

Livelihood Concerns in Water Resources Management Regimes in Scarce Conditions

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ABSTRACT

Irrigation provides a source of livelihood to millions of people both in developed and developing countries. In U.P. the Bundelkhand region is extremely water scarce region only one percent of the country's water is available for 5 percent of the population living in 10 percent of the total geographical area. The rainfall is generally low and uncertain. The socio-economic conditions of the households living in the command areas of old irrigation schemes were similar in non-command area. There exist no considerable variations across the different categories of households and schemes in the adoption of livelihood strategies in the form of work participation access to resources as land, livestock and credit facilities. In certain cases, the level of income was also very low as compared to state level per capita income estimates. The gender relations are noticeable in terms of sex ratio, level of education and work participation. The situation of females was worse off rather than their male counterparts. Without the active female participation in the formal and informal village institutions that play an important role in managing water resources. It is difficult to improve the conditions of Rural households in general and that of women in particular. Agriculture and animal husbandry are complementary activities, As irrigation is the Major factor affecting the Agriculture sector, similarly, it also affects the livestock economy in a particular region. The rearing of Buffaloes is economically viable across the schemes, but there exist wide variations in the gains from livestock enterprise. The various factors that are responsible for these variations include the condition of feeding resources, lack of animal health facilities and inadequate households access to marketing facilities. To make the livestock sector viable, it is important to provide infrastructural facilities in the rural areas.

Key words : Livelihood; Water resources management; Work participation

Irrigation provides a source of livelihood to millions of people both in developed and developing countries. It parts of South Asia, where there has been a massive thrust on rural development. Extensive networks Co-exist with the greatest concentrations of rural poverty in the world. Production and livelihood are linked with poverty Alleviations. However, generations of employment and income and support of livelihoods in a high priority than production (Chambers, 1991). Bundelkhand region in U.P. is an extremely water scarce regions only 3 per cent of the country's water available for 8 per cent of populations living in 10 percent of the total geographical area. The rainfall in generally low and uncertain. A major part of the region in arid and Semi-arid. The agriculture sector is the major consumer of water where as high as 90 per cent of the total availability is used for irrigation purpose. The domestic demand is fulfilled by about 9 per cent of the total supply while only one per cent is allocated for other uses. The economy of Bundelkhand region is mainly dependent on the Agriculture sector, which supports about 70 per cent of the population and contributes 40 per cent to gross domestic product. The challenge of coping with

the security of water resources can be met only refocusing on the existing irrigation projects for efficient of use of water. Rehabilitation of irrigation schemes may help in providing substantial benefits to the farming community at low investment. The programme will help to contribute in income and employment generations that further help in reduction in poverty in the rural areas. Consequently, productivity of irrigated agriculture is much below its potential. In this backdrop, the present study has attempted to analyze the various issues relating to livelihoods across the irrigation schemes and different categories.

METHODOLOGY

In the present study one major irrigation schemes were selected of which three were old schemes that were constructed before independence and one was new proposed schemes, which selected schemes was of minor size.

Selection of minor irrigation schemes in Bundelkhand
 District - Jhansi Tehsil - Mauvanipur
 Schemes - Parsoli Types of schemes - Old
 Total number of canal water users - 476
 Sampled canal water users 70

The issues were adverse through primary level household survey, participatory method are secondary data from village revenue records. Structure schedule was used to collect the data from each selected irrigations schemes three villages and/or farms located on the head, middle and tail reaches of the main canal were selected randomly with a view to give a proportionate representation to all water users having varying access to irrigation water. In the present study, Canal water users were selected for in-depth verifications with a view that they get the direct benefits from the schemes. A sample of 70 households was drawn from selected schemes the household data were collected on recall method for the year 2000-2001. Information's was collected on the following aspects. Demographic landholdings, source wise household income, employment patterns, agriculture and livestock husbandry and water resources management at farm and off-farm level. The information both qualitative and quantitative was collected through participatory method and group discussion with old and knowledgeable individuals.

RESULTS AND DISCUSSION

The demographic features of the command area of selected irrigation project are reported in the present section. The average family size among the sample households varied between 5 to 8 persons per household across the schemes. It was almost comparable with the 1991 figures during reference period (Table 1)

The age of marriage is one of the important factors of social development which is responsible for population growth. This growth not only influence the living conditions of the households but also affect the per capita gains from the available irrigation facilities in the short run which decreasing per capita size of land in the long run. Across the schemes, the average age at marriage among both males females varied from 17 to 20 years among males and 14 to 16 years in case of females. The age of marriage was lower in the Panwar irrigation project area as compared to that of the other areas. But the average at marriage was still lower as compared to state level estimates i.e. 22.6 and 18.21 years for males & females respectively (NFHS-1, 1992-93). The lower average age of marriage may be attributed to the conservative altitude of the society towards social traditions as well as lack of conditions.

Education : The literacy, rate is one of the major factors that is considered to be an important one in the process of modernizations. In the present context, it varies between 51 to 58 per cent across different schemes except Awar schemes, the preset literacy rate among the sample households across the schemes was comparable with the state level, N 550 estimates i.e. 55 per cent during 1991.

Table 1. Demographic and Social aspects of sample households in Persoli

S.No.	Particulars	Persoli (in average)
1.	<i>Average family size</i>	
	Male	2.95
	Female	2.34
2.	<i>Average age of marriage</i>	
	Male	17.95
	Female	15.10
3.	<i>Literacy rates (%)</i>	
	Male	86.17
	Female	36.12
4.	<i>Workforce</i>	
	Male	62.30
	Female	61.20
5.	<i>Work participation farm sector</i>	
	Male	50.75
	Female	78.11
6.	<i>Non-farm sector</i>	
	Male	51.42
	Female	26.37
	Total	37.92

Workforce and work participations : The availability of workforce and its development determines the level of productions, consumptions, investment and saving pattern of the households. In the development process of the agriculture sector, the availability of labour force varies between about 58 to 64 per cent across the selected irrigation schemes. The analysis shows that the households living in the command areas are endowed with earning hands than consumptions.

Gender relations across the irrigation schemes : In many development projects, extension agencies address only men since they are sensitized to comprehend the role of women in the development process. This resulted in a weak link between women's participation and development of natural resources for the enhancement productivity in the agricultural sector (Shah, 2000) they work harder and for longer hours, without any significant positive change in their status. In the present sectors, an attempt has been made to examine the status of women in the irrigation project areas.

The analysis shows that in their proportions were nearly 24 percent in Parsoli. There were three main reasons for heading the households by females as widowhood, whose husbands are working out side the villages and the irresponsible attitude and males. The females performed the responsibilities towards their families in a larger extent where their male counterparts behaved in an irresponsible manner. It is due to the fact of deteriorating social values in the society. The society the proportion of such women headed households was about three fourth in parsoli area.

Table 2. Status of women headed households across the model schemes in Parsoli

Size of farm	Total member of households	Proportion of women head households	Reason for heading the households (percent)		
			Widowhood	Male working out side the village	Irresponsibility attitudes of males
Marginal	376	28.24	2.42	21.40	79.68
Small	242	26.16	1.75	19.62	81.34
Medium	192	7.99	14.72	44.56	46.32
Large	10	0.12	0.14	1.76	1.21
Overall	91	23.78	4.92	23.67	79.16

In is due to fact of strong social setup in the village. It is noticed across the different categories of the households that the irresponsible attitude of males was prevalent among the poor households (marginal & small). Irrigation has crucial gender implications the active participation female in agricultural production along with managing the irrigations will help to increase the benefits.

Ownership and distribution of land resources: Land in the major resources, which determines the economic states of the households in the rural economy. It is essential

to understand the pattern of ownership and distribution of land among different categories of farmers while discussing the benefits from irrigation facilities in a particular area. In overall terms, there exist some variations across different irrigation schemes. The Kardi project area, the overall average size of holdings was less than the small size of farm i.e. less than 2 hectares where it was slightly higher than the small size in other project areas the average size of marginal category was considerably lower than that in other project areas.

Table 3. Scheme wise ownership and distribution of land holdings in Parsoli

Size of holdings	Number of holdings	Area owned (ha)	Average size of holdings	Distribution percent	
				No. of holdings	Area owned
Marginal	124	65.16	0.64	41.12	11.58
Small	88	121.92	1.45	27.92	21.76
Semi-medium	65	179.18	2.86	23.16	31.42
Medium	31	178.64	5.78	11.47	32.11
Large	6	61.96	16.24	3.19	10.09
All	312	674.16	218.11	100.00	100.00

The other categories of households such as semi-medium, medium and large those were in limited numbers owned larger properties of land. The size of distribution of land ownership by the different size classes varies across the schemes. The analysis shows that there exists unequal distribution of land holdings across the command area. The unequal distribution of land holding not only determines inequalities in the rural economy but also influence the extent of benefits available or the irrigation facilities.

Economics of livestock economy : The livestock economy continues to be indispensably the major source livelihood next only to crop production in most of the rural areas. In some areas, particularly less developed regions, livestock economy is more important than even agriculture. It is evident from the fact that after the operation of irrigation, livestock economy has also been changed. These changes may be in terms of its composition and productivity that are caused due to various factors like Mechanization of Agricultural operations, availability of grazing space and shortage of labour for grazing of animals. The size and composition of livestock economy also varies with size of land holding.

An attempt has been made to study the economic viability of animals by calculating the costs & returns incurred in different irrigations scheme areas. The costs include cash expenses and imputed value of items used in animal rearing like fodder concentrates, etc on the returns side the estimates of output of milk and milk products, value of during and other items including wool, meat in case of small ruminants and drought power used for ploughing have been taken into account. The exist wide variations in cost and returns across different types of animals and schemes. The study shows that rearing of cattle was not economically viable in all the schemes. It is because of the low productivity of animals on the one hand and high rearing cost on the other.

Rearing of Buffaloes was economically viable. But per animal benefits very across the schemes. Rearing of small Ruminants i.e. Sheep and Goats was also viable in respect of net returns that vary between Rs. 210 to Rs. 380 per animal across the schemes. The paid out cost increased in rearing small per animals was considerably lower because they fed on grazing and common lands. That is why poor household intend to rear them

Table 4. Scheme wise annual cost and returns of livestock economy in Parsoli

Schemes/ types of animal	Per animal average returns				per animal average cost			
	Milk and milk products	other items	value of Dung	Total returns	cost of fodder	cost of concentrate	total cost	net returns
Cattle	981	470	412	1863	1814	416	2226	363
Buffaloes	3412	110	624	3677	2412	535	2947	730
Small ruminants	375	155	112	642	246	64	310	332

Table 5. Scheme wise Distribution of House hold income in Parsoli

Scheme of farms size	Per couple income	Total H.H. Incomes (Rs.)	Source wise Income distribution (Percent)					
			Agri.	Livestock	Service	Business	Wage employment	Other Source
Marginal	4630	28114	33	22	3	3	30	15
Small	7318	43232	65	15	1	1	19	1
Medium	14982	84118	87	8	3	1	3	0
Large	0	0	0	0	0	0	0	0
Overall	9041	51983	73	13	2	1	14	3

(Singh, 1998) they treat them as cash in their hands because the possibility of marketing Prevails every where and it any time whomever the need is realized by the households. It emerged from the analysis that except for cattle population the rearing of animals is economically viable. But the extent of benefits varies across the regions. *Household Income:* The following section deals with household income across the scheme, the average household income was the highest in Parsoli project area. In all the project areas, the Agriculture sector contributes a major share in the household Income. Due to its Location area, People get employment in the city. Similarly, rearing of milch animals was also one of the Major Sources of household income as this sector was profitable to the villagers, except Kardi Project area. Livestock sector has been contributing substantially as compared to other trader.

Poor Households derive their major share of Income from wage employment and Non-farm activities. The economic condition of the poor households was comparatively better in Parsoli project areas. the precipitate income in different schemes ranges from Rs. 5840 to Rs. 8906. In the comparison of state level estimates of per capita income i.e. Rs. 9819 during the reference period.

CONCLUSION

The issues that emerge from our in-depth analysis provide some Meaningful insight that have wider policy implication. The main conclusion that emerge from the

study are as follows. The socio-economic conditions of the households living in the command areas of old irrigation schemes were similar in non-command area. There exist no considerable variations across the different categories of households and schemes in the adoption of livelihood strategies in the form of work participation access to resources as land, livestock and credit facilities. In certain cases, the level of income was also very low as compared to state level per capita income estimates. The gender relations are noticeable in terms of sex ratio, level of education and work participation. The situation of females was worse off rather than their male counterparts. Without the active female participation in the formal and informal village institutions that play an important role in managing water resources. It is difficult to improve the conditions of Rural households in general and that of women in particular. Agriculture and animal husbandry are complementary activities, As irrigation is the Major factor affecting the Agriculture sector, similarly, it also affects the livestock economy in a particular region. The rearing of Buffaloes in economically viable across the schemes, but there exist wide variations in the gains from livestock enterprise the various factors that are responsible for these variations include the condition of feeding resources, lack of animal health facilities and inadequate households access to marketing facilities. To make the livestock sector viable, it is important to provide infrastructural facilities in the rural areas.

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