



TACTICS FOR CREATING PARTICIPATORY MANAGEMENT IN IRRIGATION NETWORKS AND STUDING THE FACTORS EFFECTIVE ON ITS STABILITY

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ABSTRACT

Participatory management in irrigation is among the issues which were provoked for discussion in recent decade for exploiting the irrigation and drainage networks of different countries irrespective of their involving infrastructural facilities.

Considering the competition in consumption of agricultural water and optimum use of accessible water resources, generally the governmental management faces serious challenges in meeting the needs of users. On the other hand, the private sector looks at it doubtfully because of high risk in investment on agricultural water.

In this study the manner of creating participative irrigation management in Foumanat Irrigation Network (Gilan Province) and Soufichai Irrigation Network (East Azerbaijan Province) has been studied and discussed.

Foumanat Irrigation Network is a network with an age of more than 30 years and covers an area approximately 50,000 hectares. The main crop of the area is rice. Soufichai Irrigation Network is about 8 years old and covers an area about 12,000 hectares. The main crop of the area are cereals and fruits.

Key Words: Participatory Management, Agricultural Water, Risk Taking, Governmental Management, Foumanat, Soufichai

1. INTRODUCTION

Participation is one very important issue in developing countries. Participation of the people in administering the villages and their participation in decision making in macro level especially in long-term policies, demand the achievement of the aims and stability of the achievements. In our country, in past two decades participation in its general

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sense was somehow pale in all socio-economic fields. At post-war period when the development projects started, the lack of participation culture in people was considered a vacuum. Gradually the culture grew among the people to some degree. Perhaps the expansion of apartment dwelling is one of the aspects of promulgation of participation culture in urban communities. Of course, still the place of a cohesive organization for promotion of participation level of people in urban problems is felt. Different ministries and organizations call more participation of people in their projects and aims.

In rural areas, because of poverty and strong agricultural culture and other reasons, participation culture has developed in lesser degree than urban areas. However, recent years witness some common activities in villages. Election for Village Council Members is an example.

Considering the above facts, if the administration manner of villages and its restrictions be not deeply studied and reconstructed, participating in one constituent of rural life such as irrigation actually faces problems. In a word, promotion of participation shall be a process coming down from the top and without making the needed infrastructures it will be fruitless and instable to expect participation. The relevant infrastructures, for instance legal issues and necessary laws for respecting the participation council, shall be institutionalized so strongly that all individuals and organizations have no choice but comply with that culture and respect it.

This research has studied and appraised the participation in irrigational affairs of Foumanat and Soufichai Irrigation Networks in a 10-12-year period and compared these two with each other.

2. FOUMANAT IRRIGATION NETWORK

Foumanat Irrigation Network consists of irrigation networks of Soumesara, Fouman, Shaft, and Toulam Shahr areas with surface area of about 50,000 hectares in north of the Iran. The main crop is rice, that is, about 90% of the area is used for rice growing. In primary plan, the needed water was estimated to be 32 m³/s and it was provided from Tarik Dam at downstream of Sefidroud Dam through a water tunnel that is stretched to Foumanat. Increased cultivated area in recent years was so high that produced difficulties, the difficulties which will be explained later. Figure 1 shows the layout of Foumanat Irrigation Network. In this network, water distribution is controlled and regulated by six Irrigation Bureaus.

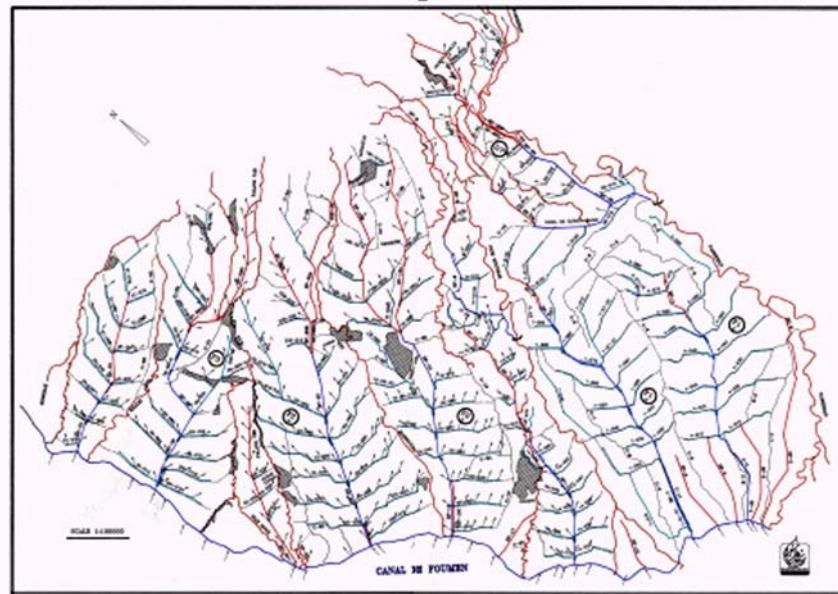


Figure 1. Layout of Foumanat Irrigation Network

2-1- PARTICIPATION IN FOUMANAT IRRIGATION NETWORK

Studying the participation process of the users of Foumanat Irrigation Network in present situation and studying the manner of assigning water distribution management of this network were among the aims of this research made in years 1994 to 1996.

The opinions of the users have been obtained by local interview and filling the questionnaires. Photograph 1 is a scene of local interview in the area.



Photograph 1. A Scene of Local Interview in the Area Covered by the Research

2-2- PRESENT SITUATION OF PARTICIPATION

At present (at the time the studies were being made), water for agricultural purposes is distributed by “water distributors” and “assistant water distributors” elected by the farmers. However, there is no special organization for this election. A person who intends to be “water distributor” or “assistant water distributor” collects the signatures of the farmers and submits the signed nomination form to Irrigation Bureau and

Irrigation Bureau confirms his position. The remuneration of “assistant distributors” is paid by the farmers in proportion to the water they receive and manner of water receipt. This arrangement has been common since very old time and even it may go back to pre-land reform era.

As seen above, the farmers are familiar with their role in irrigation participation but there are some marginal problems related to the degree of participation which are connected to physical system and management of Foumanat Irrigation Network.

2-3- STUDYING THE FUNCTION OF IRRIGATION NETWORK IN PARTICIPATION PROCESS

Foumanat Irrigation Network is about 35 years old. During this period of exploitation, some faults that have been observed by the users have been occurred. The most important faults are as follows:

- A). Non-completion of the irrigation and drainage network so that not all lands are covered.
- B). Increase in cultivated lands especially after Revolution because of dividing land of the forest area and bodies water which were effective in misbalancing of water consumption in irrigation network.
- C). Cultivation on the limits of main and secondary canals whose solution is a real problem. Providing water for these plots of land is among the problems facing the network management. What is seen in Photograph 2 is an example of cultivation on canal limits.
- D). Non-sufficient maintenance of main and secondary canals of the network (The main canals are concrete and subsidiary canals are semi oval and aerial type). Obstruction in canals because of accumulated sediments and growing plants in the canals have been showed in Photograph 3.
- E). Increase in cultivated lands and non-provision of a modern irrigation network for those lands and since supplying water in consumption peak of water is not certain, the farmers have broken the canals and or have created blockages in sections of canal entrance to get water for their lands sooner. Photograph 4 shows this reality.
- F). One of the network problem is illegal off take that in present is as right for whom used water in this method.



Photograph 2. Example of Cultivation on Canal Limits



Photograph 3. Obstruction Created by Accumulated Sediments and Growing Plant in the Canals



Photograph 4. Creating Blockage in Canal Sections for Getting Needed Water

2-4- GETTING RESULTS FROM PARTICIPATION STUDIES IN FOUMANAT IRRIGATION NETWORK

The main question was that how the management of second class canals and distribution water up to the fields may be assigned to the farmers.

If the above mentioned points be considered, it is clear that the farmers by no means are ready to accept participation in exploitation and maintenance of the network. Based on the questionnaire filled by the farmers, they look at participation as an acceptable and practicable thing but the situation of the network prevents them from daring to participate. Also, there are some principal questions whose answers must be provided in advance.

1. What is given to the farmers and what is expected from them against such grant.
2. Up to what level the management on second class and water distribution is assigned to the farmers and there is not any legal vacuum for such powers.
3. How the farmers will become certain for solving the water shortage problem. What is most disturbing for the farmers is that the network management shall not be able to guarantee water supply for agriculture.

In years of this study none of above questions has been answered convincingly and it was not clear that which tools should be introduced to the farmers to create the belief that their needed water would be supplied and distributed by a reliable system. We have to note that in years of study (1994-1996) none of participative institutions such as elected city councils and village councils did not exist.

3. SOUFICHAIR IRRIGATION NETWORK

The water of Soufichai Irrigation Network is supplied from Alavian Dam. This network locates at extreme part of the southwest of East Azerbaijan Province and covers the lands of Maragheh and Bonab areas. The dam and the network started to be used in 1996. The surface area of the project was estimated to be 12,500 hectares. The dominant agricultural activity of the area is growing vines, fruit trees, and wheat. Figure 2 shows the layout of Soufichai Irrigation and Drainage Network

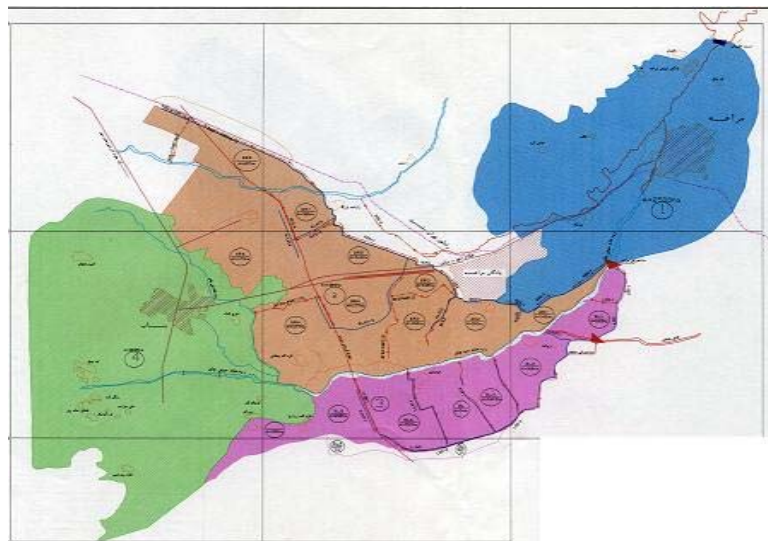


Figure 2. shows the layout of Soufichai Irrigation and Drainage Network.

3-1- PARTICULARS OF SOUFICHAIR IRRIGATION NETWORK

As it is seen in Figure 2, this network consists of four different districts. District I which Covers a surface measuring 2500 hectares locates at downstream of the dam and at present is irrigated by traditional irrigation streams. There is no underground water in this district. In Districts II and III whose surface areas are 3,600 and 2,500 hectares, respectively, modern irrigation network has been constructed and water is transferred to

the farms through concrete (job-mix concrete) canals. In these two districts underground water is used extensively. Further, water in district III is supplemented by water of Varjouchai River too. In district IV which locates at the end of the network area and covers about 3,900 hectares, the traditional irrigation streams are used for distribution of water. Among restrictions existing in this area, high level of underground water, extreme use of underground water, and flow of salty water through Urmia Lake (existing adjacent to the area), may be mentioned. Underground water provides about 40-50 percent of the needed water. Further, potable water of Maragheh City is supplied from Alavian Dam.

As it is observed the irrigation particulars are different in four irrigation districts and there are different interactions between the irrigation exploitation management and farmers.

3-2- PARTICIPATION IN SOUFICHAH IRRIGATION NETWORK

When exploitation of the network started in 1996-97, participation was seriously discussed in the country. Though the discussion was running in academic level but gradually different strata of the population were involved and ordinary people were getting familiar with concept of participation. Elections of city councils and village councils and assigning the urban and rural activities to elected persons of same city or village have arisen in all levels of the society the discussion on participation of people in decision makings. In line with these developments, formation of Cooperative Societies of Water Users have been designed by Regional Water Organization of East Azerbaijan and Ardebil Provinces for Soufichai Irrigation and Drainage Network and its implementation is followed up.

3-3- PRESENT SITUATION OF PARTICIPATION

At present some 21 cooperative societies of water users have been formed and are active in the area covered by Soufichai Irrigation Network and 12 other societies are in process of formation. The area covered by each society spans between 72 and 1,770 hectares. The members of each society are 32 to 576 persons and each member has about 2.1-3.4 hectares of land. In irrigation districts II and III, are villages have cooperative society of water users and in districts I and IV, the societies are being formed. Of course, in district No.IV, four villages have already formed their cooperative societies. The process of cooperative societies formation in Soufichai Network started in 1995-96 and is continuing.

3-4- REQUIREMENTS OF PARTICIPATION IN SOUFICHAH IRRIGATION NETWORK

As it was pointed out, in all areas the creation of participation depends on their environment and social structures. Based on this approach, in respect of developing participation in Soufichai Irrigation Network situation is as follows:

1. Being Newly-Founded Network: Since the network is newly-founded the farmers are not mentally ready to assume responsibility of maintenance and exploitation of new canals. The maintenance cost of the canals in beginning years is low and so

the farmers and newly-founded cooperative societies have lesser engagement with each other and with mother exploiting on company.

2. In beginning years of exploitation of the network the social environment was more suitable for accepting participation and creating capacities of participation for involving the farmers in exploitation and maintenance of the irrigation network. Therefore, the two poles of this participation, that is, the main exploiting company (the mother company) was more ready to assign the responsibility and the farmers were more willing to assume the responsibility.
3. Increased number of the degree-holders, especially those graduated in agricultural engineering and irrigation fields, drove them to private sector and many of them are working as managing director of the cooperative societies of water users. Since they are familiar with the local situation of water and agricultural activities they have been effective in enriching the insight of the farmers toward optimum use of water in agricultural sector.
4. Existence of participation approach in Regional Water Organization of East Azerbaijan Province and seeking the opinions and proposals of the water users in implementation of irrigation projects too have played important role in formation of the cooperative societies of water users.

3-5- STUDYING THE PROBLEMS OF FARMERS' PARTICIPATION IN SOUFICHAH IRRIGATION NETWORK

Participation of the users in exploitation and maintenance of irrigation networks is a newly established institution and so naturally the problems and difficulties are less likely to show themselves. The most important problems in continuation of the activities of the cooperative societies of water users in Soufichai Irrigation Network are as follows:

1. Lack of sufficient training and conception in the users about the place of these societies in respect of interaction with mother exploiting company.
2. The fact that the users are not familiar with their roles in the cooperative societies in respect of attending in general meetings, electing the managing director, and ...
3. The members are not familiar with the legal role of these societies in civil institutions.
4. The users are not familiar with the interactions between the water users cooperative societies.
5. The users are not sufficiently trained and familiar with system for allocating and distributing agricultural water.
6. The mother exploiting company has not fulfilled its obligations toward water users cooperative societies in delivering the allocated water.

As it is evident in above sections, in Soufichai Irrigation Network the allocation and distribution of agricultural water are among the instances which may originate a lot of problems in the activities of water users cooperative societies. The issue has been under discussion in Regional Water Organization of East Azerbaijan Province since 2-3 years ago and it was tried to find a way for systematizing water allocation and distribution in

such a way that the obligations of mother exploiting company toward the water users cooperative societies can be fulfilled with minor changes. The mother exploiting company has also thinking about the possibility of designing a system which makes the cooperative societies certain about their needed water. It is sure that such certainly will facilitate the planning and will minimize the problems and disputes between farmers who are member of water users cooperative societies and these societies.

As it was pointed out earlier same problem was stated by the farmers covered by Foumanat Irrigation Network too. In other words, the necessity of a tool for estimating the needed water and manner of distribution exists in both networks under study. For meeting this necessity, a model has been developed for estimating the needed water and manner of distribution in Soufichai Network. The model is recommended as a pattern for other networks too.

4. MODEL FOR ALLOCATION AND DISTRIBUTION OF WATER IN SOUFICHAH IRRIGATION NETWORK

Based on above discussions and for strengthening the stability of water users cooperative societies, a model has been developed as a tool for allocation and distribution manner of water in Soufichai Irrigation Network. The model estimates the flow of Soufichai River into Alavian Dam and predicts the allocation and distribution of water in each irrigation area of Soufichai Irrigation Network on monthly base. Figure 3 shows a scheme of the model. Further, Figure 4 shows outflow which is the water allocated to each product at any time in each irrigation area. By applying this model, the mother exploiting company will be able to predict the water needs of coming crop year and determines for each area the maximum surface of land which match with that amount of water. At present, this model has been used in Soufichai Irrigation Network and as a primary appraisal aiming to improve the predictions of the model in estimating the flow of Soufichai River, the results of the model are in process of calibration. The model may not be operational unless with getting the directors of water users cooperative societies familiar with the model and showing them the process of the calculations related to water allocation and distribution.

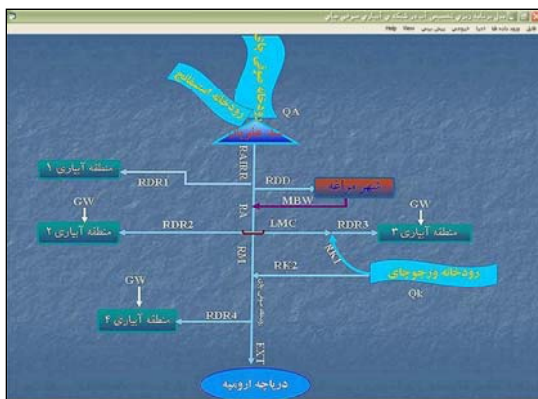


Figure 3. Scheme of the Main Page of the Water Allocation Model of Soufichai Irrigation Network

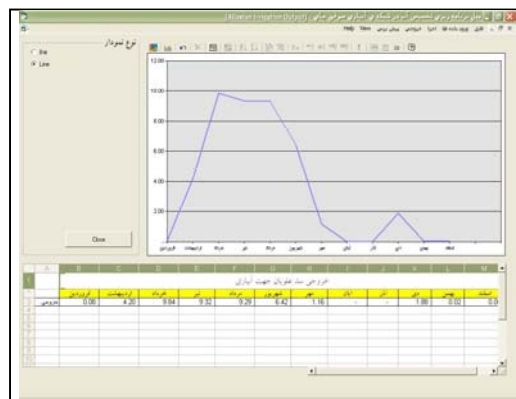


Figure 4. Scheme of the Output of the Water Allocation & Distribution Model of Soufichai Irrigation Network

4-1- ADVANTAGES OF EXPLOITATION MODEL:

1. Simplicity of the model for being applied.
2. Accessibility of the process of the calculations related to allocation and distribution in the network through observing the outputs of the model in each calculation step.
3. Creating common look in mother exploiting company and water users cooperative societies as far as the prediction of water resources in coming water year is concerned.
4. Becoming aware of the amount of surface and underground water sources accessible in each irrigation area and thus, for each water users cooperative society.
5. Preventing non-expert interventions of persons not being responsible in distribution of network water.
6. Paving the way for participation of the water users cooperative societies for overcoming the probable water crisis in coming crop year based on identification of new water sources in the network.
7. Optimum use of agricultural water in the irrigation network

5. CONCLUSIONS

Participation in exploitation and maintenance of irrigation networks is not independent from ways of participation in rural and urban societies. The ways and degree of participation in irrigation networks depend on two poles or two arms. The first arm is the degree of willingness of the mother exploiting company to assigning part of its responsibilities and the second arm is the users who are going to accept the responsibility. For explanation of common issues especially the ways of allocation and distribution of water in irrigation networks, both these poles need a tool. In irrigation networks, applying a model which is able to demonstrate water allocation to each product at any time in each irrigation area is among the means that would calm the tension between the users especially in low-water years and this, in turn would lead to more activity and stability of water users cooperative societies.

6- SOURCES

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