



Water User Associations (WUA)

The story of participative irrigation management in the Jordan Valley

Working with the farmers for efficient water management in the Jordan Valley

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It is already known that water in Jordan is amongst the priority issues for development. The Jordan Valley encompasses the major surface water resource in the country and provides water for different purposes including drinking, tourism, agriculture and industry. The agricultural sector remains the highest economic activity in the valley, thus providing it with its needs of retail water in an efficient manner is a key duty of Jordan Valley Authority (JVA). However, due to the socio-economic conditions and the competition and pressure on the resource, the efficiency of retail water management decreased progressively in the 1990s. We, as Jordan Valley Authority, realized that the best way to revitalize the sector is to involve the farmers in managing the retail water; it is basically the water that they use, therefore they are the best to protect it and preserve it through a practical and efficient distribution set-up; the water user associations.

As of 2001, JVA in cooperation with GTZ launched the concept of participative irrigation management. Since then the project showed good progress in developing and implementing the concept.

Today I am so delighted to see that more than 75% of the irrigated land in the Jordan Valley is covered by water users associations and that the water is distributed at a much higher efficiency and in a fair way. Certainly this added an appreciable value to the quality of the service. The engagement of the farmers gave mutual confidence and enabled team work spirit. I assure our support to the continuous evolvement of the process and further to sustain the experience to become the way of work for those involved in irrigation water management in the Valley.

Participative irrigation management is now a reality in the Valley JVA and the farmers through the water users associations became indeed partners working for better management of irrigation water. I do appreciate the efforts of all farmers, the JVA staff, the project team and the GTZ support for the constructive efforts that made a positive change.


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List of abbreviations:

GTZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) GmbH
FTA	Farm Turn-out Assembly
JCC	Jordan Cooperative Corporation
JV	Jordan Valley
JVA	Jordan Valley Authority
WUA	Water User Associations

Management of Water Resources

Water User Associations

The story of participative irrigation management in the Jordan Valley

Summary

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The irrigation water has been a major issue of concern in the water sector for many years particularly

in the Jordan Valley, where there has been a pronounced competition on water resources among the user associations: agriculture, domestic, and tourism. Despite the remarkable efforts of Jordan Valley Authority (JVA) in managing the bulk water, the irrigation water distribution system had undergone a major challenge. The case eventually resulted in a sharp fall in the operation as a whole in the late 1990s, where so much of the efficiency in retail water management was lost, farmers became distanced from each other and had negative attitude towards the authority (JVA). The drought years made the situation even more stressful.

To reclaim the situation, a sustainable operational system had to be implemented based on the involvement of the parties concerned, namely the farmers and JVA. In this way, it was understood that both parties would shoulder the responsibility. Among the options considered, JVA selected the participative irrigation approach as a strategic option for improving the efficiency of irrigation water management, this came in line with the government approach.

The idea was very challenging to a system that reached a deadlock. Therefore, many activities of ice breaking and rebuilding of trust and mutual understanding points had to be undertaken. The program even included contributing in technical support in terms of reclaiming the network and providing know-how transfer to advance the farmers to a better position of efficiency and cooperative mode. The implementation was started at a small level in 3 pilots (north, middle, and south). After the trust development phase, water user associations were established, where a democratic process was necessary to be followed to select the members on duty and the management structure.

The work on forming the water user associations was not easy; many difficulties and challenges had to be overcome. Yet when the concept was implemented, it resulted in a number of success stories and positive impacts. For example many farmers reported that they have improved productivity due to availability of water in a regular base according to the irrigation program. The illegal use of water was dramatically reduced, thus fair water distribution was achieved.

WUA and JVA established sort of a partnership for the efficient water use in irrigation. The WUA became recognized by JVA and contracts were achieved with the water user associations that reached tasks transfer, where the associations became responsible for the distribution of the water for irrigation. Yet to ensure the sustainability of the experience for a long term, a bylaw will be set in the near future to govern the holistic relationship among the WUA, JVA and other stakeholders. This is expected to be through the establishment of a federation for the WUA and a corresponding unit at JVA.

Based on the communication made with many members and leaders of the WUA, it is realized that WUA are very satisfied with the results, they even recommend the future generation and any other farmers community to board on participative approach. The concept is based on fairness, and meets well with the traditional approach and religious principles for water management. That is why today more than 3/4 of the Jordan Valley farm units joined WUA; the full coverage would not be too long.

Introduction

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The Jordan Valley had been known as the fresh fruit and vegetables supplier to Jordan and to a certain extent to the region. It used to be called the “vegetables basket of Jordan”. This status, however, was challenged along the years by the continuous stress on water resources and the availability of water for agriculture. The municipal and industrial water needs were somehow being met on the expense of the water available in the valley for agriculture.

To revive the Jordan Valley agricultural performance several programs were implemented that led to the establishment of the Jordan Valley Authority JVA in 1977. JVA was mandated by the management of the resources and the socio-economic development of the valley (including its water resources) and the responsibility of water supply and irrigation water distribution for agriculture. JVA achieved a great success and showed an excellent model in the management of bulk water, but the retail irrigation water distribution faced a gradual decrease in efficiency due to several factors such as maintenance cost and deterioration of the network. As a result the farmers started to lose faith in the efficiency of the operation and became more and more reliant assuming that only JVA had the duty to reclaim the situation. Thus led to lack of cooperation among the farmers themselves to tackle the problem of water resources availability. JVA was gradually overwhelmed with bureaucratic processes and lack of resources to manage the situation. This eventually led to jeopardizing the agricultural performance in the valley on one hand and deteriorating the retail water distribution system on the other.

In 2001 following severe droughts and cuts on water for agriculture, JVA called for serious plans to reclaim the situation and to revitalize the agricultural performance. JVA in cooperation with GTZ stepped in to introduce **a sustainable participatory approach** for water resources management in irrigated agriculture with the goal of **“efficiency of irrigation in the Jordan Valley is increased”**. This initiative was also coincided with the amendment of the JVA law for the purpose of improving efficiency and cost effectiveness of JVA management. The change in the law resulted in aligning much of the socio-economic development duties and responsibilities to the concerned ministries, while JVA became more focused on water management and distribution among some other duties. The development at JVA mandate, the initiated project and the need of the farmers to see a good change provided a fertile – though challenging – ground for the project.

The project adopted farmers' participation in water distribution management through forming water user associations (WUA). It was known from the beginning that this will be a long process and will require a stepwise approach. In the early stages (2003 – 2004) the success indicators were set to be upon the completion of the project (in November 2009) as follows:

- Membership of farmers in WUA will cover 40% of all irrigated area in the Jordan Valley;
- Founding documents of a federative organization representing regional interest of water user associations in Jordan Valley are signed; and
- At least 60% of members of WUA are, according to a survey, satisfied with water distribution services.

Progress of work and yearly planning resulted in upgrading the indicators periodically. The indicator of membership of farmers of 40% was increased to 75% in 2008.

To strive for reaching the above success indicators implied that a plan for making a change should be in place. This included action plans to build awareness on problems and potential solutions, regaining the mutual confidence (between the farmers and JVA and among the farmers themselves), and organizational structure development and technical improvements for the water distribution system. Therefore the project was implemented in phases as outlined in Figure 1. The study area is shown in Annex 1.



Figure 1: Project implementation phases up to October 2009

While celebrating the completion of 8.5 years of the project, this document presents the experience along the march; it summarises the story of farmers' participation in managing water for irrigation in the Jordan Valley from its inception until today. This includes the development of the concept, reflecting some of the challenges faced, examples of problems encountered, means adopted to overcome such difficulties and the achievements, lessons learnt and success stories.

Farmers Participation via Water User Associations

The concept of managing the irrigation water by the farmers used to be practiced in the past; long before the formation of the JVA. That was the indigenous or traditional practice; the small community of farmers had a source of water, the user associations got together and managed the use of the resource according to societal traditional control system. In fact the concept reflects shared ownership, interest and thus responsibilities towards optimum performance. It illustrates good water governance and leads to openness, mutual trust and confidence among the farmers groups and between the farmers and the authorities.

With more sophisticated agriculture involving technologies for irrigation water distribution of high pressure pumping and the associated maintenance, it became imperative to have a more organized form of farmers management group (the WUA). It was also necessary that irrigation water distribution be tied to allocation (taking into account the farm area and crop pattern) rather than allowing certain time for water supply. Thus urged the need for ground management groups i.e. the WUA.

In this project WUA in the Jordan Valley are classified to three progressive levels in terms of their status (1):

- **Water councils:** They are based on the traditional mechanism of problem solving. Water councils are recognized by the JVA. Each council would have 15 – 20 elected farmers chosen through prior informal discussion with the concerned farmers. The interesting aspect is that the government is represented through the sub-governor (Al Mutassarif) in the water council. Thus the council has an executive power. Al Mutassarif may even chair the council.
- **Water user committees:** They are also based on or similar to the traditional form of farmers' management that existed before the formation of JVA. A water user associations committee is a group of representatives of farmers elected by the farmers in a general assembly after several informal meetings. Although the associations have no legal status as such, they are recognized by JVA; normally a letter is issued by the JVA Secretary General in this respect.
- **Water user Cooperatives:** They are the type of associations that have a legal status. Cooperatives follow the Cooperation Law No. 18 / 1997 and thus they are affiliated to the Jordan Cooperative Corporation JCC. Cooperatives must have their internal regulatory system that specifies the objectives, capital, membership procedure and financial and administrative issues. It should be noted that up to the date of issuing this document, JCC was the only available way to register the water cooperatives. However, the project has taken the necessary steps to prepare for the bylaw in cooperation with JVA in 2010, by the registration of the WUA will become governed and a well clarified process.

The Process Adopted

To make the change in managing water resources and to reach to a participatory approach leading to the formation of the above forms of water user associations, a dedicated (open, transparent and flexible) process had to be in place. At the outset the project prepared for a comprehensive understanding of the local issues including traditions, socio-economic aspects and the problems and difficulties facing the farmers. This was done through a series of meetings among the project team, the farmers and JVA, see Figure 2. Examples of key issues and problems that were facing the farmers are listed below

- Unreliable supply of water both in quality and quantity due to lack of planning, stress on water, lack of proper management system, and lack of efficient maintenance;
- Lack of efficiency of some JVA water distribution staff and the support to farmer to meet their needs;
- Competition among farmers on water leading to bad practices like illegal connections and abstractions, thus affected trust among farmers;
- Competition and mistrust between the small farmers and the influential large farmers;
- Demand on water for other uses such as the tourism sector in the Jordan Valley (JV) that would also compromise the allocation for agriculture.

Furthermore, during the initial phase of attempting to form water user associations groups, a survey by a hired social studies expert was done aiming at understanding the opportunities and constraints on farmers participation. The result of the study had given a light to the next steps of project interventions and ways and means to handle the issues taking full consideration of the societal dimension. The study (1) revealed that



Figure 2: Identification of issues and problems analysis workshops.

- There existed a potential (even though low) for farmers to accept each others; thus farmers had to be subjected to training and offered initial support to participate more actively.
- The farmers had great demands and wishes from JVA to reclaim the situation and grant efficient water management. However, they also had the understanding that JVA had to undergo a reform and water user associations had to have a clear role in water management.
- The farmers were also aware of the urgency of having legal status for the water associations. They also were demanding for capacity building and incentives.

Based on the above and since mutual confidence was mostly lacking, the project took a priority to rebuild the trust among the farmers, the project team and JVA to ensure that a change is doable. The project cared to respond to the problems facing the farmers in a structured approach. The project included activities to contribute to the technical upgrading efforts; these included providing equipment and facilitating maintenance work to the water distribution network in a speedy way. Awareness raising and human resources capacity building were also a major topic. A number of workshops were held in the associations to advance the level towards the sought better management of irrigation water via participation, see Figure 3. The workshops covered

- Farmers participation in irrigation management;
- JVA and water user associations groups communication workshops; and
- Joint JVA – farmers – water user groups project planning workshops.



A brainstorming session in the field.



A field visit by the WUA; farmers visit farmers



Meeting to establish a WUA

Figure 3: workshops, field visit, and planning meeting by the WUA

Furthermore the participatory approach was demonstrated by sharing experiences from other countries and associations. Field visits were conducted to associations in the south of Jordan, where the participatory approach through water associations have been in place for a long time. As some farmers were still hesitant to board on the more serious and committed participatory approach and in order to boost the level of belief in the practice as well as to share knowledge, the project planned and executed technical visits (Figure 4) to Syria, Turkey and Egypt, where strong water user associations have been a successful practice. What was interesting, on the other hand, that the farmers covered their costs for such visits and participated a great deal in the technical upgrading work. Thus such activities were not solely donor driven, but they were reflections of farmers interest and commitment.



Figure 4: The most recent regional visit of the WUA was to Turkey.

Then to demonstrate commitment to the participative approach, the project facilitated mutual planning meetings with the participation of the top management of JVA and the farmers. All of the above activities along the time of the project led to successive built up of personal capacity and knowledge, worthwhile confidence and ownership to working together to solve the problems.

When the project gained the support of the farmers and of course JVA, it started to boost work on forming the suitable shape of water associations in the pilot study area in the north, middle and south of the Jordan Valley. For the formation of such water groups, routine and subsequent meetings with the farmers were undertaken to initiate the process. The scope was developed by the farmers, members of the WUA were identified, and the leaders of the WUA were selected by the members. By the first phase in 2003, the work resulted in forming 9 water associations (6 communities, 3 councils, and 1 cooperative). **Progressive work on the water associations and based on the success, more water associations were formed reaching to 21 associations by October 2009. See Annex 2 for the details of the WUA and Figure 5 for the phases of the project.**

The progress was advanced by ensuring a parallel effort being given to the issue of the legal status. The project in agreement with the JVA managed to secure recognition to the established communities upon proving good intention to work in a structured manner. The project worked with JVA to have a legal status and a certain form of power to the water associations. The water associations, depending on the performance, get to a level of transfer of tasks (for retail irrigation water distribution) from JVA, whereby the responsibility becomes shared. In other words, the WUA are very respected by JVA and are looked at as the outsourced private (non-for-profit) community arm to guarantee proper services to the associations with regards to irrigation water distribution.



Figure 5: Complete project cycle including sustaining the WUA

The different phases of the project are illustrated, where it is shown that the progress has been in a structured approach in phases, the last is being started to sustain the WUA by recommending the necessary bylaw, the institutional frame for the WUA and a federation.

At present the highest level of the water associations is the cooperative. The cooperative via JVA support and the facilitation of the project is established under the Jordan Cooperatives Corporation JCC. The establishment of a cooperative (until now) requires the approval of the Prime Ministry.

At present the number of associations that have reached task transfer is 12, it is planned that by 2015 all the JV will be covered by farmers participation as well as task transfer for retail water distribution.

Challenges and Difficulties Faced

Certainly handling historical disparity and mistrust accumulated through a number of years and making a change of attitude, behavior and management would not be easy. The project faced many difficulties and challenges throughout. According to the previous external evaluation reports (3) and to the meetings carried out during the preparation of this document (meetings with the Committee of Al Kafrein (middle JV), Committee 33 (north of JV), and representatives of the south JV communities), the challenges and difficulties faced at the outset can be summarized as follows:

- **Mistrust, resistance of farmers** to this change due to previous negative experience with JVA. For example the farmers in the beginning had doubts about the intention of granting transfer of tasks; they thought that JVA would not do it. Concerning the formation of water associations, the farmers had the remains of the previous bad experience with local fund facilitating corporations, thus made them very hesitant to board on another "what could be" a hurting experience.
- **Severe shortage of water resources** (in addition to the change in quality) and the diversion of much of the fresh water to Amman for drinking purposes made the farmers believe that irrigation will always be a second if not third priority.
- **Influence of large farmers** was also seen by the associations a challenge that had to be overcome. The influential farmers might prefer to proceed with business as usual, as they had their own ways to obtain sufficient amounts of water.
- **Absence or lack of adequate legal frame** for the farmers participation in the irrigation management. Since there was no legal frame, the farmers and members of the WUA felt insecure about the future of the WUA and the operation of the task transfer.
- **Worn out supply and distribution network.** The network suffered high leakage in addition to much of illegal connections (Figure 6); these were coupled with the disability to perform maintenance to the network. Reclaiming the network and ceasing the illegal connections were a challenge. First because of the high cost imbedded and second for the need of taking courageous steps to stop the large number of illegal connections.
- **Negative attitude of some junior water distribution staff** of JVA who did not favor the change; they preferred continuing business as usual for their own benefits.

Mistrust coupled with resistance to change, shortage of water resources, effect of influential farmers, absence of a suitable legal frame, worn out water distribution network, and negative attitude of some junior field staff were the key challenges and difficulties faced the development of participative irrigation.



Figure 6: Parts of worn out network and illegal connections identified and isolated by the WUA.

Difficulties were solved and challenges were overcome by opening endless dialogue and a track of openness and understanding between one and another. The mistrust was leaned first by meetings and opening a room for discussion, then the participation was developed further by sharing developing the concept and the planning process; a sort of partnership was thus seeded. The technical needs were responded to in a speedy way to furnish the farmers with some of their key immediate aspirations such as reclaiming some parts of the irrigation network, providing information on modern techniques in irrigation management and best practices in agriculture.

To demonstrate the positive features of cooperative participative work in agriculture, the technical field visits to Turkey, Egypt and Syria were beneficial. These did not only provide exposure to management of WUA, but also technical know-how on advanced techniques in agriculture and a platform for the farmers to go over their era of individualism. Furthermore, the participation was fortified by the offering of JVA top management to brainstorm with the farmers and the WUA the needs, strategies, and work plans for the future management of irrigation water (Figure 7). The farmers and JVA became thus full partners.



Figure 7: Meetings of JVA top management with the WUA; sharing ideas and plans.

Success Factors, Stories and the Achievements

What absolutely unique about the project was that it followed a bottom – up approach; the ideas were extracted from the field i.e. from the farmers as they are the affected party and the future beneficiary. The approach was worth the trust generated along the march of the project.

The most prominent element of the success made was the concerted ability and commitment to make a change. This was developed through the continuous dialogue among the stakeholders (farmers – GTZ project – JVA) and was backed by the presence of wise project undertakings and support. The dialogue followed by immediate implementation / action taking resulted in proving good intention, trust and confidence. For example the project in coordination with JVA facilitated to undertake immediate repairs and to respond to top urgent needs and legitimate requests by the farmers with regard to the water distribution network. Interestingly the farmers took over part of the costs for such works, indeed that was a success of the developed trustful partnership.

The JVA backed by the project has also respected the status of the new form of water management entities and went for recognizing the successful ones in appropriate times. These were not to be accomplished without the commitment of the top management of the JVA to change, wise management at the project level and the readiness and willingness of the farmers.

The remarkable achievement is illustrated in the successive propagation of the adoption of participative irrigation approach; in 2009 it can be said that more than 75% of the irrigated areas are covered by WUA. This reflects the success, fairness of the approach and the satisfaction of the farmers of this experience.

Farmers' satisfaction reached high rates, today 95% of the farmers are well served with water while in the past only 5% were benefiting.



The approach resulted in direct savings of water resources. A good example is given in Al Kafrein area, where the community was able to optimize the irrigation scheme, reduce leakages and illegal connections to the network, and thus reduced the water released from the dam to the network from 12000 m³ / day to 6000 m³ / day. This was achieved only in 2 months after handing over the water distribution task to the WUA. The WUA of Al Kafrein also pointed that the proper management of water enabled them to withstand and manage their farms even with less amount of water in the dry seasons.

"We stopped many illegal connections to the distribution pipes; we improved the efficiency and maintenance of the network". Mr. Ahmad Abdul Kareem Al Adwan, Head of Al Kafrein WUA.

In WUA 28 (Mashare') the committee managed to secure access to the farm turn outs (FTA) or irrigation assemblies. This enabled better control of water flows and distribution. According to information from the field even if the main supply pipe valve was in full open, the consumption by the farms was within the ordered allocation. This reflected the cooperation of the farmers as well as the importance of having a good control by the WUA. The endeavor led to reaching fair and equal distribution of water and after all improved efficiency.

In fact the continuous engagement in participative irrigation management built up valuable experience and progressive mutual belief in the ability to change. The developed experience at the WUA and project levels led to having some WUA able to meet and go over challenges in remarkable times. The project in Al Kafrein gained success in very outstanding short time. After working as a water council, it formed a cooperative in November 2006, then the transfer of tasks was achieved in February 2009, although it was one of the areas that suffered very much of illegal water uses and almost completely damaged irrigation system.



The approach resulted in numerous socioeconomic and soft skills benefits; these were illustrated in improving income, democracy level, and team work.

The associations reported that their farms productivity has undoubtedly increased as the water became available in a systematic way; the plants were irrigated according to the set schedule. In case of trouble shooting in the system, the problem was reclaimed immediately and so the farmer did not miss the turn in irrigation. In addition, the availability of a reliable irrigation management encouraged farmers to expand their farms areas and some to invest in farming business. The approach was sort of contributing in rebuilding the trust in the agricultural sector in the valley.

The approach also resulted in raising the level of participation, this was expected though as the project was about participative irrigation. An important aspect, however, was the level of democracy gained throughout. The farmers became responsibly democratic; they express their views and call for their needs in a professional way. The communication and management skills have also been improved. The associations' members are now able to present their activities to the public and key figures in the society in a professional manner. The associations even care to run the meetings efficiently; they respect time and they prepare agendas and minutes or meetings records.

Women role received respect in the participation. In some associations women role was well pronounced; as women farmers were present in the communities covering their areas. Thus ensured equal rights for women participation (in this case) in irrigation management. In fact the committee in the North (WUA 33) comprised 205 members of which 13 were women farmers (7%).

The associations have also indirectly benefited from the awareness on the water situation, strategies and demand management. The farmers confirmed their knowledge in facts and figures and became more powerful stakeholder on water management and sustainability.

The regional technical visits (info-trips) were beneficial not only from pure technical aspects but also in getting all the WUA members together. This created an atmosphere for cooperation, exchange of ideas and business practices. This by itself improved the performance of the farmers and allowed collective thinking.



We learned that we have to work together; WUCs got us to cooperate, discuss problems and find solutions. Mr Mohamad Qasem Mahi, Head of Al Mashare' WUC 33.

One marvelous feature of the experience was the readiness to volunteer for the sake of community service. This was common among many WUA. The level of dedication paid back positively on the image and reputation of the communities. Indeed volunteering time and effort is a sign of the success the participative approach reached.



On the other hand the approach has resulted in a better image for JVA. The support given by the JVA was eventually well appreciated. management support was also a key element for WUA to succeed. The mode of work in a participative approach was like a partnership for one goal. The WUA have now direct access to the Secretary General of JVA and his deputies. Their requests are well considered and they are respected as strategic partner in the water distribution management.

"There is no other way but to continue work with and via the WUA". Mr Musa Hwarat, Director of Middle Jordan Valley.

The experience offered a room for JVA to reshuffle performance via the modified bylaw issued at the time of the inception of the project. JVA even documented receiving much less complains from the farmers on water allocation and distribution issues. The approach enabled putting a limit to any negative practices some operators had and thus improved the overall performance and image of JVA.

On the other hand the WUA became an important resort (or resource body) for the farmers, as they became favoring expressing their needs to the WUA even if the farmers were not members of the WUA. Certainly by working in concrete steps affected having almost 80% of the farm units in the Jordan Valley covered by WUA.

The bylaw for the security of the WUA was a major objective of the project. In steps the project and JVA managed to reach to a suitable form recognizing the WUA at their different levels. The effort even included involving the Governors or sub-governor to give needed power to the WUA. The higher level of regulation is planned by the project as a series of next tasks (as outlined in Figure 5). That is to establish the suitable institutional frame and a federation for the WUA to regulate the work and the relation with the concerned stakeholders via a suitable bylaw. In this way the sustainability of the WUA is set a top of priorities in the current phase (started in October 2009).



Together in the field ...

A major element for the success of the endeavor has been the proper project management by all parties and the dedication of staff and WUA members. The project staff was in a regular communication with the farmers, they are actually stationed in the field; this by itself meant a lot to the farmers. The farmers and WUA felt the support intended to improve their situation and sustainability. The JVA management (adopting modernized approach with long term vision) has also contributed to a large extent in making a change. The support of the Directors in the JVA was crucial. The farmers developed a tying relationship with the team of management. The appointment of deputies to the Secretary General for the North, Middle and South Jordan valley was indeed a wise step to ensure availability of high level decision makers, thus contenting speedy actions in a semi decentralized management processes. This contributed to positive impacts on the farmers and WUA confidence in the future.

It was learnt that the change shall be made by a step by step approach. This was illustrated in the different phases and activities undertaken. Through out the road from disparity to unity, many actions for breaking the ice, bridging the gaps, developing mutual trust and confidence were imperative. Such activities included general assemblies, workgroup, brainstorming and planning sessions in addition to one to one meetings to handle problems and difficulties. All of these were found useful and effective. Then the facilitation of technical support was a vital tool to furnish the confirmation of reliability and good intentions of the initiative. The formation of the WUA in a democratic approach and consultative procedure together with granting the recognition to the WUA to empower them in a timely manner were successful strategic steps. The change from complete reliance with negative attitudes and perceptions to full task transfer formed a print of success for the cooperative work.



For the series of such undertakings, the GTZ advisors acted as facilitators among the farmers, WUA, and JVA. The GTZ role was vital as a non-biased technical arm, facilitating to make things happen, offering a platform and a media for the dialogue and technical assistance, and thus achieved the sought understanding among the parties.

The fair distribution of water was a great achievement of this endeavor. By the formation of WUA a social pressure was exerted that enabled stopping illegal practices leading to unfair water allocations. Influential farmers became treated like ordinary farmers in terms of the amount of water they should receive. Certainly this injected a form of equity, better comfort and satisfaction on the ordinary social level indicating good governance. This progress was also documented via the number of penalties along the years that showed dramatic decrease. For example in one area the penalties decreased from 134 to 27 in the same year after taking over the responsibilities. That was indeed a good indicator of respect to rights and change in behavior by practicing water use ethics in the concerned associations.

The farmers and members of the associations highly valued the experience in participative water management. According to them and based on few interviews and brainstorming sessions undertaken by the author in the Jordan Valley, the most valuable aspect of this endeavor was improving the efficiency of irrigation water and the management of water resources. The second level was the improved relationship with JVA and the fair distribution of water. At the third level was the improved cooperative relationship among the farmers, gaining trust and confidence, and improving the maintenance works. These were certainly good reflections of how the project met its set objectives to date.

Another positive aspect of the project was that the participation was not limited or restricted to any form of social level or background. The coverage was comprehensive; participation was among small and large farmers, rich or poor and of mixed origins. They were all interested. For example in WUA 55 (middle), the investment in farms is high and the revenue is very rewarding; the farmers have connections to the international markets and manage to export a large part of their produce. Yet the participation in the WUA was one of their interest and they committed to the good work. Of the lessons learnt reported by the farmers and members of the WUA, the following were most striking:

- **Communication, cooperation, and know-how exchange are imperative for sustainable farmers.** This was most prominent as the farmers benefited quite well from the capacity building activities including the workshops and the field visits in Jordan and abroad. The farmers in the valley now learn from each other and help each other.
- **The support of the authority is vital.** The farmers started the road of participation with mixed feelings - and to some extent fears and doubts - as they thought that the authority would not be serious and supportive to this proposal. The JVA, with modern management approaches, on the contrary worked in so much favor of the participative irrigation management. Indeed the farmers valued such support. They changed attitudes and appreciated the position of JVA. Though for JVA, the matter was so crucial; participation was the available strategy for improvement. The story of participation became a win-win situation.
- **The team work** is the way for handling the problems. Many problems faced the farmers in the past, while no one could make an impact for a change, because of the individual approach that most of the farmers practiced. It is now well appreciated that no one would necessary listen to individual request or arrange services for singled cases. As stated by the farmers, acting together was the detrimental factor for success.

The lessons learnt were part of a continuous learning loop fed into the institutional set-up procedures of new associations. Learning by doing and utilizing the experience gained in developing the new WUA, or the new contracts, or the management structure of the WUA were all examples of how the team became resourceful and efficient. This well structured approach led to having more than 75% of the irrigated areas of the Jordan valley covered by WUA and many WUA are now granted transfer of tasks and are operating in a successful manner.

A unique thing about the project management is that it did not choose the easy ways just to document success; on the opposite they challenged the most difficult cases. Some WUA were established in the most difficult areas where so much of inefficiencies and troubles in irrigation water were existing such as the case of Al Kafrein. The WUA there holds now one of the top records of success. Again this had a great impact about the capabilities of the project, the effectiveness of the participative irrigation, and even encouraged other associations to follow the track.

The WUA proved also good internal governance and learning process. Some WUA leaders were happy to chair the association due to the sought prestige and societal position. However, when this was not accompanied by real actions taking and improving the performance, the members of the WUA were able to change the leader. This was also a good confirmation that the participative approach is for the good of all.

It was reported that the selection of the leader of the WUA has eventually become based on the performance! This is a true change indeed . . .

Another flag of the success stories was on the institutional level, where the project output was the formation of new WUA with own statutes and the strengthening of the already existing ones. Yet fostering this position is also regarded well by the all (WUCs, GTZ project and JVA). Therefore, as noted the parties are in agreement to move ahead in forming the necessary relationship among the partners in irrigation (WUA – JVA and any other concerned body). It is learnt now that a federation for the WUA supported legally by a bylaw is essential for the long term sustainability of the WUA during and post GTZ involvement. The federation will have to solve basic questions of water allocation, quality and organisational structures general for all the Jordan Valley with already initiated regional subgroups for the main water sources and their particularities (3).

It is worth to note finally that the WUA through this involvement managed to enhance their knowledge and understanding of hydraulic principles governing the secondary water distribution system. Thereafter they could jointly with JVA optimize water distribution schedules for acceptable working pressure in the pipelines and receive the responsibility of self-operation of their farm gates (formerly task of ditch riders). This largely led to an adjusted water distribution to farm water demand requirements. Thus ensured also that equal rights are observed among the farm units (3).

Synergies and cooperation lines were established with other projects / initiatives by donors such as the French Development Agency project (IQJOV) in the north of Jordan Valley. The cooperation in this case has been based on joint interest like the rehabilitation and improving the irrigation water management and assisting the French project in implementing its tasks. The Italian program (IRWA) in Al Karamah (middle of Jordan Valley) offered filtration systems to the farmers, while the fees paid by the farmers went as a kind of support to the WUA.

It should finally be noted that the impact of the success made reached the highest levels in the set-up of water management; the recent Water Strategy (2008), issued by the Royal Water Committee, adopted the approach and called for intensifying it (4). The government is now in full support of the participative irrigation management via WUA. This was not to be unexpected, the visit of the Minister of Water and Irrigation and the Minister of State for Media Affairs and Communications including representatives of the public and parliamentarians was a witness and a milestone of the project success, see Figure 8.



Figure 8: The visit of the Ministers of Water & Irrigation and the State Minister for Media Affairs and Communications.

Conclusions & Recommendations

Throughout the life of the project since 2001, many lessons were learnt and difficulties were overcome. These were documented in the several reports of the project and finally in this quick review of the project story. It is thus important to preserve the experience gained and to build upon it; it is beneficial to use these lessons and approaches in solving obstacles in the further work in establishing participative irrigation either in Jordan and elsewhere. The experience gained here is really unique; it represented the formation of a participative irrigation management from a severely disrupted system and yet involving various social structures and levels.

From the described experience and the interviews undertaken during the preparation of this document, it was concluded that the associations became ready to look for the future and to entrust the junior farmers and the coming generation that they have to work and operate through WUA. The farmers even asked that the WUA should be able to expand in their capacity and mandates (tasks).

It was revealed that the WUA appreciate the experience of this endeavor (approach, goal, institutional set-up). They unanimously formulated their noble objective as “to reach efficient and fair water distribution to all farmers”.

The step by step approach was remarkable factor for the success. Today, almost 80% the irrigated farming area in the Jordan Valley is managed in participation by WUA. The transfer of the entire responsibility of operational tasks so far has been granted to 11 associations. In steps the members of the WUA have developed a great feeling of ownership. It is indeed worthwhile to note that the newly developed experience in participative irrigation management links well with the traditional way the farmers – at least in this part of the world – used to adopt for years. It is based on equal rights and has a religious dimension as well. Therefore it is recommended to utilize this unique feature in further developments and replication of the approach.

As stated in a previous report (3), all in all the experiment showed the readiness of both farmers and JVA to move from a more or less “permissive participation” (where JVA remains in the driver's seat for most of the responsibilities) to a transfer of operation and maintenance tasks to WUA. It is again confirmed that this step is essential for an eventual sustainable organizational basis for water user participation.

With regard to the performance, the WUA performed in an organized manner. Rooms for further improvements were spotted along the process such as in the leadership of the WUA and the management of the WUA. The improvements were adopted in steps, as these were introduced to the loop of lessons learnt. Certainly, more issues could be learnt in the future, this is a dynamic process and many experiences may yet appear, but what is wise is to learn and build on the experience.

It can be concluded that the drivers of change were well understood and their potential effects were well utilized to enable better water resources management. The drivers of change were:

- To sustain irrigated agriculture in the Valley;
- To avoid privatization of irrigation water;
- To avoid further transfer of water for municipal uses or investment projects;
- To improve productivity and quality of life of the farmers associations.

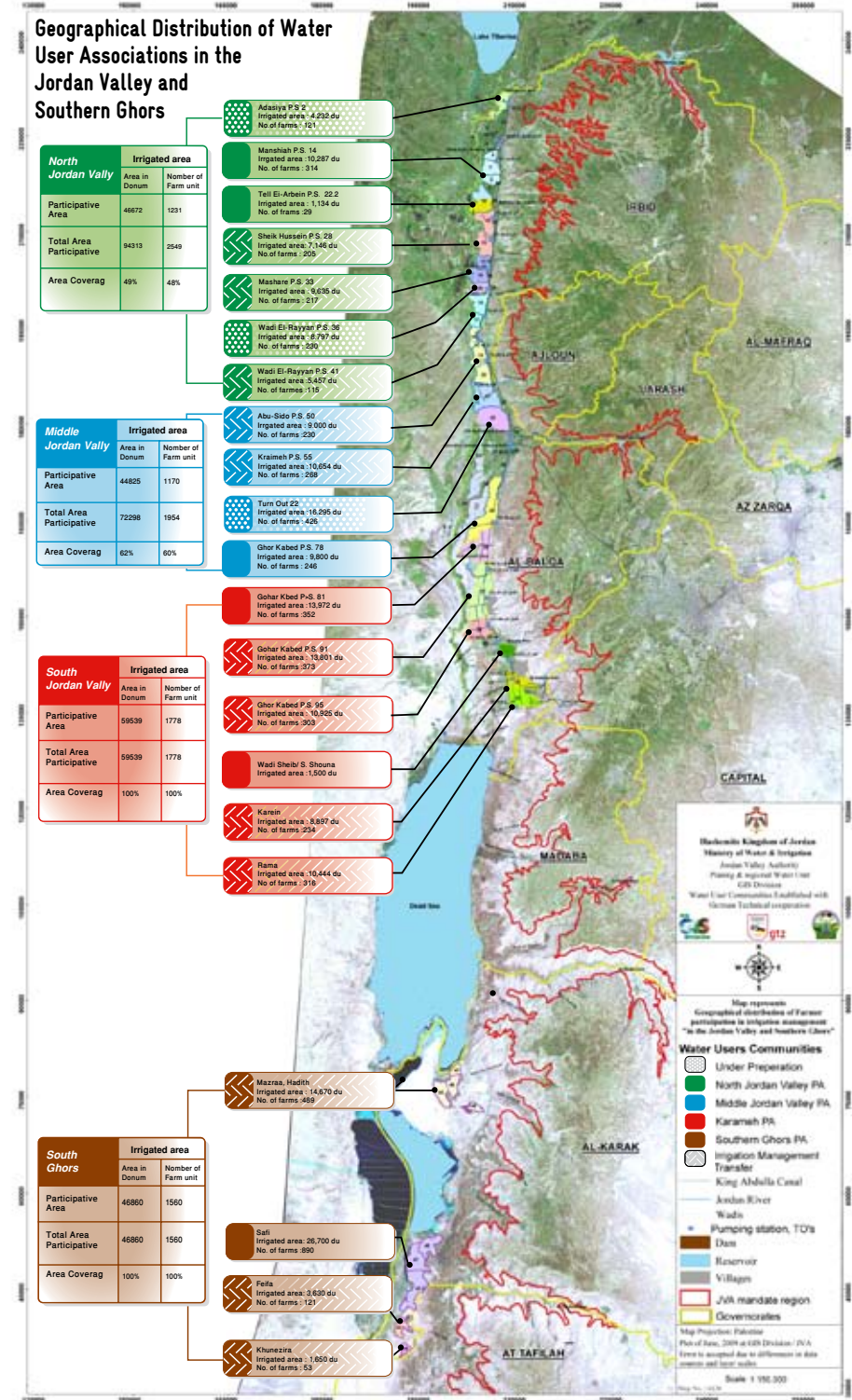
It is highly recommended that future initiatives for participative irrigation make best use of the drivers of change determined by the society (beneficiary party) as was adopted in this project. In this way the results will be relevant and the positive impacts would be more significant.

Indeed, the change from disparity to unity and from complete reliance and negative perceptions to full task transfer, stamped a print of success for the cooperative work.

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2. Water Resources Management for Irrigated Agriculture, annual progress report, June 2002.
3. Efficient water resource management in irrigated agriculture in the Jordan Valley and Highland areas, GTZ interim evaluation report, 2008.
4. Water Strategy, Ministry of Water and Irrigation, 2008.
5. Interviews and meetings with water user associations in the north, middle and south of Jordan Valley.
6. Meetings with the Project Manager and the JVA concerned staff in Amman and Jordan Valley.

Annex 1: Project Area Map



Annex 2: List of Water User Associations

WUA in the Jordan Valley as in March 2010

Location of WUA	No. of members	Task Transfer Agreement	Start of activity	Form of organization	Name of WUA Chairperson
Adaseya P.S.2	25	-	2009	Water Council, under preparation	Adnan Waked
Manshiah P.S. 14	86		2007	Water Council	Ahmad Hammori
Tell El-Arbein P.S. 22.2	35		2006	Cooperative	Eng. Suliman Gazawi
Sheik Hussein P.S. 28	195	Sheik Hussein P.S. 28, Feb 2009	2002	Cooperative	Ashraf Gazawi
Mashare P. S. 33	205	Mashare P. S. 33, June 2008	2004	Cooperative	Mohammad Qassem
Wadi El-Rayyan P. S. 36	85		2009	Cooperative, under preparation	Not Elected yet
Wadi El-Rayyan P. S. 41	42	Wadi El-Rayyan P.S.41, March 2010	2004	Cooperative	Methqal Zenati
PM coverage North JV	49%				
Abu-Sedo P.S. 50	45	Abu-Sedo P.S. 50 March 2010	2003	Cooperative	Musa Mudaris
Kraimeh P.S. 55	65	Kraimeh P.S. 55, Feb 2009	2004	Cooperative	Eng. Yousef Barakat
Deir Alla T.O. 22			2009	Under preparation	Not Elected yet
Ghor Kabed P.S. 78	39		2007	Cooperative	Fuhaid Msalha
PM coverage Middle JV	62%				
Ghor Kabed P.S. 81	35		2007	Cooperative	Tawfiq Satari
Ghor Kabed P.S. 91	26	Ghor Kabed P.S. 91 March 2010	2003	Cooperative	Eng. Ali Mustafa
Ghor Kabed P.S. 95	68	Ghor Kabed P.S. 95 March 2010	2006	Cooperative	Hussein Qutaina
Wadi Sheib/ S. Shouna	22		2007	Cooperative	Shlash Bader Adwan
Kafrein	43	Kafrein, Feb 2009	2001	Cooperative	Ahmad Adwan
Rama	60	Rama, June 2008	2001	Cooperative	Awad Adwan
PM coverage Karama	100%				
Mazraa, Haditha	110	Mazraa, May 2010	2003	Cooperative	Saleem Huwamil
Safi	33		2003	Cooperative	Eng. Ahmad Hayajnah
Feifa	85	Feifa, March 2010	2003	Cooperative	Musa Kataba
Khunezira	36	Khunezira, Feb 2009	2008	Cooperative	Ayed Rawashda
PM coverage Southern	100%				
PM coverage Jordan Valley	76%				

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