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The Impact of Water Users Associations in Terms of Direct Changes in Krishna Delta Region of Andhra Pradesh

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ABSTRACT

A study on Impact of Water Users Associations in Krishna delta of Andhra Pradesh was carried out by selecting 240 respondents from Krishna delta area. The study mainly focused on direct changes that have occurred as impact of water user's associations in Krishna delta. The study revealed the direct changes that occurred due to functioning of Water Users Associations were availability of sufficient irrigation water, creation of employment, effective implementation of Warabandhi system, rehabilitation of water courses, distribution of irrigation water to tail-end farmers, reduction of conflicts among farmers, maintaining good relations with irrigation and revenue officials etc., Finally the study resulted that there was a positive impact due to Water Users Associations in terms of their direct changes in Krishna delta area.

Key words: Water users associations, Impact, Direct changes, Krishna delta area

The Water Users Associations (WUAs) are the grass root level functionaries who draw the water from the Distributary Committee (DC), which in turn sub-ordinate to the Project Committee (PC), an apex body. The water user's associations play a key role in integrated approaches to water management that seek to establish a decentralized, participatory, multisectoral and multi-disciplinary governance structure [1]. The water user associations involve in management and maintenance of the irrigation system for efficient and equitable supply and distribution of water ensuring optimum utilization for improvement of agricultural production, systematic development, and maintenance of irrigation infrastructure at the grass root level [2-3]. All these activities could be possible only with the effective functioning of WUAs. Keeping this in view for sustainable development of Water Users Associations, there is a need to know the impact of Water Users Associations in terms of their direct changes that have occurred to the respondents in Krishna delta area of Andhra Pradesh.

MATERIALS AND METHODS

The present study was undertaken purposively in

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Krishna delta area of Andhra Pradesh during the year 2018 - 2019 because it is the major delta area contributing a large portion of the food production of the state. The research design followed for the study was ex-post-facto. The Project Committees of Krishna delta area i.e., Krishna Eastern Delta and Krishna Western Delta were selected as it contains only two Project Committees. From each of the Project committee, a total of 7 Distributary Committees were selected on proportionate random basis. From the selected Distributary Committees, a total of 41 Water User Associations were selected through proportionate random sampling method. Finally, a total of 240 members of Water User Associations were selected as respondents on proportionate random basis from Krishna Eastern Delta and Krishna Western Delta. The selected beneficiaries were personally interviewed with the help of pretested structured interview schedule. The statistical tests like mean, standard deviation, frequency, percentage were used to draw meaningful conclusions.

Table 1 Distribution of respondents according to direct changes (n=240)

Direct changes	Frequency	Percentage
Low direct changes (27-35)	32	13.33
Medium direct changes (36-44)	114	47.50
High direct changes (45-53)	94	39.17
Total	240	100

RESULTS AND DISCUSSION

Data in (Table 1) inferred that majority (47.50%) of the respondents had medium level of direct changes, followed by high (39.17%) and low (13.33%) level of direct changes for

the respondents of water user's associations in Krishna delta area. The direct changes were studied in different aspects as shown in (Table 2).

From (Table 2) it could be inferred that the availability of water was for a period of six months as the water was released as per Warabandhi schedule which reduced the over exploitation of water at the head reach areas and made available to the crop throughout the crop growth period. The water quantity available was about 75-50 per cent since the water has to be supplied to all the areas viz. head reach, middle and tail end areas and the water was released for a particular period of time depending on water availability in the Prakasam barrage [4]. The released water was utilized only for one crop by most of the respondents as the water was released only during Kharif season and stops releasing of water before

the harvesting of the crop. The WUAs have created the employment generation because during summer season only works like constructions or repairs pertaining to canals could be done. So, employment was provided to people mainly on cleaning of drains. The water user's associations were taken care for the proper implementation of Warabandhi schedule which otherwise might lead disputes among the farmers. They had planned for the irrigation schedule, providing information on water release, and closing dates to farmers and finally proper implementation of Warabandhi schedule resulted in excellent performance of water user's associations. Though the funds allocated for maintain the water courses were not sufficient the WUAs have made adjusted for cleaning of aquatic weeds, canal repairs etc., finally maintained the rehabilitation of water courses at good level [5].

Table 2 The impact of Water Users Associations in terms of direct changes (n=240)

Direct change	Impact	Percent agreed by respondents
Water availability	6 months	60.83
Availability of water quantity	75-50 per cent	50.83
Water utilized for no. of crops	One crop	83.75
Employment generation mainly in	Cleaning of drains	49.58
Implementation of warabandhi	Excellent	44.58
Rehabilitation of water courses	Good	45.83
Water availability to tail-end areas	75-50 per cent	38.75
Resolving water disputes	By arranging meetings to settle the issue	55.42
Benefited area due to WUA	WUA jurisdiction level	83.33
Participation of WUA's in water management	Excellent	49.58
Delegation of powers to WUAs	Sufficient	57.08
Coordination among WUAs, Irrigation and Revenue departments	Good	45.48
Avenue plantation along the bunds of canal	Poor	43.75

The water availability to tail-end areas was about 75-50 per cent because WUAs had worked a lot to implement the Warabandhi schedule properly to avoid over exploitation of water at head reach areas so that, water was supplied to tail-end areas to the maximum extent. The water was supplied almost equally to all the areas to reduce the disputes. If any disputes arise regarding water the WUA members would try to settle the disputes by arranging meetings and convincing the farmers. The whole jurisdiction level of WUA was benefited due to function of water user's associations, as the water courses were not only restricted to only individual or family or village level so the entire WUA jurisdiction was benefited. Participation of WUA's in water management was excellent as the water user's associations had strived a lot to supply water to all the areas in Krishna delta. The WUA members provide up to date information on water releasing and closing dates. They had put their maximum efforts in organizing, operation and maintenance works. Their efficient work output showed their participation in water management. Delegation of powers to WUAs was sufficient to carry out the functions under their jurisdiction. The powers they had were making proposals regarding canal works to the government through irrigation department, collection, and spending of allotted funds from

the government for the proposals they made. There was good coordination among WUAs, Irrigation and Revenue departments with mutual cooperation among them in organizing and maintenance works. Avenue plantation along the bunds of canal was poor because in some places due to the presence of green grass no particular plantation was practiced on canal bunds. Many of them were not interested to grow plantation as the canal bunds were not in required size. Some of the direct changes were studied by comparing them before and after establishment of water user's associations [6].

The data depicted in (Table 3) revealed that the average acreage before establishment of Water Users Associations (WUAs) was 6.07 and after establishment of WUAs was 6.05. As majority of the respondents were medium landholders (4-10 ha) there was not much difference between before and after establishment of Water Users Associations (WUAs) in acreage. Before the establishment of Water Users Associations (WUAs) the average yield of paddy was 20 qt/ac whereas after the establishment of WUAs the average yield was 32.49 qt/ac. The increase in yield was due to timely availability of sufficient water through Warabandhi schedule, proper management of water, good varieties of seeds used by respondents and favorable climatic conditions [7].

Table 3 Direct changes occurred on establishment of Water Users Associations (n=240)

Direct change	Before establishment of WUAs	After establishment of WUAs
Acres	6.07	6.05
Yield (q/ha)	20	32.49
Income (%)	24.14	42.42
Employment generation (days)	120	110

There was an increase in income after the establishment of WUAs i.e., 42.42 per cent whereas before the establishment of WUAs it was only 24.14 per cent. It was because increased production and productivity of crop, efficient utilization of water and improved land use pattern the income have increased. The employment generation before the

establishment of WUAs 120 days whereas after the establishment of WUAs it was 110 days. Because due to improved farm mechanization the agriculture labour days have been reduced and the employment have been increased due to repairs, rehabilitation and other maintenance works of canals during summer season [8].

Table 4 Distribution of respondents according to direct changes and their impact on establishment of Water Users Associations (n=240)

Direct change	Impact	Before establishment of WUAs		After establishment of WUAs	
		Frequency	Percentage	Frequency	Percentage
Cropping intensity (%)	One crop	46	19.16	106	46.24
Cropping pattern	Paddy + pulses to Maize	90	37.50	31	12.91
Livestock possession	No livestock	142	59.16	156	65.00
Fodder area	Paddy straw and grass area	153	63.75	15	6.25
Sowing method	Conventional method	240	100	149	63.09

The (Table 4) explained that the cropping intensity have been increased after the establishment of WUAs (46.24%) than before the establishment of WUAs (19.16%). The reasons could be the change in climatic conditions and low rainfalls resulted in water scarcity to crops. However due to timely release of water and implementation of Warabandhi schedule helped in supply of irrigation water to all the areas. In some tail-end areas because of these WUAs only it was made possible to cultivate at least one crop per year. The cropping pattern in Krishna delta region i.e., paddy followed by pulses have been decreased after the establishment of WUAs (12.19%) than before the establishment of WUAs (37.50%). The reason for decrease in cropping pattern after the establishment of water user's associations was loss due to YMV attack in pulses have made respondents to shift from rice fallow pulses to paddy followed by maize crop. The percentage of respondents not possessing livestock has been increased after the establishment of WUAs (65.00%) than before the establishment of WUAs (59.16%). The main reason could be due to shortage of labour for maintaining the livestock or high wage rates for the labour. The availability of fodder for the livestock was also reduced due to machine harvesting of the crop [9]. The fodder area before the establishment of WUAs was 63.75 per cent. Whereas after the establishment of WUAs was 6.25 per cent. The reason was, in

most of the areas the crop was harvested with the machinery. Reduction in livestock possession, for easy and timely completion of operations the crops were being harvested with machinery which led to reduced fodder area. The sowing method before the establishment of WUAs was cent per cent. But after the establishment of WUAs it was 63.09 per cent [10]. Because there was a change in sowing method in Krishna delta region from conventional method to direct sown rice method. The reason for change in sowing method was efficient use of water, saving labour charges, time and energy and reduced cost of cultivation have motivated some of the respondents to follow direct sown rice method of sowing. It also helps in better growth of succeeding crops. So, the respondents following conventional method of sowing has been decreased after the establishment of WUAs.

CONCLUSION

There was a medium level of direct changes in Krishna delta region due to water user's associations. This was due to sufficient availability of water through Warabandhi implementation. Yield, income, employment generation has been increased after the establishment of water user's associations. Finally, a positive impact was observed due to WUAs in terms of their direct changes in Krishna delta area.

LITERATURE CITED

1. Patel HD. 2015. Study of participatory irrigation management (PIM) system and its impact on sustainable development of tribal community. *Ph. D. Thesis*, Centre for Studies in Rural Management (CSR), Gujarat.
2. Abirami G. 2012. Socio-economic impact of Irrigated Agriculture Modernization and Water bodies Restoration and Management (IAMWARM) project in Pudukottai district of Tamil Nadu. *M. Sc. (Agriculture) Thesis*, Acharya N.G. Ranga Agricultural University, Hyderabad, India.
3. Kumar R, Singh RD, Sharma KD. 2005. Water resources of India. *Current Science* 89: 794-811.
4. Bruns B, Taher T. 2009. Yemen Water User Association study: Findings and recommendations for a problem-solving approach. pp 1-76.
5. Saleth RM, Dinar A. 2000. Institutional changes in global water sector: Trends, patterns, and implications. *Water Policy* 2(3): 175-199.
6. Biggs TW, Gaur A, Scott CA, Thenkabail P, Rao PG, Krishna GM, Acharya S, Turrall H. 2007. Closing of the Krishna Basin: Irrigation, Streamflow Depletion and Macroscale Hydrology. IWMI Research Report 111. Colombo, Sri Lanka: International Water Management Institute.
7. Batchelor CH, Rao RMMS, Manohar RS. 2003. Watershed development: A solution to water shortages in semi-arid India or part of the problem? *Land Use and Water Resources Research* 3: 1-10.
8. Reddy KS, Krishna A, Srinivas A, Reddy BS, Reddy SR. 2001. Impact of on-farm water management under third Andhra Pradesh irrigation project at SRSP and SRBC command area. In: Proceedings of a State level Workshop on Capacity Building in Agricultural Water Demand Management. ANGRAU University, Hyderabad November 2001. pp 48-53.
9. Mollinga P. 2001. Water and politics: Levels, rational choice and south Indian canal irrigation. *Futures* 33: 733-752.
10. Mollinga PP. 2003. On the waterfront. Water distribution, technology, and agrarian change in a South Indian canal irrigation system. Hyderabad. Orient Longman, Water Resources Series, Wageningen University.