

TURKISH EXPERIENCES ON PARTICIPATORY IRRIGATION MANAGEMENT

OSMAN TEKYNEL (*) - MEHMET L. AKSU (**)

There has been a substantial development and improvement, both in terms of expansion of arable land and increased agricultural production, in the agricultural sector since the foundation of the Republic of Türkiye in 1923.

During this period, agricultural land increased from 11.7 million hectares up to 28.5 million hectares, which reflects a 2.5 times increase in the total arable land.

The population of the country on the other hand, has reached to about 60 millions from 10.5 millions in early 1920's marking an increase of 6 times.

Furthermore productivity and net income per hectare have gone up 2-10 and 10-20 times respectively, depending on the variety of agricultural products, which made Türkiye one of the 7 or 8 countries in the world that are self sufficient in food and agricultural production.

Detailed soil surveys, selection of alternate land utilization patterns and maintenance of the most suitable patterns in every stage of irrigation projects, skilled soil management, accurate determination of water supply and size of the project area, efficient application of irrigation water, efficient and durable drainage systems, eff-

ABSTRACT

This paper on Turkey's experience with users' participation and full transfer of irrigation systems to users highlights the recent achievements of DSI since 1993 in the process of transfer of irrigation systems to users and pursuing a plan to complete the transfer of additional area of close to 1.5 millions ha by the end of year 2000. Beyond all expectations, DSI has shown a remarkable success and transferred area already reached over 1 175 970 ha as of 1 st of Nov., 1996. Transfer of irrigation systems to users had started at a slow pace in the early 1950's and until 1993 small schemes were gradually transferred to users every year with an average annual total area of about 2 000 ha. DSI was also encouraging participatory approach through establishing Irrigation Groups (IGs)*** or Water User Groups (WUGs) with limited responsibility for O&M. The main reason for accelerating transfer program has been the financial burden of O&M for DSI and the Government, which became unbearable and unsustainable. The O&M cost recovery (rate of collection of water fees), has also been unsatisfactory (about 42%). Considerable increase in the cost of O&M due to the role of ununiozed labor further aggravated the situation. The present Government's general policy of promoting privatization was also a contributing factor and the positive results of generally satisfactory O&M of transferred schemes encouraged future schemes.

RÉSUMÉ

Ce travail portant sur l'expérience de la gestion participative en irrigation en Turquie, où il y a eu le transfert complet des systèmes d'irrigation aux utilisateurs, illustre les résultats récents acquis à travers les Ouvrages Hydrauliques d'Etat — le DSI, State Hydraulic Works — depuis 1993. Un plan a été poursuivi pour compléter le transfert dans une zone additionnelle d'environ 1,5 millions d'hectares d'ici la fin de l'année 2000. Au-delà de toute attente, le DSI a eu un grand succès; le transfert a intéressé plus de 1175970 ha au 1er Novembre 1996. Le transfert des systèmes d'irrigation aux utilisateurs a commencé à un taux assez lent au début des années '50 et jusqu'à 1993 de petits périmètres ont été graduellement transférés aux utilisateurs, chaque année, avec une superficie annuelle moyenne d'environ 2000 ha. Le DSI a aussi encouragé l'approche participative en établissant des Groupements d'Irrigation (GI) ou Groupements des Utilisateurs de l'Eau (GUE) qui se chargent d'une partie des responsabilités de l'Exploitation et la Maintenance. La raison principale qui justifie l'accélération du programme de transfert a été le poids financier, devenu insoutenable, de l'E&M pour le DSI et le Gouvernement. Le coût de recouvrement de l'E&M (taux de collecte des tarifs d'eau), a été également insatisfaisant (environ 42%). Un accroissement considérable du coût de l'E&M, dû au rôle joué par la main d'oeuvre organisée en syndicats, a aggravé encore plus la situation. Aussi la politique générale poursuivie actuellement par le Gouvernement vers la promotion de la privatisation e eu son poids; de plus, les résultats généralement satisfaisants de l'E&M dans les périmètres transférés aux utilisateurs ont encouragé l'approche participative en d'autres périmètres aussi.

fective extension services and the other necessary technical amendment are necessary for the realization of high yielding, persistent and successful irrigated farming.

Irrigation has a vital role in increasing and stabilizing agricultural production in Türkiye because of scarcity and unreliability of rainfall conditions prevailing during growing season in most part of the country.

The annual potential of rivers is calculated as 186 billion cubic meters and a certain level of runoff is to be allocated for water requirements of neighboring countries.

The amount of flow that can be used for consumptive purposes is estimated to be around 95 billion cubic meters.

Together with the 12.0 billion cubic meters of ground water resources total available water resource of Türkiye is around 107.0 billion cubic meter.

At present 36.5% of the total land in Türkiye is suitable for agriculture and 25.9% is forest.

Of the total irrigatable area 32% is under irrigation while 16% is not.

Only 16% of total water resources is used for irrigation and other purposes.

Economically viable irrigation is possible for only 8.5 million hectares.

Prime attention must be given for appropriate irrigation since heavily irrigated lands may become salty and unfavorable for agriculture (**table 1**).

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INSTITUTIONAL FRAMEWORK FOR IRRIGATION IN TURKEY

The institutional framework for Government and other public responsibility for irrigation and drainage is summarized below:

Ministry of Agriculture and Rural Affairs (MARA)

According to the establishment law and subsequent revisions, the Ministry of Agriculture and Rural affairs is responsible for the development of agriculture, stock-breeding, various socio-economic services and the establishment of certain sub-surface facilities, within rural development plans.

The major responsibilities covered in the laws concerned are related to the promotion, completion, input supply and the extension of all aspects of agriculture including irrigation and drainage, operation and maintenance of irrigation projects for the farmers.

General Directorate of Rural Services (GDRS)

The General Directorate of Rural Service (GDRS) was established in 1984 by incorporating the following existing organizations: the Soil Conservation and Irrigation Organization (TOPRAKSU), the Rural Settlement Organization and the Rural Roads, Water and Electricity. New laws are urgently required, especially in relation to

on-farm development (land consolidation included).

State Hydraulic Works (DSI)

The law establishing DSI (Law no 6200) and subsequent amendments include a number of items relevant to the planning, design, construction, operation and maintenance of irrigation and drainage systems. While the legal basis for the O&M and On-farm Development activities needs to be better defined and perhaps broadened, existing laws appear to provide ample scope for the Authorities to take action in such cases as formation of Water Users' Groups, willful damage to SDI systems etc.

Agricultural Reform

The General Directorate of Agricultural Reform, which is a General Directorate of the Ministry of Agriculture and Rural Affairs is indirectly involved in irrigation and drainage. Its main responsibilities are

- Determining the priority areas for the land reform after detailed investigations and surveys.
- In the land reform areas:
 - To distribute land registered under Government authority, not required for public services, to farmers in need of land.
 - To provide the equipment, support and training for these farmers and encourage them to establish farmers' organizations.
 - To consolidate the land, into more economic units.

IRRIGATION DEVELOPMENT

Government supported irrigation

Government-supported irrigation which has been pursued since the middle of the century and still continues to receive firm governmental attention, has contributed substantially to agricultural growth. It is expected that in the period 1992-2001 an additional area of about 1.2 million ha will be brought under irrigation by State Hydraulic Works (DSI).

A limited area is also expected to be developed for irrigation by the General Directorate of Rural Services (GDRS) and the farmers themselves.

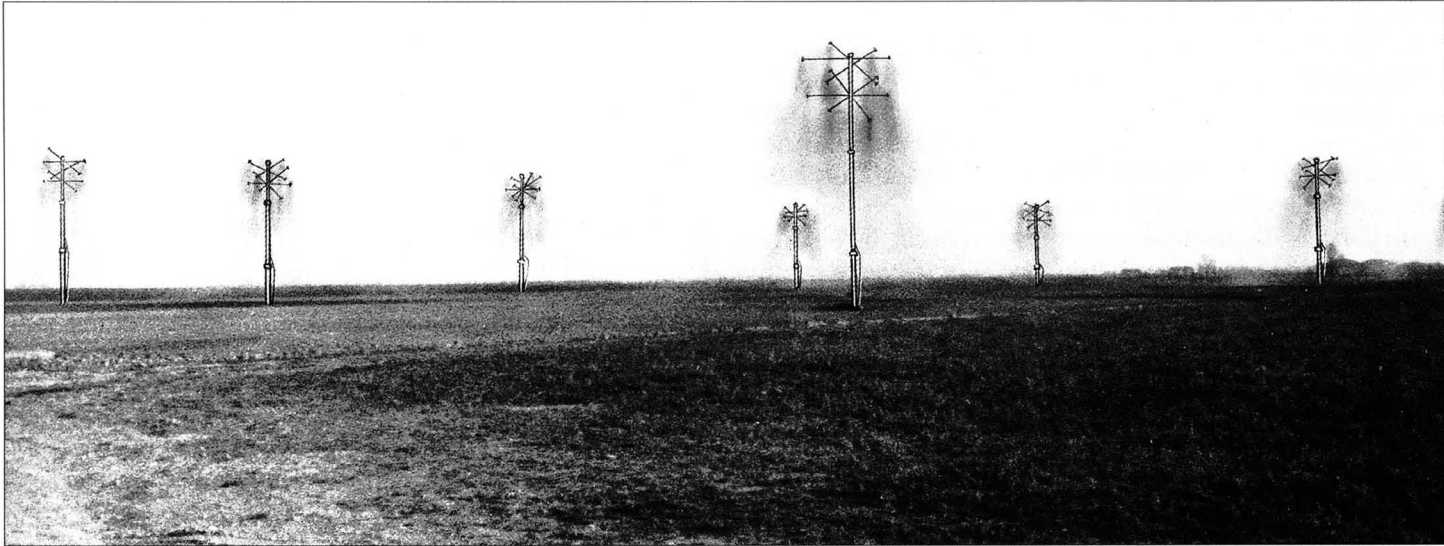
The reasons for devoting substantial investments to irrigation lie mainly in the nature of existing ecological conditions and the potential gains in production and employment which can be realized in irrigated agriculture. The critical growing period for most of the crops is between June and August when most of the rivers carry base flows only. Water storage is therefore indispensable and almost 70% of major irrigation projects are fed with water from reservoirs or lakes.

Table 1. Land and water resources of Turkey 31.12.1995.

Land resources	
Total Area	77.95 mha
Area of Arable Land	28.05 mha
Area of Irrigatable Land	25.85 mha
Economically Irrigatable Land	8.50 mha
Water resources	
Average Annual Precipitation	643 mm
Total Precipitation over Turkey	501 km ³
Total Run-off	186 km ³
Run-off Coefficient	37%
Usable Surface Run-off	95 km ³
Safe Yield of Groundwater	12 km ³
Total Usable Potentyal	107 km³

Table 2. Irrigation development 1.1.1996.

1.619.000 *	developed by DSI
279.000 **	developed by DSI&GDRS
952.000 **	developed by GDRS
1.000.000	developed by farmers and others
3.850.000	total irrigated area
* estimated	
** estimated	



OPERATION AND MAINTENANCE OF IRRIGATION PROJECTS

The success of operation of irrigation schemes should be evaluated on the basis of farmer satisfaction. In 25% of the irrigation schemes, covering 10% of the irrigatable area of Türkiye serious water shortages occur. Such water shortages are generally the result of deficiencies in irrigation system and limited water availability. However they are aggravated when of proper water management is not practiced. Basically, two methods available for water distribution; the on-demand method and the supply method. Although in Turkey officially the on-demand method is practiced, in actual fact the supply method is adapted in most projects. Irrigation schemes are designed according to the cropping pattern established in the Feasibility Report. However in practice cropping patterns show annual variations, creating big problems during the operation. In mono-culture areas peak water demands often occur at the very same time which creates water scarcity, when the supply method is applied, i.e. DSI decides when to release water. Another problem is that irrigation projects are normally designed for 24 hour irrigation, however most farmers prefer to irrigate during daylight hours only causing most of the water delivered at nights go to the drainage system. Because of the on-demand water distribution with the manual upstream water control in main systems, the upstream farmers gain big advantage using more water than their needs and violating the downstream farmers rights. The rate of project implementation by the General Directorate of State Hydraulic, Works (DSI) is of the order of 100.000 ha per annum, but projects take much longer to complete than predicted due to interruptions caused by budgetary constraints. Also, on-f arm development, which is carried out by the General Directorate of Rural Services

(GDRS), is often not synchronized with construction upstreams. Operation and maintenance (O&M) services are chronically underfunded. Although officially water users cover all O&M costs, in practice less than 40% of the cost are caused by such operational problems The general questions of the financing of irrigation is extremely complex, involving economic, social, political and technical factors. Whether other sectors of the economy can continue to subsidize irrigated agriculture to the order of 90% of costs is a policy matter to be addressed. Shifting the responsibilities from state to beneficiaries has to be seriously considered.

THE POSSIBILITIES OF TRANSFERRING OF THE MANAGEMENT RESPONSIBILITIES TO THE FARMERS OF THE IRRIGATION PROJECTS

Turnover to self-management

In many parts of the world it became apparent that bureaucracies, with staff trained as administrators, were not best suited for management tasks. Various approaches have been made to hand over the management of irrigation projects and even of larger water resources development entities to organizations of the users.

Forms of organizations for transfer

Transfer to Water User Associations (WUAs)

An irrigation scheme can be transferred to a WUA where there are more than one local administrative units (Village legal entities, municipalities) within one irrigation scheme. These WUAs are established under a statute which has to be approved by the Council Of Ministers. For large areas, this is considered to be the most appropriate organization.

Transfer to Municipal Organizations

This is a form of transfer where the scheme serves only a single municipal unit. In this organization mayor is the natural chairman of the WUA and the agreement of transfer is undersigned by the DSI and the mayor and submitted to the Minister of Energy and Natural Resources (DSI's Ministry) for the approval.

Transfer to Village Organization

This is a form of transfer where the scheme serves only a single village. Village Head (Muhtar) is the natural chairman of this organization and the transfer agreement is undersigned by DSI and Muhtar and submitted to the DSI's Ministry for approval.

Transfer to Cooperatives

These organizations are established under the Cooperatives Law and it is mandatory that a legal cooperative be formed at the request of a minimum of 15 farmers before a scheme is undertaken.

There are two means of transfer to cooperatives as follows.

a. Transfer of DSI irrigation schemes to cooperatives

DSI transfers its scheme (excluding groundwater schemes) to cooperatives for only irrigation purpose.

b. Transfer of DSI and GDRS developed irrigation schemes to cooperatives

This is a form of transfer to groundwater cooperatives where an irrigation scheme is provided by DSI with wells and pumps and irrigation distribution network by GDRS. After the establishment of these co-operatives transfer is realized following the same legal procedure applicable to other organizations.

Informal transfer to users

Most of the surface irrigation schemes developed by GDRS, have been turned over (or transferred) to users in an informal manner.

One of the factors contributed to such transfer is that GDRS does not have an O&M organization and transfer or turnover the schemes to users becomes a feasible alternative. Although these schemes are operational, a recent general review of their performance revealed that the results would have been much better had the transfers taken place in a more formal manner with clear designation of responsibilities for GDRS and the users.

Description of irrigation or water user groups

WUGs or IGs are considered to be highly appropriate transitional (intermediate) organizations for gradual establishment of successful WUAs. DSI has transferred O&M responsibility for the tertiary distribution network to so-called irrigation Groups (IGs) headed by the Muhtar (Village Head). Until 1994, about 0.6 mha (this area was reduced to less than half within the last two years because they were transformed into WUOs) of

the area developed by DSI, were partly managed by IGs and they had achieved an irrigation ratio of 81% compared to 67% of the schemes run entirely by DSI.

THE FACTS ON REALIZATION OF THE TRANSFER OF THE RESPONSIBILITY OF THE OPERATION AND MAINTENANCE OF IRRIGATION SCHEMES

According to the law 6200 upon which DSI was established, DSI builds systems for the improvement of land sources and carries out the administration operation and maintenance of those related with irrigation. By 01/01/1996 the total area opened to irrigated agriculture by DSI was 1,619,000 ha. In the last five years approximately 70,000 ha of land has been opened to irrigated agriculture every year. In 1996 this area reached up to 120,000 ha. The numbers of dams and artificial lakes opened for use in 1996 were 168 and 260 respectively. When the number of dams and artificial lakes being currently built and more than 1.6 millions ha area to be irrigated is taken into account it is obvious that the administrative responsibility of DSI will get bigger. However the increase in personnel equipment and financial sources do not keep pace with this increase in responsibility. In spite of all these shortcomings DSI works with full responsibility and enthusiasm and since it is against the policy of DSI to make any sacrifices in administrative and maintenance services, it seems not feasible to carry out these services with this quality without the improvement of financial sources. Before 1993, DSI focus was on transferring only small and isolated schemes. This policy on transferring irrigation schemes was guided primarily by the concern that it was difficult and uneconomical for DSI to manage such schemes. However, since 1993 in view of the following reasons, and with persuasions of the World Bank's staff and its cooperation in getting DSI's staff, at various levels, more exposed to accelerated transfer of irrigation systems in Mexico, DSI's policy shifted from transferring only the small and isolated schemes to an accelerated approach of transferring small and large schemes. As it can be observed in **table 3** and **4** such a policy was put to action without delay. In 1993 and 1994 DSI, with the World Bank's support has sent more than 50 senior officials to USA and particularly to Mexico. These visits had substantial effect in further encouraging DSI's staff to pursue accelerated transfer. In areas of Antalya, Adana, Konya and Yzmir, where DSI officials had shown a higher level of readiness and dedication and the farmers were more receptive a pilot program of accelerated transfer initiated. Extensive internal training, including seminars and workshops significantly contributed to the process. A friendly competition among various DSI regions in promoting successful transfers is

Table 3 DSI's transfer achievement (1.11.1996).

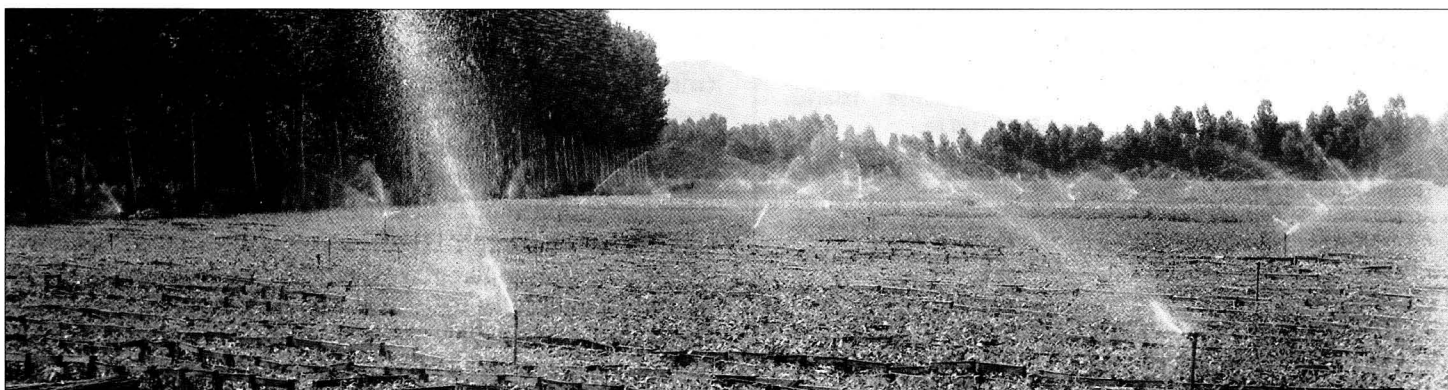
Year	Area of transferred Schemes in ha.	Total ha.
Before 1993 since the beginning of transfer in the 50's	62 620	
Average annual transfer before 1993 about	2 000	
In 1993	9 422	
In 1994	195 320	
In 1995	711 214	
Total		978 576
First of January-First of Nov.1996	197 394	
Total (1.11.1996)		1 175 970
Transfer formalities are already under signing	107 367	
General Total		1 283 317

Table 4 Classification of transferred irrigation schemes according to receiving Organizations (1.11.1996).

	Number	Area (ha)
WUGs	208	33 016
Municipal Authorities	122	47 933
WUAs	228	1 081 258
Cooperatives	24	13 076
The Others	3	687
Total	585	1 175 970

another contributing factor. The policy that O&M engineers will not lose their jobs as a result of transfer and knowing that they will have an important role to play after transfer, kept their moral high and DSI engineers who established a very close interaction with the village and municipality councils and their chairmen played a very important role in this promotion process. In 1994 the studies to transfer irrigation systems to the users accelerated. The amount of irrigation land transferred in that year was 195,320 ha which was well above the amount suggested by the action plan. The fact that farmers showed great interest to this transfer process, was appreciated by the world Bank, and they decided to show Turkey as a model country. This caused various experts from various countries such as Bulgaria, Pakistan, Egypt, Albania, and Macedonia to visit Adana and Antalya regions and see the applications in Turkey. In this pretext two DSI staff worked in the world Bank project for Bulgaria. In 1995 the amount of irrigation land transferred to the users well passed the amount suggested in the action plan and reached to 711.214 ha. In the first ten months of 1996 the amount of irrigation land transferred was 197,394 ha. It is estimated to reach 1,283,317 ha by the end of 1996. The principle followed in this process is transferring the responsibility of operation and maintenance of the system not the whole property.

There is no legal problem in transferring the irrigation systems owned by DSI to governmental organizations (municipal authorities) and non governmental organizations (cooperatives or WUA'S). The process is initiated upon the demand of the related body. The organization or the body to which the responsibility of operation and maintenance of the irrigation system is to be transferred, is determined based upon criteria such as its representative capacity of the farmers, and its capacity to carry out the responsibilities it is to take. If the irrigation system is to be transferred to a cooperative or a WUAs then these organizations are supposed to complete their organizational structures in accordance with the related commercial laws and they are supposed to take the decision of taking the responsibility of the operation and maintenance of irrigation schemes in their respective executive organs. If the system is to be turned over to municipal bodies it is sufficient that they take the related decisions in their authoritative organs. All these organization are assessed as regards to their representation capacity of the farmers and their ability to carry out the necessary services when the decision to transfer the irrigation systems is made. These organizations are supposed to carry out the related services in accordance to the protocol signed between related parties and DSI. The organization which assumes the responsibility of operation and maintaining irrigation systems charges certain fees from the farmers for their services. These charges can be based upon amount of plantation per unit area, number of irrigation's disregarding to plant type or simply m³ of water used. By Nov., 1st 1996 the total irrigation land transferred was 1,175,970 ha. 1,081,258 ha. of this land was transferred to WUAs which are incorporated in accordance to municipal law 1580 articles 133-148. The WUA is established after the municipal authorities take a decision in that effect and its constitution is approved by council of ministers. Each WUAs can make certain amendments in their constitution when necessary after discussion it in their executive organs. If an irrigation system serves more than one region or village, it is generally transferred to the WUAs formed by the municipalities of these villages. A WUA is composed of natural members (heads of municipalities and village leaders within the region which the irrigation system serves in accordance to the law 1580 article 144) and democratically elected members within these municipal authorities. It then elects a chairman (for 1 to 4 years) and four executive committee members (for 1 year). This five member committee together with an assigned general secretary and accounted forms a seven member "executive committee". Now that the accelerated transfer has been successfully initiated and pursued, DSI with support from the Bank mainly focuses on the quality of management of the transferred schemes and their sustainability. DSI



recognizes the need for a continuous monitoring of the transferred schemes, identifying required improvements, and providing assistance to users in all related aspects, including:

- (a) assistance in acquiring and maintaining required skills and consulting and technical support as needed;
- (b) Regular technical training of the staff of WUAs on different aspects of irrigation (an outline for such a training course on irrigation is given Annex II.)
- (c) assistance in obtaining essential O&M equipment and handling urgently needed repair or rehabilitation works on the basis of reasonable repayment or cost sharing arrangements; and
- (d) legal, procedural and organizational changes concerning both the WUOs and relevant Government agencies, and taking appropriate action.

Turkey's experience, in participatory management of irrigation through establishing numerous WUOs and transfer of full management of irrigation systems to users, can offer useful information and examples for those countries interested in promoting participatory management and complete transfer. As a result of the success of transferring irrigation systems to the users, the world Bank authorities offered to hold the second "international joint irrigation conference" in Turkey. This conference was held in Antalya between 10-17 April 1996. The conference was attended by 58 people from 16 countries including ministers and high ranking officials, 12 people from related institutions, 16 people from world Bank, 25 people from DSI and 13 people representing the people who took over the irrigation systems.

CONCLUSION

Some outcomes of the transfer program are evident at this early stage, while others will not be assessable yet for several years. Public costs of O&M have begun to fall and will very likely continue to do so over the next few years. Cost recovery has improved dramatically. DSI O&M staff levels have fallen marginally, though more dramatic declines will depend on resolving issues

of transfer and termination with the powerful unions representing DSI support staff. Associations have gained control over many operational decisions and secured the opportunity to stabilize and improve system performance. The impacts of transfer on quality of irrigation service are not assessable yet and important issues of future sustainability remain. Still, in comparison with efforts in other countries, the early achievements of the Participatory Irrigated Management in Turkey show considerable promise in achieving objectives held both by the government and by local associations. ●

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Annex I

List of abbreviations

DSI	State Hydraulic works in Water Works Organization with major responsibility for irrigation
GDRS	General Directorate Rural Services
IGs	Irrigation Groups (Same as WUGs)
WUAGs	Water User Associations
WUGs	Water User Groups

Annex II

Outline of the training course for the technical staff of the Water Users Associations.

I. Week

Date	Hours	Subject	Teaching Staff
04.11.1996 Monday	09.00-10.00	Opening	Assoc.Prof. Sabri Sener Cevdet Köse Assoc. Prof. Sabri Sener Dr.Öner Çetyn
	10.30-12.00	Irrigation and Importance	
	13.30-14.25	Soil-Water Relations	
	14.35-15.30	" "	
	15.40-16.35	" "	
05.11.1996 Tuesday	09.00-09.55	Irrigation timing, Determination of irrigation water need	Dr. Öner Çetyn
	10.05-11.00	Water measurements and Related equipment's	Assoc.Prof. Sabri Sener Mehmet Gündüz
	11.10-12.05	Irrigation Methods	
	13.30-14.25	Surface Irrigation Methods	
	14.35-15.30	" "	
06.11.96 Wednesday	09.00-09.55	Irrigation Methods	Mehmet Gündüz
	10.05-11.00	Pressurized Irrigation	Dr. Öner Çetyn
	11.10-12.05	" "	
	13.30-14.25	Water -Yield Relationships	
	14.35-15.30	" "	
07.11.96 Thursday	09.00.09.55	Trickle Irrigation	Assoc.Prof. Sabri Sener
	10.05.11.00	" "	Yyldyry m Kayam Dr. Öner Çetyn Yyldyry Kayam Dr. Öner Çetyn
	11.10-12.05	Tensiometers, Neutronmeters, Infrared Thermometers	
	13.30-14.25	Field Exercise	
	14.35-15.30	" "	
08.11.96 Friday	09.00-09.55	Water Quality, Salinity problems in Irrigation Water and soil sampling for quality	Dr. Öner Çetyn
	10.05-11.00		
	11.10.12.05		

II. Week

11.11.1996 Monday	09:00-12:05	Excessive Irrigation and high ground water, as a result salinity	Dr. Müslüm Beuzgöl
	13:00-17:00	Possibilities of Improvement of Saline Soils	Dr. Müslüm Beyazgöl Dr. Öner Çetyn
12.11.1996 Tuesday	11:10-12:05	Irrigation of individual crops - Sugar Beet - Wheat - Cotton	Dr. Karani Ödretyr Dr. Karani Ödretyr Dr. Öner Çetyn
13.11.1996 Wednesday	09:00-09:55	Citrus Grape, Alfa Alfa	Assoc. Prof. Sabri Sener Assoc. Prof. Sabri Sener Dr. Müslüm Beyazgöl
	10:05-11:00		
14.11.1996 Thursday	09:00-12:00	Management of Irrigation , Systems IGs, WUAs, WUGs	Dsy Ergün Döker
	13:30-17:00	Management of Irrigation Systems IGs, WUAs, WUGs	Dsy Faruk C. Erdodan
15.11.1996 Friday	09:00-12:00	Water Users Associations, Participatory Irrigation, Achievements	Dsy Ergün Döker Faruk C. Erdodan
	13:30-17:00	Face to Face talk to technical staff of the Irrigation Groups	Dsy Dr. Öner Çetyn

Annex III

The summary of the views of the conference of operation and maintenance officials

All the regional authorities were asked to prepare a report concerning the administrative operative maintenance and transfer issues in their respective regions and submit them to the Administrative and Maintenance General Office by 7 October 1996. The General summary of the views and the recommendations of the problems in application and maintenance of participatory irrigation based upon the reports submitted by various regions is outlined below.

1. Technical issues

1.1 The comparative assessment of the services provided by the organization which assumed the responsibility of operation and maintenance of the irrigation systems as regards to quality, quantity and adequacy based upon the results obtained during the time after the transfer process.

- It is of utmost importance for the performance of WUAs that the WUA personnel be trained properly in order to make them realize the significance of the subject and the general secretaries be competent in the field they are dealing with.

1.2 The views and applications to meet machine and equipment needs of irrigation WUAs.

- It is important that the physical features of the irrigation plant be taken into account when considering their machine and equipment demand. The equipment should be chosen by taking the criteria such as fuel effectiveness, abundance of spare parts, suitability for the purpose into account. Large, expensive and sophisticated equipment should be avoided as much as possible.

- The needs of the WUA for large excavators and bulldozers should be met by purchasing them from DSI machine park. Large and multipurpose tractors should be supplied from the market or be jointly purchased by several WUAs together. They may also be rented. - The WUAs should be provided long term low interest credits to meet their equipment needs.

1.3 The views on communication with DSI and related organizations.

- The establishment of relay station for the communication among the WUAs creates quite a big financial burden. Therefore the use of relay stations belonging to our institution will cause quite big relief.

1.4 The views on the operational and maintenance programs of the project transferred and compliance with the stipulations of the protocols.

- There is no possibility of implementing the related protocol in most regions, since there allocated no cash as "special expenses" for the jobs to be completed. Therefore even if 50% of the cost is charged in advance the lack of cash makes the completion of the remaining job impossible.

- According to protocols the jobs supposed to be completed by the WUAs but not carried out due to various reasons, shall be done by DSI and the costs involved shall be charged from the WUAs. However the lack of cash allocated to the WUAs makes the completion of job by DSI impossible as well.

2. Legal and administrative subjects

2.1 The views that the cost involved in the operation and maintenance of the joint project to be paid by the institution/WUA itself.

- It is generally stipulated that the cost of the services provided by DSI to the project such as dams, regulators, main and drainage channels used by more than one WUA/ organization/body be paid by the WUAs in proportion to the amount of service they get. These cost should be not be charged for a few years in order to support the WUAs.

- The administrative and maintenance costs of the joint plants should be charged from the users in proportion with the extend of their usage. It is natural that the operational and maintenance costs should be charged from the users. However they should be charged based on certain principles such as: The need for maintenance should be jointly determined by DSI and the WUAs together and the WUAs should pay their share in accordance to the account jointly determined.

- The cost of maintenance should be charged from the users. However the WUAs should be informed by writing about the starting date of the payment.

- All the force major costs should be met by the state and the normal maintenance should be paid jointly with the WUAs.

2.2 The views on the proposals of the items to be present in the transfer protocols and their justifications.

- New transfer protocols should be signed after the enforcement of new WUA law.

- The WUAs should be consulted for the renewal of the transfer protocol.

- DSI should be final authority in the selection of the staff, their number and their quality.

- The article saying that the jobs beyond be the capacity of the WUAs shall be done by DSI should be abolished and a binding statement stipulating all these jobs shall be carried out by the WUAs themselves should be added. In the case of this article remains unchanged then a provision stating that the cost of the services carried out by DSI shall be charged from the WUAs based upon current values with a penalty when necessary, should be present.

- All the calculations should be based upon area/dimension.
- The WUAs should be obliged to establish operational and maintenance units within their framework.

- It will be appropriate to extend article 6. of the protocol and add a provision stating " DSI shall not be liable whatsoever for the damages due to force major conditions, water cuts due to directions of the legal or municipal authorities, or inadequate water supply".

- Article 3. leaves the training of personnel at the initiative of the user. This article should also be amended as "under the circumstances which DSI finds necessary..."

- New provisions for the safety and the protection of the plants are to be added to the protocol.

- Staff charts of the WUAs should be included in the protocol. In large scale irrigation's the staff should include electrical and mechanical engineers.

- WUAs budget should be ratified by DSI before being submitted to the government.

- It should be stated that additional protocols can be made in order to solve the problems which may arise, during the period of original protocol.

2.3 The proposals for the election of the executive committee.

- The executive committee should be chosen among the farmers within the villages or municipalities using the system.

2.4 The solution of specific problems.

- There were no specific solution which can be commonly applied to all regions.

2.5 The views on financing the rehabilitation of the project by active participation of the farmers.

- The WUAs are already participating in small scale rehabilitation works. However the participation of the farmers into the large scale rehabilitation is something else. Because the prospective participants were initially assured that the project was going to be transferred in fully operable condition and the parts which were in need of rehabilitation was going to be rehabilitated as much as possible before the transfer talks to erase their worries.

- The rehabilitation of the systems is a very costly procedure and not possible to be financed by the farmers.

- The way and the body who will meet the maintenance and rehabilitation costs of the project in need of urgent repair should be clearly stated in the transfer protocol. The WUAs in some regions assured that they were ready to contribute the rehabilitation works on the condition that DSI provides the necessary equipment.

- The rehabilitation of the system should be financed by the participation of the farmers. However it is essential that WUAs become financially capable before that. This may be achieved by urging the WUAs to go into commercial activity or providing them low interest credits.

- There should be no charge demanded from the WUAs for

the rehabilitation of old and outdated project.

3. The relations between DSI and WUAs to which the irrigation schemes are to be transferred

3.1 The relations of the irrigation WUAs with municipal authorities as regards to the maintenance of the services and the staff employed.

- Since most of the staff had been trained only on the distribution of water and since maintenance teams are yet to be established we have to be dependent onto DSI for these services.

- That WUAs have to take the approval of the municipal authorities for the staff they employ has no logical explanation since all personnel expenses are met by the WUAs themselves. This situation puts the WUAs under very big stresses when employing the necessary staff and buying the necessary equipment. These authorities are often reluctant to approve overtime, food and clothing aids for which certain allocations are made in WUA budgets.

3.2 The views on the energy costs of the irrigation systems, the downpayment asked by the electric distributing company TEDAS and the payments.

- Although there are certain variations in the payment of energy costs the general tendency is that DSI pays the costs for the first year and the WUA joins later on.

- TEDAS used to be quite flexible in the electrical connection procedures. However they stopped this after they had the opinion of the ministry of Finance that these WUAs were not governmental organizations.

3.3 The views on the preparation of the fees charts and the establishment of WUA-DSI relations.

- There is a provision in the transfer protocol that DSI should approve the fees chart for the services. However the regional authorities refrain from exercising this right and avoid interfering with the fees policies of the WUAs.

3.4 The views on the relations among the WUAs themselves and with other agricultural organizations.

- The relations among the WUAs culminates especially when common interests are at stake. The neighboring WUAs are generally act together when determining the fees for the services they provide. This joint action has recently extended to purchasing and renting expensive machines or equipment.

- The relations between the WUAs and other governmental organizations are yet to be established. DSI remains to be the major body to consult for administrative, technical and legal problems.

4. The post transfer developments

4.1 The proposals to transfer the excessive staff within the organization after the transfer of the project.

- All the precautions should be taken to prevent the workers and their rights after the transfer procedure. The staff whom are not able to work in their normal jobs after the plants are transferred should be shifted to other positions within the organization. All the necessary legal procedures in that effect should be completed before hand.

4.2 The views the training of WUAs personnel by DSI.

- The WUAs personnel should be accepted as DSI staff and given regional and central training.

4.3 The opinions on the schemes which have not been transferred up to date and can not be transferred for a foreseeable future.

- In some regions the amount of irrigation land is so low and the land is mostly irrigated by pumps. Therefore it may not be possible to meet irrigation costs.

- The factors adversely effecting the transfer of future transfers can be summarised as follows: Long winter periods makes the agricultural activity limited, most of the irrigation systems are inoperable or the region is mostly irrigated by the systems. The people in some regions have high expectation from the state.

- They are worried that the services will come to stop when state dissociates itself from these services. Their self confidence is low and they think that they will not be able to carry out the services even the state cannot manage.