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IRRIGATION MANAGEMENT TRANSFER: IRRIGATION ASSOCIATIONS IN THE LOWER SEYHAN AND GEDIZ RIVER BASINS (TURKEY)

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Introduction

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Highlights:

- Building communities of practice is currently the most popular KM strategy
- Organizations must support communities of practice culturally and financially for them to thrive
- Incentives for workers are key

THEME 4: Building a Knowledge Culture & Momentum

OBJECTIVE: Organizational Learning

Highlights:

- KM leadership from the top is crucial but KM leaders need to be found throughout the organization
- Big mistake to look at technology as a quick-fix solution for KM
- Be prepared to fail in the implementation of your first KM strategy; this is difficult but ultimately wort

THEME 5: Fostering Knowledge Management Networks

OBJECTIVE: Knowledge Networking

Highlights:

- Enthusiasm for pursuing KM discussions in the international development community and learning fro
- Possibilities for an ongoing e-mail and Web forum on KM for development currently being explored
- Idea of holding subsequent KM Workshops received much support.

Based on both formal and informal feedback the workshop was exceptionally well received by both participa several recommendations for carrying the process forward. The suggestion to organize a follow-up European unanimous support. Enthusiasm for it was such that plans for European workshop began to take shape durin

This report, as well as a range of resource material (e.g. background papers and articles, participant list, agend presenters' biographies, and a bibliography) is available on the KM Workshop Web site (http://www.bellane also serve as the focal point for potential communities of practice discussing specific KM themes.

Other important outcomes include preliminary discussions on possibilities for Southern KM workshops in th exploring the linkages between KM and evaluation/learning activities for development.

Introduction

For a long time being, development of water resources in most developing countries was dominated by the state, and planning, construction, operation and maintenance of large-scale irrigation projects was subject to state bureaucracies. The provision of government financing developed from a historical situation after World War II, when no private investors were able, or willing, to finance these large and costly infrastructures. Governments thus stimulated economic development through infrastructure financing, and it was believed that only state bureaucracies would be best able to administer water allocation, maintain the technical infrastructure and limit free riding behavior.

The fiscal crisis in the developing countries that began in the early 1980s, however, has demonstrated the weakness of governmental interventions, and experiences in state-administered irrigation systems have not validated the positive assumptions. Misallocation of resources, poor performance of supplying water, and deterioration of infrastructure have exposed institutional deficiencies of state irrigation institutions, and have put to question the governments' role.

Since the beginning of the 1990s, many developing countries transferred management of irrigation systems to users organizations. Turkey has been among those innovative countries, and research studies2 show significant improvements in operating and maintaining irrigation systems, and in financing 1 Performance under two kinds of shared responsibility

The transfer process has been gradually undertaken, and the state agency still assumes partial respon-sibility. What are the critical items for which the state agency continues to play a role - at the operative level and for regulatory functions?

Prior to transfer, both irrigation systems in the Lower Seyhan Plain and Gediz river basin were managed by the state agency (State Hydraulic Works, DSI). In the early 1980s, Irrigators Groups were established at the tertiary level but assumed minor responsibility. High subsidies and, thus, the burden on the national treasury for services provision was the driving force of management transfer taking place in 1993/94. The state agency has not yet completely transferred management of irrigation and drainage systems to Irrigation Associations, and for the time being associations and DSI jointly operate and maintain irrigation systems and drainage infrastructure.

State management of irrigation and drainage systems: DSI - Irrigators Groups (1981-1993/94) The General Directorate for State Hydraulic Works (DSI) was the principle actor for managing irrigation and drainage systems. DSI has been dependent on budget allocations, determining the scope of maintenance works. Budget allocations were not linked to water charges, and collection rates were low flicts could not be solved and if conflicts arose between farmers belonging to different Irrigators Groups.

Centralized control over the resource and the provision of services was not able to flexibly respond to local demands deriving from e.g. diversified cropping patterns; it was weak in effectively enforcing water allocations and preventing free-riding behavior. Finally, the multi-organizational arrangement with many ministries and state agencies involved was not designed as to hold public service providers accountable to irrigators, and to achieve financial sustainability.4

Joint management of irrigation and drainage systems: Irrigation Associations – DSI (since 1993/94) The high subsidies and, thus, the burden on the national treasury for services provision was the driving force of management transfer taking place in 1993/94. DSI has not yet completely transferred management of irrigation and drainage systems to Irrigation Associations (IA), and for the time being Irrigation Associations and DSI jointly operate and maintain irrigation and drainage systems. Within their area of responsibility, Irrigation Associations are self-reliant and recover costs from local resources. They manage their common water source, and the associated infrastructure, at their own discretion based on officially sanctioned transfer contracts. The organizational set-up of Irrigation Associations variesy among regions, but the privations are membership organizations to which the farmers join voluntarily. Irrigation Associations are free to decide on the representative system, i.e. Yearly investigation and evaluation is done by using a common format which forms the basis for technical assistance by DSI staff. The report includes, inter-alia, amongst other items irrigation ratio, cropping pattern, water use planning and delivery, maintenance and repair activities, budgeting and accounts. 5

The prevalent trend is that the state agency operates and maintains only those parts of irrigation and drainage systems which exceed the boundary of one association, or for which an association has refused to take over management responsibility. This refers, in particular, to main canals to which more than one Irrigation Association are adjacent, and to main drains. While O&M of main canals is then charged to associations, maintenance of drainage infrastructure is still free of charge in the Lower Seyhan system. The transfer contracts for associations in the Gediz basin include management transfer of drainage network as well, but maintenance is not realized because of too high costs. In case of a shared main canal, a legally binding protocol defines activities and costs, and is signed by all partners. Another option has been that an Irrigation Association has hired a DSI technician who is then accountable to the Irrigation Association for monitoring crucial delivery points to guarantee downstream water rights.

The establishment of an upper higher-level as periation on river basin level (or sub-level) is envisaged that allows the state agency to completely refrain from the operative level. However, some services should be provided by the state agency (e.g. monitoring groundwater and salinity), and regulatory and T in Turkey does not include transfer of ownership of infrastructure and water, but assigns users rights to both. What does this mean in effect, and does partial turn-over negatively impact on irrigation associations ?

what are the prevalent maintenance problems, and what are the rationale of the associations decision-making?

Farmers were not asked to contribute towards investment cost of on-farm drains, and, prior to transfer, maintenance was nobody's responsibility. Now, maintenance has become an issue, and irrigation associations have are assumed responsibility, but clear rules are lacking.

Conflicts may arise between irrigation associations and the state agency, among irrigation associations, and between associations and the farmers. Given different causes and issues, what are the arrangements like, and are they effective and acceptable for associations and farmers?

19.If many actors (stat and civic) are involved in operation and maintenance, their spheres of decision-making may conflict and may give rise to inequities because of information asymmetries and asymmetries of holding authority. What kind of procedures have been introduced?

1. The state agency have en very proactive initiative in providing technical support and training to-

The decisive actors, i.e. the Ministry for Public Works, the state irrigation agency DSI and a majori of farmers wanted change, giving different reasons.

The decisive actors agreed in principle on the direction of the transfer process, i.e. the disengagement of the state agency at the operative level. Decentralization has been discussed since years, and there was no other feasible option but transfer due to the serious financial crisis.

The responsible ministry and DSI followed a strategy that prevented the issue to be politically in-

strumental.

Positive experiences with irrigation organizations elsewhere in the country have suggested that users can successfully manage common pool resource systems. Management transfer benefited from more or less experienced and consolidated Irrigators Groups which had lead collective action at the tertiary level prior to transfer, and management transfer only took place in pilot regions where Irrigators Groups had been participating. Although they had assumed limited responsibility, their headmen had gained skills and were experienced in collaboration with the state agency.

Legal regulations have supported local organizations as recipients of O&M responsibility.

The relevant actors expected positive pay-off deriving from transfer; others have not been negatively

affected (i.e. staff of the state agency was not dismissed, and was assured of continued job before

hand).

The actors with new functions, i.e. local administrators and influential farmers, have been accepted

Organizational set-up	Three-tier representative system	e
	without Irrigators Groups	Γ
Delegates	Village headmen, mayors and two	t
	members of council of elders and	¢
	town assembly;	
	Farmers can be nominated by them;	
	Equal number for administrative	1
	units	

Transfer contract

Management of irrigation systems

Whether or not Irrigators Groups are maintained and incorporated into the new setting, depended on whether village and municipality institutions were willing and able to take over management. Elected village and municipality units form the basis of Irrigators Groups, and headmen and mayors provide irrigation services on behalf of irrigators. Their incorporation is evident in Izmir, and was supported by law that farmers may be represented by either village headmen, mayors or farmers as delegates in the fines in case of illegal water withdrawal. This has partly been solved by internal reorganization: Irrigation Associations hire and employ personnel that monitors and enforces water schedule, and collect water charges.

4 Incentives for good maintenance performance

Incentives for participation of irrigators groups were removed with management transfer. What are the arrangements like for promoting 'good' maintenance standards?

Farmers in Turkey do neither contribute in-kind nor labor for maintenance. Maintenance expenses are covered through water charges, and the responsible units either employ or temporarily hire laborers. This kind of commercialization and job differentiation reduces conflicts among farmers, and, at the same time, improves professionalism. It certainly works against upstream-downstream conflicts as employed or hired personnel has no intrinsic incentive for working in favor of either of a group. Prior to management transfer, village and municipality institutions, i.e. village mayors, council of elders etc., were stimulated to take over O&M of tertiary irrigation systems by giving them a discount and reducing their water charges up to certain extent. They could spend the surplus between their O&M

5 Relevance of property rights for maintenance

IMT in Turkey does not include transfer of ownership of infrastructure and water, but assigns users rights to both. What does this mean in effect, and does partial turn-over negatively impact on irrigation associations?

In Turkey, management transfer is based on transfer contracts signed by the Council of Ministers, the state agency DSI and the Irrigation Associations. The contract mentions the supply source (main canal and its capacity), the associated infrastructure (number, location and capacity of secondary and tertiary canals, gates etc.), boundaries, and the extent of the service area. Ownership of infrastructure remains with the State, and transfer contracts are subject to unilateral dismissal, if associations do not properly manage or uphold their system. In the event that maintenance work is not properly carried out, and damages occur, associations are obliged to bear the costs. In general, if they do not keep to the terms of the contract, DSI has the right to approach the judicial system for cancellation of the management transfer contract.

By signing the contract, Irrigation Associations have agreed that they accept and follow DSI's technical directives for operation and maintenance, and DSI's technical design principles for rehabilitation, remodeling and renewing. DSI due to ownership rights, technically monitors the maintenance works There is evidence that if capacity of canals cannot serve all farmers, tail-end farmers suffer receiving little or no water. In times of peak demand, operators decide on rotations and proportionally reduce water amount thus spreading the risk among all adjacent farmers. The same procedure is applied if many associations receive water from one main canal. However, it is worth mentioning that in the Lower Seyhan Plain there is no overall water scarcity. Usually water flows 24 hours, and water flows are used 12 to 17 hours only which means that night-time irrigation is an option yet to be fully exploited. In case of water scarcity, which was experienced in the Gediz basin for about 10 years, DSI informs the associations on water availability and the amount they can expect. In addition, DSI recommends crops and crop pattern accordingly. Scarcity is allocated proportionally to the Irrigation Associations and farmers, e.g. instead of 4 to 5 irrigation applications for cotton, only 1 or 2 are applied. If more than one Irrigation Association are served by one main canal, presidents and general secretaries of the adjacent associations attend a planning meeting together with DSI staff in advance of the irrigation season where they negotiate flow rates. A "Protocol on water usage and distribution" is then signed by the associations and DSI that defines water allocations. According to this protocol, monitoring the critical off-takes is DSI's responsibility, or associations hire DSI technicians that are then accountable to them.

Concerning maintenance, associations share in the cost in proportion to their irrigated area. In 1998, for instance, the Right Conveyor in the Lower Seyhan Plain which supplies water to all associations in

ancing costs. In addition, main drains are used by industry and cities which are so far not charged. A solution requires legal and institutional changes. Legal changes refer to charging principles, and institutional reforms are necessary in such that representatives from all pollutants, i.e. farmers, cities, industry, and from the state form a council where decisions on drainage are at the core.

Ownership to land, however, impacts on payment of water charges, financing services and on investments in different ways: Many farmers rent their land out to others, and several types of sharecropping arrangements exist. Only registered land owners are liable for paying water charges which they collect from their rentals. Most share-cropping arrangements are based on yearly contracts, and it is easily understood that they do not create incentives for the actual operators to investment. Some associations mentioned low water charges collection rates in the year when services are provided, because of high percentages of share-croppers and lessees. They are then confronted with additional administration and, eventually transaction costs. However, all associations achieve high collection rates and do not hesitate to use all kind of sanctions and legal instruments available.

6 Prevalent maintenance problems and rationale for decision-making on maintenance

What are the prevalent maintenance problems, and what are the rationale of the associations decision-

'urgent needs' are identified by technicians and enter into planning. However, it is not trivial to state that in the final end decision-making for maintenance, depends on farmers' economic considerations and financial capacity.

Age of infrastructure plays an important role as it increases maintenance requirements and costs which become enormous. The actual alternative may be maintenance or replacement of the old system. If . replacement costs are high and cannot be afforded, or are not an acceptable option for whatever reason, only urgent maintenance is done (this was reported by two Irrigation Associations in the Tarsus Plain, Lower Seyhan). On the contrary, new systems cause little maintenance costs, and associations are able either to reduce O&M costs and thus water charges, or build reserve funds (reported from two associations in the Yüregir Plain, Lower Seyhan).

However, maintenance efforts and thus cost incurred may not substantially increase water supply and benefits deriving from additional water. In this case, and if benefits can be maintained at a given level without causing costs, maintenance is postponed because maintenance investment without associated benefits, impose opportunity costs on farmers.

Demand for maintenance is unequally spread among farmers depending on their location on the irrigation system and its state. Particularly in case of aged infrastructure, demand for maintenance increases towards the tail-end to uphold water deliveries, while head-end farmers still may receive enough wa-

ter. This may negatively affect decision-making as head-end farmers may influence their delegates not

On-farm drains are publicly subsidized, and farmers do not contribute towards cost although benefits deriving from on-farm drains can be easily attributed towards private farm units. This practice is ongoing until the very beginning of the irrigation system until to date. In 1988, a World Bank-funded project aimed at rehabilitating old farm drains and laying new ones in not yet, or insufficiently connected fields. Cost-sharing between state and farmers is even not discussed, and officials of the responsible state agency, i.e. the General Directorate for Rural Services (GDRS), are of the opinion that farmers do not have the financial capacity to bear costs. However, in 1997, a law was launched which intends to transfer on-farm drains to Irrigation Associations taking over their maintenance because maintenance is very much neglected by the farmers. The associations so far, refused to assume responsibility and stated that they already are struggling with O&M of irrigation systems. Contrary to recent law, on-farm drains might be transferred to farmers (and not associations) through

legal contracts and assign them ownership titles. Farmer then can enter into service arrangements with their Irrigation Association, or private companies, given that special equipment and skilled staff is available.

Rough estimates indicate that farmers are able to contribute towards investment and maintenance cost. Installation cost for sub-surface drains is around US\$1,000 per hectare, which is almost equal to the annual net income. Likewise, periodic maintenance cost averages at US\$50/ha/a, which stands around 8 Lack of coordination between key players

Off-farm and on-farm drainage network has been under the auspices of two state agencies. Poor coordination negatively affects operation, and the question arises whether functions should be integrated within one unit.

Prior to transfer, responsibility for irrigation and drainage systems, and for on-farm drains was assigned to two state agencies: DSI being responsible for construction and O&M of large irrigation and drainage network, and TOPRAKSU (the predecessor of GDRS) for installation of on-farm drains and land leveling. When TOPRAKSU was integrated into GDRS, its drainage units have played a marginal role compared to other tasks of GDRS such as drinking water supply in rural areas, construction of services roads, etc. leaving the drainage units with little funds. However, the GDRS' drainage units were not supposed to maintain on-farm drains.

In general, DSI has always received higher budget allocations for its projects than GDRS which heavily depends on foreign exchange for projects. DSI almost always completed its work before GDRS. The common feature has been uncoordinated action between DSI and GDRS resulting in unadjusted on-farm and off-farm drainage systems which required remodeling at high cost. And uncoordinated action has impacted on maintenance: DSI staff while carrying out maintenance of the off-farm drainseen to violate beyond the tolerance level of others involved. A complaint is an informal warning, and a formal warning may follow for which mediation will be sought from outside parties. Since a conflict arises because preferences and information and perceptions are not exactly alike, a third party may be approached. Depending on agreements and legal systems, third parties may decide and penalize with binding effects, or mediate only.

In the irrigation management context of Turkey, various actors interface at various levels where conflicts may arise: Within a tertiary system, farmers interface with each other and with association organs, or within an Irrigators Group, resulting in conflicting situations. At secondary level, Irrigators Groups interface, and at the primary Irrigation Associations interface with other associations, other users as well as with DSI. Given the context, interrelationships among various actors are described here.

Prior to the transfer, many farmers complained about the quality of public services, the agency's responses to system breakdowns and illegal water withdrawal by other farmers. While the former cases might have induced refusal of payments, the latter caused high enforcement costs often deepening the conflict between the farmers involved because it was resolved by state action. After transfer, there are few conflicts among members of Irrigation Associations or Irrigators Groups, as water distribution technicians perform their job efficiently. A handful complaints have been reported after transfer most of which relate to provision of water on-demand and in desired volume. Conflicts have arisen, for exlating its duties, they may discuss their problem with its staff, and as a last resort may refuse to pay for the services provided by DSI. However, contrary to the explicit penalties for violation, no Irrigation Association has been punished in the actual sense, as DSI implicitly wants to completely refrain from management functions. This part of the contract is unilateral and there is no penalty for DSI, if its staff fails in performing its duties. However, none of the associations visited had any compliant against DSI as it performs its tasks professionally. Probably, the associations are yet at an early stage and both partners try to solve problems amicably to keep cordial relationships.

The Ministry of Interior monitors whether associations are performing according to the law governing these organizations. Their staff inspects reports and procedures, and may take legal action. The general assemblies may withdraw support for their management units by passing a vote of no confidence against the chairman, if they consider him not performing well. If majority vote becomes impossible, and the chairman is found to be violating rules, any member can be a plaintiff to the Ministry of Interior. A complaint against an irresponsible chairman resulted once into an inquiry and subsequent dismissal of him by the Ministry.

Conflicts among members, and members and Irrigation Association management organs are mostly about damaging the structures, water distribution and payment of fees. Associations are authorized to impose fines, if farmers extract water out of turn or unlawfully. If members do not pay the fines or dues, graduated penalties are levied, e.g. a warning, penalty, disconnection of services and law suits. If many actors (state and civic) are involved in operation and maintenance, their spheres of decision-

making may be conflictive because of information asymmetries and asymmetries of holding authority.

What kind of procedures have been introduced?

Previous paragraphs already mentioned information asymmetries at varying interfaces. However, they

are summarized here. Crucial points are the following:

- Data on water availability and water demand;
- Planning water supply based on water availability and on the associations demand;
- Fixing water delivery schedules for a sub-basin with more than one association, and actual water

allocations;

- Water allocations from one main canal which serves more than association;
- Water allocations from secondary to tertiary systems;
- Water allocations from tertiary systems to farmers fields;
- Maintenance of main canals which serve one association, and is executed by DSI staff and charged

to them;

Maintenance of main canals which serve more associations, and is executed either by riparian associations themselves, hired DSI staff or jointly by associations and DSI.

11 Support systems for sustainability

What kind of support is provided to irrigation associations for they can attain self-sufficiency?

Irrigation Associations are unable to produce all goods and services they need for undertaking the responsibility entrusted to them. However, such services and goods are accessible through contracts and purchases from many suppliers.

A key element behind the transfer process in Turkey is the strong initial support by DSI in assisting the associations in attaining self-sufficiency. The accounting systems are provided by the Ministry of Interior and training therein is provided by DSI through a series of seminars. Likewise, the Ministry of Finance conducts audits of accounts. Banking services are available in most villages where associations established their offices. The Irrigation Associations, however, do not have access to credits, as it is prohibited by law, but this is an essential service they need. Budgeting advice is available from DSI, and by now most associations have become experienced to prepare budgets of their own. Besides, DSI envisions its future role in keeping on assisting the Irrigation Associations.

DSI also provides basic management and planning training by working with them. Many associations

have a few problems in recovery of water charges and consequently are constrained to address mainte-



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* in the Lower Seyhan Plain, namely: Gazi Sulama Birlik, Kadikoy Sulama Birlik, Altinova Sulama

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* in the Gediz Basin, namely: Menemen Sol and Sag Sahil Sulama Birlikler, Sarikiz Sulama Birlik.