

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

*Mrutyunjay Swain\**  
*and*  
*Mamata Swain \*\**

### **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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\* Sr. Research Officer/Assistant Professor (SS), Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar - 388 120, Gujarat, India, E-mail: mrutyunjay77@gmail.com

\*\* Professor of Economics and Dean, School of Social Sciences, Ravenshaw University, Cuttack, Odisha, India, E-mail: mama\_swain@hotmail.com

The paper is based on PhD work (2009) of the first author under the supervision of the second author undertaken at NKC Centre for Development Studies (ICSSR), Bhubaneswar by availing of ICSSR doctoral fellowship. The authors wish to thank anonymous referees who reviewed this paper and participants of National Seminar on 'Agrarian Crisis: The Way Out' held at NIRD, Hyderabad during November 5 -7, 2012 and the Fourth National Research Conference on Climate Change held at IIT Chennai on October 26 and 27, 2013 for their useful comments on the earlier drafts of the paper.

## 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; Gol, 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 (Gol, 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 (Gol, 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 Sainitala (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)<sup>5</sup> 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)<sup>6</sup>, Development of Women and Children in Rural Areas (DWCRA), Training of Rural Youth for Self-Employment (TRYSEM)<sup>7</sup> 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 (Gol, 2002). JRY, IRDP and TRYSEM were merged to form a new self-employment programme called Swarna Jayanti Gram Swarajgar 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 Programme (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 Committee (Gol, 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 (Gol, 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 (NWDPR), 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)
	<b>Total</b>	<b>442.69</b>	<b>4.09</b>	<b>10813.32</b>
		(100.00)		(100.00)

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

Source: Gol (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

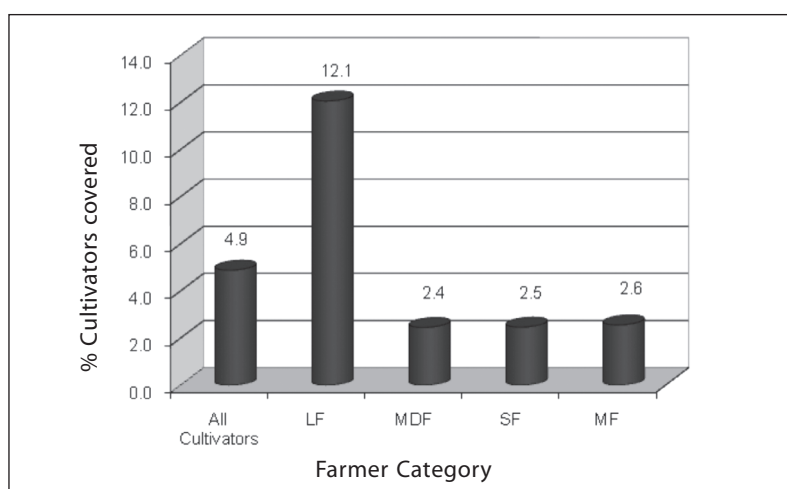
Bolangir district was very low (3.8 per cent) (Table 4). Among the study blocks, the coverage was as low as 1.7 per cent in Titlagarh and 3.3 and 4.2 per cent in Patnagarh and Saintala, respectively. As per the household survey data (Figure 1), the large farmers (12 per cent) insured their crops to a 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*<sup>13</sup> 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).

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**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 (Gol, 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-pastoral 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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