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Performance of Water User Associations in the Management-operation and Maintenance of Great Menderes Basin Irrigation Schemes

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Abstract: The aim of this study was to assess the impact of the water users related to management-operation and maintenance services carried out by Water User Associations (WUAs) in the Great Menderes basin irrigation schemes. Irrigation schemes of basin are operated by WUAs, an user organization and consist of 4 schemes, namely Nazilli, Akçay, Aydın and Söke. In order to investigate the opinion of the water users in general, a survey was carried out, using the random sampling methodology. A questionnaire considering 5 different topics was used to analyze the management, operation and maintenance performance of the WUAs. The user's general opinion is that the turnover of the irrigation infrastructure to the WUAs has had a very positive impact.

Key words: Great Menderes Basin, water user association, MOM performance, turnover, water user, questionnaire

INTRODUCTION

The policy of turnover irrigation management from government agencies to water users associations is part of the more general structural adjustment process which continuing into the 1990s. It is now very widespread and reflects the need of many countries to reduce government expenditures for recurring costs of irrigation management, particularly in countries which have been unable to collect irrigation service fees from farmers[1,2]. It is widely assumed that management turnover will reduce the cost of irrigation for governments and that farmers will capable of taking over management and bearing the increase in costs. It is thought that farmers should have a greater incentive than government agencies to improve the efficiency, productivity and sustainability of irrigation[3].

Most research studies on performance of irrigation have aimed to monitor the performance over time, for example to determine the impact of a management change, or to analyse the performance of comparable projects[4]. These evaluations mostly focus on an analysis of inputs and outputs of irrigation projects (water, land, labour, value of production, cost of operation and maintenance). These indicators are often referred to as external indicators. These indicators in general do not provide significant information when comparing projects.

A number of specialist thought that taking irrigation and drainage system management out of the direct governmental sphere would inevitably lead to improvements in the sustainability of irrigation and drainage systems and in agricultural production[5]. The philosophy was that users were more likely to operate systems effectively and according to their requirements and also pay for the operation if they were also the owners. The dominant perception was that public irrigation management organizations lacked the incentives and responsiveness to enhance performance whereas water users had a direct interest in cost efficiency, profitability and proper physical condition of the irrigation facilities.

However, despite the widespread adoption of management transfer programmes, there is still little information about their impact on the agricultural performance of irrigation systems. A review of turnover impact studies in 1997 noted that the impact is typically not noticeable in terms of agricultural performance. Sri Lanka there has been no detectable change in irrigated area, crop patterns, cropping intensity or yields. Turnover has neither improved nor interfered with agricultural productivity[6]. Another review of experiences in irrigation management transfer in selected countries in Asia revealed that the main impact has been a gradual decline in government financing of operation and maintenance of irrigation systems, whereas water user groups are making a modest contribution towards maintenance. The analysis also showed that there had been a modest improvement in the irrigation service following transfer. The review concludes, the evidence of the impact of turnover on

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systems' operations is not conclusive but seems to suggest that it has not resulted in a deterioration of systems operations nor decline in agricultural performance[7].

In this study, performances of water user associations (WUAs) in management, operation and maintenance (MOM) services of Great Menderes Basin irrigation schemes were evaluated.

MATERIALS AND METHODS

This study has been carried out four irrigation schemes which were turned over the WUAs to assess the performance of these WUAs in the MOM services of the irrigation infrastructure. Nazilli, Akçay, Aydın and Söke irrigation schemes located in Great Menders Basin in Turkey were chosen for study, with total area 71000 ha, where almost 23752 user were organized into four WUAs, which were responsible for management and maintenance of the hydraulic works.

The irrigation areas of four schemes cover 39.9 % of the total irrigation areas of the basin. The data relating to irrigation schemes have been obtained (Table 1), Irrigation Scheme Monitoring and Evaluation Reports[8] and Ph.D Thesis[9].

In this study, in order to investigate and evaluate the opinion of the Board of WUAs and the user in general, a survey in each case was carried out, using the random sampling methodology. Sampling size determined in Nazilli, Akçay, Aydın and Söke irrigation schemes was 299, 278, 193 and 240 water users, respectively and total number of water users interviewed is 1010. All of the interviews were conducted on farm and usually took between 15 and 20 min depending on how much time the individual could spare and how much they had to say. The interview was based on a page questionnaire considering five different topics (water delivery, maintenance and repair works, MOM personnel, irrigation fee, sustainability of WUAs). Each interview was recorded in shorthand and then transferred to an Excel database. The data was then analysed to assess the range of responses and attitudes toward each issue.

Table 1: A summary of the main characteristics of irrigation schemes researched

Irrigation schemes	Net irrigation area (ha)	No. of users	No. of holdings	Average farm size (ha)
Nazilli	15000	10783	27886	0.6
Akçay	15000	7070	18430	0.6
Aydın	15000	2816	5895	1.6
Söke	26000	3083	10661	2.7

RESULTS AND DISCUSSION

Countries are more concerned with the implementation of the transfer programmes than with impact assessment. Reports of hectares transferred or water user association established are easily obtainable but very rarely do reports provide evidence of the impact of the transfer. Results obtained from this study aimed the performance assessment of WUAs after turnover.

In the first one, the question is whether the water users in Nazilli, Akçay, Aydın and Söke irrigation schemes receive the water on time and sufficiently . The water users in Nazilli, Akçay; Aydın and Söke irrigation schemes answered 'yes' 55, 75, 80 and 75%, 'no' 23, 14, 10 and 12%, 'sometimes' 22, 11, 10 and 13%, respectively. About 71% of the water users in irrigation schemes answered "yes", 15% 'no' and 14% 'sometimes'. Water users in all the researching schemes (71%) have considered to be on time and sufficient of water delivery. Irrigation water used schemes was not restricted in the year of investigation as water resources in the basin was sufficient. The answer of the same question would be different, if irrigation water were not so sufficient. Generally, water users in the irrigation schemes constructed newly have had positive opinion about water delivery. Each level (main, secondary and tertiary channels) of irrigation scheme, water delivery should be planned the technically and practiced carefully. Qualification and number of the irrigation personnel practicing water delivery programme need to be adequate. The personnel of WUAs must practice the equity, adequacy, timeliness, reliability and sustainability in water delivery systems. The least answer 'yes' about water delivery have realized in Nazilli irrigation scheme. Although water resource in the basin is adequate, aged and worn-out of Nazilli irrigation scheme and problems in the irrigation schedule practised have decreased the number of the pleasuring water users in water delivery. According to investigation Coello and Saldana irrigation schemes turned over the WUAS in Colombia, In the Coello irrigation scheme, where relative water supply was reported to approximately 1.4 and a variety of crops is planted[10]. 45% of water users interviewed after turnover said water delivery was always enough while 32% said it was too enough most of time. In Saldana irrigation scheme, 59% said water delivery was always enough and 31% said it was enough most of time[11].

The second main topic is whether maintenance and repair works achieved by WUAs are well or not (Table 2). In Nazilli scheme almost 38% of water users consider to be well the maintenance and repair works achieved by

Table 2: Assessment and performance of five different questions in four irrigation scheme.

	Nazilli	Akçay	Aydin	Söke	Average
Opinion on	55	75	80	75	71
water delivery	23	14	10	12	15
	22	11	10	13	14
Opinion on	38	53	62	72	56
maintenance	40	31	24	16	28
	22	16	14	12	16
Opinion on	67	82	83	90	80
WUAs personnel	32	17	16	10	19
	1	1	1	0	1
Opinion on	2	3	4	2	3
water charges	70	59	56	71	64
	26	37	40	27	32
	2	1	0	0	1
Opinion on	42	62	71	77	63
sustainable of	25	12	10	12	15
WUAs	33	26	19	11	22
	0	0	0	0	0

WUAs as well as 22% of water users of Söke irrigation scheme. The rates of water users considering, no well maintenance works achieved by WUAs in Nazilli and Söke irrigation schemes were 4 0 and 16%, respectively. The rates of the water users answering fair in Nazilli, Akçay, Aydın and Söke irrigation schemes were 22, 16, 14 and 12%. Fifty six present of water users answered well, 28% not well, 16% fair in irrigation schemes. Inadequate of funds allocated the maintenance and repair works and aged and worn out of irrigation schemes are to influence negative the water users and Board of WUAs. Particularly, maintenance of secondary and tertiary channels was enough quality and completed on time. Work machine and labour forces required for maintenance works planned by WUAs are to be determined carefully. Water users should monitor and warn the WUAs relating to whether maintenance works are on time after turn over. When WUAs have work-machine required for maintenance work and quality labour forces, maintenance works will achieve both efficient and economical. This condition will reflect on irrigation fees. In a study of Rio Maya and Delicious irrigation schemes turned over the WUAS in Mexico, In Delicious irrigation scheme, 89,8% of water users said maintenance and repair works achieved by WUAs were well, 7.2% not well, 3% no answer. In Rio Maya irrigation scheme, 71.8% said well, 24.5% not well, 3.7% no answer[12]. Maintenance activities by WUAs in Mexico have stopped the deterioration of infrastructure[13].

The third main topic is whether personnel of WUAs solve the problems relating to management, operation and maintenance (Table 2). In Nazilli, Akçay, Aydın and Söke irrigation schemes, water users answered 'yes' 67, 82, 83 and 90%, respectively. In irrigation schemes 80% of all the water users answered 'yes', 19% 'no' and 1% no answer. Water user has pleased much service efficiency of irrigation personnel carrying MOM services of WUAs. WUAs personnel have responded positively demands of water user the solving of problems relating to irrigation and controlling of irrigation schemes. The elements increased the personnel efficiency of WUAs are to be based on personnel productivity, working period determined to the quantity and quality of work, practised of elements appeared the efficiency. Decreasing number of the personnel required for system management and efficient service with quality personnel might cause of irrigation fees decreasing. The quality and quantity of MOM personnel are to change according to system sizes and technology including. The number determined of MOM personnel should raise the level of MOM performance indicators and optimize personnel expenditure in MOM cost.

The fourth main topic in questionnaire has been researched the user's opinion on the cost of water charges determined by WUAs in irrigation schemes (Table 2). The rations of water users considered being expensive of the water charges in Nazilli and Söke irrigation schemes were 70 and 71%. Akçay and Aydın irrigation networks were 59 and 56%. Percent of water users considered to be normal of water charges in Nazilli, Akçay and Söke irrigation schemes was 26, 37 and 27%. 2% in Nazilli, 3% in Akçay, 4% in Aydın and 2% in Söke, considered it to be cheap. In Alto Rio Lerma irrigation scheme in Mexico, 62% of the water users report that they perceive that the water charges have increased after turn over[7]. According to general opinion in four irrigation schemes, 64% of water users considered to be expensive, 32% normal, 3% cheap and 1% no answer. For the reason that no meeting all the MOM expenditures of water charges and practicing flexible payment methods, before turnover, water charges have considered to be expensive by water users in irrigation schemes, after turnover. National economic conditions, low crop prices and high production cost is to prevent setting their individual finance balance of water users. After turn over, WUAs have enough financial responsibility the revenue and expense issues.

The fifth main topic is whether irrigation MOM services achieved by WUAs are sustainable or not (Table 2). 63% of water users in irrigation schemes answered well, 15% not well, 22% not any different 50% water users of Aydın irrigation scheme, 77% of Söke irrigation scheme were let known to be better of WUAs in forward years. 25% of water users in Nazilli irrigation network were answered to be worse.

REFERENCES

1. Vermillion, D.L., 1992. Irrigation management turnover: structural adjustment or strategic evolution? Iimi Rev., 6: 3–12.
2. Small, L. and I. Carruthers, 1991. Farmer-financed Irrigation: The Economics of Reform. Cambridge, Uk. Cambridge University Press, pp: 233.
3. Vermillion, D.L., 1991. The turnover and self-management of irrigation institutions in developing countries: A Discussion Paper for a New program of the International Irrigation Institute, Colombo Sri Lanka: International Irrigation Management.
4. Albertney, C.L., 1989. Performance Criteria for Irrigation System: Conference on Irrigation Theory and Practice. Southampton England, pp: 10
5. Repeto, R., 1986. Skimming the Water: Rent-seeking and the Performance of Public Irrigation Systems. Research Report No. 4, Washington, DC: World Resources Institute.
6. Vermillion, D.L., 1997. Management devolution and the sustainability of irrigation: Results of comprehensive versus partial strategies. FAO/World Bank Technical Consultation on Decentralization and Rural Development, Rome, pp: 12
7. Samad, M. and P. Simidt, 1999. Management transfer in irrigation systems in Asia: A review of selected country experiences; Question 49, ICID International Congress Granada. Spain, pp: 177-196.
8. Anonymous, 1999. Monitoring and Evaluation Reports of Irrigation Schemes Transferred. State Hydraulic Works, XXI Regional Directorate. Department of Operation and Maintenance, Aydın.
9. Koç, C., 1997. Investigations on the Organization and Management Problems of the Great Menderes Basin Irrigation Network and Development of New Models. Ph.D Thesis., Faculty of Agriculture, Ege University, Izmir, pp: 183
10. Levine, G., 1982. Relative water supply: An explanatory variable for irrigation systems. The determinants of developing country irrigation project problems. Technical Report 6. Washington, DC: US. Agency for International Development.
11. Vermillion, D.L. and C. Garces-Restrepo, 1994. Irrigation management transfer in colombia: A pilot experiment and its consequences. Short report series on locally managed irrigation. Colombo. Intl. Irri. Manage Inst., 5: 18.
12. Placious, E., E. Mejia, J. Duran, R. Valdivia and D. Del Vale, 1993. Diagnostico sobre el desempeno de las Asociaciones de Usuarios que operan sistemas de riego. First Report of Study, with the Support of the Ford Foundation.
13. Johnson, S.H., 1995. Selected Experiences with irrigation management transfer: Economic Implications. Intl. Water Res. Development, 11: 61-72.