

A Study on Functions Performed by the Water Users Associations in Krishna Delta Region of Andhra Pradesh

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Abstract

A study on functions performed by 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 the primarily functions that are performed by Water Users Associations, distributory committees and project committees i.e., timely availability of water to crop with the implementation of Warabandhi schedule, resolving of disputes among farmers, maintenance of registers. It also revealed the functions that were partially performed like assistance to revenue department in collection of water rates, maintain feeder channels of minor irrigation tanks and finally the non-performed functions were like avenue plantation on bunds, Conduct general body meetings and water budgeting as prescribed.

Key words: Water users associations, Distributory committees, Project committees, Functions, Krishna delta area

In view the growing importance of the farmer's participation in the management of irrigation systems, the Government of Andhra Pradesh in 1997 has canonized the participatory irrigation management as "The Andhra Pradesh Farmers Management of Irrigation Systems (APFMIS) Act 1997", as an initiator in the Indian sub-continent [1]. Participatory Irrigation Management generally implies "the involvement of irrigation users in all aspects of irrigation management, and at all levels" in 'All aspects which includes planning, design, construction, operation and maintenance, financing, decision rules and the monitoring and evaluation of the irrigation system. The legal framework created out of the APFMIS Act resulted in creation of farmers' organizations at different levels of irrigation system like Water User Associations (WUA), Distributory Committee (DC) and Project Committee (PC).

a. Water Users' Association (WUA): will have a delineated command area on a hydraulic basis, which shall be administratively viable. Generally, a WUA would cover about six farmers (water users) one among them as president and others act as members.

b. Distributory Committee: will comprise of five or more WUAs. All the presidents of WUAs will comprise general body of the distributory committee and each distributory committee is headed by a president.

c. Project Committee: will be an apex committee of an irrigation system and presidents of the distributory committees in the project area shall constitute general body of this committee.

Water Users Associations (WUAs) are community-based organizations established to efficiently manage water resources at the local level, with a particular focus on irrigation systems. These associations aim to decentralize water

management, empower local farmers, and ensure equitable distribution of water resources [2]. By involving stakeholders directly in decision-making, WUAs enhance accountability and promote sustainable practices in water usage [3]. The Krishna Delta, located in Andhra Pradesh, is one of India's most fertile agricultural regions, heavily dependent on irrigation for the cultivation of paddy and other crops. However, the region faces significant challenges due to fluctuating water availability caused by climatic variations, upstream river disputes, and changing rainfall patterns [4]. Efficient water management in the Krishna Delta is therefore critical to maintaining agricultural productivity and supporting the livelihoods of the local farming community.

MATERIALS AND METHODS

The present study was undertaken purposively in 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 Distributory Committees were selected on proportionate random basis. From the selected Distributory 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

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mean, standard deviation, frequency, percentage were used to draw meaningful conclusions.

RESULTS AND DISCUSSION

The results depicted in (Table 1) indicated the functions performed by the project committee. The functions fully performed were maintain a list of the distributory committees and water users associations in its area of operation (100.00%), approve an operational plan based on its entitlement, area, soil, cropping pattern as prepared by the competent authority (95.00%), approve a plan for the maintenance of irrigation system including the major drains within its area of operation (90.42%), maintain an inventory of the distributory and drainage systems in its area of operation (82.08%), maintenance works with the funds of the committee from time to time and regular water budgeting (75.83%), promote economy in the use of water (60.42%), maintain accounts, cause annual audit of its accounts, social audits and other records as may be prescribed (45.42%), conduct general body meetings as may be prescribed (22.08%) and encourage avenue plantations and modernization of agriculture in its area of operation (10.83%) [5].

The functions that were performed partially were conduct general body meetings as may be prescribed (36.25%), maintain accounts, cause annual audit of its accounts, social audits and other records as may be prescribed (35.83%), resolve

disputes if any, between the distributory committees (28.33%), encourage avenue plantations and modernization of agriculture in its area of operation (23.33%), maintenance works with the funds of the committee from time to time and regular water budgeting (19.17%), maintain an inventory of the distributory and drainage systems in its area of operation (16.25%), approve a plan for the maintenance of irrigation system including the major drains within its area of operation (9.58%) and approve an operational plan based on its entitlement, area, soil, cropping pattern as prepared by the competent authority (5.00%) [6].

The functions that were non-performed were encourage avenue plantations and modernization of agriculture in its area of operation (65.84%), conduct general body meetings as may be prescribed (42.00%), resolve disputes if any, between the distributory committees (31.25%), maintain accounts, cause annual audit of its accounts, social audits and other records as may be prescribed (18.75%), promote economy in the use of water (17.08%), maintain an inventory of the distributory and drainage systems in its area of operation (5.00%) and maintenance works with the funds of the committee from time to time and regular water budgeting (1.67%). The analysis reveals that while the project committee excelled in several key functions, there were significant gaps in conducting general body meetings, promoting agricultural modernization, and resolving disputes, highlighting areas requiring focused improvements for more effective performance [7].

Table 1 Distribution of respondents according to functions performed by Project Committee (n = 240)

S. No.	Functions of project committee	Fully performed		Partially performed		Non-performed	
		F	%	F	%	F	%
1.	Approve an operational plan based on its entitlement, area, soil, cropping pattern as prepared by the Competent Authority	228	95.00	12	5.00	0	0.00
2.	Approve a plan for the maintenance of irrigation system including the major drains within its area of operation	217	90.42	23	9.58	0	0.00
3.	Maintain a list of the Distributory Committees and Water Users Associations in its area of operation	240	100	0	0.00	0	0.00
4.	Maintain an inventory of the Distributory and Drainage Systems in its area of operation	197	82.08	39	16.25	4	1.67
5.	Maintenance works with the funds of the committee from time to time and regular water budgeting	182	75.83	46	19.17	12	5.00
6.	Resolve disputes if any, between the Distributory Committees	97	40.42	68	28.33	75	31.25
7.	Promote economy in the use of water	145	60.42	54	22.50	41	17.08
8.	Maintain accounts, cause annual audit of its accounts, social audits and other records as may be prescribed	109	45.42	86	35.83	45	18.75
9.	Conduct General Body Meetings as may be prescribed	53	22.08	87	36.25	100	42.00
10.	Encourage avenue plantations and modernization of agriculture in its area of operation	26	10.83	56	23.33	158	65.84

Results in (Table 2) indicated the functions performed by the distributory committee. The functions fully performed were maintenance of register regarding water users associations and an inventory of the irrigation system in the area of its operation, including drains (95.83%), resolve disputes, if any, between the water users associations in its area of operation (94.17%), maintain accounts, cause annual audit, social audits and other records as may be prescribed (90.00%), regulate the use of water among the various water users associations under its area of operation and monitor the flow of water for irrigation (83.75%), promote economy in the use of water allocated (81.25%), conduct general body meetings and abide by the decisions of the project committee (77.50%), preparation of operational plan based on its entitlement, area, soil, cropping pattern (76.25%), assist in the conduct of elections to the managing committee (73.75%), maintenance works with the funds of the committee from time to time (66.67%),

maintenance of both distributaries and medium drains within its area of operation (65.42%) and encourage avenue plantations and modernization of agriculture in its area of operation (15.83%) [8]. The functions performed partially were maintenance works with the funds of the committee from time to time (26.66%), maintenance of both distributaries and medium drains within its area of operation (25.83%), assist in the conduct of elections to the managing committee (19.17%), preparation of operational plan based on its entitlement, area, soil, cropping pattern (14.17%), promote economy in the use of water allocated (13.75%), conduct general body meetings and abide by the decisions of the project committee (13.33%), maintain accounts, cause annual audit, social audits and other records as may be prescribed (10.00%), encourage avenue plantations and modernization of agriculture in its area of operation (9.58%), resolve disputes, if any, between the water users associations in its area of operation (4.58%) and maintain

a register of water users associations and an inventory of the irrigation system in the area of its operation, including drains (4.17%) [9].

The functions that were non-performed were encourage avenue plantations and modernization of agriculture in its area of operation (74.59%), preparation of operational plan based on its entitlement, area, soil, cropping pattern (9.58%), conduct general body meetings and abide by the decisions of the project committee (9.17%), maintenance of both distributaries and

medium drains within its area of operation (8.75%), assist in the conduct of elections to the managing committee (7.08%), maintenance works with the funds of the committee from time to time (6.67%), regulate the use of water among the various water users associations under its area of operation and monitor the flow of water for irrigation (5.42%), promote economy in the use of water allocated (5.00%) and resolve disputes, if any, between the water users associations in its area of operation (1.25%) [10].

Table 2 Distribution of respondents according to functions performed by Distributory Committee (n = 240)

S. No.	Functions of project committee	Fully performed		Partially performed		Non-performed	
		F	%	F	%	F	%
1.	Preparation of operational plan based on its entitlement, area, soil, cropping pattern	183	76.25	34	14.17	23	9.58
2.	Maintenance of both distributaries and medium drains within its area of operation	157	65.42	62	25.83	21	8.75
3.	Regulate the use of water among the various Water Users Associations under its area of operation and monitor the flow of water for irrigation	201	83.75	26	10.83	13	5.42
4.	Resolve disputes, if any, between the Water Users Associations in its area of operation	226	94.17	11	4.58	3	1.25
5.	Maintain a register of Water Users Associations and an inventory of the irrigation system in the area of its operation, including drains	230	95.83	10	4.17	0	0.00
6.	Maintenance works with the funds of the committee from time to time	160	66.67	64	26.66	16	6.67
7.	Promote economy in the use of water allocated	195	81.25	33	13.75	12	5.00
8.	Maintain accounts, cause annual audit, social audits and other records as may be prescribed	216	90.00	24	10.00	0	0.00
9.	Conduct General Body Meetings and abide by the decisions of the Project Committee	186	77.50	32	13.33	22	9.17
10.	Assist in the conduct of elections to the Managing Committee	177	73.75	46	19.17	17	7.08
11.	Encourage avenue plantations and modernization of agriculture in its area of operation	38	15.83	23	9.58	179	74.59

Data in (Table 3) showed the functions performed by the water users associations. The functions fully performed were maintain an inventory of irrigation system, registers of landholders and co-opted members (96.25%), resolve disputes (95.50%), conduct general body meetings, water budgeting as prescribed (90.83%), maintain accounts, records and social audits (90.00 %), prepare and implement Warabandhi schedule and regulation of water schedule (89.17%), abide decisions of distributory committee and project committee (87.08%), prepare a plan for maintenance of irrigation system (82.50%), assistance in conduct of elections and managing committee

(75.83%), monitor flow of water for irrigation (74.17%), raise resources and promote economy in the use of water allocated (69.58%), maintain feeder channels of minor irrigation tanks (66.67%), assistance to revenue department in collection of water rates (28.34%) and encourage avenue plantation (20.00%). The data in (Table 3) highlights that while water users associations successfully performed most core functions, including maintaining inventories, resolving disputes, and conducting general body meetings, areas such as assisting with water rate collection and encouraging avenue plantation require greater attention and improvement [11].

Table 3 Distribution of respondents according to functions performed by Water Users Associations (n = 240)

S. No.	Functions of WUAs	Fully performed		Partially performed		Non-performed	
		F	%	F	%	F	%
1.	Prepare and implement Warabandhi schedule and regulation of water schedule	214	89.17	20	8.33	06	2.50
2.	Prepare a plan for maintenance of irrigation system	198	82.50	29	12.00	13	5.50
3.	Resolve disputes	230	95.50	7	2.90	3	1.20
4.	Monitor flow of water for irrigation	178	74.17	50	20.83	12	5.00
5.	Maintain an inventory of irrigation system, registers of landholders and co-opted members	231	96.25	9	20.83	0	0.00
6.	Maintain accounts, records and social audits	216	90.00	24	10.00	0	0.00
7.	Raise resources and promote economy in the use of water allocated	167	69.58	19	7.92	54	22.50
8.	Assistance in conduct of elections and managing committee	182	75.83	49	20.42	9	3.75
9.	Assistance to revenue department in collection of water rates	68	28.34	137	57.08	35	14.58
10.	Conduct general body meetings, water budgeting as prescribed	218	90.83	22	9.17	0	0.00
11.	Abide decisions of distributory committee and project committee	209	87.08	26	10.84	5	2.08
12.	Encourage avenue plantation	48	20.00	26	10.83	166	69.17
13.	Maintain feeder channels of minor irrigation tanks	160	66.67	58	24.16	22	9.17

The functions that were performed partially were assistance to revenue department in collection of water rates (57.08%), maintain feeder channels of minor irrigation tanks (24.16%), monitor flow of water for irrigation and maintain an inventory of irrigation system, registers of landholders and co-opted members (20.83%), assistance in conduct of elections and managing committee (20.42%), prepare a plan for maintenance of irrigation system (12.00%), abide decisions of distributory committee and project committee (10.84%), encourage avenue plantation (10.84%), conduct general body meetings, water budgeting as prescribed (9.17%), prepare and implement Warabandhi schedule and regulation of water schedule (8.33%), raise resources and promote economy in the use of water allocated (7.92%), resolve disputes (2.90%) [12]. The functions that were non-performed by the respondents were encourage avenue plantation (69.17%), raise resources and promote economy in the use of water allocated (22.50%), assistance to revenue department in collection of water rates (14.58%), maintain feeder channels of minor irrigation tanks (9.17%), prepare a plan for maintenance of irrigation system (5.50%), monitor flow of water for irrigation (5.00%), assistance in conduct of elections and managing committee (3.75%), prepare and implement Warabandhi schedule and regulation of water schedule (2.50%), abide decisions of distributory committee and project committee (2.08%), resolve disputes (1.20%), maintain an inventory of irrigation system, registers of landholders and co-opted members. The functions

like maintain accounts, records and social audits and conduct general body meetings, water budgeting as prescribed was at zero per cent under non-performance [13-15].

CONCLUSION

The project committee was perfect in maintaining the list of the distributory committees and water users associations, approving the operational plan based on their resource availability. But the PC has failed to motivate the DCs and WUAs to encourage avenue plantation. The distributor committee was maintaining the registers, accounts and social audits up to date. The disputes were resolved by water regulation to all the areas and by arranging meetings and discussions with the WUAs in their jurisdiction. The DC also failed to create awareness among WUAs in its area of operation on avenue plantation along the bunds of canals. The WUA functionaries were in up to date in maintaining the registers of land holders, co-opted members, inventory and accounts of irrigation system. The WUA functionaries followed the decisions of their respective DC and PC in maintaining the irrigation system. The water was sufficient for the crops and disputes were resolved among farmers with the implementation of Warabandhi schedule. Most of the respondents had non-performed the function of encouragement of avenue plantation due to less spacing of bunds of the fields, lack of knowledge and their uninterest to follow that function.

LITERATURE CITED

1. Reddy VR, Reddy PP. 2005. How participatory is participatory irrigation management? Water users' associations in Andhra Pradesh. *Economic and Political Weekly* 40(53): 5587-5595.
2. Agizan S, Bayramoglu Z, Agizan K, Bozdemir M. 2024. The role of institutional diversity in sustainable water use: Performance comparison among water user organizations. *Irrigation and Drainage* 73(4): 1520-1535.
3. Howell Colby L, Cortado AP, Ünver O. 2023. Stakeholder engagement and perceptions on water governance and water management in Azerbaijan. *Water* 15(12): 2201. <https://doi.org/10.3390/w15122201>
4. International Water Management Institute (IWMI). 2011. Water Users Associations in the context of small holder agriculture. A systematic review of IFAD funded Water Users Association in Asia, submitted to *International Fund for Agricultural Development* (IFAD).
5. Raju KV, Shashidhara HL, Narasimha Reddy NL, Babu N. 2006. Participatory irrigation management in Andhra Pradesh. A quick review of 7 years of experience. *Institute for Social and Economic Change*, Bangalore. pp 1-58.
6. Shaoshu L, Yuan K. 2013. Study on roles of farmer water users association in construction, management and maintenance of small-scale irrigation and water conservancy. *Asian Agricultural Research* 5(4): 139-144.
7. Sangle S. 2016. Role of water users association in management, operation and maintenance of irrigation systems in India. *Second World Irrigation Forum*. Thailand. pp 1-8.
8. Zhang L, Heerink N, Dries L, Shi X. 2013. Water users associations and irrigation water productivity in northern China. *Ecological Economics* 95: 128-136.
9. Qiao G, Zhao L, Klein K. 2009. Water user associations in Inner Mongolia: factors that influence farmers to join. *Agricultural Water Management* 96(5): 822-830.
10. Yercan M, Atis E, Salali HE. 2009. Assessing irrigation performance in the Gediz River basin of Turkey: water user associations versus cooperatives. *Irrigation Science* 27(4): 263-270.
11. Zema DA, Nicotra A, Tamburino V, Zimbone SM. 2015. Performance assessment of collective irrigation in water Users' associations of Calabria (southern Italy). *Irrigation and Drainage* 64(3): 314-325.
12. Uysal ÖK, Atis E. 2010. Assessing the performance of participatory irrigation management over time: a case study from Turkey. *Agricultural Water Management* 97(7): 1017-1025.
13. Ghazalli MA. 2004. Benchmarking of irrigation projects in Malaysia: Initial implementation stages and preliminary results. *Irrigation and Drainage: The Journal of the International Commission on Irrigation and Drainage* 53(2): 195-212.
14. Ricks JI. 2016. Building participatory organizations for common pool resource management: Water user group promotion in Indonesia. *World Development* 77: 34-47.
15. Aydogdu M, Karlı B, Aydogdu M. 2015. Irrigation union presidents' views on water pricing and management: the case of gap-Harran plain irrigation. *The Journal of Academic Social Science Studies, International Journal of Social Science* 31: 167-177.