



ROLE OF WATER USERS COOPERATIVES IN OPERATION AND MAINTENANCE OF SOUFI CHAI IRRIGATION AND DRAINAGE NETWORK

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ABSTRACT

Management of Irrigation and Drainage Networks (IDN) by government in the past few decades has not resulted in optimal operation and maintenance and the irrigation efficiencies are far below the design bases. Failing to collect the water fees has been another incentive for the East Azerbaijan Regional Water Authority (EARWA) to think of the beneficiaries as the main custodians of the network both in design and implementation stages of Soufi Chai IDN and this was in accordance with the traditional network operation management in the region. Therefore, for the first time in the country, 17 Water Users Cooperatives (WUC) were formed in 1994 within the framework of Note-26/ Budget Act of the same year and cooperatives were allowed to participate in the implementation of the network. The consulting engineers considered the opinions and rights of the beneficiaries in design. The implementation of the Alavian Storage ended in 1999. For a short while, EARWA operated the system, then holding a tender, the operation and maintenance management was conferred on a contractor. As a part of the network management, WUC annually makes contracts with the contractor for the delivery of volume- based irrigation water to be distributed among users. WUC participates in operation and maintenance management of Grade-1&2 Canals, collects the water fees from the members, has remarkable part in settling the disputes and sociopolitical issues. EARWA is trying to build the union of water user's cooperatives to confer on them the operation and maintenance management of the whole IDN downstream Alavian Storage Dam.

Key words: EARWA, IDN, WUC

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1- INTRODUCTION

Studying the measures taken in the route of large hydraulic structures realization in 1950's and 1960's for the purpose of water supplying and distribution, we witnessed the rapid development of agriculture in developing countries including Iran. This strategy brought about several problems on rural communities. One of the main sources of these problems has been neglecting presence of rural people in management and planning of IDN's. Experts believe the way to tackle with the prevailing issues is to return the people to management arenas. Because disregarding the rural people had no result but improper operation and maintenance of IDN's & lowering the irrigation efficiency, etc. This, which was the case with many of the government managed IDN's, originated from focusing on hardware aspects (structures) and neglecting the software including the residents. Persons in charge had no exact idea then about the operation and maintenance costs and out-comes of putting aside the farmers in the management arena. Finally, in the late 1960's it was clarified for the governments that, the water fees would not suffice to supply costs of IDN's implementation, operation and maintenance and other expenses. Then, for three decades the solutions and methodologies were in the global focus and understood that, only part of this deficiency results from financial restrictions and the major part roots from failing to understand the necessity of presence of rural community in planning and the major role of farmers in network management. In our country too, the subject of popular partnership in implementing the modern IDN's has come to notice since a decade ago. Regarding the available experience from the irrigation networks in use (e.g. Moghan), EARWA intended for the first time in the country to tackle the executive and optimal operation and management of an IDN (Soufi Chai) through supporting and forming Water Users Cooperative.

2-LOCATION AND LIMITS OF SOUFI CHAI IDN

Soufi Chai IDN lies on the south slope of the mount Sahand and southeast of Urmia lake, 140 Km away from Tabriz towards southwest. This area is divisible into four distinct zones from viewpoints of crop pattern and the existing or newly constructed structures.

Zone-1: Including the orchards and farms upstream of the diversion dam to Alavian Storage Dam and vicinity of the city of Maragheh in the total area of 2500 hectares. IDN was not implemented in this Zone due to topographic conditions, high slope, well developed orchards on terraced lands owned by private sector. This Zone is irrigated by seven traditional canals branched from the Soufi Chai River the intake of which have been amended or newly constructed and receive water in term of volume.

Zone-2: 440 hectares in area, this Zone is located downstream Maragheh Diversion Dam between the 18 Km Right Main Canal and Soufi Chai River and is irrigated via four Secondary Canals.

Zone-3: Lying among Maragheh Diversion Dam, Left Main Canal and Soufi Chai River, this Zone is 2408 hectares in area and is irrigated by five Secondary Canals. Built on a river with the same name, Khanghah Diversion Dam is meant to utilize the surface water for this Zone in irrigation season.

Zone-4: This Zone includes Bonab Plain and the lands after Zarrineh Roud water conveyance pipeline and is irrigated by 14 Canals branching from Soufi Chai. A water need of this Zone is met from Alavian Dam, runoffs and the extra water in Khanghah Chai from September to June and from ground water resources in June to September. This Zone is 2850 hectare in area and its development is under study on Bonab area.

3- GENERAL SPECIFICATIONS OF SOUFI CHAI IRRIGATION AND DRAINAGE NETWORK

Table 1: General Specifications of Soufi Chai Irrigation and Drainage Network

Network Area	12'000 ha	Length of Secondary Canals	33.2 Km
No. of Irrigation Zones	4	Length of Secondary Drainage	5 Km
No. of Diversion Dams	2	No. of Main Irrigation Canals	2
Length of Main Irrigation Canals	30.8	No. of Secondary Canals	9
Length of Main Drain	33.6		

4- CLIMATE

Mean precipitation in the project area is 331 mm per year out of which 250% falls in autumn, 30% in Winter, 40 % in Spring, and 5% in Summer.

According to Amberge climatologic classification, the project area lies in semi-arid cold zone. The hottest and coldest months of the year are August and February.

5- PURPOSES OF THE SCHEME

- Supplying irrigation water for Maragheh and Bonab regions
- Flood control
- Income increase and job creation

6- HISTORY OF WATER RESOURCES UTILIZATION BEFORE IDN IMPLEMENTATION

An annual discharge record of Soufi Chai shows no similar volume and time distribution on the course of several years. Due to such an unforeseeable behavior, it has been called Soufi Chai, which means "Sufi River" in Azeri language. There are lots of historical remnants on the banks, which indicate ancient civilizations in the area. Climatologically, this area is semi-arid and surveys prove that climate and changes in river regime have had a crucial role in formation of guilds and utilization of water, so that users have come together to cooperate and have eventually attained the proper methods of allocating each user's water-right.

According to the studies carried out, discharge of Soufi Chai used to be more the needs in winter and spring and all villages except Yengi Kand Khousheh Mehr could take irrigation water from the river as per their water-right, with the beginning of summer

river discharge would decrease and water was allocated in accordance with the water-right. Local trustees of the traditional canals around Maragheh, Khousesheh Mehr and Narj Abad would hold a coordination meeting in the first week of summer and elaborate a timetable for the water distribution of villages and canals according to their water right. The first seven days of each month was allocated to irrigation of Narj Abad and Khousesheh Mehr (3 and 4 days, respectively), and half of the river discharge was allocated to Pahr Abad and Padegan and in rest of the days the orchards around Maragheh would be irrigated. Canals Trustees were in charge of policy making and supervision over water distribution and special maneuvers were carried out in drought periods such as avoiding irrigating the harvested trees or diverting all available water into one canal for a short period.

In villages of Rusht Bozorg, Sarj, Aghajeri, Akbar Abad, Zavesht, Rusht Kouchak, and Dizaj Navlou that have no summer water right, people would cultivate cereals and irrigate them via the canal passing through the city. Representatives of the said villages would hold coordination meeting in early October to elaborate the cereal cultivation of villages and their irrigation timetable till late June. The villages Chalghaei, Dizaj Parvaneh and Ghaleh Khaleseh take their irrigation water from Soufi Chai via separate canals.

In Bonab and the villages downstream, where Soufi Chai flows till early June, orchards and farms are irrigated by river water and in summer months by underground water. There are no summer water rights in the project area except for the seven traditional canals and Narj Abad and Khousesheh Mehr villages, therefore, water is distributed by agreements based on common practice with no consideration to the water requirement of the crops.

7- NECESSITY AND MODE OF EMPLOYING WATER USERS' SERVICES IN WATER RESOURCES MANAGEMENT

After carrying out the studies up to detailed design and at the beginning of IDN implementation phase, experience of managers of EARWA in connection to non-participation of people in operation and maintenance of hydraulic structures and inefficiency of governmental management in this area, motivated the attraction of popular participation in all stages of IDN implementation and operation and the following came to their agenda to be sought on the whole EARWA:

1. Attraction of popular participation in water distribution management for optimal use of water and adjustment of social issues
2. Motivating the sense of possession among water users towards the IDN in favor of extending its useful life
3. Diversifying the financial sources of water projects and providing part of the sums needed and increasing investment in such projects
4. Reducing the government's domain of affairs

Implementation of Soufi Chai IDN was the first IDN construction experience after Islamic Revolution by the EARWA in East Azerbaijan province, and attraction of the

strong traditional water users guilds present in the area, was an on important event in the engagement of beneficiaries in implementation of IDN's.

Thus, EARWA was required to urge the responsible bodies and gain cooperation of other governmental offices. To attain this, meetings were held with the said people explaining the goals so that, elaborated was the memorandum of Water Users Cooperative using memorandum framework of other cooperative companies and the same were approved. For the first time ever in Iran, 17 WUC's were registered and established in Zones-2& 3 of the IDN. These cooperative companies took measures in respect of concluding Civil Partnership contracts with Bank Keshavarzi (Bank of Agriculture) under Note-3/ Budget Act 2003 and Note-26/ Budget Act 2004 and the facilities granted were at the disposal of EARWA and spent for IDN implementation. In 1999, with Soufi Chai IDN utilization commencement, to institutionalize water distribution sector, to realize goals of Irrigation Water Use Optimization by-Laws, the existing traditional guilds were promoted to WUC's. In Zones 1&4, WUC's were registered and established as well. Following table shows status of the WUC's in Soufi Chai IDN.

Table 2: Names and Details of WUC's in Soufi Chai IDN

Zone	Name of WUC	Name of Guild	Being Established	Establishment Year	Village	Township	Irrigated Area/ha
1	-	Alavian	-	-	Alavian	Maragheh	90
	-	Nava	-	-	Nava	Maragheh	120
	-	-	Talebkhan	-	Talebkhan	Maragheh	150
	Haj Kord	-	-	-	Haj Kord	Maragheh	200
	Pahr Abad	-	-	2002	-	Maragheh	272
	-	Jooi Shahr Maragheh	-	-	-	Maragheh	180
	Ghiamat Abad	-	-	2002	-	Maragheh	400
	Amir Jamal	-	-	2002	-	Maragheh	250
	-	-	Pesteh Ju	-	-	Maragheh	300
	Varjuri	-	-	1996	-	Maragheh	800
-	Darvazeh	-	-	-	Maragheh	50	
2	Rusht Bozorg	-	-	1995	Rusht Bozorg	Bonab	1382
	Ghaleh Khaleseh	-	-	1995	Ghaleh Khaleseh	Bonab	253
	Sarj	-	-	1995	Sarj	Bonab	577
	Dizaj Parvaneh	-	-	72	Dizaj Parvaneh	Bonab	357
	The three Chalghaei's	-	-	1995	Tazeh Kand Qeshlaq Chalghaei	Bonab	634
	Dizaj Navlou	-	-	1995		Bonab	154

Zone	Name of WUC	Name of Guild	Being Established	Establishment Year	Village	Township	Irrigated Area/ha
2	Zavesht	-	-	1995	Zavesht	Bonab	388
	Rusht Kouchak	-	-	1995	Rusht Kouchak	Bonab	450
	Aghajeri	-	-	1995	-	Bonab	301
	Akbar Abad	-	-	2002	-	Bonab	205
3	Khousheh Mehr	-	-	1993	Khousheh Mehr	Bonab	800
	Yengi Kand Khousheh Mehr	-	-	1993	Yengi Kand Khousheh Mehr	Bonab	600
	Tazeh Kand Zavaregh	-	-	1993	Tazeh Kand Zavaregh	Bonab	150
	Narj Abad	-	-	1993	Narj Abad	Maragheh	380
	Zeinagh	-	-	1993	Zeinagh	Maragheh	89
	Khanghah	-	-	1993	Khanghah	Maragheh	80
4	Kor Arkh Gazavesht	-	-	1993	Kor Arkh Gazavesht	Bonab	465
	Mehrabad	-	-	2002	Mehrabad	Bonab	587
	Qarachopoq	-	-	2002	Qarachopoq	Bonab	895
	Zavaregh	-	-	2002	Zavaregh	Bonab	765
	Khanehbarq Qadim	-	-	-	Khanehbarq Qadim	Bonab	300
	Khanehbarq Jaded	-	-	-	Khanehbarq Jaded	-	435
	Yengi Kand Khanehbarq	-	-	-	Yengi Kand Khanehbarq	-	170
	Qeshlaq Khanehbarq	-	-	-	Qeshlaq Khanehbarq	-	300
	Ali Khajeh	-	-	-	-	-	-
	-	Kuteh Mehr	-	-	-	-	-
	-	Supergan	-	-	-	-	18
	-	Sari Gullar	-	-	-	-	35
-	Qarashir	-	-	-	-	30	

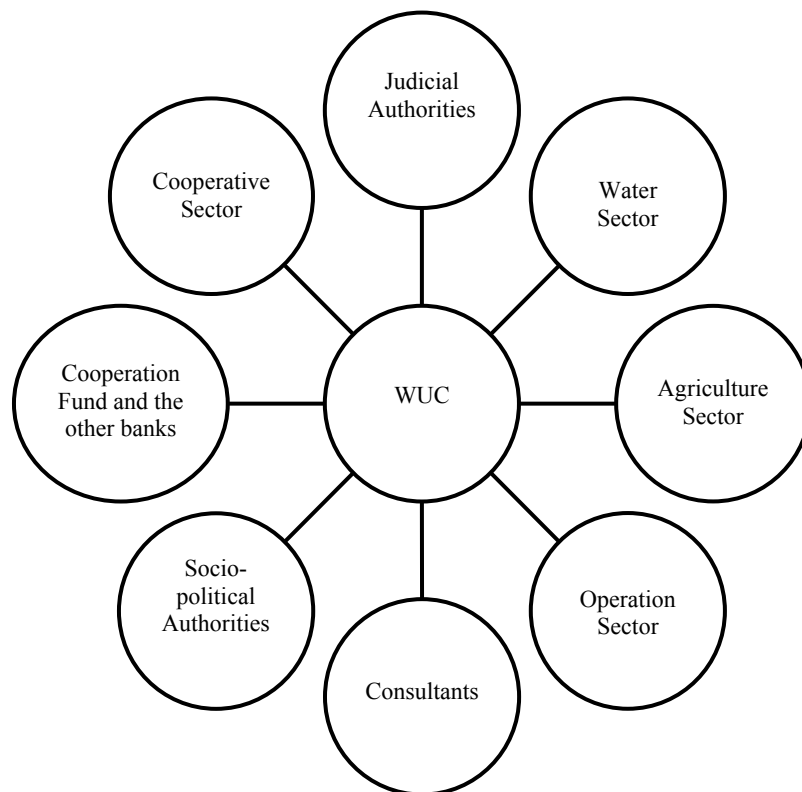
8-STRUCTURE AND FUNDAMENTS OF WUC

Gaining the permission from Water Affairs and letter of agreement from the cooperative sector, WUCs are formed after holding General Assembly meeting and elections of Directors Board. Cooperative Department sends results of elections and the decisions made to Deeds and Real Estates Registration Department and after the company is registered at Companies Registration Department and its Establishment Notice is publicized on the Official Gazette of the Islamic Republic of Iran, the Company commences its legal activity. WUCs have three organs:

1. General Assembly, to approve the proposals;
2. Members of Directors Board to operate;
3. Inspector to supervise the operations and report to General Assembly.

Supervision on activities of WUCs is done by Cooperative Department as a policy-maker. WUCs are active on the basis of their memorandum in the areas of water distribution maintenance, protection of the IDN, improvement of canals, implementation of tertiary canals and submit their opinions to Consulting Engineers for in improving the water distribution efficiency. For realizing the goals and activities of WUC's they keep in touch with the authorities mentioned below:

Figure 1: Diagram showing the relationship between WUC and pertinent offices



A review of WUCs history shows that at the beginning, they were only active in the area of water distribution among their members but as time passed, WUCs developed

their activities and promoted their role in operation management and maintenance of IDN so that having established WUC Union to seek larger share in IDN management. EARWA intends to confer such management on WUC Union in the coming years by supporting them.

9- ROLE OF WUC IN MANAGEMENT, OPERATION AND MAINTENANCE OF SOUFI CHAI IDN

WUC's have played effective part in the following areas as a segment of IDN management factors:

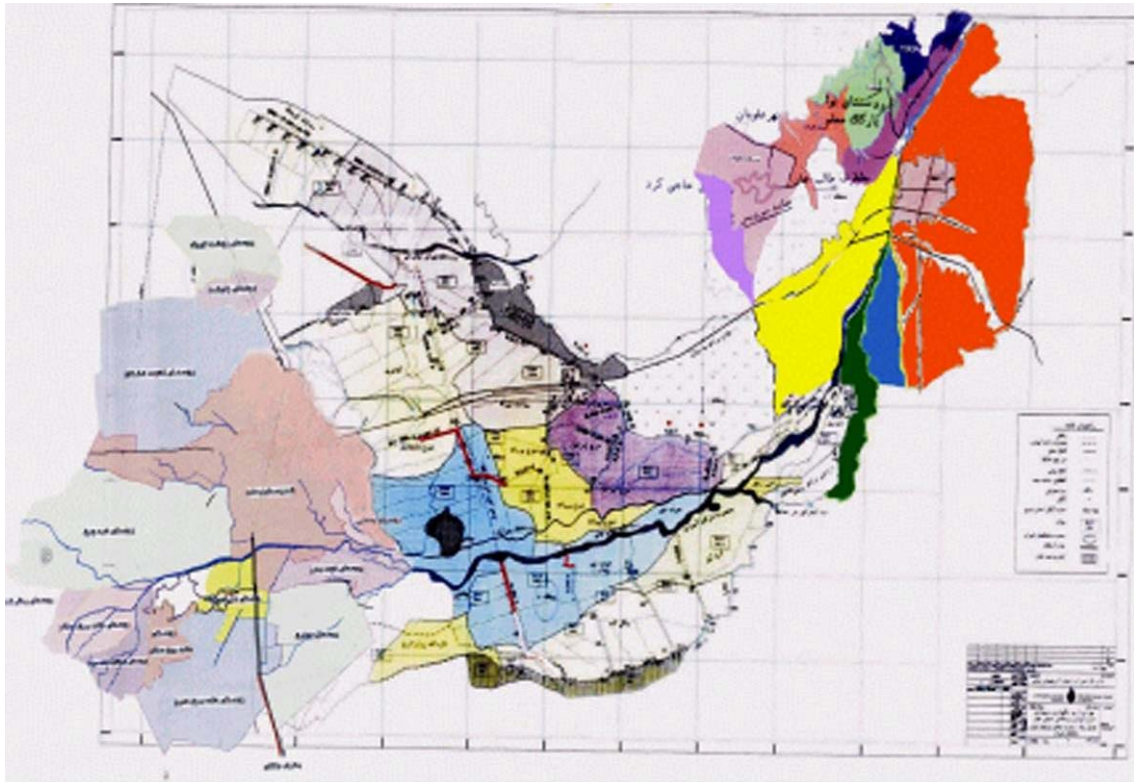
1. Orientation of the members and expediting the implementation process;
2. Conclusion of irrigation contracts for water distribution among water users;
3. Protection of the irrigation network and secondary canals;
4. Adjustment of legal and social issues;
5. Participation in administrative meetings and extending the agricultural policies.

The Following is a detailed explanation of the above.

9-1- ORIENTATION OF THE MEMBERS AND EXPEDITING THE IMPLEMENTATION PROCESS

Having a financial contribution to the project, WUCs played an important part in expediting the implementation operations. This contribution urged the persons in charge to finish the job in time so that water users could pay installments of their loans utilizing the IDN. WUCs announced their ideas in the course of IDN implementation and such opinions have been of great effect in easing the IDN operation. Also, parts of the IDN, which were not executed for the reasons like financial restriction for land acquisition, WUC convinced their members to let the EARWA to perform the secondary canals. Figure 2 shows route of canals implemented with the pursuance of WUC's.

Figure 2: Soufi Chai irrigation and drainage network plan



At present, equipping and renovation is underway by Agricultural Jihad that is in charge of coordination among members, all social issues and presentation of correctional opinions to the consulting engineers and WUCs have a strong executive role at the service of Agricultural Jihad in improvement of canals.

9-2- CONCLUSION OF IRRIGATION CONTRACTS FOR WATER DISTRIBUTION AMONG WATER USERS

Annually, WUCs receive area list of lands to be cultivated by the members and conclude a formatted contract of irrigation and draw up a monthly timetable with the IDN Utilization Company. Based on this timetable, each cooperative attempts to irrigate their lands in accordance with their local common and practice and deliver the members' water fee bills also collecting the sums or the payment receipt to deliver to EARWA. Rendering services to their members, WUCs reduce number of referring to governmental office and by cooperation in preparation of water distribution timetable, increase satisfaction level of people and their optimal water use. Water users announce the adequate time of irrigation and this way increase the water use efficiency. The map shows activity area of each cooperative.

9-3- PROTECTION OF TERTIARY CANALS OF THE IDN

Water delivery point of each WUC is according to the map. Delivering the secondary canals to the WUCs, they get a more important role in servicing and maintenance of the IDN and show a serious conduct towards people who may harm or disuse the canals.

WUCs consider protection of canals a privilege for themselves. Traditional tertiary canals too, are managed and protected by cooperatives.

9-4- ADJUSTMENT OF LEGAL AND SOCIAL ISSUES

Managing Directors of WUC's who are responsible bodies before the members, amicably solve lower legal problems like violating irrigation program and try to prevent the case to be referred to legal authorities as far as possible and play an effective role in social matters through orientation of the members.

9-5- PARTICIPTION IN ADMINISTRATIVE MEETINGS AND EXTENDING THE AGRICULTURAL POLICIES

By their presence in the meetings of irrigation water use optimization, WUC Managing Directors set forth the opinions and problems of their members

And by applying the regional agricultural policies, they play an important part in agricultural extension issues.

10- CHANLLENEGE FACING WUCs

In the present conditions, legal protections and executive ambiguities are the main challenges of sustainable development of the WUCs. Role of WUCs in water resources management is not defined for the legal authorities and they are not legally supported. For the same reasons, they are devoid of financial protection too.

11-SUGGESTIONS:

Although WUCs have proved their positive role and efficiency in water distribution and service rendering, agricultural development is influenced by many factors Therefore, it is suggested to form a united institution for focusing the protective activities of executive organizations in a single unit. Such an institution will execute all agricultural policies and can have an effective role in agricultural development.

12-REFERENCES:

1. Seyed Ahmad HEIDARIAN, 2005, How's and Why's of Transferring Irrigation Management, 4th Technical Workshop on Cooperation of Farmers and IDN Management
2. Reports of Mahab Ghods Consulting Engineers on Soufi Chai IDN.