

MODERN MANAGEMENT OF WATER USERS' ASSOCIATIONS IN OPERATION AND MAINTENANCE OF IRRIGATION SYSTEMS OF IRAN (CASE STUDY PARTICIPATORY OPERATION AND MAINTENANCE IN GOLESTAN NETWORK WITH RURAL PRODUCTION COOPERATIVES (RPC))

GESTION MODERNE DES ASSOCIATIONS
D'USAGERS DE L'EAU POUR L'EXPLOITATION ET LA
MAINTENANCE DES SYSTEMES D'IRRIGATION EN
IRAN
(ETUDE DE CAS : EXPLOITATION ET MAINTENANCE
PARTICIPATOIRE DU RESEAU DE GOLESTAN EN
COLLABORATION AVEC LES COOPERATIVES DE
PRODUCTION RURALE (RPC))

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ABSTRACT

Due to lack of rainfall, irrigation development is essential in Iran to support crop cultivation. On the one hand, creating irrigation infrastructure and managing them has proved to be unmanageable by the government, on the other hand individual farmers cannot undertake this activity. Thus, cooperation among government, private sector and public is needed in this endeavour. People's cooperation in design, sustenance and using water structures, has deep root in Iran.

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The present analytic survey have been performed to investigate the cooperative management of water users in sustaining and using water structures and irrigation and sewerage channels in the state of Golestan, Iran. The sample for the survey is taken from the members of irrigation and sewerage network of Golestan.

The purpose of the present study is to enlighten and empower the water users in sharing knowledge of the researchers in evaluating and resolving the water management problems and to sustain the complimentary role of the modern and the traditional irrigation systems.

Key words: *Water user groups, Water management, Water use efficiency, Questionnaire survey, Cooperation types, Golestan, Iran.*

RESUME

En raison du manque de pluie en Iran, il est nécessaire de développer l'irrigation pour soutenir les cultures. La création d'infrastructures d'irrigation et leur gestion semble difficile à gérer par le gouvernement d'une part, il est impossible aux agriculteurs individuels d'entreprendre cette activité de l'autre. Ainsi, la coopération entre le gouvernement, les secteurs privé et public est nécessaire dans cette entreprise.

Cette étude analytique a été réalisée pour étudier les coopératives des usagers de l'eau en ce qui concerne la gestion et l'utilisation durable des structures d'eau et des canaux d'irrigation et d'assainissement en Etat de Golestan en Iran. L'échantillon de l'enquête est recueilli par les membres du réseau d'irrigation et d'assainissement de Golestan.

L'étude vise à sensibiliser et donner pouvoir aux usagers d'eau dans le partage de la connaissance des chercheurs pour évaluer et résoudre les problèmes de la gestion d'eau et soutenir le rôle complémentaire des systèmes d'irrigation moderne et traditionnel.

Mots clés : *Groupes des usagers d'eau, gestion d'eau, efficience d'utilisation de l'eau, enquête par questionnaire, types de collaboration, Golestan, Iran.*

1. INTRODUCTION

In irrigation and drainage water management these days, the greatest emphasis is on promoting the role of water user groups in dealing with the economic, social, agronomical and environmental matters. This is expected to improve water use efficiency, maintain groundwater quality, arrest the declining trend of groundwater table and reduce the burden of the government in irrigation and drainage network (IDN) management.

Transferring the water management from the government to water user groups is in fact assigning the rights and social grants as social assets to the water users and their managers in order to perform irrigation management. The substantive value of the presence of water users in managing and programming is now clear and water users have made it clear previously through managing the use of rivers, ditches, aqueducts, shafts etc.

A significant matter which has been focused in present survey is that a successful management in sustaining and using water structures is possible through the presence of water users during its planning, execution and performance evaluation stages. The failure of top to bottom approach in planning irrigation programs has been experienced many times in this country.

2. THE STUDY REGION (THE STATE OF GOLESTAN)

Area and boundaries

The 20437.74 km² state of Golestan is located in north and northwest of Iran, between 52° 19' to 51° 53' E longitude and 38° 8' to 36° 30' N latitude. Its population is 1,426,288 according to the last census performed in 1996. The state is bounded by Turkmenistan and Caspian Sea from north, Northern Khorasan from east, Mazandaran from west and Alborz Mountain range and Semnan from south. The state comprises 11 counties, 21 parishes and 50 villages. The center of state is Gorgan which is located at 13 meter above mean sea level.

Weather and climate

The climatic is moderate to semi-humid and the rainfall varies across the state with an average of 450 mm of which, 70% is received during the non-crop season, from April to June. The annual rainfall varies from 700 mm in the south and southwest to 200 mm in the northern areas. The maximum annual rain of 1300 mm is recorded at Normab station and the minimum of 170 mm is recorded at Inche station. The annual average daily temperature varies from 7 °C at higher altitudes to 19 °C at the lower altitude Gonbad area. The average rate of evaporation is 800 mm in southern and higher areas, and 2000 mm along the northern border of the state.

Framing the question

The two major concerns in the developing countries are water crisis and food safety. These concerns are more serious in arid and semi-arid countries with inadequate rain, such as in Iran where the undesirable consequences of this limitation have been aggravating. Of the total available fresh water in Iran, 92% is used in agriculture. Thus, developing an optimum management strategy to use water in agriculture and sustain related structures in different regions is necessary.

Past evidences indicate that the government is not a good manager in using and sustaining these structures. An appropriate replacement should be found to undertake the duties of government; who should be able to perform in order to improve the management, use, sustenance and distribution of water while reducing the burden of the government.

The survey questionnaire therefore comprises questions to understand the peoples' perception of the current water management scenario and how would people like this to be handled in the future.

The partnership of water users in using water structures

Planning various programs in order to enable local societies to cooperate more in different stages of sustenance and use water with discipline is a matter of significance. The lack of water users' cooperation, have caused irrigation efficiency reduction increased water use cost endangering the use and sustenance of water structures and resources.

Investigations on a number of international projects which were not adapted to local social-economic situations, reveal that these projects had an efficiency rate of 8% and the projects which didn't include the cooperation of water users in choosing and making decisions from the very beginning, were not successful at all.

Now a days, the significance of cooperation - both as a method and as an aim of development - is more discussed nationally and internationally. The concept of cooperation, despite all the definitions that it has, is a bit obscure, as perhaps there cannot be a universally accepted definition for this term. A usual usage of this term is the mobilization of people to undertake the subjects of social and economic development. The second explanation sets the cooperation equal to decentralization of governmental systems or related organizations. The third one identifies cooperation as the process of authorizing the deprived social levels, and so on.

The concept of cooperation from an irrigation management point of view is framed under 7 types (Table 1).

Table1: Framework of water users' cooperation in managing, using and sustaining irrigation and sewerage networks

Cooperation type	Description
Type 1: passive cooperation	Water users have no role in managing, using and sustaining irrigation and sewerage networks and they would be aware of the programs after the unilateral announcement of local water company. The opinions of water users are not considered in this type what so ever.
Type 2: cooperation in giving information	The cooperation of water users in managing, using and sustaining irrigation and sewerage networks is limited to answer to the requests and adjusting the needs of water users. Even in this level of cooperation, water users have no considerable dominance.
Type 3: cooperation through consulting	Governmental experts or using companies and different administrative levels of cooperating water users in managing using and sustaining irrigation and sewerage networks, both assign the using and sustaining and its solution without the cooperation of water users. Then they will consult with water users in order to inform them and ask their ideas. Of course the consulting process with water users causes no requirement about applying their ideas in reforming the program of managing, using and sustaining irrigation and sewerage networks.
Type 4: financially motivated cooperation	Water users cooperates in managing, using and sustaining irrigation and sewerage networks, for example through working for using companies and etc in exchange with money, water cost discount or other financial motivations, it is clear that the cooperation of water users will be stopped in the case of cutting financial motives.
Type 5: functional cooperation	Water users cooperates in defining related managing using and sustaining aims in irrigation and sewerage networks (distributing water and taking water cost and etc) through forming local groups and organizations and water user groups or cooperative firms. Of course, these local groups can't cooperate in the first stages of planning and making substantial decisions about using and sustaining irrigation and sewerage networks.
Type 6: transactional cooperation	Water users cooperate with experts and managers in analyzing the managing, using and sustaining irrigation and sewerage networks which causes the planning of practical programs or forming or corroborating local organization. In this level of cooperation, the regular and organized learning programs are applied.
Type 7: self motivated (enabling) cooperation	The water users have the higher level of cooperation and proceed to reform and change their situation independently from local water companies, using companies and governmental organizations. Of course they may ask help from local water companies, using companies and external governmental organizations in order to finance resources and learn requires techniques, but they control the use of resources themselves.

Historical studies and the rules

In 1991 water and agronomy department, power ministry and agriculture ministry, considered attracting the cooperation of users in their programs and the using companies from irrigation networks were formed after the settlement between power and agriculture ministries and programming and budget organization, aiming to obtain the cooperation of water users in these companies. But even this action wasn't that much efficient and peasants didn't undertake to cooperate in managing the usage practically. It can be said that, the most important reason of not forming water users group, was the lack of clear and efficient rules on this matter. In a way that even through developing appropriate administrative structures, it is the presence of firm rules which helps the executives to realize the aims of organization.

In second development program, the resolution of law remarks such as remark 76 about the obtaining of peasants cooperation in the introduction of irrigation networks and the provision of remark 19 of the same law about the optimum use of agronomic water resulted in resolution of optimum agronomic water use bylaw in the government, in which it is attempted to provide the legal base for cooperation of peasants. By and large, developing agronomic water user groups is discussed in two different forms:

- A) Water user groups aiming to cooperate in operating irrigation projects and using them.
- B) Water user groups aiming to cooperate in using and sustaining the networks which are developed by the government previously.

In the first case, users are more motivated to form the groups, because the grant of finance and transformed water, and gaining governmental supports and debts in introducing irrigation networks, motivates the peasants to form user groups and cooperate in investment and definitely after the integration of plan it is expected by them to undertake the managing of provided structures usages themselves.

But in second case, the peasants who had no responsibility about the using and sustaining irrigation networks from the beginning, is less inclined to form groups and cooperate in using operations from irrigation networks. Developing a group is a precise and delicate job which should be done step by step within adequate time.

3. DISCUSSION

During recent years, Golestan local water company along with Agronomic Jihad Organization of state has proceeded to form and activate several rural producing cooperative companies in its new irrigation and sewerage networks (especially in irrigation networks of Golestan). Four rural producing cooperative companies in irrigation and sewerage network of Golestan (such as Sabz, Miras, etc.) and a total of 8600 ha of irrigated lands are among them. The general managers of these companies (groups) have appropriate work experience and master degree in agriculture. Each of the groups of irrigation network of Golestan has been given a work office near the Golestan dam by local water company which is facilitated by themselves. By following and cooperating of the aforesaid groups in this network, some tributary irrigation networks are being built.

The above mentioned rural producing cooperative companies in the considered irrigation networks are directly related to the local water company of Golestan and no mediums exist between them and local water company of Golestan. This relationship is established through annual contracts between them. Such an aspect from local water company of Golestan enables active groups in the irrigation networks, in a way that existing groups apply for long-term contracts with local water company and even the ownership and managing of all water structures.

The reviewed groups in Golestan 1 irrigation and sewerage network are performing different agronomic, commercial, official and educational activities for their members. The meetings of general assembly, managing board and member communication of these groups are being set regularly and their activities are significant and efficient.

The existing aspect in Golestan local water company, is based on establishing cooperative management (PIM) and eventual transfer of irrigation management task (IMT) in irrigation and sewerage networks under its management and it attempts to obtain the cooperation of beneficiary peasants by developing its relationship with agronomic jihad and Islamic councils of covered villages.

Managing the irrigation network of Golestan 1 dam and the situation of existing agronomic groups

The Golestan 1 dam was completed in 2001. The network of this dam is among the first few networks of country built by the cooperation of people. Its administrative cost has been financed through agreement and cooperation of people according to remark 76 of 2nd program and remark 106 of 3rd program by operative bank (Agriculture Bank). After the completion of this dam and the 1st and the 2nd stage irrigation channels, 5400 ha out of 10000 ha of irrigated lands in this network, were earmarked for drip irrigation. However, due to lack of preparation and financial capability of most of peasants, no action took place and finally, it ended in performance of channels 3 and 4 for surface irrigation.

One of the existing problems is the lack of land leveling. Some of the other problems of peasants of the low income of agronomic land and not paying the water cost to use the water of this dam and networks, which cause undesirable use of these facilities during the recent years.

Controlling the use and distribution of water is now performed through assigning contracts between producing cooperative companies by local water company of the state. The water headquarter of Golestan and Agronomic Jihad Organization cooperated in encouraging user peasants to develop cooperative companies which ended in establishment of four companies (Table 2) which are commensurate to establishment of irrigation network and giving services to peasants such as related problems about assigning contract of water delivery with the local water company of Golestan and performance of other related cases.

Table 2: Characteristics of producing cooperative companies in Golestan 1 network

Number	Title of company	Year of establishment	Number of members	Number of villages	Covered lands (ha)
1	Golestan 1, Miras	2001	212	4	3600
2	Golestan 2, Dayan	2001	68	3	3000
3	Golestan 3, Elkam dasht	2001	195	4	2800
4	Golestan 4	2001	170	4	2600

In addition to performing usual services for peasants, the aforesaid cooperative companies receive the peasants' applications for irrigating their lands and calculate the required water volume based on the cropping pattern, and arrange for delivery of this water in accordance to the contract in to the 1st stage channel. Water distribution in the network is performed by operators of cooperative companies and the related water cost would be taken based on tariff depending on the cropping pattern. Five per cent of received water cost is paid to cooperative companies as their wage. The pumping station of Golestan dam is facilitated by 23 pumps which transform water to the network lands through 2 pipe lines.

Learning and achievements

1. Cooperative companies in Golestan 1 irrigation network are directly related to local water company of Golestan and there is no medium between them.
2. These groups perform different agronomic, commercial, official and educational activities for their members. They also work for using, sustaining and managing irrigation networks. The general assembly and managing board sessions and member communication are regularly performed in these groups and their activities are evaluated significant and efficient.
3. The role and the cooperation level of general managers of cooperative companies is good, because of being native, being agronomic experts and knowing the problems and limitations.
4. Producing cooperative companies resolve the problems inside their network through interior management and problems such as water demands, cropping pattern, water cost payment and even selling products from time to time and training the water users are undertaken by them.

4. CONCLUSIONS AND SUGGESTIONS

1. Although some tasks about empowerment of water users have been performed in Golestan networks according to this matter, it should be done with better aims and programs.
2. All of the responsible operators and executives of managing water and soil resources in the country should be convinced in power transform procedure and bottom to top approach and they should be motivated to follow it. So it is recommended to develop

irrigation cooperative management as a national task to be announced by the president or power minister.

3. Considering the significance of training the philosophy and theoretical basis of cooperative approach in rural development literature and the acquaintance of operators with related techniques and implements, it is necessary to operate the water users cooperation department in academic centers of country, especially educational centers which are dependant to power and Agronomic Jihad ministries.