)

Lending Agencies	All Farm Households			All Non-farm Households			All Categories		
	NY	DY	% Change	NY	DY	% Change	NY	DY	% Change
Banks	7385.8 (53.3)	5824.3 (51.5)	-21.1	1294.3 (17.0)	844.7 (10.6)	-34.7	3324.8 (29.8)	2504.6 (23.6)	-24.7
Cooperatives	225.4 (1.6)	161.3 (1.4)	-28.4	192.5 (2.5)	450.2 (5.7)	133.9	352.2 (3.2)	611.6 (5.8)	73.7
Under Govt. Programmes	356.5 (2.6)	126 (1.1)	-64.7	1081.6 (14.2)	1242.1 (15.7)	14.8	1455.4 (13.0)	1605.8 (15.1)	10.3
Village Organisations*	1139.9 (8.2)	1245.5 (11.0)	9.3	966 (12.7)	1247.3 (15.7)	29.1	1063.3 (9.5)	1232.2 (11.6)	15.9
Moneylenders	847.3 (6.1)	852.5 (7.5)	0.6	1083.7 (14.2)	1350 (17.0)	24.6	1435.9 (12.8)	1502.9 (14.2)	4.7
Traders/Shop Keepers	931.6 (6.7)	2202 (19.5)	136.4	637.9 (8.4)	675.6 (8.5)	5.9	902 (8.1)	822.3 (7.8)	-8.8
Large Farmers	1334.5 (9.6)	2962.5 (26.2)	122	914.4 (12.0)	1120.1 (14.1)	22.5	1047.1 (9.4)	1128.1 (10.6)	7.7
Relatives	1628.7 (11.8)	1498.5 (13.2)	-8	1455.7 (19.1)	1003.2 (12.6)	-31.1	1594.3 (14.3)	1200.8 (11.3)	-24.7
Borrowing from Institutional Sources	7967.8 (57.5)	2559.1 (22.6)	-67.9	2568.4 (33.7)	2537 (32.0)	-1.2	5132.3 (45.9)	4722 (44.5)	-8
Borrowing from Private Sources	5881.9 (42.5)	8761 (77.4)	48.9	5057.6 (66.3)	5396.2 (68.0)	6.7	6042.6 (54.1)	5886.4 (55.5)	-2.6
Borrowing from All Sources	13849.7 (100.0)	11320.1 (100.0)	-18.3	7626 (100.0)	7933.2 (100.0)	4.0	11174.9 (100.0)	10608.4 (100.0)	-5.1

Notes: (1) DY stands for drought year and NY stands for normal year.

(2) *Village organisations included SHGs, Village Development Committee, Forest Protection Committee, Village Drought Action Committee and Youth Clubs.

(3) Figures in parentheses are the percentages of total.

The essential items like rice, kerosene and sugar were made available in required quantity in the sample villages through the targeted Public Distribution System (PDS). However, people could not purchase their full quota of subsidised food materials from the local dealers due to lack of purchasing power induced by widespread poverty (Swain, 2010). More importantly, they were unable to arrange money within the stipulated due date for purchasing the PDS items. It is worth mentioning that the proportion of households having purchased PDS rice increased marginally from 66.2 per cent in the normal year to 68.3 per cent in the drought year. However, some deserving landless and marginal farmer households (13.7 per cent) were excluded from the benefits of targeted PDS due to discrepancy in preparation of the list of BPL households whereas some of the better-off people were BPL card holders. Furthermore, some families managed to get multiple number of BPL cards also. Such kind of irregularity in allotment of BPL cards weakened the effectiveness of PDS as a safety-net to the poor households.

As far as the infrastructure provisions for withstanding the drought are concerned, irrigation is the foremost requirement in the area. The irrigation coverage in the district hovered around merely 23 per cent. The major sources of irrigation in the study region are micro level water sources like dug wells, tanks and cross bunds. The percentage of irrigated area under dug wells to gross irrigated area in the normal year and drought year was 35 and 42 per cent, respectively (Swain, 2006). It is worth mentioning that the major and medium irrigation systems did not contribute a single drop of irrigation water to the sample households. The shortage of water in the drought year resulted in a frequent intra-village and inter-village conflicts. Since water for irrigation is very scarce, particularly in the drought year, the frequent conflicts among water users are obvious outcome. Again, the inter-village conflicts were found to be more in the study area compared to intra-village conflicts. This shows the lack of cohesion among the village level institutions in the study area. The frequent conflicts among farmers over sharing of water resulted in loss of irrigation water. Moreover, the farmers in the area usually depend on lift irrigation but the water charges are high. The poor farmers find it difficult to pay the water charges to avail of irrigation. On the other hand, the cost of lifting the water through pumpsets increased significantly. The power unavailability and low voltage have also been the major causes of concern for the farmers.

Out of three study villages, two (Samara and Mundomahul) were watershed villages and one (Bijepur) was non-watershed village. However, the proportion of irrigated lands was more in Bijepur compared to two other villages due to well developed water harvesting structures, particularly cross bunds. Though a number of soil and water conservation measures have been undertaken under watersheds in the study villages, they are not well managed due to poor quality of works and lack of people's participation. However, in the non-watershed village (Bijepur), stronger village level organisation with more educated population helped in better maintenance of the structures and better spread of awareness among the villagers.

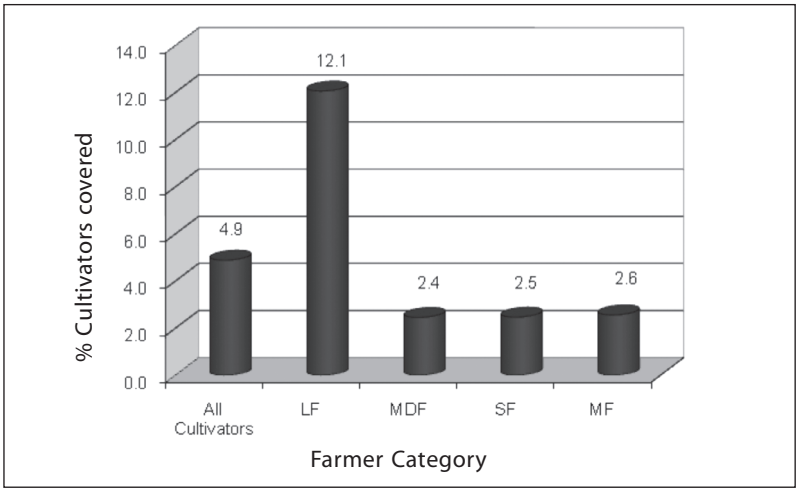
In spite of all the adaptation and mitigation measures taken up by the State Government and the farmers, if there is a crop failure, crop insurance is a mechanism to provide economic support to the farmers and stabilise their income. Crop insurance is considered as one of the most effective institutional mechanisms to compensate the farmers for their losses due to events which are quite unpredictable and cannot be prevented. However, the percentage of net sown area covered under crop insurance in Bolangir district was very low (3.8 per cent) (Table 4). Among the study blocks, the coverage was as low as 1.7 per cent in Titlagarh and 3.3 and 4.2 per cent in Patnagarh and Saintala, respectively. As per the household survey data (Figure 1), the large farmers (12 per cent) insured their crops to a larger extent compared to other category of farmers. Overall, about 4.9 per cent sample farmers were insured under crop insurance scheme.

Table 4 : Change in Crop Insurance Coverage in Drought Year (2002) over Normal Year

Study Blocks and District	% farmers covered in 2002	% NSA covered in 2002	2002 over 2001 (% increase)			2002 over 2003 (% increase)		
			Loanee	Non-loanee	Total	Loanee	Non-loanee	Total
Titlagarh	1.67	1.74	46.7	98.4	94.5	8.3	94.7	88.1
Patnagarh	3.34	2.79	44.1	100	93.6	21.8	95.7	87.2
Saintala	4.23	2.59	47.8	95.8	88.7	33.5	98.6	88.9
Bolangir district	3.80	3.81	46.6	99.5	91.9	26.2	94.3	84.5

Source: GIC of India, Bhubaneswar.

Figure 1 : Crop Insurance Coverage (% of sample HHs)



However, the sample farmers expressed their anguish over the procedure followed for declaration of crop loss in their locality. During a group discussion with the farmers in a study village Samara, a large farmer said, "for the drought year 2002-03, only 16 per cent crop loss was declared. He had paid premium of ₹ 120 per acre for 15 acres. Though the actual crop loss was about 50-74 per cent, the government declared considerably less crop loss so as to pay less. They picked good irrigated plots for crop cutting experiment and declared the entire region as less affected on that basis. On the other hand, the district was less affected by drought during 2001, and the actual crop loss was relatively less, but the crop loss declared was 48 per cent". Thus, the discrepancy was observed in declaration of crop loss in different localities of the district. The lack of awareness about the scheme and the limited time period allowed for enrolling for crop insurance also resulted in large scale exclusion. Some farmers also expressed that the payment of claims against the crop loss reached them very late.

Besides government departments/ agencies, there were many NGOs and community based organisations (CBOs) operating in the region and taking up various activities to make the region more climate resilient. Some of the NGOs associated with drought proofing and other developmental works in the area are Jangal Surakshya O Parichalana Forum, Aggragamee, Sahara, Praninka Pratisthan, Jana Kalyan, Prayas, etc. As stated earlier (Table 2), the sample farmers were not benefited by these NGOs in real sense. On the other hand, working of CBOs and Self-Help Groups (SHGs) is praiseworthy. Some of the CBOs in the study villages were Village Development Committee, Forest Protection Committee, Village Drought Action Committee, Youth Clubs and SHGs. These organisations judiciously managed their common pool resources such as available irrigation water, village ponds, community forests and grazing lands and resolved a number of inter-village and intra-village conflicts amicably, particularly related to water distribution. Women-headed SHGs helped their households by generating additional income and participated in the activities of village level institutions. SHGs have undertaken handicraft activities using bamboo, paddy grain, cotton thread, kaincha etc., and they sell the products at local and regional market. Youth Clubs in the study villages looked after overall developmental activities in the village including development of common property resources (CPRs), leasing-in village ponds for fishing and investing the profit for village development.

It is revealed through group discussion with the farmers that the community level mechanism to combat drought was stronger in earlier periods. For instance, about 30 years back, paddy collection group known as Jagannath Dhana Fund (a grain bank) was operating in the village Samara. The group was providing loan in terms of paddy, transacting 1 *khandi*[13] against 1.5 *khandi*, thereby making a profit of 0.5 *khandi* per khandi paddy invested. It was helping the poor farmers in the time of distress, as they were repaying after harvesting of their crops. The village development committee utilised the profit on developmental works including

strengthening of village infrastructures. But such types of disciplined and well-managed organisations are now-a-days non-existent in the study villages. Such institutions gradually disappeared due to increased reliance on government run public distribution system.

Conclusions

The frequent occurrence of drought along with weak coping capacity of the people resulted in perpetual backwardness of western Odisha. Huge flow of funds to the region under various special programmes such as Backward Regions Grant Fund, Biju KBK plan, Special Problem Fund, Integrated Action Plan and long-term developmental programmes through Western Odisha Development Council (WODC) have not helped much in strengthening the coping capacity to the desirable extent in the region. To ensure better targeting and governance, the government policies and programmes have been refined over the years and the institutional support system has been strengthened with the experiences of successive droughts. However, the institutional performance in allocating resources and implementing the developmental programmes are observed to be influenced by the nature of Centre-State relationship and manipulation by pressure groups. A large number of developmental programmes have been implemented in the drought-prone study region, but the benefits of these programmes reached very less proportion of rural households and these programmes have not been sustained due to lack of long-term vision, poor quality of programme implementation and insufficient people's participation. There is a need for livelihood focused interventions with high priority to people's participation for their sustainability. There is an urgent need to make the system more efficient and transparent so that these programmes help in strengthening the coping capacity of rural households for effectively dealing with drought risk that seems to be rising in the region along with the intensification of climate change.

There are many areas where coping capacity can be strengthened with effective policy interventions. Increasing irrigation coverage has to be given due importance. There is huge scope for increasing irrigation in the district through developing micro-level water resources. The traditional tanks (locally known as Kata, Bandha, Chahala, etc.) proved to be extremely useful not only in normal years but also in water scarce years. Small size water harvesting structures (WHSs) are advantageous over medium and large irrigation projects in Bolangir due to its uneven and hilly topography and other socio-economic and biophysical factors. So instead of going for big dams which require massive investment and a long time for completion, efforts should be made to increase the irrigation coverage through WHSs such as dug wells, check dams, tanks and renovate the existing defunct WHSs. Though WHSs are quite feasible in the region, poor economic standards of majority of farmers, insufficient power availability, political negligence and weak institutional set-up are the major hindrances for their sustainability. The financial constraints may be eased by encouraging community mobilisation of resources, provision of performance based incentives and effective institutional development. Agricultural

research and extension activities need to be strengthened through institutional support for better drought management.

The crop insurance coverage (which was only 3.8 per cent) needs to be increased for reducing the level of drought risk of farmer community. The lack of proper marketing facilities coupled with the problem of credit availability from institutional sources and shortage of power supply forced many prospective farmers to avoid cultivating remunerative cash crops like sugarcane and cotton. Thus, much emphasis is required to be given on infrastructure development in the region. Infrastructure development is the first step for accelerating growth and livelihood promotion and diversification in the region.

There is a need for harmonious relationship between the Centre and State Government so as to facilitate effective implementation of development programmes in the region. Smooth flow of funds from Centre to the State, convergence of development programmes and the proper utilisation of funds require proper coordination between the Centre and State Government and the strong political will of the State Government. The strong political will of the State Government may improve the governance, accountability and transparency in implementation of the programmes. There is a need to strengthen the local level organisations with more empowerment and better command for conflict resolutions.

Appendix I : Institutional Arrangements for Drought Management in India

Institutions for drought management	Level of action	Major responsibilities	Nature of strategies
National Disaster Management Authority (NDMA)	National	Laying down policies, plans and guidelines for drought management and coordinating their enforcement and implementation for ensuring timely and effective response to drought	Prevention/ preparedness/ mitigation
National Executive Committee (NEC)	National	To assist the NDMA in the discharge of its functions and ensure compliance of the directions issued by the Central government, and in preparing the National Plan	Prevention/ preparedness/ mitigation
Central Government	National	To take all such measures, as it deems necessary or expedient, for the purpose of drought management and will coordinate actions of all agencies. It will ensure that Central ministries and departments integrate measures for the prevention and mitigation of drought into their developmental plans and projects, make appropriate allocation of funds for pre-disaster requirements and take necessary measures for preparedness The Department of Agriculture and Cooperation (DAC) in the Ministry of Agriculture (MoA) along with other departments of that Ministry is responsible for the technical aspects of drought management	Prevention/ preparedness/ mitigation
National Institute for Disaster Management	National	Training, research, documentation and the development of a national level information database. It will network with other knowledge-based institutions and assist in imparting training to trainers, drought management officials	Prevention
India Meteorological Department (IMD)	National	The IMD is responsible for the National Meteorological Service such as drought forecasting and early warning and is the principal government agency in all matters relating to meteorology, seismology and allied subjects	Prevention

(Contd...)

Appendix I *(Contd...)*

Institutions for drought management	Level of action	Major responsibilities	Nature of strategies
Central Water Commission	National	To monitor reservoir storage status of 81 important reservoirs spread all over the country on weekly basis	Prevention/ Preparedness
National Centre for Medium Range Weather Forecasting	National	To provide medium range weather forecasts through deterministic methods and to render agro-advisory services (AAS) to the farmers	Prevention/ Preparedness
National Remote Sensing Centre	National	To obtain aerial data on drought occurrence to transfer the space-enabled inputs to the concerned State and Central government departments	Prevention/ Preparedness
National Rainfed Area Authority (NRAA)	National	To address the issue of drought mitigation on a long-term basis. The NRAA has been set up as an institution of experts to provide knowledge inputs with reference to systematic upgrading and management of the country's dry-land and rain-fed agriculture The NRAA aims to infuse convergence and synergy into the numerous ongoing water conservation and watershed development programmes and monitor their implementation	Mitigation
India Drought Management Centre (IDMC)	National	To help in selecting appropriate drought mitigation and preparedness measures and methodologies. It will provide guidelines for implementing those measures and monitor the progress, and also undertake impact-assessment and evaluation of the response system	Preparedness/ Mitigation
Disaster Management Departments/ Commissioners	State level	To deal with rescue/ relief operations during droughts	Preparedness/ Mitigation
State Disaster Management Authorities (SDMA)	State level	To lay down policies, plans and guidelines for drought management and coordinating their enforcement and implementation for ensuring timely and effective response to drought	Prevention/ Preparedness/ mitigation

(Contd...)

Appendix I *(Contd...)*

Institutions for drought management	Level of action	Major responsibilities	Nature of strategies
State Executive Committee	State level	To assist the SDMA in the performance of its functions	Prevention/ preparedness/ mitigation
District Disaster Management Authorities (DDMA)	District level	DDMA headed by the District Magistrate, with the elected representative of the local authority as the co-chairperson, will act as the planning, coordinating and implementing body for drought management and take all necessary measures for the purposes of drought management in the district	Prevention/ preparedness/ mitigation
Local Authorities	Local level	These include Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs)for control and management of civic services and local institutions for effective drought management	Prevention/ mitigation
Non-Governmental Organisations (NGOs)	State/ district/ local level	To help in planning and undertaking mitigation activities	Prevention/ mitigation
Community Based Organisations (CBOs)	Local level	To help in planning and undertaking mitigation activities at grassroots level	Prevention/ mitigation

Source: Government of India (2010).

Notes

1. The major common strategies followed by the drought afflicted rural households for adjusting with drought in the region were borrowings from institutional sources and private lenders, reducing consumption, disposal of assets and livestock, increased dependence on CPRs, livelihood diversification, migration, etc. As far as the cultivator households are concerned, they found to adopt some strategies like curtailing cost of cultivation, diversifying cropping pattern, crop insurance and creating/renovating WHSs, etc (Swain, 2010).

2. The KBK region in western Odisha was earlier constituted by three districts namely, Kalahandi, Bolangir and Koraput which were divided into eight districts later on in 1992-93. The eight districts of KBK region are Kalahandi, Nuapara, Bolangir, Sonepur, Koraput, Rayagada, Nowrangpur and Malkanagiri. These districts in western Odisha are well known for prevalence of chronic poverty, widespread illiteracy, malnutrition and periodic out-migration. The entire western Odisha districts (10 in number) lag behind their counterparts of coastal districts in core sectors. Looking at the degree of development/ backwardness of 10 western Odisha districts, it can be said that out of 87 blocks only 5 blocks are developed, 25 are developing, another 25 are backward and 32 blocks are very backward, whereas in coastal districts 70 blocks are developed, 50 blocks are very backward out of total 227 blocks (GoO, 2013).

3. The degree of drought vulnerability in the blocks was estimated according to the value of Composite Drought Vulnerability Index (CDVI) constructed on the basis of ranks or weights attached to nineteen key drought vulnerability factors out of which six were biophysical factors (i.e., drought probability, intensity, long-term rainfall variability, water holding capacity of soil, land slope, and groundwater table) and thirteen were socio-economic factors (poverty, education, irrigation, major crop production, land use pattern and some important institutional factors).

4. The twelve major livelihood groups were: large farmer (average size of operational area of more than 4 hectares), medium farmer (2-4 hectares), small farmer (1-2 hectares), marginal farmer (up to 1 hectare), agricultural labourer, non-agricultural labourer, forest resource dependant, rural artisan, businessman, service holder, livestock rearer, and others covering fishing community, stone merchants, and tailors.

5. The main objective of the JRY was additional gainful employment for the unemployed and under-employed persons in rural areas. The other objective was the creation of sustained employment by strengthening rural economic infrastructure and assets in favour of rural poor for their direct and continuing benefits. An evaluation study of this scheme by Planning Commission (GoI, 1991) revealed that the scheme helped in

employment generation for SCs, STs and weaker sections, but the quality of maintenance of assets in most of the cases was found to be either average or poor.

6. IRDP was a rural development programme of the Government of India launched in financial year 1978 and extended throughout India by 1980. It was a self-employment programme intended to raise the income-generation capacity of target groups among the poor. The target group consisted largely of small and marginal farmers, agricultural labourers and rural artisans living below the poverty line.

7. TRYSEM was the largest scheme launched by the Government of India to address the problem of training the rural youth for employment. Training was imparted through formal institutions, including industrial and servicing units, commercial and business establishments and through master craftsmen. Rural youth aged 18-35 were eligible. The programme was expected to cover a minimum of 50 per cent of the youth from the scheduled caste and tribe communities and a minimum of 3 per cent from the ranks of the physically handicapped.

8. SGSY was launched in 1999 to focus on promoting self-employment among rural poor. It was remodeled to form National Rural Livelihood Mission (NRLM) in 2011 with a budget of $ 5.1 billion and is one of the flagship programmes of Ministry of Rural Development, which is being supported by World Bank. This is one of the world's largest initiatives to improve the livelihood of poor.

9. A very senior IAS officer was posted as the Chief Administrator, Special Area Development (KBK) Project. He was responsible for effective monitoring and supervising the implementation of various programmes. His office was also vested with enhanced financial power. The Revenue Divisional Commissioners of Southern and Northern Divisions were made Deputy Chief Administrators with well-defined financial powers. The Central government was very much pleased with such institutional arrangement for speedy and transparent implementation of the programme.

10. At present, WODC covers 10 western Odisha districts (Bargarh, Bolangir, Deogarh, Jharsuguda, Kalahandi, Nuapada, Sambalpur, Sonepur and Sundargarh and Boudh) and Athmalik block of Angul district.

11. One example of allegations and counter allegations on the implementation of the developmental programmes for drought mitigation in the study region may be cited here. A Congressman said, "BJP is claiming that Revised Long Term Action Plan (RLTAP) for KBK was started by NDA government. In fact, it was envisioned by Rajiv Gandhi and was started during Congress government with Narasimha Rao as the prime minister. The prime minister in his address to Congress delegation mentioned that

NDA Government, in six years of its rule, disbursed ₹ 700 crore for development of KBK region, while Congress led UPA Government during the first two years of its tenure disbursed ₹ 500 crore and another ₹ 1500 crore is in the pipeline". So they asserted that the State government should stop false propaganda and take the people of Odisha for a ride.

12. Some soil and water conservation measures undertaken as part of watershed programme on arable lands were establishment of contour vegetative hedges and construction of gully control structures with vegetative measures. The measures carried out on non-arable lands were planting by over-seeding of grasses and legumes as per the suitability of the lands, afforestation and silvi-pastural intervention and construction of check dams at upper reaches and loose boulder check dams and earthen structures at middle reaches of the watershed.

13. 1 Khandi is equivalent to 20 kg.

14. The availability of groundwater resources is also conducive for development of WHSs in the region. There is not a single over-exploited zone in the district. The groundwater development is 16.77 per cent and the average depth of groundwater level varies from 0.78 mbgl (metre below ground level) to 6.85 mbgl during post-monsoon period and from 1.33 mbgl to 8.85 mbgl during pre-monsoon period (CGWB 2007).

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JRD 3

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ACHIEVING SELF-SUFFICIENT MODEL VILLAGES FOR INCLUSIVE GROWTH: A CASE OF RAMCHANDRAPUR

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ABSTRACT

According to 2011 census, 68.84 per cent of Indians live in about 638,691 villages. However, rural India's share in total national income is less than 45 per cent. Rural India is characterised by low income levels, poor quality of life and weak human capital base. Although in the post-economic reform period, India has grown economically faster, the performance in reduction of poverty, employment and economic disparity remained dismal. This is due to inability to extract and utilise rural people's potential through their participation in the government at the local level. The need of the hour is the convergence of all development interventions at the grassroots level which can be possible through effective governance within villages to convert them into Model villages- a concept which was not new but have been neglected in the mirage of worldly development. This paper presents a case study on a successful model village of India- Ramchandrapur (a village in Hyderabad, Andhra Pradesh) and evaluates Ramchandrapur's unique governance system, which has made Ramchandrapur village a self-sufficient and autonomous village. This village has shown that inclusive growth can be achieved by local people by their combined and honest initiatives. Ultimately, India is a land of villages and India will only prosper if it's all villages prosper with equal socio-economic and inclusive growth.

Introduction

"If the village perishes, India will perish too. It will be no more India. Her own mission in the world will get lost."

- M.K.Gandhi

According to 2011 census, 68.84 per cent of Indians live in about 638,691 villages. However, rural India's share in total national income is less than 45 per cent. Rural India is characterised by low income levels, poor quality of life and weak human capital base.

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Although in the post-economic reform period, India has grown economically faster, the performance in reduction of poverty, employment and economic disparity remained dismal. This is due to inability to extract and utilise rural people's potential through their participation in the government at the local level. 37 per cent of population remains below poverty line not able to meet basic necessities of life. Nearly half the rural population is still illiterate (50.56 per cent). On the health front, the situation is far worse. The infant mortality rate is 63.19 per thousand live births and less than five mortality rate is 98 per thousand live births. The under- weight children are 53 per cent. Population with access to sanitation is only 31 per cent. More than half of the children between one and five years in rural areas are undernourished and 60 per cent of the rural households do not have electricity connection (Mathew, 2003).

In the State of Andhra Pradesh, 72.7 per cent of people live in rural areas. Therefore, rural development is one of the thrust areas of administration. As Mahatma Gandhi said, *"India lives in villages and the development of the nation cannot be achieved without the development of the villages".* The need of the hour is the convergence of all development interventions, at the grassroots level which can be possible through effective governance at the village level. The movement towards decentralisation of the National and State governments through the Panchayati Raj system needs to be strengthened through lessons learned from the successful stories of 'Model villages' around India. Village of Ramchandrapur is an example of innovative governance that is involved in solving its problems through participation and it is exercising its voice in the planning and implementation schemes offered by National and State governments. This study examines if the village has reached its political and financial degree of autonomy and self-sufficiency through raising its own revenue allowed by the Constitution. It further explores the future sustainability of the current scheme without National and State governments interventions.

Area of Study

'Ramchandrapur' village of Hyderabad was purposively chosen to conduct study on model village as a part of IARD (International Agriculture and Rural Development) course offered by Cornell University, Ethaca, USA in India (2012). Village Ramchandrapur was selected because it has emerged as a self-sufficient model village by adopting its own innovative governance system. Ramchandrapur has shown significant positive changes in finance, education, nutrition, and infrastructure and has been recognised as model village by State Government. Ramchandrapur has also got many recognitions including Nirmal Gyan Puraskar (2006) for full sanitation coverage in village and outstanding contribution in rural sanitation.

Objectives of the Study

The present study was done to fulfill the following objectives:

1. To study the unique governance system of Ramchandrapur model village under following aspects
    - Financial Aspects in Ramchandrapur
    - Social Development in Ramchandrapur

- Education and literacy levels
- Nutrition and Health
- Infrastructure development

2. To compare and contrast the pre and post-condition of Ramchandrapur village with respect to adoption of model village governance system.

3. To know the relationship between Governance System of Ramchandrapur and socio-economic characteristics of villagers (Extension agency contact, Mass media exposure and Innovativeness).

4. To know the perception of villagers about model village governance system of Ramchandrapur.

Methodology

The authors studied the village by case study method of Social Science. Data were collected from 100 randomly selected villagers of Ramchandrapur village to understand the relationship of Ramchandrapur governance system with their socio-personal characteristics.

To study the unique governance system of Ramchandrapur model village under aspects viz. Financial Aspects in Ramchandrapur, Social Development in Ramchandrapur, Education and literacy levels, Nutrition and Health and Infrastructure development, personal interviews of villagers and officials of governance system were conducted. To compare and contrast the pre and post-condition of Ramchandrapur village with respect to adoption of model village governance system, primary data from villagers were taken with the help of questionnaire and validated in village during study time. To know the relationship between Governance System of Ramchandrapur and socio-economic characteristics of villagers (Extension agency contact, Mass media exposure and Innovativeness), Correlation between Governance System of Ramchandrapur and socio-economic characteristics of villagers were calculated at 1 per cent significance level.

To know the perception of villagers about model village governance system of Ramchandrapur, Likert's five point scale was used for various opinions of villagers under the category (highly agreed, agreed, neither agreed nor disagreed, disagreed and highly disagreed with score of 5,4,3,2 and 1, respectively).

Current State of the Village

The village of Ramchandrapur is located in Karimnagar district, 110 km North East of the capital of the erstwhile United State of Andhra Pradesh. The total population in the village is about 2200 persons who make up about 500 families. A large part of the population is occupied in agricultural activities from which they derive their income. The majority of the population is small to medium landholders who are primarily subsistence farmers. The use of irrigation is important in complementing food produced from rain-fed agriculture. The transformation of the village is a result of structural innovations in the governance systems that have created a participatory approach to planning and development.

Like most villages in India, the village of Ramchandrapur was no exception with its

high rates of unemployment, low literacy levels, under-nutrition and poor health and agriculture infrastructure. Before the conception of the model village framework of development which is highly dependent on a decentralised form of governance, Ramchandrapur had literacy level of 47 per cent; about 20 percentage points lower than the national average literacy rate of 64.8 per cent. School drop-out rates were high with most drop-outs turning to liquor consumption. Some lucky few left for the city and became involved in the informal sector as petty-traders. Those who remained had few options but farming. The lack of irrigation infrastructure meant little yields and constant food insecurity. Furthermore, the lack of education and low literacy levels made it impossible for individuals to acquire information about new technology that could help in raising their yields. This inability to access information made them backbenchers in development matters that concerned not only their communities but their livelihood and well-being. Water and land resources were either over or under-utilised across the village through mono-cropping, poor irrigation practices and inadequate water management initiatives. The local public health status of the village was equally poor with villagers prone to many infectious diseases due to a lack of proper sanitation facilities.

The adoption of the model village framework helped in transforming a once destitute village onto a path of development. Currently, the village has a revitalised education system with zero per cent drop-out rate, a functional irrigation and potable water system and an electricity station. The present sanitary conditions available in the community earned the village the prestigious 'Nirmal Gram Puraskar' (NGP) Award. This infrastructure development helped in increasing agricultural production annually with tremendous increases in livestock population and dairy milk production. The livelihood diversification activities extended from just crops to include semi-formal income generating activities. The village is home to 27 Self-Help Groups (SHG) and 7 Farmer clubs which helped in consolidating the new found autonomy of the village by encouraging participation in decision making.

Governance System of Ramchandrapur Model Village

Governance in the Ramchandrapur model village represents the standard governance system. The same as at national level, Ramchandrapur model village governance consists of lower house and upper house (Lok Sabha and Rajya Sabha). The structure follows a village cabinet system that consists of members elected among the citizens of the village. The village cabinet system is divided into the ministries headed by a minister. Further, under each ministry, committees are elected among the population of the village to address particular challenges. Gram Sabha is a public forum that can be attended by all elected officials and public participants. It is considered a grassroots democracy, and according to PRI, this meeting is to be held at least twice a year. The forum encourages citizen participation in addressing issues and challenges of concern to each citizen. One role for participation emphasised in the literature is to improve the flow of information into the political process beyond that available by elected officials (World Bank, 2005). At the Gram Sabha meetings

elders are elected to form the village legislative council and elect ministers.

Tables 1 and 2 show Ministries under the governance system of Ramchandrapur and their respective responsibilities and Committees under the governance system of Ramachandrapur with their responsibilities, respectively.

Table1: Ministries in Ramchandrapur Village

Ministry	Responsibility
Chief Minister (Sarpanch)	Supervise all ministries and committees and head the administration of the village
Minister of Power, Public Distribution and Revenue	Financial regulations and tax collection
Minister of Animal Husbandry	Management of farm animals and by-products
Minister of Minority Welfare	Representation of minorities within the village
Minister of Women , Child and Self-Help Groups (SHG)	Women empowerment, child nutrition and SHG's regulation
Minister of Legal Affairs	Management of all legal affairs including land records but excluding criminal justice
Minister of Family Planning	Management and ensuring healthy families

Table 2: Committees Under Various Ministries in Ramchandrapur Village

Committees	Responsibilities
Water Committee	Management of irrigation and quality regulation of potable water
Environment and Sanitation Committee	Management of sanitation in each household and tree plantation
Revenue Committee	Collection of taxes and management of village revenue and expenses
Roads and Building Committee	Transportation and housing
Cultural Affairs Committee	Festival celebration and marriage regulation
Employment Committee	Employment generation

Once every three months in Ramchandrapur, members of the committee identify problems related to respective ministries by the help of a survey. The head of the committee, members and villagers identify the problems in monthly meetings held at a common place called chaupal within the village. After this, the chief minister (Sarpanch) assigns the problem to its specific ministry to solve it. This system is strictly followed and is corruption free. This model differs with the PRI system as the village legislative council has its own House of elected representatives. Instead of working under the Zilla Parishad, the village is headed by the Gram Panchayat who also chooses the head of various committees under the legislative council. The aim of the PRI system is development of the village by concept of democratic decentralisation. However, it lacks grassroots contacts with villagers. With the model village, its aim is development by concept of leadership through participation.

Sarpanch has managed to structure unique governmental arrangement and revitalise the village within very short period of time. Further challenges that the village might face are inherently rooted in the current governmental institutions. Indian society is hierarchical based on caste system, patriarchal in nature and feudal in character. Administration within PRI is influenced by existing governance system of the country and power of authority lies in hands of people of certain caste or region. This is detrimental for the welfare of minorities. Some level of conflict is based on caste, religion, region, culture and language in villages and it makes governance vague and unresponsive. Further, an organic linkage between Gram Sabha and Gram Panchayat is yet to be forged. Gram Panchayats do not constitute viable administrative units due to their geographical areas and physical distances from potential growth centres and sheer inaccessibility due to lack of proper infrastructure such as roads. Another area of concern is interference of middleman, brokers and other external agents in production process that results in degradation of margins of villagers. Inefficient Central and State administration with top to down approach complicates the concern further.

1. Financial Aspects in Ramchandrapur

Besides all the constraints, Sarpanch of Ramchandrapur has been able to manage financially and bring about some major capital improvements to the village, such as: uninterrupted water supply for irrigation and potable use; piping to every house in the village; the power sub-station to provide each habitant with a certain amount of hours of electricity per day; improvement in education and health facilities; and pucca roads for a better connectivity to the rest of the State. Financially, this was possible through a combination of self-collected revenue, use of already existing Central and State schemes and innovative approach to NGO's to fill in the missing funds.

In the past, the village depended on the water supply from the nearby river and used water pumps for irrigation. Once the dam was constructed upriver, the village was left with no water supply for irrigation and daily use. In collaboration with the department of Government of Andhra Pradesh (GoAP), specifically the Rural Water Supply and Sanitation Department (RWSS), an innovative solution was implemented to

solve the water problem for the village. Since there was no running body of water nearby but groundwater was plentiful, an effort was made to construct a trench 3' wide and 15' deep in the dry river bed to act as a wall and collect rainfall and underground water. The innovative solution still allowed the surface water to flow downstream, while capturing only the water below the surface. This ensures ample water for the village to use year round for irrigation and for the households. At present, the village is served by 21 handpumps, 1 community well and 4 borewells. Two overhead storage reservoirs (with the capacity of 40000 lts and 60000 lts) are used to distribute the water through pipes in the village. Almost all households have tap connections. Similarly, water supply system is extended to schools in the village, as a welfare measure (Ram, 2012).

Majority of this cost (83 per cent) was borne by RWSS, GoAP. Gram Panchayat in collaboration with a NGO Bala Vikasa shared about 15 per cent of this cost. In Ramchandrapur, the local contribution was clearly visible for the capital cost of the project. The population saved and contributed to the capital expense in the form of purchasing land required for the reverse osmosis plant in order to have clean, potable water delivered to their homes. The experience in other parts of India according to "Wash Coast India" is limited to population contributing to operation and system maintenance only. In Ramchandrapur, however, the citizens actually contributed to the capital expense.

Once the project was underway and village gained some acknowledgment, a government institution for capacity building of Panchayati Raj and Rural Development (APARD) also extended financial help to Ramchandrapur. APARD sponsored support costs that comprised about 3 per cent of total expenditure of the water project. The cost subsidised visits to two other model villages, Gangadevulapally and Gudur, in order to observe and learn about their success stories. These visits were considered to be critical and a turning point for the water project in Ramchandrapur.

Before the water project could have been realised, the need for uninterrupted power had to be satisfied. The village invested in separate dedicated transformer for uninterrupted power in order to run the drinking water supply systems. The village collaborated with the electricity department on this project. The citizens of Ramchandrapur collected ₹ 40,000 rupees and bought an acre of land for electricity department to set up a power sub-station. The sub-station was crucial to provide continuous water supply to the village allowing water pumps to run as needed by the user. Each household now receives about 7 hours of electricity a day for agricultural purposes. The investments made by the village are about 13 per cent of the total cost and the rest of the cost was borne by the schemes from Irrigation Department and RWSS, GoAP (Ram, 2012). Current maintenance and service fees for water and electricity are allocated from the Gram Panchayat's own revenues. Own revenue collected includes tariffs and income paid by the citizens for utilisation of the water and electricity.

The water delivery piped system was developed through the combination of local contributions and government funds. Since the water system was put in place, it allowed

for uninterrupted irrigation of the crops. 1900 acres of land is cultivated now, up from 700 acres that used to be cultivated just few years before. Besides the increase in the cultivated land, the crop diversification was viable as well. In the past, the village grew only rice and groundnuts; however, today they have diversified into growing cash crops and vegetables. Annual turnover from all agricultural activities is ₹ 3.5 crore.

Another viable source of revenue for the village today is taxation from the 29 self-help groups (SHG) that exist in the village. The concept of self-help groups became popular during the 90's, as a primary tool for poverty alleviation and empowerment. The model was very successful in Andhra Pradesh as it suited socio-economic context of this State (AMR-APARD, 2008). Today Andhra Pradesh is home to more than 50 per cent of all self-help groups in India.

The SHG evolves as a group of people with homogeneous social and economic background voluntarily coming together to save small amount regularly, operate a small scale business and to meet their emergency needs on mutual help basis. The group members use collective wisdom and peer pressure to ensure proper use of credit and timely repayment (AMR-APARD, 2008). Further, SHG enhances the capabilities of poor to develop collective decision making, provides a broad range of social benefit to members and even to the entire village and motivates poor taking up social responsibilities particularly related to women development. The concept encourages the habit of savings among poor and facilitates the accumulation of their own capital and improves their ability to mobilise local resources (AMR-APARD, 2008).

The poor have different needs for financial services. The SHG provides access to finance while equally distributing the risk for payment amongst the members. According to the Sarpanch of the village, repayments of all SHGs in the village are 100 per cent. The peer pressure within the SHGs serves as a substitute for collateral (AMR-APARD, 2008). Further, the sarpanch has instituted private savings for the population as well as introduced insurance policies. Today more than 1700 people hold an insurance policy totaling the annual premium for the entire village between ₹ 30-40 lakh. The savings accounts amount to about ₹ 40-50 lakh. Between the insurance policy and savings, the village has combined annual savings around ₹ 1 crore.

While the sarpanch together with the village council and the ministers was able to truly uplift the village within a decade of time, the issues of sustainability and further development of the village arise on the State and National scale. Society for Participatory Research in Asia (PRIA) study on status of finances of PRIs in 10 States across India reveals that share of own revenue in total income of Panchayats at all levels is declining. It is suggested that misbalance mainly exists because the self-collection of the revenue by Panchayats has not kept with the pace with increasing governmental grants (PRIA, 2000). The situation in Andhra Pradesh is in much better position than in other States of India, where self-collected revenue is up to 50 per cent of the Gram Panchayat's budget comparing to some other States that are below 1 per cent indicating almost total dependence of GP's on State and Central government funds. However, in no State have Panchayats been able to generate enough own revenue to reach financial sovereignty (PRIA, 2000).

While government programmes are forthcoming and can accommodate many of the basic requirements in areas such as health and education, locating funds for larger capital investments has been an issue. In case of Ramchandrapur and funding of the water project, both in the case of the drinking water project as well as the irrigation, efforts were not possible within the existing government programmes. The village had to raise funds from other sources, and this was difficult given its past reputation and the lack of information on possible sources. The drainage system still awaits such funding possibilities, though a plan has been drawn up (GoI-UNDP, 2011).

2. Social Development in Ramchandrapur

The social reality of individuals in the village of Ramchandrapur changed significantly in the last decade or so. Through the efforts of the Mayor, the village moved from bad to progressive. The Sarpanch conducted a census like survey to take an inventory of the population and their social status. Initially the data were recorded manually making it difficult to establish population needs. He collaborated with APARD in order to digitalise the database. Once the database was computerised, they were able to generate reports. With this information, the leadership in the model village is able to determine the needs of its residents and determine which National and State programme fits the specific need of each villager. This efficient use of information means that the leadership is able to be more receptive.

The high rates of alcoholism which were common among school going children have been reduced through the introduction of fines and the improvement of the education system. The poor amenities have been replaced with sub-surface water irrigation system which improved the overall sanitation and health of the community. The once isolated community which was accessible by a kutcha road is now connected to the neighbouring villages and towns by pucca roads that have opened access to new markets for the community. These indicators give a picture of the transformation that has occurred in Ramchandrapur. As stated earlier, changes in education, health and nutrition and infrastructure development will be the main focus of this social reality.

3. Education and Literacy Levels

The Mayor (Sarpanch) of Ramchandrapur who is credited for the achievements of the village spearheaded the transformation of the education system within the village after recognising the limits of illiteracy. The starting point was to reduce the drop-out rates and the literacy rates which had crippled agricultural productivity. With half of the population illiterate, spreading of new knowledge and technology was almost impossible. As part of the ICDS programme, he initiated the development of two anganwadi centres which would cater to pre-school children. These children are 'collected from their homes by the anganwadi staff to ensure regular attendance'. The aim of these centres was to stimulate learning among the children from a young age as well as make their mothers able to participate in other self-development activities (Self-Help Groups) while their children were in the care of other experienced mother. This programme also helped facilitate supplementary feeding programmes that aid

under-nourished children recover from malnutrition.

For the older school going children, an experienced retired teacher from the community was hired to lead the transformation of the school system. This visionary leadership and commitment helped in reducing the school drop-out rates to zero. It is certainly evident that the transformation of the education system helped in improving other social indicators within the village.

4. Nutrition and Health

Nutrition and health are some of the social indicators that benefited from the gains made through education. The school feeding programmes which are a part of the national agenda in decreasing under-nutrition helped in attracting and retaining students. As such it was also easier to administer vitamin supplements to under-five children in anganwadi centres and general vaccinations for the older school going children. Given that the feeding programmes are mostly funded by government grants, it remains uncertain of their lifespan and/or their future. The current financial status of the model village only allows for adoption of programmes with guaranteed funding from the Central government as part of the implementation process of their policies.

The sanitation issues in the village were addressed by first creating soak pits near discharge points. The members of the governing body canvassed from house to house to encourage people to adopt this new system that would divert the water overflow from the pits to kitchen gardens. Adoption levels were eventually high and these changes helped the village win the 'Nirmal Gram Puraskar '(NGP) Sanitation Award. This award is given to communities that have managed to become 'open defecation free' by having sanitary toilets in houses, schools and anganwadis.

The village of Ramchandrapur has also managed to build a clinic using government grants and local resources. This clinic has been crucial in acting as a centre for community health workers to disseminate information on hygiene, balanced diets and feeding practices for pregnant and nursing women.

5. Infrastructure Development

Infrastructure development certainly plays an indispensable role in helping a developing nation to achieve economic and social prosperity. India is no exception to this trend with Central government initiatives augmenting infrastructure in the areas of telecommunication, road and agriculture (Bhattacharyya & Chakraborty, 2010).

Before the innovation of the model village, infrastructure in Ramchandrapur was minimal. The new leadership tackled the problems of infrastructure systematically by beginning with water development projects. At the time, the source of water for the village had high fluoride concentration which many times caused fluorosis. By using government grants and local contributions, they developed a piped water system which drew water from the river through pipes to two water tanks that were constructed near the village. This enabled the supply of uncontaminated water to the homes of individuals and helped in reducing the spread of infectious diseases.

The leadership in the model village discovered that power supply was important for irrigation purposes. The village was able to raise funds to buy a plot of land on which power generating activities were implemented. With power supply assured, it was easier to explore irrigation possibilities. Unfortunately the river that was close to the village had dried up due to a dam construction that occurred upstream. Thus, it was necessary to construct a sub-surface dike to hold the necessary water. With the help from government grants and other donors, they were able to put pipes that connected the river to farms and supports irrigation through sprinkler systems.

After this achievement, the leadership discovered that irrigation alone without management systems was a waste of resources as it became more apparent that the management of the operation and maintenance would determine the level of success. The local community organised itself into branches that were responsible for inspecting the pipes to ensure timely maintenance. These changes improved the overall efficiency and equity in the use of water. Currently the model village lacks the capacity to be genuinely independent and to generate income from local sources. As such it remains imperative on how long they will be able to sustain these rates of development.

The unique features that have helped the village of Ramchandrapur achieve such success are exceptional leadership, decentralised governance through the creation of sub-committees and community participation. However, it remains uncertain on how long the model village will survive in future given its dependence on government grants for development projects. While we celebrate the success in utilising the programmes available for the rural communities in India, it will be necessary for the village council to find alternative ways of generating funds and maintaining the autonomy of the village.

Pre and Post-Condition of Ramchandrapur Village with Respect to Adoption of Model Village Governance System

Table 3 summarises the specific achievements of different committees after adoption of Ramchandrapur model village Governance.

Table 3: Specific Achievements of Different Committees Under Ramchandrapur Model Village Governance

Committees	Specific achievements
Water Committee	• Solved Fluoride problem in drinking water by constructing two treated water tanks • Construction of 21 handpumps, 1 community well and 4 bore wells for irrigation purpose

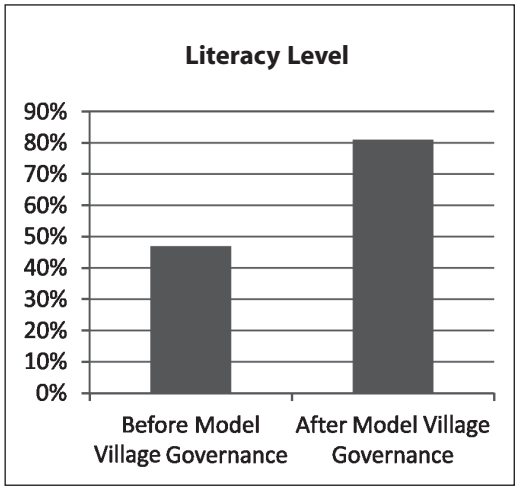
(Contd...)

Table 3 *(Contd...)*

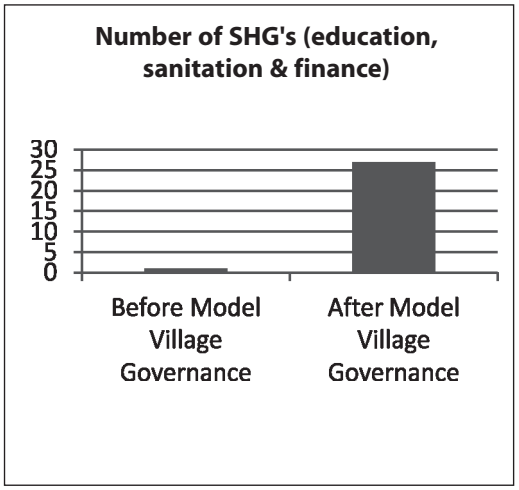
Committees	Specific achievements
	• Creation of sub-surface irrigation system on Moithuma river which solved the entire irrigation problem of village
Environment and Sanitation Committee	• Sanitation management system for each house
	• Sanitation management system for schools, Panchayats and other social infrastructure
Revenue Committee	• Annual turnover achieved in 2012 is ₹ 3.5 crore with annual savings of ₹ 1.0 crore
	• Successful management of taxes and other revenues
Roads and Building Committee	• Construction of roads in all four directions of village
	• Management of marketing for agricultural produce
Education Committee	• Ensured 100 per cent schooling of children (no dropout)
Women and Child Welfare Committee	• 27 SHGs are formed to work in different aspects.
	• Two anganwadi centres are formed for successful management of ICDS and mid-day meal programme.

After adoption of model village governance system in Ramchandrapur village, there has been a huge positive shift in literacy level, self-help groups formation, irrigation facilities (number of tube wells, working home taps and bore wells), health status of villagers (health insurance cases), area under agriculture, annual turnover and overall saving of village. Histograms 1, 2, 3, 4, 5, 6, 7, and 8 show specific achievements of Ramchandrapur model village governance after its inception in the village w.r.t. literacy level, SHG's, irrigation, home taps, health insurance, cultivated area, annual agricultural turnover and annual savings of the village, respectively. (Pre and post-condition of Ramchandrapur village with respect to adoption of model village governance system).

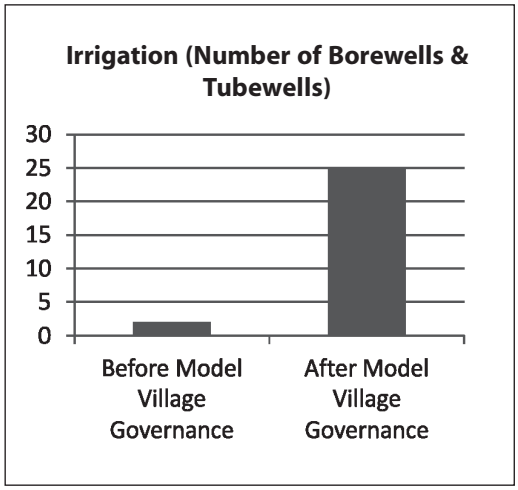
Histogram 1 : Pre and post-literacy level



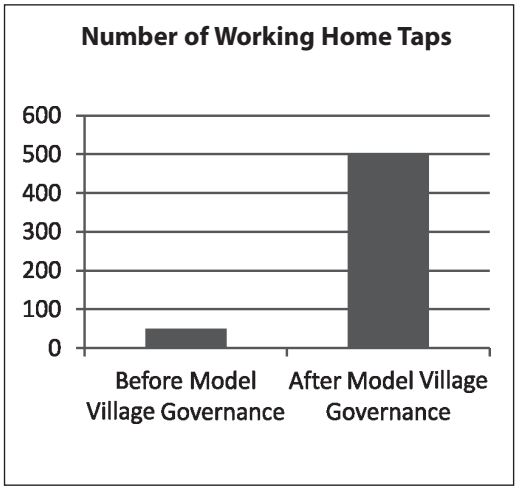
Histogram 2 : Pre and post-SHG's numbers



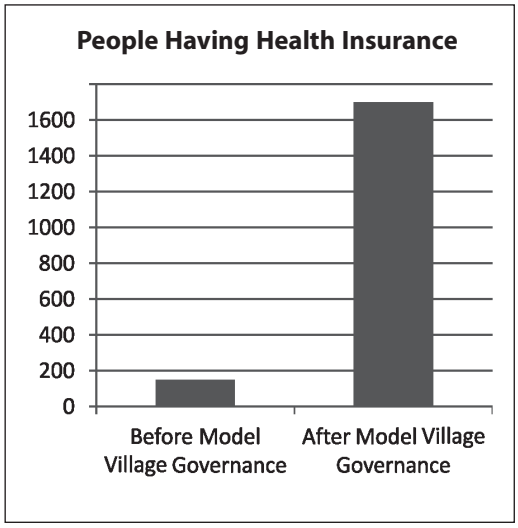
Histogram 3 : Pre and post-irrigation status



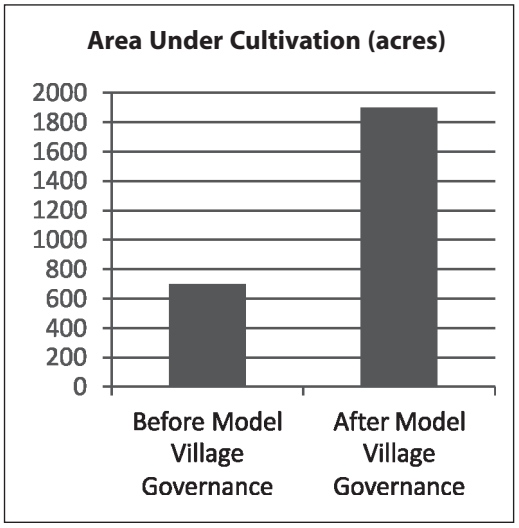
Histogram 4 : Pre and post-home taps status



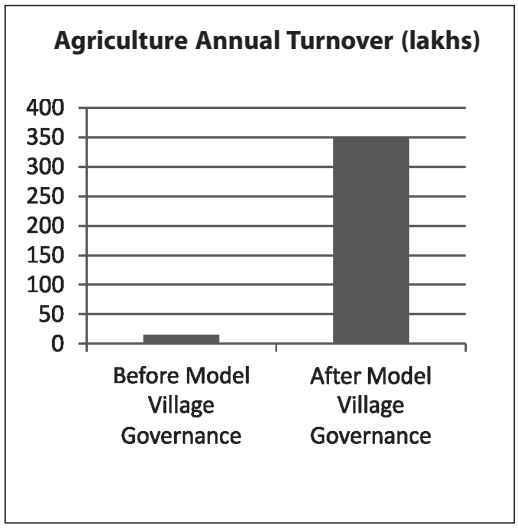
Histogram 5 : Pre and post-health insurance



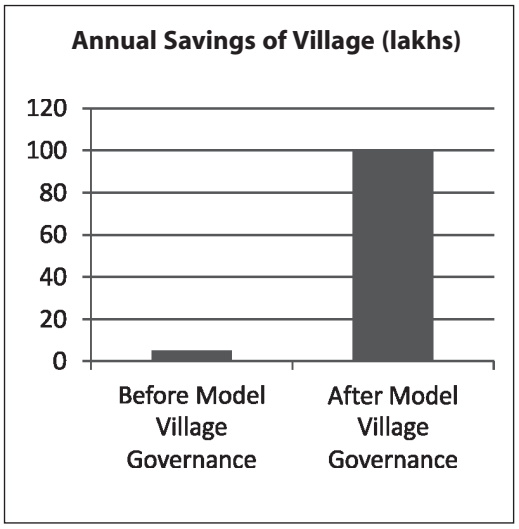
Histogram 6 : Pre and post-cultivation area



Histogram 7: Pre and post-Agri. turnover



Histogram 8 : Pre and post-annual savings



Relationship Between Governance System of Ramchandrapur and Socio-economic Characteristics of Villagers

After adoption of Ramchandrapur model village governance system, villagers got an opportunity to participate and discuss during meetings. Various developmental programmes launched by Government of India were discussed at many village discussion forums. Villagers became members of different committees and took responsibility under model village governance system. This increased their extension agency contact, mass media exposure and innovativeness. Table 4 shows relationship between Governance System of Ramchandrapur and socio-economic characteristics of villagers.

Table 4 : Relationship Between Governance System of Ramchandrapur and Socio-economic Characteristics of Villagers

	Governance System of Different Departments/Committees			
Socio-economic characteristics	Education	Health	Agriculture	Finance
Extension agency contact	0.227**	0.226**	0.217**	0.221**
Mass media exposure	0.212**	0.232**	0.234**	0.230**
Innovativeness	0.219**	0.228**	0.235**	0.233**

**-Significant at 1% level.

Selected socio-personnel characteristics, namely extension agency contact, mass media exposure and innovativeness of Ramchandrapur people was found significant at the one per cent level based on t test with Governance System of different departments/ Committees, mainly Education, Health, Agriculture and Finance Department of Ramchandrapur Village. This indicates that, this governance model of Ramchandrapur developed extension agency contact, mass media exposure and innovativeness among the people of the village.

Perception of Villagers About Model Village Governance System of Ramchandrapur

Table 5 : Perception of Villagers About Model Village Governance System of Ramchandrapur

Statement	No. of farmers (N=100)					Total Score	Mean Score	Rank
	HA	A	NAD	DA	HDA			
Model village governance system is a cheap source of information to the villagers	300	80	-	30	5	415	4.15	4

(Contd...)

Table 5 *(Contd...)*

Statement	No. of farmers (N=100)					Total Score	Mean Score	Rank
	HA	A	NAD	DA	HDA			
Officials of Model village governance system are easily accessible by farmers	225	60	-	50	15	350	3.50	6
Model village governance system made villagers knowledgeable about developmental schemes of government	250	84	-	22	18	374	3.74	5
Model village governance system fulfils the various informational needs of the villagers	230	64	-	36	20	350	3.50	6
Model village governance system is an efficient system of solving villagers' problem	360	88	-	14	3	465	4.65	1
Model village governance system involves villagers in decision making	345	84	-	16	4	449	4.49	2
Model village governance system improved wealth of villagers	325	88	-	14	6	433	4.33	3
Model village governance system improved the innovativeness of the villagers	205	44	-	70	14	333	3.33	7
Model village governance system created employment opportunities	245	88	-	24	17	374	3.74	5
Villagers implement the recommendations of Model village governance system	195	48	-	74	12	329	3.29	8

It is evident from Table 5 that respondents have given first and second rank to the statements 'Model village governance system is an efficient system of solving villagers' problem' and 'Model village governance system involves villagers in decision making', respectively which indicates that model village governance system which Ramchandrapur adopted is involving local people and solving their problems efficiently. Respondents have given third rank to statement 'Model village governance system improved wealth of villagers' which indicates that the model village governance system is finally benefiting the villagers to increase their wealth. If we analyse the mean score of statements 'Model village governance system made villagers knowledgeable about developmental schemes of government', 'Model village governance system fulfils the various informational needs of the villagers',

'Model village governance system created employment opportunities', 'Model village governance system improved the innovativeness of the villagers' and 'villagers implement the recommendations of Model village governance system', then it is evident from Table 5 that mean scores of these statements do not have much variance and all are above 3.20 (with minimum 3.29 and maximum 3.74) which shows that model village governance system which Ramchandrapur adopted has positive effect on all dimensions mentioned in statements which respondents ranked. Thus, villager's perception towards model village governance system is positive and thus they actively participated in all activities of model village governance system which Ramchandrapur adopted.

Conclusion

Although the figures show that India is progressing in the right direction in reducing education inequalities and increasing literacy levels, there is still a lot that needs to be done. An understanding of social issues is important for effective planning and policy development. A systematic approach of decision-making that involves stakeholder input is necessary for effectively addressing issues that are significant locally.

The advent of self-governance ensured that Indian citizens, even the previously marginalised, can participate in decision-making. With the Panchayat elections, it is encouraging to see increased participation of women and minorities. This is an important step towards improving the governance. However, the full potential of utilising the Gram Sabha as an instrument of participatory governance has not been realised.

Ramchandrapur village serves as a model, showing the initiative and investment of local people. If more villages can run like it, India would likely experience an improvement in livelihoods. Ramchandrapur village has shown the strengths of the system to be a dedicated and corruption-free Gram Sabha system that decides its own governance structure (ministers), dedicated leaders and members of various committees, and an overall participatory method of problem solving that includes the villagers. Ramchandrapur has proven that the concept of the model village has potential to make Indian villages self-sufficient and autonomous with good and transparent governance. In a Parliamentary Democracy like India, citizens elect their leaders.

India showed its interest in this in the 73rd Amendment to its Constitution where it sought to organise village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government. The government should take it further to ensure that like Ramchandrapur, all villages in India are aware of these programmes and use it to their benefit.

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CLUSTER DEVELOPMENT INITIATIVE FOR POVERTY ALLEVIATION : A CASE STUDY

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ABSTRACT

From a relatively minor sector of a largely part-time and subsistence in nature, the rural non-farm economy is a very important contributor to the economic growth of a region because of its frequently small scale, low capital requirements and seasonality, etc. Industrial clusters are widely understood as a worthwhile target for local economic development and poverty alleviation. Review of existing evidence underlines the relationship between cluster and poverty. In India, clusters of micro and small enterprises are in existence for centuries. But only in late 80's the policy and schemes for development of those clusters gathered pace. In the State of Assam, thousands of rural household enterprises are operating based on traditional skill and local resources, acting as a sustainable livelihood for the rural household. Labour is expected to be more productive within cluster which translates into higher income. Our analysis reveals that cluster initiative empowered rural artisanal segments, helped in increase in income with household status, creation of assets, social capital, skill upgradation, product development and improved backward and forward linkages, etc.

Introduction

In the last decades, Indian economy has grown in an impressive rate and demographic pressure has also slowed down. Yet, the incidence of unemployment in the last decade was more than 7 per cent. Employment in rural sector, which is associated mostly with agriculture, stagnated during 90's (Jha, 2006). Considering pressure on land, there exist limited scopes for increasing employment in agriculture. Therefore, employment in the rural non-farm sector becomes an important option. Studies also suggested that with the increase of development, the share of non-farm income and employment in the total income of the household increases in the developing country. There is numerous evidence that rural household can have highly diverse (often multiple) source of income. The average contribution of non-farm activity in India varies between 25-30 per cent of the total household income in the rural area.

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According to Ninth Five Year Plan document, 90 per cent of employment growth during 90's was from unorganised sector which comprises non-farm activities. Evidences also show that productivity and profitability in the non-farm sector is generally higher than that of the farm sector (Fisher & Mahajan, 1997).

In India, around 41.89 million persons are engaged in rural non-agricultural establishments that constitute 46.55 per cent of the total employment including both rural and urban areas. The rural non-farm economic (RNFE) activities are often defined as activities which include all economic activities in the rural areas except agriculture, livestock, hunting and fishing (Lanjouw, & Lanjouw, 1997). All activities associated with work, whether waged or self-employed, located in rural areas but are not agriculture activities (Davis, 2006), are the non-farm activities. Economic opportunities in the non-farm sector in India are also increasing as rural non-farm employment is considered to be important to the landless small and marginal farmers which leads to the growth of real per capita income of non-agricultural output and can have a significant impact in reducing real poverty (Coppard, 2001). Traditional household industry is considered to be most significant rural non-farm manufacturing sector in-terms of size of workforce, income generation and contribute in social up-liftment in the rural areas.

The growth of RNFE activities holds important implications for the welfare of women and poor households, sometimes helps in offsetting inequities that may arise within the agricultural sector (Haggblade, Hazell, & Reardon, 2002). Historically these rural non-farm activities are found in certain geographical area in cluster form, due to locally available raw material, labour force and proximity to key transport and market or sometimes as a result of historical accident. A number of recent studies highlighted that income levels of the households and workers engaged in rural non-farm activities are generally low and the incidence of poverty is very high. But without this sector the poor would be driven into destitution. Poor people cannot afford to remain idle and unemployed, as they have to find some work to earn their living (www.academia.edu/.../UNITED_NATIONS_ECONOMIC_AND_SOCI...). In recent years, a large number of rural landless/ marginal farmers have forcibly adopted the home based non-farm activities which require low specialised skill and techniques. The limited employment opportunities in organised sector and disguised unemployment in agriculture flourished the non-farm employment in rural India.

Although the rural non-farm economic sector has ample economic importance in national economy, its growth is still stagnant in India. The Government of India since 1980 adopted various policies and schemes for development of the non-farm economic activities. These policies include establishment of industrial park, industrial estate, product specific industrial park such as- textiles, food processing, leather products, information technology park, specific economic zone, subsidies on export, transportation and tax relief, etc. However, all the policy initiatives by the Central as well as the State government could not yield expected result.

Over the last 2-3 decades, cluster approach has drawn substantial interest for policy makers, legislatures, academics,

economic development practitioners and development agencies. Many countries around the world have based their industry development strategies (specifically rural non-farm SME sector) on cluster models. European, Australian and American policy makers have taken up cluster development policy not because of a shift in priorities from macro to micro-economic issues but due to increased focus on the hitherto neglected aspects of local issues (Foundation for MSME Clusters, 2008). Many European countries have made impressive progress through cluster based policy to ensure higher prosperity or continued economic growth.

On the academic front there has been much interest in studying the location and the geographic concentration of economic activity. Today clusters exist in the economics of both developed as well as developing countries. Governments continuously search for new tools and policies to improve economic performance and create economic prosperity for all citizens. In this context, a more pro-active and strategic role for government in support for the cluster base economic development model has emerged. There is a growing consensus that this model can provide a foundation for sustainable economic growth and the way forward to greater prosperity (Irshad, 2009). The clustering of economic activity has important implications for development, through its effect on employment and growth (Mukim, 2011). Studies by UNIDO, UNDP, MSME, ILO, etc., identified cluster initiatives as a vehicle for pro-poor growth. Recent diagnosis studies on cluster development initiative in India have shown some positive indication in generating income and employment in rural areas.

Looking into economic performance of cluster initiative in RNFS, the present paper attempted to access the impact of cluster development initiative towards poverty alleviation in the Chackchaka block under Barpeta district of Assam. The Khadi and Village Industry Commission, Assam under SFURTI Scheme initiated cluster intervention at Barpeta Cane and Bamboo Craft Cluster covering five villages of Chackchaka block during the year 2008.

Methodology of the Study

The present work is exploratory in nature. The study considered households' artisanal cluster as "geographically concentrated households units producing handicrafts/ handlooms products, often belong to a traditional community producing the long established products for generation and the skill of centuries ago' (MSME, 2008). On the other hand, traditional households industry means "an activity which produces marketable products, using locally available raw material and skills and indigenous technology" (Ministry of Agro and Rural Industries, 2005).

The study considered both primary and secondary sources of data. The primary data were collected from the field observation and survey of cluster's household by using a detailed semi-structured questionnaire. The questionnaires comprise household data, artisan's personal data, standard of living and welfare, benefits received from CDI, etc. In order to gather primary information, formal focus group discussion and interview were conducted with the key informant. The selection of clusters was made on the basis of the purposive sampling and by taking care of their age and economic importance. On the other hand, the selection of households for the interview was considered on the basis of random sampling. The total number of

collected questionnaires from the clusters households were 200. The sample respondents for the study comprised the head artisans or member of the cluster household. Sample size was determined through considering several factors: the degree of precision (reliability), desire for the survey estimates and the efficiency of the design. Random sampling was implemented in the selection of clusters villages and respondents, to serve the purpose of data collection.

For assessing the impact on poverty from cluster development initiative in the study area, the study followed the impact criteria proposed by Nadvi and Barrientos (2004) in their methodology which is followed as under:

Indicators or "Impact Criteria" Areas of Change: Positive Poverty Reduction Impacts

Cluster's Stakeholders: Increasing revenues, enhanced standard of living, reducing dependence on single traders/ market, increasing formal training/skill increasing access to credit, better information and contacts, less discrimination, greater participation in cluster improved governance.

Workers: Increased wages, enhanced standard of living (e.g. housing), longer period/more stable work, more skill training/ experiences, increased employment benefits (pension, social security), improved condition of work (e.g. hours, contracts), better health and safety (e.g. chemicals, machineries), less discrimination (e.g. wages, job training), gender empowerment (e.g. more female employment freedom of association).

Households: Increased and stable income, decent housing, social network and support, equitable distribution within households (work, income, decision making).

Local Community: Improved services, improved social capital, clean and safe environment.

Results and Discussion

Barpeta falls under the lower plain zone of Assam having geographical area 2677.33 sq. km. The district has a rich history of tradition and culture. Household enterprises based on traditional skills (artisanal) are important livelihood for rural masses. Secondary sector contributes 12 per cent of the Gross Domestic Product of the district, comprises mainly households industries. The inherent non-farm economic activities include bell and brass metal, pottery, bamboo and wood craft, mask making, ivory carving, and traditional Assamese jewellery making, etc., are occupying a unique place in the district. These sectors provide livelihood opportunities to more than 5 per cent of the working population. Till date ten (10) numbers of naturally developed clusters have been identified in Barpeta district. During the year 2008, KVIC under the SFURTI scheme has taken one of such traditional handicraft clusters 'Barpeta Cane and Bamboo Craft Cluster' at Raipur village under Chakchaka block for its development.

Impact Analysis of Barpeta Cane and Bamboo Craft Cluster

Barpeta Cane and Bamboo Craft Cluster is situated 20 km distance from the district headquarter of Barpeta. Barpeta cane and bamboo craft cluster was developed naturally at Chakchaka block of Barpeta district of Assam. Looking into the economic

importance of artisanal work, the Khadi and Village Industry Commission (KVIC, Guwahati) under the Scheme Fund for Regeneration of Traditional Industries has taken up the cluster development initiatives (CDI) at Chakchaka block of Barpeta district during the year 2008. The KVIC with the implementing agency (IA) Anchalik Gram Unnayan Parishad (Jania), an NGO, established Common Facility Centre (CFC) at Raipur Village by covering another four villages- Bhaluki, Dhupguri, Joshihatigaon and Joshihatichar-which have rich culture of decorative bamboo craftsmanship.

The cluster development initiative (CDI) under Chakchaka block brought a new dimension in the socio-economic status of the cluster's artisans. The pre-diagnostic cluster study by implementing agency indicates that there were limited income and employment opportunities in the sample cluster villages prior to cluster intervention and majority of the households were living below poverty line.

Table 1 : Households Below Poverty Line of the Sample Village

S. No.	Name of the Village	Number of Households (2001)	Households under BPL (2002)
1	Raipur	377	381
2	Jaishihati	295	303
3	Bhaluki	473	466

Source: 1. Population Census, 2001.

2. Panchayat and Rural Development, Government of Assam, 2002.

It has been observed from Table 1 that all the sample households under the surveyed villages were below poverty line (BPL).

Income and Employment Status of Cluster Households (Pre and Post-Cluster Intervention)

Table 2 : Status of Employment Pre and Post-Cluster Intervention (CI)

Activities/Occupation	Post-Intervention		Pre-Intervention
	Primary Occupation	Secondary Occupation	Primary Occupation
	Per cent	Per cent	Per cent
Not fulltime and fixed occupation	-	-	34.5
Agriculture	1.5	1.5	35.5
Business	0.5	-	3.5
Agricultural labour	-	-	5.0
Artisanal work	98.0	2.0	21.5
Total	100.0	3.5	100.0

Prior to the cluster intervention, among the present cluster artisans, only 21.5 per cent of them were engaged in artisanal activities and 34.5 per cent were not involved in any fulltime occupation. Most of them were underemployed and engaged in construction work and agri-labour. After the intervention in the sample villages, 98 per cent of the population have taken up traditional bamboo craftsmanship as their prime occupation for their livelihood.

The field study reveals that prior to cluster intervention, 17.5 per cent of the sample household's monthly income was up to ₹ 1000 only. About 77.5 per cent of the households reported their monthly income ranging between ₹ 1000 to ₹ 1500. Only 5 per cent of the households were having other income sources like- small business, petty shops, vegetable vendors, etc., and their income was above ₹ 1500 per month. Whereas post-intervention it was found that the average monthly income of these cluster population increased substantially from ₹ 1,169 in 2008 to ₹ 8,681 in 2012.

Gender-wise Employment in the Cluster

The gender dimension in rural income and employment has become an important issue in the recent decades with respect to the growing concerns about the deteriorating status of females in a society. Before the cluster intervention at Chakchaka block, the involvement of females in artisanal activity was very less. But it was revealed from the study that after the intervention, the involvement of the female member household in artisanal activity increased and become very important earning member of the family. Involvement of female artisans does not only generate income and employment, but also improves the status of women in the society. At present the total number of artisans participating in common facility centre (CFC) and directly involved in artisanal activity was 1382, where, 60 per cent were males and 40 per cent were female artisans.

Table 3 : Gender and Age-wise Participation in the Cluster CFC

Age Group	Male (in per cent)	Female (in per cent)
Below-30	20.5	20
30-60	78.5	79
Above-60	1	1
Total	100	100

The above Table shows that maximum number of artisans involved in the cluster belong to the age group of 30-60 years.

Status of Artisanal Households (Pre and Post-Cluster Intervention)

In India poverty has a multi-dimensional aspect, where poor people are lacking in terms of household assets, income and employment opportunities, proper housing and sanitation, etc. Although the assets creation is not the primary objective of CDI, the initiative indirectly influenced in accruing household assets due to generation of surplus income for artisanal households. In recent years, the household status of the cluster artisans improved with the increasing income level (Table 4).

Table 4 : Household Assets Possessed by the Barpeta Cane and Bamboo Craft Cluster Artisans

Assets		Post-Intervention	Prior to Intervention
		Percentage	Percentage
Lives in Own/Rented House	Rented house	1.5	nil
	Own house	98.5	100.0
Status of House	Pucca house	12.5	2.0
	Tin roof but kutcha	87.5	12.0
	Kutcha house	nil	85.0
Electricity available		85.0	24.0
Pucca Latrine		10.0	nil
Kutcha latrine		90.0	100.0
Source of drinking water	Ringwell	7.0	3.0
	Tubewell	93.0	76.0
	Not having own water facilities		21.0
Fuel for cooking	Firewood	13.0	97.0
	LPG	87.0	3.0
Television/CD players		26.0	4.0
Cycle		84.0	21.0
Motor cycle		7.5	nil
Refrigerator		nil	nil
Radio		13.0	18.0
Mobile		86.0	nil
Fan		85.0	nil

The study revealed that prior to CDI, only 2 per cent in the sample households were having pucca houses and 85 per cent were residing in kutcha house and the entire sample household used open space or kutcha latrine. They used to access drinking water from tubewell (76 per cent) and 21 per cent of them did not have any permanent source of drinking water. It was also found that 97 per cent of cluster artisans used firewood for cooking and only 3 per cent were having LPG connection. There were only few assets, namely, bicycle and radio possessed by the household. These findings of the household status prior to cluster development initiative reflect the standard of living of the cluster artisans.

Post-cluster intervention household status of the artisans in the cluster improved as 12 per cent of the sample households are now living in pucca house, 75 per cent living

in tin-roof kutcha house, 10 per cent households now having permanent sanitation facilities, 85 per cent of sample houses were electrified and 87 per cent of them used LPG for their cooking. In the post-intervention period, 26 per cent of the artisanal households were possessing television, 84 per cent of them were having bicycle, 85 per cent were having fan and 86 per cent of households were having mobile phone. Households possessing motor bike were 7 per cent only.

Figure1 : Number of Working Days of Sample Households in a Year

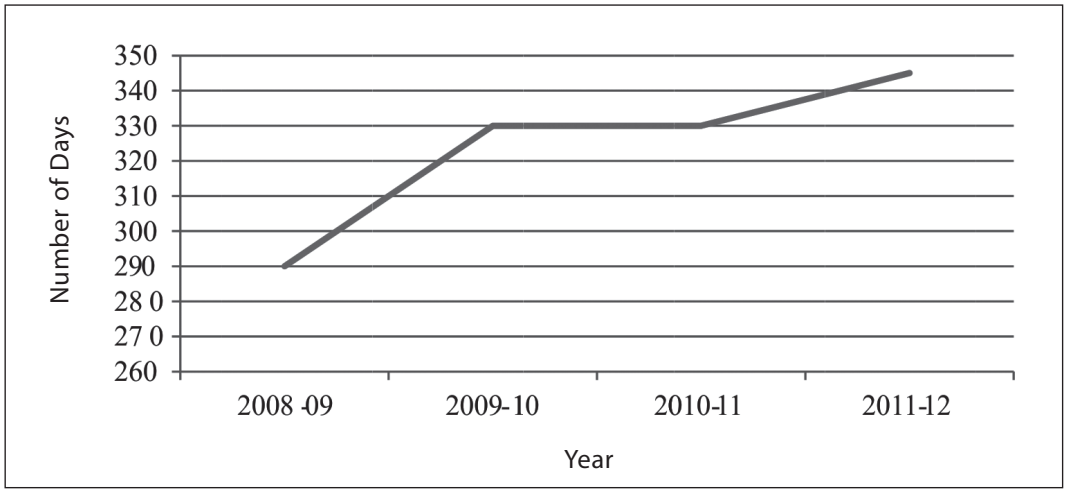


Figure 1 shows that the involvement of household in artisanal work in terms of number of days in a year increased substantially and reached to 345 days in the year 2011-12.

Figure 2 : Number of Self-Help Groups Formed

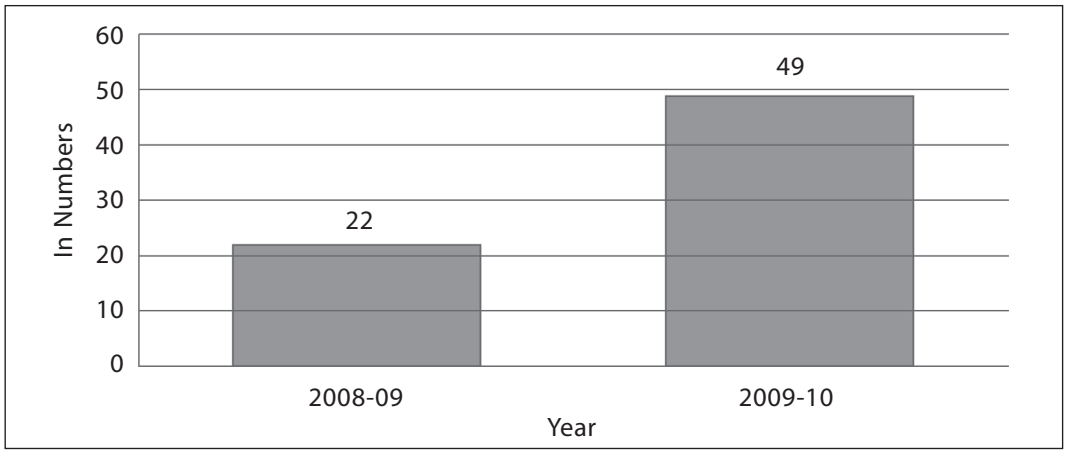
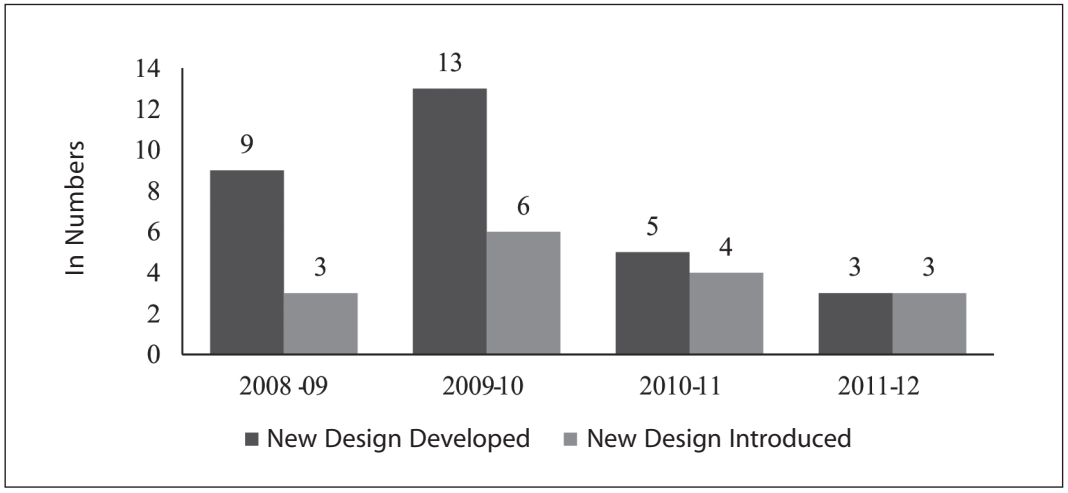


Figure 2 shows that during the year 2008-09 in Barpeta Cane and Bamboo Craft Cluster, 22 Self-Help Groups were formed by the Cluster Implementing Agency (CIA). This increased to 49 during the year 2009-10. The motive behind the establishment of SHG among the cluster artisans was to bring coordination among the cluster artisanal households and establish forward and backward linkages with external agencies like financial institutions, development agencies, government agencies and departments, etc.

Figure 3 : New Design Developed and Introduced in the Cluster



The above figure shows that after the CDI was undertaken at Barpeta Cane and Bamboo Craft Cluster, every year products with new designs were developed.

Benefits Received from Cluster Development Agency (CDA)

The cluster intervention at Barpeta Cane and Bamboo Craft Cluster facilitated skill development training to about 35.5 per cent of the artisans, exposure visit to 8 per cent, 30 per cent of the artisans received financial assistance and 23 per cent benefited under medical help. Cluster implementing agency also facilitated insurance coverage to 16 per cent of artisans, credit card to 13 per cent and distributed tool kits among 44 per cent of the artisans (Table 5).

Table 5 : Facilities/Benefits Received from Cluster Development Agency (CDA)

S. No.	Benefits	Numbers	Per cent
1	Received Training Facilities	71	35.5
2	Exposure Visit	16	8.0

(Contd...)

Table 5 *(Contd...)*

S. No.	Benefits	Numbers	Per cent
3	Received Financial Assistance Post-Cluster Intervention	60	30.0
4	Received Medical Facilities from Cluster Development Organisation	46	23.0
5	Insurance	32	16.0
6	Received Credit Card	26	13.0
7	Bank Account	122	61.0
8	Received Tool Kits from CDO/CDA	88	44.0

Social Sector Development

Social sector development is an important dimension of pro-poor cluster development initiative in India. The cluster initiative at Barpeta Cane and Bamboo Craft Cluster brought new transforms in terms of social sector up-liftment. The formation of SHGs brought better coordination among the cluster artisans and establishing forward and backward linkages with financial and educational institutions, development agencies, government departments, suppliers and marketers, etc. The collaboration of cluster implementing agency with IIT Guwahati assisted the artisans in product diversification by developing new improved design and revival of traditional designs. Through design and training inputs, cluster artisans have been assisted to produce high quality and advance marketable products which added a completely new product range in the cluster for different market segments. Cluster implementing agency have taken up initiative in marketing the cluster products by setting up different showrooms and participation in the national and international trade fair and exhibition.

Prior to cluster intervention, artisans under study were completely dependent on traders, contractors and middleman for both personal as well as 'enterprise' related financial requirements. Artisan's linkages with financial institutions and banks reduced the dependency rate on moneylenders after the CDI. Formation of SHGs in cluster villages initiated some economic activities like dairy farm, poultry firming, micro-finance, etc., which generate extra income to the households. Participation of women into SHG is more than male counterpart.

Conclusion

The present study on Barpeta Cane and Bamboo Craft Cluster shows that significant improvements occurred in rural livelihood in terms of employment and income generation in the study area. The cluster intervention by KVIC strengthened the artisanal sections by giving emphasis on traditional skills based household industries, empowering women, increasing social capital - trust, capacity building, networks, backward and forward linkages to the cluster households.

The rural non-farm economic (RNFE) activities hold special importance for women

in rural areas of Assam. Women are mostly participating in part-time artisanal and weaving activities in their household unit. In the study area, female members have become a key actor in the economic transition. The participation of female worker has considerably increased through the advancement of vocational training, formation of cooperative societies and SHGs. Women who were earlier engaged in household activity now have become important earning members of the family. It was found that more than 40 per cent of the females are actively engaged in artisanal work in Barpeta Cane and Bamboo Craft Cluster. The artisanal sub-sector exhibits almost equal ratio of female and male worker. Women are culturally less mobile therefore, artisanal activity as a household unit became an advantage to them as they are employed closer to their living abodes.

Recent studies observed that formal capital plays a vital role in the growth of RNF sector. Poor access to formal credit is a major constraint to the development on RNF sector. Successful implementation of CDI at Chakchaka block of Barpeta district significantly minimised the financial constraints for the cluster artisans. Linkages with financial institutions and Banks (Assam Gramin Vikash) brought some amount of financial stability to the cluster's artisan.

Existing literature shows that lack of education and skills development is the key barrier for the rural poor especially women to acquire gainful employment. CDI at Barpeta Cane and Bamboo Craft Cluster facilitated training for skill development to the artisans which eventually increased the work efficiency. Linkages with the technical institutions (Indian Institution of Technology, Guwahati) helped the cluster artisans in the development of new product and reviving the existing traditional items. Product diversification resulted in better market for the cluster product. Facilities provided through CDI inspired the households under study area to take up artisanal activity as a primary source of occupation.

In the case study it was observed that monthly household income increased substantially in post-cluster intervention in the study area. With increased income, artisans are now able to address their basic needs and social infrastructure in a better way. Besides, social capital is another important variable for empowerment approaches that potentially plays an important role in poverty reduction. Poor often lack the ability to bridge and link social capital. They are not often connected to other groups and civil society or the State. They can be only empowered when groups connect with each other, across communities, form networks or associations and begin to influence local decision making as well as gain collective bargaining power with suppliers of raw materials, buyers, marketers and financiers, etc. The implementation of CDI eventually empowered the rural poor artisans through increasing their choice of suppliers and buyers of the artisans under study. Their collective activity helped to access information, inclusion, participation and accountability. Therefore, by taking evidence from worldwide experience and present case study, it can be said that if rural non-farm activities are given a formal structure in the rural set-up, they can be a potential source of income and employment generation and act as an instrument for poverty alleviation.

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JRD 3

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CAPTURE FISHERY AND RURAL SOCIO-ECONOMIC DEVELOPMENT- A STUDY OF THREE FISHING VILLAGES OF CACHAR DISTRICT, ASSAM

*Pinki Purkayastha**
and
*Susmita Gupta**

ABSTRACT

An investigation was carried out in three fishing villages, namely Amtila, Boiragitila and Lalmati of Cachar district, Assam to generate baseline information on status of capture fishery and how it moulds socio-economic life of rural fisherfolk. The study revealed low CPUE and low income leading to increased poverty and its consequences. There is always a cyclic relationship in between production (based on capture per unit effort) and poverty. Once production is increased, proper marketing strategy can lead to poverty alleviation and once poverty is alleviated, production can be increased by using scientific measures and modern technologies. Application of sustainable practices for fisheries management can only restore and increase productivity, facilitating long-term capture fisheries and socio-economic condition of fishermen leading to rural development.

Introduction

Villages are principally food producing units. They produce not only for their own subsistence, but also for the urban societies, which are non-food producing units. Rural economy includes activities that are either agricultural or closely linked with agricultural production i.e. allied agricultural production activities. In the process of production, rural workers enter into various kinds of economic relationship with each other. Through these relationships, cultivators and food producers get access to land, credit, labour and other resources and landless labourers get access to employment. Fishing is one of such economically important allied agricultural production activities. Fish is highly nutritious, so even small quantities can improve people's diets (FAO, 2007a). They can provide vital nutrients absent in typical starchy staples which dominate poor people's diets (FAO, 2005a). Fish provides about 20 per cent of animal protein intake in 127 developing countries (Thorpe et al., 2006). Fisheries can also contribute indirectly to food security by providing revenue for food-deficient

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countries to purchase food. The number of people directly employed in fisheries and aquaculture is conservatively estimated at 38 million, of whom over 90 per cent are small-scale fishermen (FAO, 2005a). In addition to those directly employed in fishing, there are "forward linkages" to other economic activities generated by the supply of fish (trade, processing, transport, retail, etc.) and "backward linkages" to supporting activities (boat building, net making, engine manufacture and repair, supply of services to fishermen and fuel to fishing boats, etc.). There are three categories of rural poor in India. First, those who have landed properly, but due to lack of proper facilities they are poor. Second, those who have skill but no landed property for production purpose and fighting with poverty due to lack of opportunities and lastly those who have neither skill nor land. Fishing is such a production activity which can provide economic benefit and employment to all the three categories of poor thereby leading to poverty alleviation and upliftment of rural socio-economy.

Fishing is not a new practice in India. Evidence of fishing was found among the pre-historic artifacts (Allchin and Allchin, 1982 ; Sarkar, 1984), in the artifacts of Harappan pottery , motif and civilisation of Indus valley (Bagchi, 1955; Allchin and Allchin, 1982) and 'Asokan' epigraphical materials (Hora, 1950 ; Thapar, 1961). Some fishermen are specialised and rely entirely on fisheries for their livelihood, while for many others, especially in inland fisheries and developing countries, fisheries form part of a diversified livelihood strategy (Allison and Ellis, 2001). In India, according to Sinha and Srivastava (1991), the return from aquaculture can be up to fifteen times higher than traditional agriculture. Fishermen, researchers and managers commonly rely on measures of fish abundance based on catch per unit effort (CPUE) rather than on fish population estimates, because CPUE require less effort and expense (Harley et al., 2001). The "catch" portion of the measure may be expressed as the number or weight of the entire catch, a selected subset of the catch, or a particular species in the catch whereas the "unit effort" portion of the rate usually refers to the time. A decline in CPUE over a time period is usually an indication that stocks are declining (Morgan and Burgess, 2005). In Assam, floodplain wetlands constitute important fishery resources as 23.15 per cent of area of Assam is floodplain (ENVIS-Assam, website). Cachar district occupies a geographical area of 3,786 square kilometers and wetlands are known to cover 10419 ha i.e. 2.75 per cent of its total geographical area (NWIA, 2010). Wetlands provide ecological security to biodiversity as well as economic security to large number of fishermen of the entire area. Present investigation was carried out in three fishing villages, namely Amtila, Boiragitila and Lalmati of Cachar district, Assam to generate baseline information on status of capture fishery and how it moulds socio-economic life of rural fisherfolk.

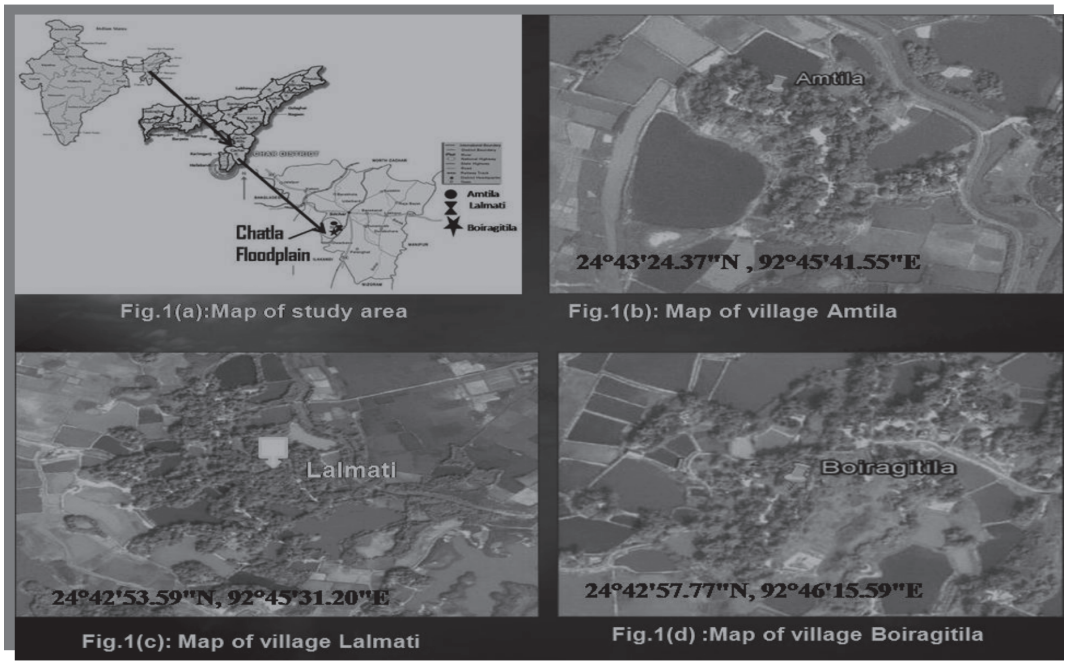
Methodology

Study Area: Present study was carried out in three villages, namely Amtila (24°43'24.37"N, 92°45'41.55"E), Lalmati (24°42'53.59"N, 92°45'31.20"E) and Boiragitila (24°42'57.77"N, 92°46'15.59"E) of Cachar district, Assam. All the three villages are located in Chatla floodplain area (Figure 1). Chatla floodplain is formed by the meandering river Ghagra, a tributary of river Barak. Chatla floodplain has

32 villages, 1500 fish ponds and 12 large water bodies locally known as Beels. Almost all male inhabitants of the area are fishermen by profession. They belong to Kaivartya community, the traditional fishermen community of Bengal and Assam.

Data Source: This study is based on primary data collected during March to September 2011. Information on fish capture per unit effort (CPUE) and socio-economic condition was collected by preparing interview schedule with structured and semi-structured questions, extracting data (ESCAP, website; econdata, website) from 90 respondents (30 respondents from each of the three villages), who are fishermen by profession, each representing a particular

Figure1 : Map of the Area Studied



family. Different other methods were applied for data collection which include Participant observations, Focus group discussions (FGD) and Household level case studies.

Results and Discussion

The fishermen community is commonly understood as group, fishing in some area and engaged in more or less the same pattern of fishing (Biswas, 1996).

CPUE: In the current study, 95 per cent fisherfolk from the village Amtila and Boiragitila, reported their CPUE within the range of 0.5-1kg/ha /individual, whereas remaining 5 per cent fishermen from both the villages reported their CPUE within the range of 1-1.5 kg/ha/individual. In the village Lalmati, 85 per cent fisherfolk reported their CPUE within the range of 0.5-1kg/ha / individual whereas 10 per cent reported their

CPUE within the range of 1.5-2 kg/ha/ individual and remaining 5 per cent reported their CPUE within the range of 2-2.5 kg/ha/ individual. Though, Lalmati was found in a better condition than the other two villages, still this is also a fact that maximum number of fisherfolk from each of the villages reported their CPUE within the range of 0.5-1kg/ha/individual (Table 1). A preliminary study by Das (2002) on the capture fishery potential of Chatla pointed out the stressed environmental status of Chatla wetland. Since water of the wetland is conducive for fish production (Laskar and Gupta, 2009; Purkayastha and Gupta, 2011), the low CPUE revealed from the study can be attributed by high population growth rate, siltation, overfishing and loss of species. High population growth rate and deforestation in the catchments areas contributed to the disruption of natural ecosystems through the clearing of the catchment areas due to reclamation for agriculture, urbanisation and over-exploitation reducing the economic value of the lake. Over-fishing is one of the important factors behind low CPUE. During seasonal flood with community fishing right in Chatla, over-fishing does occur in fisheries unaware of the consequences of their actions or unwilling to change because of

Table 1 : Percentage Composition of Range of Capture Per Unit Effort (CPUE) (kg/hr/indiv) in Amtila, Lalmati and Boiragitila

CPUE	Amtila (%)	Lalmati (%)	Boiragitila (%)
0.5-1 kgs/hr/indiv	95	85	95
1-1.5 kgs/hr/indiv	5	0	5
1.5-2.0 kgs/hr/indiv	0	10	0
2.0-2.5 kgs/hr/indiv	0	5	0

poverty despite evidence of declining fish stocks (Das , 2002; Laskar and Gupta, 2009; Purkayastha and Gupta 2012).

Income: In this survey, 5 per cent fishermen of the village Amtila reported their income within the range of ₹ 3000-3500 per month, 40 per cent fisherfolk reported their income within the range of ₹ 3500-4000 per month, 25 per cent reported their income within the range of ₹ 4000-4500 per month and 30 per cent reported their income within the range of ₹ 4500-5000. Ten per cent respondents from Lalmati area reported their income within the range of ₹ 3000-3500 per month, 50 per cent reported their income within the range of ₹ 3500-4000 per month. Ten per cent respondents reported their income within the range of ₹ 4000-4500 per month and remaining 30 per cent reported their income within the range of ₹ 4500-5000 per month. In Boiragitila, 10 per cent fisherfolk reported their income within the range of ₹ 3000-3500 per month, 35 per cent fisherfolk reported their income within the range of ₹ 3500-4000, and 40 per cent reported their income within the range of ₹ 4000-4500, 15 per cent reported their income within the range of ₹ 4500-5000 per month (Table 2).

Table 2 : Percentage Composition of Fishermen According to Their Monthly Income in Each of the Three Villages Studied

Income per Month	Amtila (%)	Lalmati (%)	Boiragitila (%)
₹ 3000-3500	5	10	10
₹ 3500-4000	40	50	35
₹ 4000-4500	25	10	40
₹ 4500-5000	30	30	15

No. of Individuals: Maximum number of fishermen from each of the three villages (80 per cent from Amtila, 90 per cent from Lalmati and 60 per cent from Boiragitila) reported their families with 5-10 number of individuals (Table 3). In Amtila, 5 per cent reported their families with 1-5 individuals, 80 per cent reported their families with 5-10 number of individuals, 15 per cent reported their families with 10-15 number of individuals. In Lalmati, 5 per cent families are reported to have 1-5 individuals, 90 per cent families are reported to have 5-10 number of individuals, 5 per cent reported their families with 10-15 individuals. In Boiragitila, 10 per cent fishermen reported their families having 1-5 of individuals, 60 per cent reported their families with 5-10 number of individuals, 25 per cent having 10-15 members and remaining 5 per cent with 15-20 number of individuals. So, the income ranges reported from each of the three villages are too low to run the families.

Table 3 : Percentage of Families in the Amtila, Lalmati and Boiragitila According to Family Size

Family Members	Amtila (%)	Lalmati (%)	Boiragitila (%)
1 to 5	5	5	10
5 to 10	80	90	60
10 to 15	15	5	25
15 to 20	0	0	5

Educational Status : In this survey, 60 per cent fishermen from the village Amtila reported their educational qualification up to primary level or LP, 20 per cent up to M.E, 10 per cent reported their educational qualification up to 10th standard, 5 per cent HSLC pass outs and remaining 5 per cent up to HS. In Lalmati, 55 per cent reported their qualification up to LP or primary level, 25 per cent reported their educational qualification up to M.E, 15 per cent reported their qualification up to 10th standard and 5 per

cent reported their educational qualification as H.S.L.C passed. 45 per cent fishermen from Boiragitila reported their educational qualification up to primary level, 30 per cent reported their qualification up to M.E. level, 10 per cent reported their qualification up to 10th standard, 5 per cent H.S.LC passed and 10 per cent reported their educational qualification up to H.S (Table 4). That means, majority fishermen from each of the three villages left their school after class four. In order to deal with poverty, majority children of the area leave their education half way and engage themselves in tea shops, grocery and stationary shops, public transportations, household domestic work.

Table 4 : Percentage Composition of Fishermen from Amtila, Lalmati and Boiragitila According to Their Educational Qualification

Education	Amtila (%)	Lalmati (%)	Boiragitila (%)
Primary level	60	55	45
M.E	20	25	30
10 std.(HSLC. FAILED)	10	15	10
H.S.L.C passed	5	5	5
Up to H.S	5	0	10

Constraints

Present study identified factors like multiple ownership, lack of technical knowledge, lack of quality seed, high price of feed, lack of money, etc., as the main constraints of fish production in the surveyed area. There is considerable evidence of a strong negative correlation between household size and consumption (or income) per person in developing countries (Atkinson and Anthony, 1987). Low CPUE, prevalence of chance factor in fishing activity and family size, all these factors are responsible for adoption of other occupations by fishermen as their primary occupation. Majority fishermen from each of the three villages reported that they have adopted fishing as their seasonal as well as part time occupation (Tables 5 and 6). So, there exist a close relationship beween poverty, family size and CPUE. In a rural area, with lots of potential for capture fishery, it is not very hard to bring socio-economic upliftment if knowledge about scientific methods of fishing is disseminated among fisherfolk of that particular area. Khan et al. (1998) identified that the lack of knowledge about fish culture is one of the most important problems behind low catches. Lack of money is another important reason behind this issue. This fact is also supported by Rahman (2003), who stated that the major constraints of carp farming are lack of money and higher production cost. The rights of poor fishermen to harvest and manage local fish stocks need to be strengthened in order to fight poverty and reduce over-exploitation of threatened coastal and inland

Table 5 : Percentage Composition of Fishermen Who Depend upon Fishing Either as Seasonal or Year Round Activity in Amtila, Lalmati and Boiragitila

Timing of fishing activity	Amtila (%)	Lalmati (%)	Boiragitila (%)
Seasonal	75	85	70
Year round	25	15	30

Table 6 : Percentage Composition of Fishermen Who Adopted Fishing as Their Part Time/ Full Time Occupation in Amtila, Lalmati and Boiragitila

Type of profession	Amtila (%)	Lalmati (%)	Boiragitila (%)
Part time fishermen	80	85	75
Full time fishermen	20	15	25

fisheries (FAO, 2007). Contributing to the eradication of poverty and food insecurity depends on equitable access to resources (Scones, 1998) and according to Viswanathan et al. (2003) the potential advantages of community participation in fisheries management include efficiency and equity. So, community participation in fisheries management along with proper scientific knowledge can only result into increased production in sustainable way.

Conclusion

The study reveals that the status of capture fishery and traditional fishing practices, play important role in socio-economic life of rural fishermen. There exists a cyclic relationship in between poverty and production. Once production is increased, poverty can be reduced. Again, once poverty is alleviated, production can be increased by using scientific measures and modern techniques. Ensuring an appropriate allocation of resources between competing groups within and outside the fisheries sector may result in an improvement in the economic situation of fisherfolk and the generation of economic benefits to the local community. In this context, community participation through active operation of a cooperative unit can be an important step. Such community based effort can reduce the role of middle man providing more and more benefits to the fisherfolk.

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BOOK REVIEWS

India's Tryst with Bt Cotton-Learning from the First Decade by N. Lalitha and P. K. Viswanathan, 2015, Published by Concept Publishing Company Pvt. Ltd., A/15 - 16 Commercial Block, Mohan Garden, New Delhi - 110 059, India pp:294, Price ₹ 950.

The authors make an attempt to relook into the consternation that exists in the genetically modified crops in modern agriculture. The book discusses different topics such as development of agri-biotechnology business scenario, significance of public research institutes with special reference to cotton, institutional arrangements, price control on seed industries, farmers' decisions about Bt cotton adoption and the rising issues of labour scarcity and availability.

The book highlights the significance of current status of both public and private R&D focused on developing different varieties which can perform well under different climatic characteristics with resistance to pest and diseases. The book discusses the emergence of agri-biotech companies in India which was primarily due to liberalisation of seed policies. It also highlights the pressure on land resources and future need of per capita consumption of cloth which indicates the requirement of cotton for present and future generation. It also underscores the importance of increasing the cotton production to the tune of 33.4 million bales which is a herculean task. This situation alarms all the stakeholders of biotechnology and agriculture industries to frame appropriate policies so as to cope up with the growing demand and adopting sustainable approaches for conserving natural resources and preserving environmental quality. The institutional mechanisms should be arranged in such a fashion that every crop should be channelised through environmental sensitivity approach by Ministry of Environment and forest departments throughput the country. In India, Bt cotton evolved as promising variety of cotton for higher returns and reduced expenditure on pesticides and use of inputs. It is emphasised that a collaborative approach is needed to create awareness among farming community about biosafety techniques and using refugee crop in cotton.

However, consideration of risk and uncertainty factors about Bt cotton and adoption of the technology shows that young farmers are ready to take calculated risk if they have proper information on both backward and forward linkages of any agricultural produce. In a nutshell, the small and marginal farmers are very much interested in adopting new technology and acquired the required information about technology which was observed in Gujarat. Further, the study points out about the emerging issues of labour use in cotton cultivation and observes that there is an increase of nearly 10 per cent in cost of cultivation exclusively for human labour.

The book suggests that social, technological and regulatory problems should

be taken care of before advancing for higher mode of action especially in GM crops so that each and every farming community will benefit from the technology. The book explains about the significance of technology in terms of both production and productivity especially cotton which is used as clothing material and majority of farmers are interested in adopting this technology. It also discusses the potential avenues and required institutional framework for smooth regulation of BT cotton technology in India. The book also focused on the significance of public-private partnership approach for seed supply channels through local and international stakeholders which are exclusively governed by regulatory norms of the countries involved in diffusion of the technology to farmers.

The book provides a glimpse of various issues involved in biotechnological aspects in general and BT cotton in particular and will be very useful for all the stakeholders involved in the biotechnology especially GM crops.

Dr. Siddayya

Tank Irrigation of Dry Zones in India: A Sustainable Livelihood by Sebak Kumar Jana, 2014, Published by Concept Publishing Company Pvt. Ltd., A/15&16, Commercial Block, Mohan Garden, New Delhi - 110 059, India, pp: xxiv and 184, Price ₹ 600.

The book makes an attempt to present the effects that research has had in the past and to be continued in future for achieving long-term objective of sustainable livelihood of rural population. There are different kinds of approaches and different ways to measure, particularly groundwater which depends on utility of tank irrigation systems in terms of development, efficiency, management and constraints. The major drawback of inefficient tank irrigation systems is solely due to lack of support among the stakeholders of tank irrigation management communities. On the other hand, particularly in dry zones, groundwater is continuously exploited over the years which created a sort of threat to upcoming generation which leads to huge water scarcity coupled with high investment.

The author highlights the significance of tank based irrigation especially for dry zones in India. The study explores the approaches for sustainable irrigation development, which not only act as surface reservoirs but also contribute towards finding the new tank investment trends, identifying both positive and negative impacts and also having greater share in improving livelihood of rural masses particularly in dry zones of India and more especially in West Bengal.

The book discusses the pattern of irrigation development among study districts in West Bengal. About 68.96, 85.71 and 70 per cent of block-wise decline in tank irrigation was observed in Paschim Medinipur, Bankura and Purulia districts of West Bengal, respectively. It also provides a blue-print of agro-climatic features of districts which can easily identify the changes due to irrigation developments over a period of time after developing tank irrigation structures in and around study area in West Bengal. The profitability analysis reveals different findings based on crops cultivated was observed across the tanks. This also helps in deciding the cropping pattern for increased agricultural

production. It also explained the potential irrigation gap between created and required irrigation for bringing up the land under cultivation.

The author studied the behaviour pattern of beneficiaries regarding willingness to pay for services approach which is very much needed for renovation of existing water structures which has direct influence on cropping intensity, cropping pattern and in turn depends on extent of tank irrigation, conditions and efficiency. All these cumulatively reflect the livelihood status of the rural people residing in the dry zones of India in general and West Bengal in particular.

The author highlighted the significance of groundwater in association with tank irrigation to refill the groundwater capacity of soil in dry zones. A separate board with the help of district magistrate is looking into the issues on tank irrigation through implementation of *Tank Improvement Act* for renovation of tanks. These kind of activities not only improve the dry zones in long run, but also solve the problem of negative externalities in utilising and managing the properties of public resources on sustainable basis. The study focused on the significance of public-private partnership approach for maintenance of irrigation management through local capacity building and enhancing skills of the stakeholders. The study also emphasised on technical know-how approach to tackle the problem of knowledge information of rural masses which can be addressed through *Integrated Natural Resource Management* (INRM) approach.

In a nutshell, the author identifies the significance of participation approach in tank management which is very crucial in the present era of managing natural resources. This acts as a prerequisite for sustainable development of tank irrigation.

The book will be a useful reference source to researchers, scholars, academicians, planners, policy makers and civil societies in India and elsewhere working in the field of irrigation management.

Dr. Siddayya

North South Divide - Lessons from the States and Regions by Samuel Paul and Kala Seetharam Sridhar, SAGE, New Delhi, pages 235, Price ₹ 850.

This scholarly volume, written by the two eminent authors explained lucidly about the economic divide between the States located in northern India vis-à-vis southern part of India. By analysing proximate and foundational factors (as the study mentioned), authors have explained the historical experience of two regions – Southern and Northern regions of India.

The book is spread over six chapters with rich bibliography and many graphs and Tables. In most of the cases recent data have been used to explain the facts. The introductory chapter covered many issues pertaining to regional disparities. It was highlighted that China's situation based on Human Development Index (HDI) improved substantially during 2008-2013. In addition, HDI improved in Sri Lanka, Bangladesh and Nepal in spite of less per capita income than

India. Further, among the BRICS nations India stands at the bottom. Second Chapter included review of literature pertaining to regional disparities. Here the authors focused on three issues viz. (i) why and how 'break appeared in the growth rate of Indian States' (ii) inter-State growth differentials and (iii) studies pertaining to convergence relying on Indian and International experience. In Chapter-III, an analytical framework was designed, tested and fine-tuned based on the data of Tamil Nadu and Uttar Pradesh. Subsequently, the same framework has been applied to Southern and Northern regions. While studying Tamil Nadu and Uttar Pradesh, significant variations, of late, were observed in the per capita income and poverty incidence. The causative factors dividing north and south are explained in Chapter-IV. In this regard, literacy rate, proportion of graduates, trained manpower, IMR, life expectancy and total fertility rate interalia have been taken into account for the comparative study. In addition, factors like infrastructure, urbanisation, efficiency of resource utilisation, quality of governance, political stability (tenure of Chief Ministers) etc., were also included in the comparative study between Tamil Nadu and Uttar Pradesh.

A thorough analysis of data for the comparative study between the Southern region versus Northern region has been made in Chapter-V. It is pertinent to mention that the Southern region refers to four major States viz., Tamil Nadu, Karnataka, Andhra Pradesh and Kerala.

The Northern region covered the States of Uttar Pradesh, Bihar, Madhya Pradesh, and Rajasthan (originally known as BIMARU States). For the purpose of study, different indicators like per capita NSDP, poverty ratio, agricultural output, IMR, public investment, access to basic services and assets, etc., were taken into account. With secondary data, a lucid analysis has been made between the two regions. In the concluding chapter, the authors interalia recorded the findings that incidence of poverty in the South had declined at a faster rate than in the Northern region. With the increase in per capita income, quality of life of the people living in Southern region improved. While focusing on governance, the authors observed an appreciable improvement in the Southern region. The authors lucidly concluded that 'once there is political will, there are many such avenues that our lagging States can pursue to shake off the burden of history and move forward'.

The volume is useful one for the researchers, academicians, policy makers and others. Such analytical study is seldom found in the recent years. The authors should be appreciated for bringing out such a worthy volume.

Dr. E.V. Prakash Rao

Agricultural Diversification and Food Security in the Mountain Ecosystem – A Case Study of Uttarakhand by Prof. Noor Mohammad and Dr. S.C. Rai, 2014. Published by Concept Publishing Company Pvt. Ltd., A/15 – 16, Commercial Block, Mohan Garden, New Delhi - 110 059, India, pp. 284, Price ₹ 900.

This book has been published by Prof. Noor Mohammad and Dr. S.C. Rai, based on the study conducted in Uttarakhand with its

heterogeneous geographical environment---physical, techno-economic and socio-cultural milieu which provides huge potential for agricultural development, implementation of various programmes and policies for agricultural development which has brought about changes specially in agricultural land use; its huge potential for agricultural diversification due to diversified physiographic conditions leading to bio-diversity; and the southern part of the State having adopted almost all modern agricultural practices and inputs has started facing its adverse consequences. The study is based on primary and secondary data. The primary data were collected from 538 households chosen from 30 selected villages lying in different physical regions of the State and secondary data were collected from published and unpublished records of the government and semi-government institutions. This book comprises eight chapters. In the introductory chapter, authors compiled the information related to green revolution including use of modern farm implements, chemical fertilisers, economical inputs, etc., that brought about a spectacular change in almost every parameter of agriculture. In fact, the intensification of farming has a great natural base degradation potential which needs substantial change in farming systems. Keeping such questions in view, the study was carried out in Uttarakhand to realise six objectives; review of literature was done with emphasis on substantive conceptual literature, food security, agricultural diversification etc., and also included a few case studies. In Chapter-2, the authors discussed the research design and database, data processing and its presentation. Prof. Noor Mohammad and Rai discussed the physical division, drainage systems, climate, natural vegetation, soils, etc., as well as the demographic characteristics of Uttarakhand State of India in detail. In this chapter only those aspects of geographical environment were considered which are interlinked with one another seeking to comprehend the agricultural diversification and food security situation in the State.

In Chapter-4, the general pattern of land use for the agricultural year 2005-06 was discussed in some detail including forest area, land not available for cultivation, other uncultivable land excluding fallow land, net sown area and spatial pattern of irrigation. The availability as well as the existence of a huge potential of water resources makes it incumbent and imperative for their national utilisation so that not only agricultural development takes place but also agricultural practices, cropping pattern and agricultural activities may be scientifically diversified.

Authors discussed the dynamics of agricultural landuse and its diversification in Chapter-5. The spatial pattern of land use 2005-06 was compared with that of 1992-93 and 2003-04. They discussed five major categories of land use which have been systematically analyed focusing on those aspects which could help in agricultural diversification and food security. The status and role of irrigation was also critically examined in this Chapter. Crop combinational analysis was discussed at length by ranking of crops and crop combination regions. Agricultural diversification has been measured as the percentage strength of all the crops with reference to gross cropped area calculated

using Gibs-Martin formula to work out the index of crop diversification.

In Chapter-6, authors discussed agricultural diversification and food security---- AMeso Level Analysis. In this Chapter, the authors elaborated the concepts of food security, indicators of food security, database and methodology, spatial pattern of food security, district-wise consumption unit, spatial pattern of consumption units, carrying capacity of land, food security and food security in monetary value. The authors concluded that a total of nine districts covering nearly 73 per cent of the districts have food secure status. There are three districts viz., Rudraparayag, Bageshwar and Almora which have the status of food security, while two districts of PauriGarhwal and TehriGarhwal have moderate level of food security. The largest number of districts i.e., four districts of Dehradun, Hardwar, Nainital and US Nagar constituting nearly 31 per cent of the total districts have high level of food security with more than ₹ 15,000 per consumption unit per annum.

In Chapter-7 captioned, Agriculture Diversification and Food Security --- A Micro level Analysis, the authors examined the personal and household characteristics, farming characteristic of households, spatial patterns of agricultural landuse, agricultural diversification ---- livelihood based levels of food security were discussed at length emphasising the ground realities.

While summing up, the study offers several suggestions. The study of level of food security has been analysed at household and village level with reference to calorific and monetary value. The study revealed that nearly 50 per cent of the households are food insecure. Out of this, one-third are severely food insecure, while the other two-thirds are insecure. Among the food secure categories, nearly 27 per cent farmers are very high food secure while only one-third are highly secure. The remaining 14 per cent are moderately secure. However, the overall status of food security is not satisfactory. The status of food security of households with reference to monetary value is better and satisfactory because the farmers increased their purchasing power by adopting diversified activities.

This book will be of immense help to academicians, particularly research scholars in the field of agriculture besides those involved in policy formulation and administration of various governmental schemes for evolving effective strategies in gaining food security particularly in the mountainous eco-system.

Dr. E.V. Prakash Rao

Indian Economy in Transition : Essays in Honour of C.T.Kurien, Edited by S.Janakarajan, L.Venkatachalam, R.MariaSaleth SAGE Publications Pvt. Ltd., Price ₹ 995.

India has achieved an impressive economic growth since the introduction of LPG policies during 1991. The economic transition paved the path for much greater role of private sector, enhanced flow of FDI's and balanced terms of trade. However, the way in which economic transition is achieved and the process of globalisation is a mixed blessing in view of many economic, social and cultural side effects. This volume is published in honour

of Professor Christopher Thomas Kurien who is among the few economists in India who made a lasting contribution to economic reach and policy. It covers some of the key issues and challenges that have emerged during and after the process of economic transition in India. In the introductory chapter on "Indian Economy in Transition : Context and Overview of Issues", the authors set the stage and context and provide an overview of 14 chapters that are included in this volume. They questioned the issue of effectiveness of economic transition in achieving the social and welfare goals and the role of ecosystems in sustaining the economic growth.

In the first chapter on "Globalisation and Indian Economy: Issues and Concerns ", the author while assessing the country's experiences and concerns in participation in the global regimes argued that globalisation have not benefited the poor countries in any substantial manner in reducing poverty and inequality. The chapter concludes with an emphatic observation that in most of the trade negotiations the agenda is formulated by the developed world,with least priority given to issues concerning environment and climate change. In the chapter on "Food Price Inflation and Public Procurement : The Indian Experience", the author tried to identify the nature and cause of food price inflation in India by looking at long run and short run aspects of rising food prices. The author argued that the fruits of growth should reach the poorest which improves their purchasing power rather than mere increase in production and productivity of foodgrains. Agrarian distress, farmers' suicides and food security are the pressing concerns of the agrarian economy in India. In the chapter on "Agrarian Change under Reforms: A Case Study of Tamilnadu 1980-2025", the author discusses the agricultural performance of Tamilnadu in comparison with India during the period 1980-2005 using both aggregate and village level data collected through field surveys since 1970's and subsequent surveys. One of the major constraints, as observed by the author in this chapter, was limitation in expansion in irrigation in Tamilnadu which constraints agricultural productivity in the State. The same has been supported substantially in the chapter on "Is farming profitable to farmers in India ? Evidences from Cost of Cultivation Survey Data" where the author by using the cost of cultivation data for six important crops for the period 1975 -2007, demonstrated that the farmers have incurred losses despite the increase in production and productivity particularly during post-1990's mainly due to the increase in private investment in irrigation.

There are many studies related to disparity in employment pattern, wages paid and employment security between men and women. In the chapter on " Measuring Labour Market Insecurity in Rural India : A Gendered Analysis", the authors focused on much neglected area of research in labour market i.e labour market insecurity for rural women by constructing a labour market insecurity index. The chapter on "Education for All in India: Issues, Policies and Imperatives", brings to light an important aspect of school education namely,"School Life Expectancy'(SLE). Through the estimates that are provided across geographical regions of India it is suggested that policies should go beyond conventional measures such as budgetary allocation and it

is imperative that one looks into issues such as 'enrolment rates, dropout rates and SLE and also focus on quality of schooling and learning outcomes. Ageing is already an important issue across developed world and emerging to be a significant challenge for the populous countries like India and China. The chapter on "The Emerging Ageing Scenario in India, in 2001-15", the author by projecting the emerging scenario on fertility, mortality and migration rates for the next 100 years addresses an important policy issue regarding social security cover and welfare measures for the growing elderly population in this country. The impacts of urbanisation fall differently on urban and rural areas and differently on different segments of people which has been brought out by the chapter on " Impacts of Increased urban demand for water on livelihood resilience in peri urban areas of Chennai". Findings presented in the chapter indicate that economic growth and the process of urbanisation result in a situation whereby some social groups are distinct winners but others are losers.

Air and water have natural regenerative capacity and can accept certain amounts of pollution loads from anthropogenic activity without affecting themselves. If the demand for these services exceeds the supply, it leads to degradation of the environment. It is therefore, important to look for instruments and institutions to reduce the demand for waste disposal services to their natural levels of supply. This is examined in the chapter on "Design of Economic instruments and participatory institutions for environmental management in India". The chapter on "Household level pollution in India : Patterns and Projections" analyses the trend and pattern of fuel use at household level in India and estimates the relationship between income and pollution and points out the severe health burden falling in particular on women and children arising out of the constant use of fuelwood not by choice but due to compulsion. Institutional reforms in the water sector in India have been a much debated subject especially with the involvement of foreign donor agencies in this area. The chapter on "Market based institutional reforms for water allocation in India: Issues and the way forward" discusses various aspects of market based institutional reforms with national and international experiences and concludes that market based institutional interventions are capable of generating efficient equitable and sustainable water allocation mechanism. The chapter on "Millennium Development Goals : How is India Doing", evaluates the MDGs as a framework for measuring development and assesses how India is doing in terms of the MDGs and observes that while poverty reduction is on track, regional disparities pose a challenge.

Discrimination and governance are two major issues highlighted in the chapters above. The same is well presented in the chapter on "Social discrimination in India : a Case for Economic Citizenship" which explored the reasons whereby individuals with the same endowments but differing in social status groups command different tangible returns. The author analysed social discrimination and its manifestation and suggested possible conceptual strategies to tackle it. He further observed that different types of discrimination in Indian society is institutionalised through

several formal and informal organisations regardless of principles of equality as laid down in the Constitution. In the last chapter on "Rural Poverty : Policy and Paly Acting Revisited : why doesn't the Indian State do better in Regard to Poverty reduction", the author discusses the different aspects and concerns pertaining to democratic governance in India. The author observed that the middle class people who usually are most capable of ensuring accountability of politicians are gradually withdrawing from using public services and concludes that the drive for progressive social legislation has come through judicial activism rather than through a political process.

The volume represents a wide canvas of issues and challenges that have emerged in the process of economic transformation and dominating the development scenario in India during the past two and half decades. The chapters included in this volume lead to case of renegotiating democracy to deliver fundamental services. While trying to answer some of the questions which can become the basis for change in development policy, the chapters raise many questions, which give direction for future research.

Dr. Ch. Radhika Rani

Microfinance India, The Social Performance Report 2013 By Girija Srinivasan, 2014, pp.156, Price ₹ 995.

Microfinance sector has grown rapidly over the past few decades. Nobel Laureate Muhammad Yunus is credited with laying the foundation of the modern MFIs with establishment of Grameen Bank, Bangladesh in 1976. Today it has evolved into a vibrant industry exhibiting a variety of business models. Microfinance Institutions (MFIs) in India exist as NGOs (registered as societies or trusts), Section 25 companies and Non-Banking Financial Companies (NBFCs). Commercial Banks, Regional Rural Banks (RRBs), cooperative societies and other large lenders played an important role in providing refinance facility to MFIs. Banks also leveraged the Self-Help Group (SHGs) channel to provide direct credit to group borrowers. With financial inclusion emerging as a major policy objective in the country, Microfinance occupied centre stage as a promising conduit for extending financial services to unbanked sections of population. At the same time, practices followed by certain lenders subjected the sector to greater scrutiny and need for stricter regulation.

The concept of Social Performance Measurement (SPM) in microfinance evolved significantly since 2005 when Consultative Group to Assist The Poor (CGAP), the Argidius Foundation, and the Ford Foundation brought together leaders across the industry to agree on a common social performance framework and development action plan. The book on The Social Performance Report within the microfinance sector includes a critique on the SHG-bank linkage programme when benchmarked with the standards and practices of responsible finance. This has also been supported by an additional sample study of 600 SHGs across three States (Madhya Pradesh, Bihar, and Karnataka) conducted in partnership with GIZ and IFMR Research. The report brings in, apart from the national trends, the key international developments in social performance management (SPM).

The book is divided into nine chapters. The first chapter focuses on the overview of the microfinance sector. The chapter discusses about several positive changes that have sharpened the focus on responsible lending as well as customer protection within the MFIs. It discusses about SHG-Bank linkage programme, progress of MFIs, regulations, innovative initiatives by private sector banks, governance and social performance management, gender balance in boards & staff, responsible financing, the role of MFIs & SHGs in financial inclusion. The author concludes by saying that MFI can improve on responsible finance practices and expand their social performance ambit, if other stakeholders support them in improving internal systems, training of staff, strengthening of boards, establishing quality monitoring and review systems, and invest in customer-friendly product development.

In the second chapter, the author argues that investors and lenders demanding responsibility should make use of their power to influence MFIs to respond better to customer needs, establish higher levels of customer protection, and ensure positive client-level outcome with the vulnerable people as ultimate customers. He brings out certain innovations by private banks in this regard. He writes about how social performance can be incentivised. In the third chapter, he focuses on responsible finance standards and assessments in which the tools and methodologies to be followed for maintaining responsible finance standards, the Indian and global initiatives which have shaped the responsible finance agenda, aspects, and methodology associated with each, developments during the past year, extent of adoption of practices by the sector, and views of lenders and other stakeholders are examined.

In the fourth chapter, the author focuses on measuring and reporting social performance through Micro Finance Information Exchange (MIX) which has created a platform for MFIs to report on the Social Performance and produce analytical reports on trends in SPM. In the fifth chapter, he discusses about responsible financing practices in SHG-bank linkage programme. This chapter draws from the recent studies on SHG-bank linkage programme apart from interviews with executives and senior officials of banks, MFIs, SHPIs, State Rural Livelihood Missions, Women Development Corporations, Capacity building institutions, industry leaders, etc.

The sixth chapter on regulations and responsible microfinance discusses about the regulations brought in force by the RBI in 2011. The seventh chapter on human resource practices in microfinance institutions deals with the HR practices adopted by different organisations which influence the value systems and process of delivery of its products and services. It focuses on manpower planning, organisation structure, recruitment, attrition levels, capacity building, performance evaluation systems, grievance redressal, etc. The eighth chapter presents case studies of some unique institutions which have contributed to improved customer comfort and better quality of service within a restricted environment and established a different and customised model of institutions with suitable products and processes. The ninth chapter draws the conclusions from all the chapters.

The book gives an analysis of social performance framework, its measurement, regulations and case studies. It provides for a comprehensive reading which will attract the researchers, planners, policy makers, social workers, economists and rural development professionals interested in microfinance sector.

Dr. N.V. Madhuri

Trend Magnitude And Dimensions Of Inequality in Post-Reform India, Edited by Rajkishore Panda & Rajkishor Meher, 2015, pp.300, Price ₹ 900.

The post-reform India presents a scenario of higher economic growth with reduction in poverty. But at the same time, India witnessed widening regional inequalities in the post-reform period. Since inequality is multi-dimensional and affects poverty reduction adversely, the high economic growth achieved in the country during the post-reform period has not shown its discerning impact on poverty reduction equally across States. Post-reform scenario is marked by greater regional inequality resulting in poverty reduction remaining uneven across States. On the extent of inequality, the all-India level differs from that at the State and sub-State levels. More so, inequality across regions differs on the basis of indicators used and statistical tools applied in measuring inequality. There is often debate among academicians, policy makers and non-government agencies in reducing inequality in the country. This book brings together the research papers of distinguished social scientists and researchers dealing with inequality in its different dimensions.

This book is a collection of papers presented in a National Seminar on "Trend, Magnitude and Dimensions of Inequality in Post-Reform India" organised by Nabakrushna Choudhury Centre for Development Studies, Odisha on the occasion of its Silver Jubilee Celebrations. The papers by economists, social scientists, planners and policymakers focus on the rising inequality in the country in recent years.

The papers in the book discuss various issues under six broad sub-themes: (i) Economic Development Vis-a-Vis Trend and Magnitudes of Inequality in Contemporary India, (ii) Genesis of Inequality in Indian Society : Economic, Social, Cultural, Religious and Political, (iii) Dimensions of Inequalities in Post-Reform Era: Income, Health, Education, Gender-based and Ethnic-based, (iv) Spatial and Sectoral Aspect of Inequality: Interstate, Intrastate, Rural-Urban, Agricultural, Manufacturing and Tertiary Sector, Organised/ Formal Versus Unorganised/Informal Sector, (V) Inequality, Quality of Life and Environment, and (vi) Process and Measurement of Inequality: Policy Issues, Measures and Implementation. There are fourteen papers in all, which are divided under this six broad sub-themes.

The paper on 'Structural Change and Inclusive Growth in India' examines the change in occupational structure in the country. The paper argues that in most of the developed countries, after a decline in agriculture, there is an increase in industrial development because along with growth, income elasticity of demand for agricultural products becomes low, while there is increase

in demand for manufacturing goods and more so for services. In the context of the above structural changes, the paper focuses on five issues, i.e. the rate of growth of the economy, changes in poverty structure, scope for additional employment opportunities, the extent of inequality and the level of human development.

The paper on 'Economic Growth, Inequality and Poverty in Odisha' examines the economic growth in the State of Odisha, how it affected the poor and how the income distribution in the State changed. The paper on 'Economic Inequality and the Kuznets Process: An Indian Recast' shows an Indian profile to the set of issues raised by Kuznets in his Presidential lecture of American Economic Association in 1954 on inequality.

The paper on 'Political Implications of Inequality in Post-Reform India' is an attempt to understand the political implications of the growing inequality. The analysis is at two levels: the micro-level which deals with unequal access to resources; and at a macro-level which deals with regional inequalities leading to tensions in India's federal polity. The paper on 'Inequality – Growth Link in the Post-Reform Indian States : Role of Human Capital' explores the growth– inequality link in the Indian States in the post-liberalisation era through the functional role of human capital. The paper on 'Regional Inequalities in Human Development in India' evaluates the relative performance of fifteen major Indian States on human development with special reference to education and health.

The paper on 'Post-Reform Economic Growth and Regional Inequality in India' goes through a brief review of earlier studies concerning economic growth, income inequality, and convergence/ divergence, and presents the methodological aspects for measuring the growth and income inequality. The paper on 'How Inclusive is Odisha's economic growth?' examines whether the current growth process of Odisha is inclusive or exclusive. The paper analyses the growth trend of gross State Domestic Product (GSDP) of the Odisha State and its composition and examines whether the growth is spatially inclusive by comparing the growth of 30 districts. It also provides the inter-district disparity in Monthly per Capita Consumption Expenditure (MPCE) and examines whether the output growth has reduced poverty among various social groups and regions. The paper on 'Consumption Inequality in India: An Analysis of New Trends' is an attempt to examine patterns of consumption inequality and causes of inequality in India.

Providing a comprehensive and analytical review of various dimensions of inequality in post-reform India, this book will attract the researchers, planners, policy makers, social workers and economists interested in inclusive growth and inequality issues.

Dr. N.V. Madhuri

Gender Issues in Water and Sanitation Programmes: Lessons from India, Edited by Aidan A. Cronin, Pradeep K. Mehta and Anjal Prakash, 2015, Published by Sage Publications India Pvt. Ltd., B1/1-1, Commercial Block, Mohan Cooperative Industrial Area, Mathura Road, New Delhi - 110 044, pp.313, Price ₹ 995.

A National Conference on Women- led Water Management was organised by the SM Sehgal Foundation in partnership with UNICEF India in November 2012. The conference shared success stories related to women's leadership and participation in water management and sanitation, needs assessment, planning, decision making, implementation, monitoring and social audit. This book collated good experiences and is an excellent documentation of work on gender relations in the water and sanitation sectors.

The book is divided into 4 sections and 16 chapters. Section one provides a conceptual overview of gender in the water and sanitation sector in India. Chapters in this section focus on exploring ways to incorporate gender dimensions in water management and sanitation agendas in India.

Section two provides case- studies involving women in the water sector and discusses women's participation, roles and voices. Section three focuses on the cases of women's participation in the sanitation sector with the focus on innovative ways in which women's role and participation can be upscaled.

Chapter one of section one, by Prakash, Cronin and Mehta gives the introduction of achieving the desired gender outcomes in water and sanitation. They focus on exploring ways in which gender dimensions can optimally be included in the water sector. Chapter two by Lala, Basu, Jyotsna and Cronin reviews the existing conceptual frameworks and current practices to strengthen the implementation of WASH programmes in India. They review a series of gender frameworks and critique timelines and processes required for strengthening gender outcomes in the WASH context. The chapter also presents potential indicators to measure the effectiveness of each phase.

Chapter three by Kabir, Vedantam and Kumar assesses the vulnerability of rural households due to lack of sufficient water for domestic and productive needs and shows how multi-use approach of water can help. The authors developed an index that helped to compute the vulnerability of households for problems associated with lack of water for domestic and other productive needs. The proposed index has six sub- indices in the areas of water supply and use; family occupations and social profile; social institutions and ingenuity; climate and drought proneness; water resources availability; and financial stability. Using the case studies from three regions of Maharashtra, the authors argue that identification of vulnerable households can help in devising systems to reduce the hardship faced by women.

Chapter four by Prakash and Goodrich documents the approaches, outputs and outcomes of a unique initiative called 'Crossing Boundaries' (CB). The project focused on education, impact oriented research, networking and advocacy as a combined effort to contribute to a paradigm shift in water resource management in four South Asian countries. This chapter documents the regional, collaborative, partnership-based capacity building initiatives undertaken by the project.

Chapter 5 of section one by Sinha, reviews the current capacity building initiatives of WASH in India from a gender and

equity lens. The chapter suggests that the training curricula lack focus on gender issues and the recipients of this training are largly men.The author raises several critical questions on training.

Section two examines successful case studies involving women in water management and has six chapters. Chapter 6 by Wani, Anantha and Sreedevi identifies critical factors essential for enhancing gender participation through watershed programmes. The authors argued that watershed programmes should look beyond land development activities to address rural livelihoods to make substantial difference in the socio- economic status of women and vulnerable groups.

In Chapter 7, Bastola attempts to understand women's participation in decentralised water institutions established by the Jalswarajya Project in the State of Maharashtra. The chapter highlights how the gender and caste based discrimination that is existing in the society, restricting women to take part in community decision-making process and argues that good water governance projects should address existing social dynamics and then only hope for change of women, poor and marginalised sections can be expected.

Chapter 8 by Mehta and Saxena addresses the questions related to the extent and type of women's participation in water related issues and their implications in Mewat- a water- scarce region. The author highlights the differing gender water priorities in which men stress the distance of water source while women give priority to water quality and source.

Chapter 9 by Chekma, Medeazza Singh and Meshram outlines the impact of fluoride on tribal women in selected parts of Madhya Pradesh and exemplifies interventions involving women which have led to improvements in the nutritional and health situation. The chapter postulates that even though excessive fluoride levels in water affect the entire population, the impact is more profound on women. This is due to the lower nutrional levels of women, their reproductive function and the higher burden of household chores they bear, including fetching water.

Chapter 10 by Mani, Rao, Reddy and Babu details the different processes adopted in mainstreaming gender for improved water use efficiency. It deliberates on the policy matters related to role of women in natural resource management. The chapter presents the case of Andhra Pradesh Farmer Managed Groundwater System (APFAMGS) project, which has successfully implemented an approach to the just usage of available water resources in seven drought-prone districts in the State based on women empowerment.

Chapter 11 by Prasad, Acharya and Basu reviews the implementation of a drinking water supply system project in the eastern State of Jharkhand from gender lens. This project was rolled out through a government-NGO partnership whereby women's SHGs were centrally involved in planning and implementation.

Third section explores experiences from developing and middle income countries in gendered approaches and participation of women in sanitation sector. Chapter 12 by Kale and Zade focuses on dealing with issues of gender role and participation through an

innovative approach developed by Watershed Organisation Trust (WOTR) in the State of Maharashtra. Authors felt that if appropriate and adequate opportunities and institutional spaces are created for women with sound capacity building strategy and financial autonomy, then domestic water availability and accessibility, health and sanitation may be effectively addressed.

Chapter 13 by Medeazza, Jain, Tiwari, Shukla and Kumar presents lessons from the implementation of community-led total sanitation (CLTS) in Madhya Pradesh and shows how women play a decisive role in rendering their community Open Defecation Free (ODF) under the State level sanitation campaign.

Chapter 14 by Saxena, Mujumdar and Medeazza discusses a new and innovative approach-tailored towards training women to provide inclusive and women centric WASH services. The chapter draws from the learning of 80 camps held at Gram Panchayat level in Madhya Pradesh.

Chapter 15 by Mehrotra and Singh, examines the role of ASHA workers in accelerating sanitation in the State of Uttar Pradesh. In this project, over 13,000 ASHAs were trained on WASH behaviours in eight districts of Uttar Pradesh by Government of India.

Chapter 16 of section 4 is concluding chapter, which pulls together the central themes of case studies where new insights on gender inclusion in WASH are offered and key action agendas are outlined.

Overall the present book shares various field experiences and fills the knowledge gap. To answer the question of how to achieve the desired gender outcomes, real-life case studies are illustrated. It is a good suggestive book for practitioners, students, academics, policy makers and all those with an interest in water, sanitation and hygiene sector.

By reading the book, an individual develops knowledge on the gender issues related to water, sanitation and hygiene and how gender impacts and strengthens these initiatives. It is informative and readability is smooth. The language used is simple and the style of presentation is good. In the overall assessment, the book is a good resource book and has great relevance to development functionaries working in water, sanitation and hygiene.

Dr. C. Dheeraja

Journal of Rural Development

(Quarterly Journal of NIRD&PR)

INSTRUCTIONS TO AUTHORS

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JRD 3

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Vol. 70	**APRIL-JUNE 2015**	**No. 2**

CONTENTS

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RESEARCH NOTE

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