



## **Impact of Developmental Interventions in Upper Krishna Project (UKP) Area**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author JB conducted the study, collected, analyzed and interpreted the data under the guidance of author JGA. Author SSD supervise the work and helps to author JB to interpret and analyzed the data. All authors read and approved the final manuscript.*

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### **ABSTRACT**

The Upper Krishna Project (UKP) is one of the biggest projects in India and was started as multipurpose irrigation project in the drought prone northern part of Karnataka. The UKP consists of two dams across the river at Alamatti village and Narayanpur village. The implementation of Krishna Water Tribunal Award passed on 30.11.2010 resulted in increase of storage level of Almatti Dam from FRL 519.60 to FRL 524.256 m. 4.656 m increases in the storage level, an area of 76357 acres of land is expected to submerge in the back waters of Almatti reservoir, though, 22 villages with 32427 families may get effected in this event. The present research was undertaken in UKP area of Bagalkot district, Karnataka state during the year 2012-13. From Bagalkot district, three Rehabilitation Centres (RC) were selected from each of Bagalkot, Biligi and Hungund taluk to form a sample size of 180 by using random sampling technique. In this context, it was indeed necessary to study the developmental interventions in Upper Krishna Project area of Bagalkot district, in order

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to plan appropriate developmental programmes. During the survey it was learnt that, Government had given top priority for construction of houses. Therefore, 100 percent of the rehabilitant farmers had availed benefit of the HCG. 90.56 per cent of the rehabilitant farmers availed benefit of Income Generating Schemes (IGS) in case of training programmes followed by horticulture development, IGA and new SHG formation. Higher proportions of the rehabilitant farmers (41.67% and 36.67%) were found in high asset acquisition category in case of financial and physical capitals, respectively. Majority of the rehabilitant farmers (80.56%) suggested for extend free household electricity. The findings of the study provide valuable information to administrators, planners, policy makers and extension workers in order to plan appropriate developmental programmes for Project Displaced Families (PDF).

*Keywords: Development interventions; asset; UKP; rehabilitant farmers; IGS; IGA; rehabilitation centres.*

## ABBREVIATIONS

*UKP : Upper Krishna Project  
R & R: Rehabilitation and Resettlement  
RC : Rehabilitation centre  
DHQ : District Head Quarters  
IGS : Income Generating Scheme  
IGA : Income Generating Activities  
HCG : House Construction Grants  
LPG : Land Purchase Grants  
SHG : Self Help Group*

## 1. INTRODUCTION

Development is one of the constitutive elements of nation building process in India. However, with the growth of Indian economy the path of growth is also resulting in uneven development with disparity and displacement. Involuntary displacement and resettlement involving the disruption and alteration of entire community life styles invariably causes acute distress and economic failure to large numbers of the displaced population, which forces economically and socially marginalized people to struggle for their survival. In recent years, this has been slowly recognized through the enhanced importance and funding provided for resettlement, but an inadequate understanding of the complexity of the social process associated with relocation limit the success of developmental programmes of resettlement. Irge [1] conducted a study on Tahtali dam displaced families in Turkey and reported that in 1996, Tahtali Dam impounded eight settlements and displaced around 7500 people from 1400 households. Based on the findings of the study, he suggested that 'mobility' was indeed amongst the foremost resources of displaced people to re-establish their lives and livelihoods.

## 2. STUDY AREA

The Upper Krishna Project (UKP) is one of the biggest projects in India and was started as multipurpose irrigation project in drought prone northern part of Karnataka across the river Krishna. The UKP consists of two dams across the river. The upper dam is located at Alamatti village, which has hill range to provide the ideal site for bulk storage of water (*i.e.* Storage cum distributor dam) and the lower dam serves mainly as a diversion/ distribution dam which is located at Narayanpur village. The whole UKP was taken up in two stages. Stage-I has 3 phases. In the I<sup>st</sup> phase, construction of Narayanpur dam and beginning of Almatti dam were covered. It displaced 11,745 families (58,720 persons) by covering 41 villages as they were submerged in the back water of Narayanpur dam. In the II<sup>nd</sup> phase, construction of Almatti dam upto 512 meters and In the III<sup>rd</sup> phase, construction of Almatti dam upto 519.6 meters, which displaced 82,298 families (2,92,160 persons) of 135 villages as they are submerged in backwater of Almatti dam. Totally Narayanpura and Almatti dams together displaced 176 villages involving 94,043 families of 3,50, 880 people.

Further, the implementation of Krishna Water Tribunal Award passed on 30.11.2010 resulted in increase of storage level of Almatti Dam from FRL 519.60 to FRL 524.256 m. 4.656 m increases in the storage level, an area of 76357 acres of land is expected to submerge in the back waters of Almatti reservoir, though, 22 villages with 32427 families may get effected in this event. In this context, it was indeed necessary to study the developmental interventions in Upper Krishna Project area of Bagalkot district, in order to plan appropriate developmental programmes.

**Table 1. Details of land / structure acquisition, rehabilitation & resettlement villages**

Sl. no.	Particulars	Extent / no.
<b>A</b>	<b>Land Acquisition</b>	
1	Extent of land submergence in backwaters of Almatti Reservoir from RL 519.60 to RL 524.256 m	76,357 Acres
2	Extent of land required for formation of 20 RCs	8003 Acres
3	Land for infrastructures	29,000 Acres
<b>B</b>	<b>Rehabilitation and Resettlement (R&amp;R) villages</b>	
1	No. of villages to be submerged	22 Nos.
2	No. of RC's to be provided	20 Nos.
3	Likely Families to be affected	
	Rural	21,601 Nos
	Urban	10,826 Nos
	<b>Total</b>	<b>32,427 Nos</b>
4	Total PDF/ Structures	32,427 Nos

Source: Upper Krishna Project implementation report, 2010-11. R & R office, Navanagar, Bagalkot

### 3. MATERIALS AND METHODS

All the rehabilitant farmers covering 176 villages and 136 Rehabilitation centres spread over in Bagalkot, Bijapur, Belgaum, Gulbarga and Raichur districts under UKP form the population for the study. Among the districts Bagalkot district was purposively selected as it has more number of rehabilitant farmers and Rehabilitation Centres (RCs). Rehabilitant farmers residing closer, moderately and far away from the District Head Quarter (DHQ) have possessed different type of infrastructure facilities, exposure and accessibility for the various developmental interventions. Therefore, in Bagalkot district, three Rehabilitation Centres (RC) were selected from each of Bagalkot, Biligi and Hungund taluk based on the distance from the District Head Quarter i.e. closer (0 to 10 kms), moderately (10 to 40 kms) and far away (>40 kms) respectively. Further, from each Rehabilitation Centre 20 farmers who possessed minimum one acre of land were selected to form a sample size of 180 by using random sampling technique.

### 4. RESULTS AND DISCUSSION

The results in Table 2 gives an account of the types of developmental interventions namely support for land purchase, support for house construction, Income Generating Schemes (IGS), vocational education, creation of the job opportunity and provision of drawdown cultivation by the Government to enhance livelihoods of the rehabilitant farmers. Among all the interventions, support for house construction and IGS were given top priority. Houses were the basic need of the rehabilitant farmers when shifted to new area and IGS has improved the socio-economic

security of the rehabilitant farmers. Kusters et al. [2] in their study on balancing development and conservation in Asia, Africa and Latin America indicated that Non-Timber Forest Product (NTFP) trade has a positive impact on local livelihoods.

With regard to support for house construction, 100 percent of the rehabilitant farmers availed benefit with respect to construction of house and free electricity. During the survey it was learnt that, house and electricity were the basic requirement of the rehabilitant farmers which were arranged by the R and R project. Government had given top priority for construction of houses. Therefore, cent per cent of the rehabilitant farmers had availed benefit of the House Construction Grants (HCG). R and R project implemented IGS through NGO, these NGO conducted trainings for rehabilitant farmers based on their need and further these NGOs take an active role in formation of new SHG and employment generation. Therefore, 90.56 per cent of the rehabilitant farmers availed benefit of IGS in case of training programmes followed by horticulture development, employment generation and new SHG formation. It can also be observed that, only sixty per cent of the rehabilitant farmers purchased lands because Land Purchase Grants (LPG) provided by the Government was not sufficient for purchase of land due to the increased value of the land over a period of time. Further, free vocational education was provided at the district place. Due to this reason, rehabilitant farmers residing far away from the District Head Quarters (DHQ) were facing difficulty to send their children for free vocational education. Less than fifty per cent of the rehabilitant farmers had availed its benefit.

It was interesting to note that, over forty per cent of the rehabilitant farmers were practicing the drawdown cultivation in closer and moderately distanced areas because of the good soil fertility of these areas. Rehabilitant farmers were happy with the provision of the drawdown cultivation since, they were getting additional income.

An insight in Table 3 & Fig. 1 indicated that an equal (around thirty) per cent of rehabilitant farmers were found in all three categories of asset acquisition. All most all the rehabilitant farmers were shifted to new area. Rehabilitant farmers were not able to establish natural, physical, financial, human and social capital acquisition to the required level. Almatti back water comes to their door steps but it will not completely submerge their houses and also they practice drawdown cultivation in their submerged lands. Because of this reason, majority of the rehabilitant farmers delayed to relocate their

family to Rehabilitation Centre (RC) and they had shifted after 2005 onwards. Due to this short span of time and their attachment with the earlier place they were unable to establish livelihood assets. However, higher proportions of the rehabilitant farmers (41.67% and 36.67%) were found in high asset acquisition category in case of financial and physical capitals, respectively. Financial capital acquisition was relatively higher due to the compensation money and R and R project benefits. Due to the higher financial capital acquisition, they purchased more household materials and all most all the rehabilitant farmers constructed concrete houses under House Construction Grants (HCG). Reddy [3] in his study on watershed development and livelihood security indicated that improvements in the household income and employment are statistically significant in all the sample villages with the total livelihoods assets

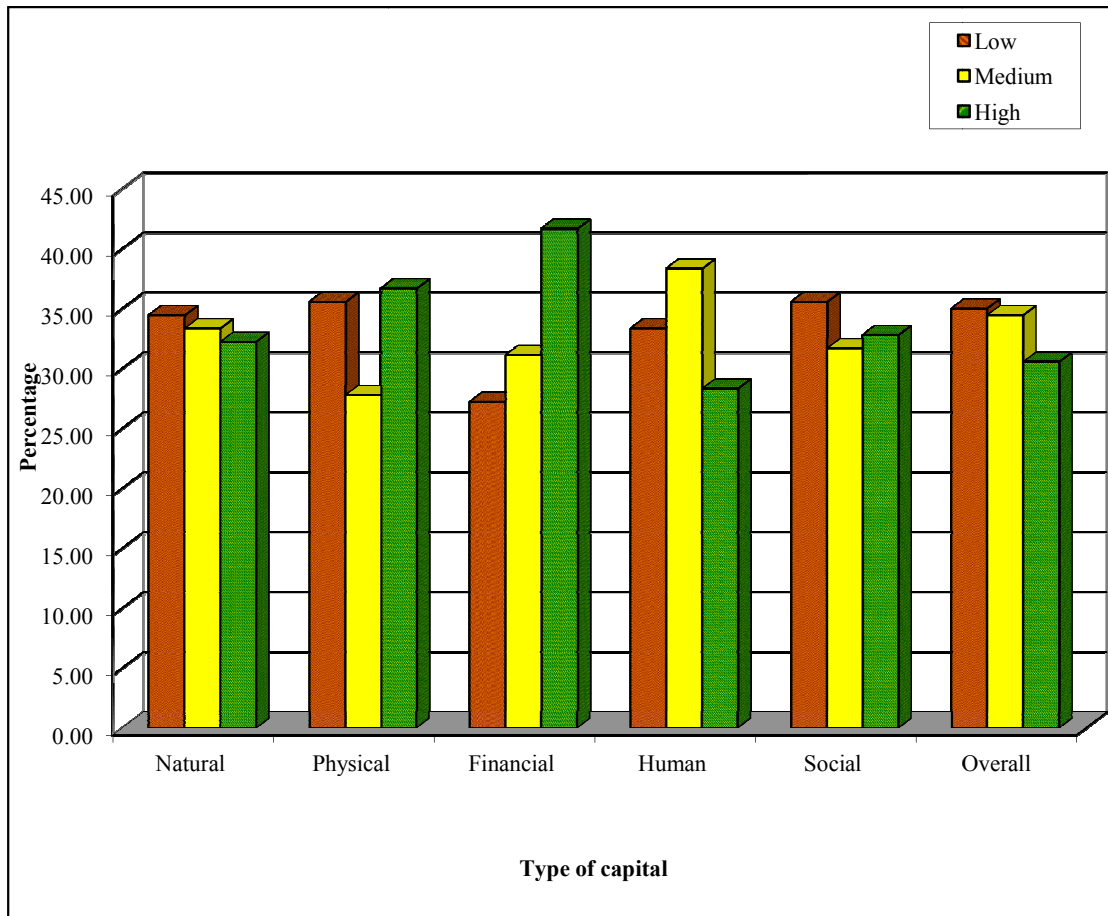


Fig. 1. Asset acquisition of the rehabilitant farmers of UKP Area

**Table 2. Developmental interventions and their impact on the rehabilitant farmers of Upper Krishna Project (UKP) area**

Interventions	Activities	Units	Number of beneficiary		Min	Max	Mean	(n=180)			
								Category			
			F	%				< Average		> Average	
1. Support for Land Purchase [Land Purchase Grants (LPG)]	Purchase of land	Acre	107	59.44	1	8	2.56	73	68.22	34	31.78
2. Support for House Construction [House Construction Grants (HCG)]	a. Construction of house	No./family	180	100	1	3	1.42	114	63.33	66	36.67
	b. Free electricity	Rs./month (Savings)	180	100	50	170	89.02	104	57.78	76	42.22
3. Income Generating Schemes (IGS)	a. Trainings programmes	Duration (No. of days)	163	90.56	1	25	7.17	106	65.03	57	34.97
	b. New SHG formation	Savings in Rs.	85	47.22	3000	15000	6682	54	63.53	31	36.47
	c. Employment generation	Man days	87	48.33	100	200	124.14	66	75.86	21	24.14
	d. Horticulture Development	No. of plants									
	--Sapota		8	4.44	10	30	19.38	5	62.50	3	37.50
	--Mango		25	13.89	10	50	23.80	14	56.00	11	44.00
	--Teak		113	62.78	10	300	38.23	31	27.43	82	72.57
4. Education	Free vocational education (Rs.400/month)	No./family	82	45.56	1	3	1.24	64	78.05	18	21.95
5. Creation of job opportunity	Job reservation Govt (5%)	No. /family	25	13.89	1	2	1.16	21	84.00	4	16.00
	Private		66	36.67	1	3	1.8	62	93.94	4	6.06
6. Provision for Drawdown cultivation	Crop production	Acre	78	43.33	1	6	2.43	50	64.10	28	35.89

F = Frequency; % = Percentage

**Table 3. Asset acquisition of the rehabilitant farmers of upper krishna project (UKP) area**

Type of capital	Min. score	Max. score	Score range	Asset acquisition category						(n=180)	
				Low		Medium		High		Mean	SD
				F	%	F	%	F	%		
Natural	45	183	91.76 – 116.98	62	34.44	60	33.33	58	32.22	104.37	29.97
Physical	9	39	25.07 – 31.13	64	35.56	50	27.78	66	36.67	28.10	7.12
Financial	3	17	10.42 – 12.79	49	27.22	56	31.11	75	41.67	11.61	2.78
Human	10	36	20.56 – 25.23	60	33.33	69	38.33	51	28.33	22.89	5.49
Social	10	50	24.48 - 30.76	64	35.56	57	31.67	59	32.78	27.62	7.40
<b>Overall</b>	<b>111</b>	<b>308</b>	<b>176.23 – 212.95</b>	<b>63</b>	<b>35.00</b>	62	34.44	55	30.56	<b>194.59</b>	<b>43.20</b>

*F = Frequency; %=Percentage*

**Table 4. Suggestions of the rehabilitant farmers of UKP area to improve livelihood security**

Sl. no.	Particulars	(n=180)	
		Frequency	Percentage
1	Extend free household electricity supply (for another 5 years)	145	80.56
2	Extend loan waivers scheme to nationalized bank	126	70.00
3	Good quality drinking water facilities	115	63.89
4	Scholarship for children to pursue higher study	112	62.22
5	Proper drainage facilities	93	51.67
6	Systematic follow up of trainings conducted	88	48.89
7	Increase Government job reservation/quota (5 to 10%)	85	47.22
8	Provision for earthen bund and farm pond	71	39.44
9	Adequate and timely supply of seeds, fertilizers and pesticides	70	38.89

\* - Multiple response

It can also be observed that, all most all Rehabilitation Centres (RC) had primary health centre with well connected roads. Further, R and R project was implemented Income Generating Schemes (IGS) through NGO's. The scheme involved for organizing training with vocational skills for rehabilitant farmers. Hence, nearly forty percent of the rehabilitant farmers were found in medium asset acquisition category. Biradar [4] conducted a study on impact of Income Generating Activities (IGA) on sustainable rural livelihoods of KAWAD project beneficiaries and shown that overall livelihood status category increased from 22.67 to 60.50 per cent after undertaking income generating activities

Nearly thirty five per cent of the rehabilitant farmers belonged to low natural capital acquisition because, only sixty per cent of the rehabilitant farmers purchased land only after they were shifted to new area even though Government made provision of Land Purchase. Majority of the rehabilitant farmers lost their fertile land due to the back water of Almati dam. Rehabilitant farmers were facing problem to adjust with new area because they had strong attachment with the earlier place and most of the youth discontinued their participation in the social activities like drama, rituals, village festivals etc. Therefore, thirty per cent of the rehabilitant farmers belonged to low social capital acquisition.

The data in Table 4 gives an account of suggestions given by the rehabilitant farmers to improve Livelihood Security. A very high majority of the rehabilitant farmers (80.56%) suggested for extend free household electricity. The provision of free electricity has created a feeling to think that the government has concern towards the rehabilitant farmers though the amounts saved every month were substantial. This emotional aspect need to be valued and renewed. Tanvir et al. [5] conducted a study on Impact of participatory forest management on financial assets of rural communities in Northwest Pakistan and suggested that integration of the natural resource management initiatives with other livelihood interventions such as microcredit, infrastructure development etc. can boost up the effectiveness of such interventions.

Extend loan waiver scheme to nationalized banks was suggested by 70.00 per cent of the rehabilitant farmers. Hither to, the loan waive are restricted to only co-operatives. A majority of the

rehabilitant farmers availed loan from nationalized banks, similar yard stick need to be extended to nationalize bank so that it eases the pressure on the rehabilitant farmers.

There is a demand from farmers for the provision of good drinking water facilities (63.89%). Safe drinking water contributes significantly to the human capital of the rehabilitant farmers. There was also a demand from the rehabilitant farmers for providing scholarship for children to pursue higher study (62.22%). From the moment of their displacement, rehabilitant farmers are in search of a secured life. Therefore, there is a demand for provision of scholarship for their children to pursue higher education and also increase in the job reservation from 5 to 10 percent. The farmers also demand the continued follow up for the training imparted on Income Generating Activities. All these aspects do contribute to increase in human capital of the Livelihood Security. Mikiyasu [6] in his study on resettlement by dam construction in 10 Asian cases revealed that lack of forestry or farmland after resettlement was observed in many cases and suggested for provision of national forests for resettlers was instrumental in some cases for their livelihood rehabilitation.

## 5. CONCLUSION

During the survey it was learnt that, house and electricity were the basic requirement of the rehabilitant farmers which were arranged by the R and R project. Government had given top priority for construction of houses. Therefore, 100 percent of the rehabilitant farmers had availed benefit of the House Construction Grants (HCG). R and R project implemented the IGS through NGO, these NGO conduct trainings for rehabilitant farmers based on their need and further these NGOs take an active role in formation of new SHG and employment generation. All most all Rehabilitation Centres (RC) had primary health centre with well connected roads. But, all most all the rehabilitant farmers were shifted to new area. Rehabilitant farmers were not able to establish natural, physical, financial, human and social capital acquisition to the required level

The findings of the study provided valuable information to administrators, planners, policy makers and extension workers in order to plan appropriate developmental programmes for Project Displaced Families (PDF).The study did not covered the landless rehabilitant farmers

because natural capital is one of the component to study the developmental interventions. Farmers also need to be empowered to solve their problems on their own through extension methods that emphasize active participation and innovation and develop self confidence to negotiate with Government and non-governmental organisations.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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