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ASSESSMENT OF WATER USER ASSOCIATION SUPPORT PROGRAM (WUASP)

May 27, 2010

This publication was produced for review by the United States Agency for International Development. It was prepared by Mendez England and Associates

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Report

Prepared under Task Order # EPP-I-08-05-00010-00 under the WATER II Indefinite Quantity Contract, #EPP-I-00-05-00010-00

Submitted to:
USAID/CAR

Submitted by:
Steve Lam
Loren Schulze

Contractor:
Mendez England & Associates
4300 Montgomery Avenue, Suite 103
Bethesda, MD 20814
Tel: 301- 652 -4334
www.mendezengland.com

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EXECUTIVE SUMMARY

USAID's Water User Association Support Program (WUASP) has been successful in Tajikistan. It has met its objectives to help farmers establish water user associations (WUAs), support them to clean and rehabilitate irrigation infrastructure, and improve their productivity through training in business, water management, and good governance and democratic principles. Thanks to this training, WUAs are, in general, institutionally and financially sustainable organizations that are responsive to their constituencies, and can resolve water management issues. By overcoming the limiting factor of irrigation water, farmers have opened up more land, grown more crops and diversified their on-farm activities. In many ways, the role and responsibilities of WUAs are expanding. Given the lack of a functioning extension service in Tajikistan, the WUAs are becoming more like farm associations that look at the entire farm management cycle and tackle the problems that hinder agricultural growth.

Many challenges remain. For example, farmers are under-capitalized, interest rates on loans are high, relations with district water departments can be strained due to water user fee issues, equipment for operating and maintaining irrigation infrastructure is expensive to rent or is in dire need of repair, and legislation on agriculture and water management still needs full improvement. Nevertheless, WUA members have a sense of purpose and unity, and are confident that they can solve their problems. Importantly, WUA members have taken their newly gained knowledge and skills out of the confines of agriculture into the larger arena of their communities, where farmers have applied democratic principles, business knowledge and agricultural skills to other aspects of their life.

Such an application and expansion of knowledge and skills underscore that the WUASP-supported WUAs are grassroots organizations actively engaging in civil society. Their continual activities after the life of the project indicate that WUAs have a promising future in shaping the dynamics of society in Tajikistan.

1.0 INTRODUCTION

The Water User Associations Support Program (WUASP) provides support to farmers in Tajikistan to promote and establish water user associations (WUAs). Reliable irrigation water in sufficient volume is essential to maintain and enhance agricultural production and, consequently, the economy of Tajikistan. WUAs address the provision of irrigation water, the primary limiting factor to agricultural production in Tajikistan, and provide assurance that subsequent investments in crop diversification, processing, agricultural finance, markets and trade will contribute to the overall food security of Tajikistan.

1.1 Purpose of Assessment

The purpose of this assessment is to provide the United States Agency for International Development (USAID) with an independent and objective view of WUASP, and to evaluate its overall effectiveness. In the preparation of its management and technical approach, Mendez England & Associates (ME&A) has followed the guidelines presented in the Request for Task Order Proposal EG11910-002.

1.2 The Water User Association Support Program

UASP initially operated in Kyrgyzstan, Tajikistan and Uzbekistan. It was funded by USAID under a five-year cooperative agreement (May 2004 — April 2009). A later amendment extended this cooperative agreement to April 2010 for Kyrgyzstan and Tajikistan (the program in Uzbekistan ended on 30 April, 2009.) An extension of the cooperative agreement to April 2011 has recently been approved.

The implementer of WUASP was Winrock International, which had two cooperating institutions, New Mexico State University (NMSU) and the Academy for Educational Development (AED). In the original design, NMSU was to assist in extension-type pamphlets and bulletins, and AED was to participate in the training component of the cooperative agreement. In the implementation process, Winrock International assumed full responsibility for WUASP, and the participation of NMSU and AED ended.

1.3 Assessment Team

The Assessment Team was responsible for all document reviews, interviews and observations. The Team consisted of:

Cheng-Un Stephen Lam, Team Leader. Dr. Lam was responsible for overall in-country leadership and report preparation;
Loren Schulze, Agricultural Specialist. Dr. Schulze provided expertise in program design, water management, and evaluation; and,
Firuz Odinaev, Logistics Coordinator and Interpreter/Translator. Mr. Odinaev managed logistics and provided interpretation and translation services.

2.0 ASSESSMENT SCHEDULE AND METHODOLOGY

2.1 Initial Data Gathering

The expatriate Assessment Team reviewed project documents and additional background information on the assessment assignment prior to departure to the region. The Team met with the WUASP implementer (Winrock International) Home Office staff in the Washington D.C. area on March 19, 2010 (Appendix 1). The Team also met with other individuals with relevant experience in Tajikistan. The Team continued the review of project-related information throughout its in-country presence as more documents became available

2.2 Initial Meetings with USAID Staff

The expatriate Assessment Team members met with the key USAID/Washington official for a briefing of the USAID projects in the Central Asian Republics on March 23, 2010 (Appendix 1). Upon arrival in the region, the expatriate Assessment Team members met with USAID/Central Asian Republics (USAID/CAR) staff members in Almaty, Kazakhstan on March 25, 2010. Subsequently, the full Assessment Team met with USAID Country Office staff members in Dushanbe, Tajikistan on March 26, 2010. The Assessment Team was briefed on the USAID regional and Tajik development programs, received their guidance, and discussed the mission of the Assessment Team. The assessment questions for the Team's data collection process was also discussed (Appendix 2).

2.3 Briefings by the Winrock International Country Staff

Following the meetings with USAID, the Team held its initial meeting with the in-country Winrock International (WI) staff on March 27, 2010 for a briefing of the WUASP and plans for specific site visits. (Appendix 1) The WI assistance in scheduling the site visits was critically important to efficiently plan the collection of field data. Sites were identified to the Regions under Republican Subordination (RRS), Khatlon Province and Sughd Province to meet with WUASP recipients and beneficiaries (e.g., WUA staff and members, farmers, water users, relevant local officials, and beneficiaries, Appendix 3).

2.4 Interviews with Donor Organizations

The Assessment Team met with the USAID project implementers and other donor organizations to discuss and understand their related current and future programs and activities, and determine existing overlaps, synergies and potential conflicts, particularly with the WUASP. Of particular importance was the interview with the Food and Agriculture Organization (FAO) Coordination Office in Tajikistan. The FAO Coordination Office has the responsibility for coordinating the irrigation sector among the donor organizations and the Ministry of Water Resources and Land Reclamation (MWR) of the Government of Tajikistan (GoT) (Appendix 1).

2.5 Interviews with GoT Representatives

The Assessment Team met with the Ministry of MWR, regional GoT officials, and local officials throughout the assessment period to discuss their perceptions of the WUASP and ask for their thoughts on future irrigation and water-related programming in Tajikistan (Appendix 1).

2.6 Briefings by WUASP Field Staff and Site Visit Data Collection

The Assessment Team met with WUASP field staff throughout the assessment period to collect project data, receive observations, and record their perspectives of the WUASP.

On its field visits, the Assessment Team conducted structured interviews as part of an observation and description phase over a 13-day period in which the Assessment Team traveled to WUA sites (Appendix 4). During this intensive period, the Team met with representatives from 35 WUAs, whose number and geographic distribution followed the request as stated in the RFTOP: 10 WUAs in Rudaki District and Vahdat District (RRS); 20 WUAs in Shaartuz District, Kubodiyon District and Jilikul District (Khatlon Province); and 5 WUAs in Zafarobod District and Konibodom District (Sughd Province). In total, 252 people took part in meetings and structured interviews. Out of this total, 35 were women, 217 were men and 56 participants were WUA administrative staff (Appendix 5).

3.0 ASSESSMENT FINDINGS

WUASP has been a successful program in Tajikistan. It has met its objective "to create and strengthen WUAs so that farmers can operate, manage, and make the investment decisions needed to maintain and improve the on-farm irrigation and drainage system." As a result of support from the WUASP strengthened WUAs.

A *muisafed* ("white beard" – elder) of WUA "Samarkandi" (Rudaki District) supervises gate operations.

Since 2004, WUASP in Tajikistan has helped farmers establish 41 WUAs and 4 Federations. Federations are composed of individual WUAs drawing water from the same irrigation canal. The total WUA membership has reached 2,344 individuals (2,106 men, 238 women). With assistance from WUASP, these WUA members/farmers have provided 30,259 hectares of cropland to irrigation with irrigation water. Out of this number, 19,357 hectares are on *dekhan* farms, 9,217 hectares are kitchen gardens (a colloquial term that belies the relatively large area under cultivation), and 1,685 hectares are presidential lands, which were given to farmers, through presidential decree, so that they could grow any crops for household use and consumption. The average area served by irrigation per *dekhan* farmer comes to 8.26 hectares, and the number of beneficiaries from irrigated land totals 280,704, which includes the individuals in the households of the individual WUA member/farmers (Appendix 6).

Moreover, WUASP expanded their efforts and made achievements in areas that had not been part of its original objectives, for example, instilling in WUA members a sense of pride in their

organization. In addition, WUASP used its budget effectively, with many aspects being cost-effective. The project also succeeded in partnering with other international donor organizations and implementers to augment its programming and provide services to WUAs. Furthermore, the project took advantage of the legislative environment to help develop national legislation. The success of WUASP has come primarily because it concentrated on addressing the limiting factor of irrigation water in Tajikistan. A broader mandate to work in other areas, for example, financing and credit, would have drained its resources and weakened its efforts.

At the conclusion of WUASP, the WUAs in general have demonstrated to be institutionally and financially sustainable although the particular circumstances of each WUA — for example, geography, soil quality, actual and potential demography, relations with local government departments, and the effects of full implementation of pertinent legislation on agriculture and water management — will affect the potential activities and the scope that individual associations undertake in the future.

The design of the project is scalable and its impact considerable. But any future water management activities in Tajikistan will need to consider alternative approaches as well to ensure that such expansion supports WUAs to continue to be institutionally and financially sustainably organizations. Furthermore, this expansion has to be appropriate and suited to the developmental environment in Tajikistan.

The assessment findings can be understood in the context of Intermediate Results (IR). These IRs were determined by USAID in regards to the WUASP Cooperative Agreement:

- IR 1: WUAs develop the capacity to manage local water delivery systems, use sound business practices, and use democratic principles;
- IR 2: WUAs implemented improvements in technical practices and institutional management;
- IR 3: An improved government legal and regulatory environment that will support the development of WUAs / Federations, and their long term sustainability;
- IR 4: Awareness of program benefits is increased through targeted outreach / communication programs, and;
- IR 5: Members of WUAs experience economic benefits.

IR 1: WUAs develop the capacity to manage local water delivery systems, use sound business practices, and use democratic principles

WUASP facilitated the creation of 41 WUAs and 4 Federations. It helped budding associations develop charters, by-laws and operational practices. Furthermore, WUASP helped associations with registration, ensuring that they were properly registered as non-governmental, non-commercial legal entities in the country. Registration is important because new laws require that WUAs, as with other domestic NGOs, register with the local tax office. Previously, WUAs were registered with the Ministry of Justice. The Law on Water User Associations modified the registration process. In many instances, WUASP assisted WUAs with re-registration to ensure that their establishment, status and operations complied with current legislation. Examples are WUA “Obi Hayot” (Zafarobod District) and WUA “Saidkalandarshoh” (Rudaki District).

The procedure and structure of WUA administrative staff is identical for all WUAs in WUASP. Following a general meeting, WUA administrative staff was elected by the association members. The elections were open and tallied by secret ballot. By participating in the nomination and election of staff, WUA members practiced and saw in action good governance and democratic principles.

Democratic Principles in Action

The Director of the newly formed WUA Federation "Istiklol" (Zafarobod District) was a candidate for a local government position during recent elections. Based on their governance training, the members of WUA "Vahdat" (Zafarobod District) identified irregularities in the local election process. They noticed a person trying to enter the voting booth to assist others as they voted. The WUA members observed an attempt to stuff the ballot box. As the ballots were being counted, a person was observed trying to take the ballots in favor of the Federation Director from the polling place. The WUA members stopped these three irregularities by speaking out that they knew their rights and the principles of good governance.

The administrative staff consisted of at least four positions: director, manager, accountant and technical person. When needed seasonal workers such as *mirobs* (water bailiffs), were hired. WUASP realized that the administrative overhead raised questions about the institutional and financial sustainability of WUAs because membership fees pay for the salary of WUA personnel (in addition for water user fees, heavy equipment rental and its fuel and operator hires, and operation and maintenance costs of irrigation and drainage canals). However, WUASP understood the issue and left WUAs to decide remuneration. In many cases, WUA staff received nominal salary and often executed their responsibilities on a voluntary basis.

WUAs members felt that the establishment of their associations, and the education and training they received prior, during and after registration were instrumental in instilling openness, transparency and accountability in their organizations. Furthermore, WUA staff made themselves available to members, keeping regular office hours to meet with their constituency, or holding appointments when members needed to arrange a special time. Working as an organization and having a forum for discussion encouraged a sense of unity and can-do attitude among WUA members. Some WUAs have district water department staff in their membership because these *dekhan* farmers receive their private farmland in areas that are now in the WUAs' areas.

WUAs Helping Each Other

Coordination Council meetings have introduced farmers from one WUA to farmers to other WUAs. Members of WUA "Shokh" (Kubodiyon District) were at the mercy of middlemen because their association is far from the green markets of Dushanbe and often do not know the price to sell their produce. Many of the WUA members have cell phones and call other WUA members they have met during the Coordination Council meetings and ask them the prices offered for produce in the green markets before they begin to negotiate with the middlemen. Now, when they sell their produce, they feel more confident that the prices offered by the middlemen are fair.

Another example of good governance and democratic principles, in particular the institutionalization of these practices, was the regular convening of Coordination Council meetings. In these meetings, which were originally designed to be held quarterly but are now held as often as deemed necessary and productive. The Coordination Council meetings are held in accordance to the geographic location of the associations. WUA participants met to discuss their common problems, exchange ideas and approaches, and learn from the successes and failures of their activities. These Coordination Council meetings became an intrinsic and cost-effective part

of WUA activities and a good gauge of institutional sustainability. They should continue to be an integral element of future water management activities in Tajikistan.

WUASP facilitated the establishment of four federations. Federations are organizations made up of two or more WUAs located along one canal and sourcing their irrigation from the same canal. The main reason for forming federations was that the larger structure gave WUA members a united voice in its relations with the district water department, especially in addressing their concerns about the operation and maintenance of major, secondary and tertiary canals, water user fees and heavy equipment rental.

This reason is compelling enough that many WUAs, for example, WUA "Orzu" and WUA "Khoshodi" (both in Shaartuz District), WUA "Obi Hayot" and WUA "Kubod" (both in Kubodiyon District), and WUA "Dusti" and WUA "Avjo"(both in Shaartuz District, and in conjunction with two WUAs not presently working in WUASP), were in discussion to form federations. The WUAs understand that the formation of federations requires additional collaboration and documentation; but they also understand that becoming or joining a federation provide them with advantages in terms of stronger cooperation with each other and a more cohesive voice in working with their local government to raise and address concerns about irrigation and agriculture.

In addition, establishing a federation made water management sense. WUAs located along the same canal realized that improved operation and maintenance in their respective part of the canal would be temporary and piecemeal if other sections of the canal lacked similar upgrade. Combining associations into federations led to better coordination of activities. This management of water resources using a larger, systemic approach has bearing on future water management activities in Tajikistan that seek to expand from micro-levels to higher levels. Expansion in a higher plane of management, for example, a river basin management, is feasible but will need to consider a location that would take advantage of the geographic proximity of WUAs along a major canal to minimize costs and maximize the effects of such an undertaking.

IR 2: WUAs implemented improvements in technical practices and institutional management

WUA "Juyi Mavlono" (Rudaki District) has a well-maintained irrigation canal.

From November 2004 to March 2010, WUASP developed and delivered 798 training sessions to 13,253 people, of which 4,128 were women and 9,195 were men (Appendix 7).

In 2004, WUSAP conducted a survey in Tajikistan to assess the knowledge, attitudes, and practices toward irrigation and the establishment of WUAs. Based on the findings of this survey, training programs were designed to strengthen the knowledge base, the attitudes and the existing practices fundamental to the formation of well-managed and functioning WUAs.

WUASP designed training in three general topic areas: governance, business, and water management. Over the course of the implementation of WUASP, the number and array of training offered to WUA members have evolved to meet their needs.

Governance training basically involves such topics as WUA organization, leadership development, the development of by-laws, facilitating effective WUA meetings, the workings of WUA committees, and conflict management, to list a few. During the ME&A Assessment, WUA members underlined the fact that their first understanding of democratic principles came from these WUASP governance training events.

Business training involves the development of skills necessary to operate the WUA as a functioning business. Business training topics include financial management, grant management, tax and taxation in WUAs, and reporting, among others. Business training also includes drying technology for vegetables and fruits and food preservation techniques because these trainings provided the opportunity for the WUA members, particularly the female members, to be involved in the commercial sale of their produce. The goal of the business training has been to provide basic business training skills specific to the management of WUAs to meet the letter of the WUA Law and to aid in the sustainable operation of the WUAs as a business entity.

Improved Agronomic Skills

The Soviet collective state farms (*kolhozes*) had staff that included agronomists, among others. With the dissolution of the *kolhoz*, the new private (*dekhan*) farmers were faced with the responsibility of raising their own crops without the advice of agronomists from the former *kolhozes*.

The Director of WUA "Takhti Sangin" (Kubodiyon District) said that when he became a *dekhan* farmer he was not a water specialist. But with WUASP training, he now considers himself an agronomist.

Many of the WUA members have received land through the dissolution of the collective system. At the time they became *dekhan* farmers, not all of these new farmers possessed the best water management skills. Water management training has involved such topics as land productivity, the development of maintenance plans for the irrigation system under the management of a particular WUA, and water measurement. Included in the land productivity training are targeted training modules in such agronomic skills as seed selection, and pest control and disease control using biochemical methods. As desired by the WUA members, training has been developed and presented in additional areas such as growing wheat, growing lemons, establishing orchards and agro-technology methods. In sum, the water management training has been a dynamic program of meeting the ever changing demands of the WUA members as they encounter areas where additional knowledge is required.

During the assessment process, the Assessment Team asked the WUA members what training they wished to have in the future. The responses varied from association to association; however, some similarities emerged. The WUA membership in most cases has grown since the original training was provided by WUASP to the original WUA members. WUA members, old and new, requested repetition of some of the earlier trainings so that all the membership would have the same understanding of the basic concepts. This request for future training was particularly important in the area of governance. Another common request for future training was in the area of food drying, processing, canning and storage. While this training to date has been primarily for the female WUA members, the Assessment Team recognized this as a concern of the WUA

members as a whole to address the need to learn other methods to provide an alternative to the sale of surplus produce at low market prices during the peak production periods.

As the WUA members have become more sophisticated in their knowledge of the market and other external factors affecting them, another frequently requested topic for future training was farm management skills involving farm plans. With the reliability of irrigation water to the farm in a desired quantity throughout the growing season as the result of improved water management, farmers have come to appreciate the value of planning their production to maximize their profits and reduce the occurrence of many of the farmers in one area producing the same crops at the same time for the same markets.

WUA members have received training through WUASP in farm planning and management. However, although well aware of the value of farm planning, the members have had relatively shorter time to practice this kind of management. In clearly seeing the relation between the volume of water used and the type of crops grown through a systemized measurement regime of irrigation water flow that is carried out daily, farmers have only recently gained knowledge about and skill in farm planning and management that is a feature of the free market economy. Farmers will need more training and practice to fully take part in and benefit from the agricultural value chain.

In all cases, training materials have been produced in both Tajik and Russian, with some in Uzbek for WUA members who are Uzbek. Pamphlets and brochures are readily available to the trainees at the time of the training sessions and additional copies of the training materials are available at the WUA offices.

Agricultural land is lost to salinization due to inadequate irrigation system maintenance.

The WUASP training staff are held in high regard by the WUA members. Tajikistan lacks an organized and functioning agricultural extension service where, in many other countries, such training would be concentrated. The WUASP trainers have become a lifeline in the provision of information to help in the general areas of governance, business and water management to the WUA members. The Assessment Team learned of several examples in which farmers in the areas outside the WUAs have come to WUA members to learn of the latest in areas important to their own agricultural and horticultural production.

Training did not stop with the adult WUA members. In many cases, WUASP provided training and learning opportunities for children in schools near the WUAs. These activities used essay contests, art competition and drama troops to expand the children's knowledge base in areas such as the importance of water and sanitation and addressing the pollution of irrigation and drinking water sources. Over time, these children will soon be the new young members of the WUAs.

Training topics were held after WUASP assessed the needs of WUA members. Finding out what WUA members wanted for topics and then tailoring trainings to these needs were particular important in making certain that women in the community benefit from interaction with WUASP. In Tajikistan, despite the advancement of women, the absence of many men (due to labor migration and shorter life expectancy) and the acceptance of women as heads of households, society remains patriarchal, conservative and hesitant to modernizing tendencies. Any project focusing on gender in development must account for cultural norms in the country and adapt to the realities on the ground. In this context, WUASP navigated the cultural landscape well to include women in trainings and to ensure that they and the community in general reaped the rewards from expanding their knowledge of agriculture-related activities and having the opportunity to put their skills to use.

The trainings component is one of the most fundamental elements of WUASP. The trainings were cost-efficient and far-reaching because WUA members who participated in these sessions (and in later sessions that reinforced previous topics) gained knowledge and later applied what they learned to real-life practice. Additionally, trainings had a ripple effect in that farmers passed on their knowledge and skills to other farmers, whether they were WUA members or not. Because training produced great value at minimal cost, they should be a part of future water management activities in Tajikistan.

Working with WUASP, the individual WUA staff raised their professional skills. Armed with this knowledge and continually honing their skills in management practices, accounting and technical services, WUA staff can now better serve their constituency. This professionalization has laid a foundation on which WUA staff can enhance their relations with other WUAs and with district water departments.

Through collaboration with WUASP, WUAs rehabilitated a significant area of irrigation infrastructure. Cleaning irrigation and drainage canals so that water can flow to fields and orchards has helped bring back into production more than 5,000 hectares of land that had gone out of cultivation due to the deteriorating irrigation infrastructure. A conservative estimate by WUASP of the annual income generated from this land is in excess of $7 million, a figure that excludes thousands of hectares of under-irrigated land.

WUA “Shaynaki Gado” (Rudaki District) installs a new flow meter installed in a narrow canal.

With training from WUASP, WUA members learned about and improved their technical practices. For example, with WUASP funding, WUAs installed gates in irrigation canals to regulate water flow. The physical infrastructure was accompanied with the elaboration of irrigation control schedules, leading to farmers cooperating with each other to develop a method to ensure that they all had equitable access to and use of water for their fields.

Furthermore, WUA members installed simple, sustainable flow meters in irrigation canals. The flow meters came in three standard sizes that corresponded to the standardized dimensions (width and depth) of the secondary and tertiary irrigation canal.

Using this flow meter, *mirobs* measure and record water flow in the canals three times a day. Under this hydrological model, farmers pay water user fees based on the actual volume of water they use instead of fees based on the type of crop they grow, an amount determined by the district water department. In many cases, the in-the-field conditions have led to farmers paying water user fees less than what they had in the past.

Thanks to financial support from WUASP, WUAs have small equipment (e.g., welding tools, cement mixers, generators, sets) to facilitate the repairs of irrigation infrastructure. Despite having this equipment, WUAs need larger equipment, such as tractors with back hoes and front loaders, and drag lines, for capital repairs and maintenance. When they need such equipment, WUAs pool funds to rent it from private hands or district water departments, and pay for fuel and technical operators. However, this equipment (and their accompanying costs) is expensive to rent and often in poor working condition. To partly address the equipment issue, WUASP awarded three tractors with back hoe and front-loader to three WUAs. These associations have developed a schedule of work so that WUA members have equitable access to equipment when they need to, and have arranged to make the equipment available for hire to other farmers whether or not they are members of WUAs.

The provision of heavy equipment in future water management projects in Tajikistan could be expanded and would require higher levels of funding. This component would need to adopt an approach that requires WUAs to submit, in exchange for the possible receipt of heavy equipment, well-developed proposals that include budgeting, cost-share possibilities, projection of fee collection (to pay for fuel, operator hire, and maintenance and repair of equipment), equitable use plans to ensure that farmers have access to equipment when they need it, as well as potential revenue generating through equipment rental to non-WUA farmers in their area.

Within the training component, WUASP was effective in coordinating and leveraging efforts with other donor organizations and implementing organizations to deliver services to WUAs. For example, WUASP worked with the Swiss Development Cooperation to use a $154,000 grant to provide trainings to WUAs. Furthermore, WUASP collaborated with UNDP to organize two WUAs and carry out rehabilitation work in irrigation infrastructure. WUASP also worked with the Aga Khan Development Network's Mountain Society Support Program and German Agro Action to provide training to WUAs and enhance older WUAs. Such collaboration is possible in future water management activities in Tajikistan, and is necessary to avoid duplication of efforts.

IR 3: An improved government legal and regulatory environment that will support the development of WUAs / federations, and their long term sustainability

WUASP contributed to developing and promoting the national Law on Water User Associations (Appendix 8). Through the cultivation of trust with ministerial personnel, the project provided input to new and regulatory instruments in support of the GoT's desire to support the formation of WUAs and federations.

During the first two years of implementation of the WUASP, the project staff including the Chief of Party provided significant input into the enactment of the *Water Users Allocation Law of the*

Republic of Tajikistan, No. 387, dated November 8, 2006, which provides the legal basis for the creation, activity, and management of WUAs as non-commercial organizations. After the passage of this landmark law, WUAs that had been registered under the *Law on Public Associations* were required to be re-registered.

Additional agricultural and water use policy reform has not been a high priority on Tajikistan's legislative agenda. Other USAID-funded projects, especially the current Land Reform activity, to ensure adoption of amendments to the Land Code allowing legal land use rights. The Land Reform activity has also supported "freedom to farm" initiatives to expand farmers' rights to choose which crops to cultivate.

The *Law on Water User Associations* addresses the establishment and liquidation of WUAs, their legal status, the management of WUAs, the property belonging to the WUAs, and provides a structure for WUA reporting, regulation, and government support to the WUAs.

The GoT is initiating a re-organization of its agricultural sector, which includes land reform and cotton debt resolution, and elaboration of the *National Irrigation Strategy*, and is seeking support and advice from the international community in this endeavor. In particular, WUASP has advocated for the transfer of the ownership of the irrigation infrastructure through privatization into the hands of WUAs. By owning the canals from which they draw irrigation water, WUAs will have a stake in their operation and maintenance, and in the results that derive from access to reliable irrigation water.

To provide assistance to this undertaking, WUASP participated in the Donor Coordination Council, which is made up of international donor organizations in Tajikistan. Following consultative meetings, six high-level Working Groups were established in July 2009 to work on the vital elements of agrarian reform, including the creation of a Working Group for integrated water resources management system. In the last coordination meeting, on August 11, 2009, all the participants agreed to adopt a common approach and implementation strategy to develop the *National Concept of WUA in Tajikistan*, which will support the development of WUAs and Federations, and promote their long-term institutional and financial sustainability. A working group consisting of WUASP and the Swiss Development Cooperation developed this concept in close cooperation with the Ministry of Amelioration and Water Resources. Because several initiatives are simultaneous, effective coordination among the different actors and stakeholders will be essential.

Commitment from the GoT at all levels is critical to the future of WUAs. It must support the concept of WUA, and provide guidance and advice to associations. However, the less then full implementation of legislation concerning water management and agriculture that are on the books hinders the support of WUAs. In addition, the present flux in ministerial organization (the possibility of shifting agriculturally-related responsibilities between the Ministry of Agriculture and the Ministry of Amelioration and Water Resources) and the lack of central governmental guidance and advice deters WUAs from reaching their potential as sustainable institutions. Future water management activities will need to account for the legislative environment as they help develop and implement nation-wide water and irrigation strategies, and assist the GoT in restructuring the irrigation department to meet future irrigation and agricultural needs in Tajikistan.

IR 4: Awareness of program benefits is increased through targeted outreach / communication programs

Throughout the life of the project, WUASP published booklets, pamphlets and brochures that promoted WUAs and their governance, and that emphasized different aspects of farming. From October 2005 – September 2009, WUASP published 32 titles with a print run of 23,090, of which 1,400 were in English, 17,159 in Tajik and 2,760 in Russian (Appendix 9). These publications, many of which were part of training sessions with specific topics, were distributed to training participants, the majority of whom were WUA members, and to WUAs so that they could build up their reference libraries.

Moreover, WUASP initiated and supported educational programs in schools. For example, WUASP conducted essay and art contests that were designed to teach schoolchildren about health and hygiene, and water use in an informative but entertaining way. In an innovative stroke, WUASP hired a drama troupe and worked with it to develop humorous skits on water-related and environmental subjects. This educational work reflected WUASP's belief that children inculcated in healthy and water-wise practices will become adults who carry and apply the lessons they learned in childhood. In additional, the school activities had a spillover effect in that children who participated in these educational programs then alerted their parents and other family members to how they could expand and apply their knowledge of health and hygiene, and water use.

Cross visits were an important part of WUASP efforts at targeted outreach and communication programs. On cross visits, participants traveled to other WUAs, for example, WUA "Shodob" and WUA "Dusti" (both in Shaartuz District), to exchange ideas, learn about best practices and, back at their farms, applied lessons learned. International cross visits also occurred. In an instance of international cross visits, WUA "Shodob" (Rudaki District) traveled to Batken Province of Kyrgyzstan to learn about WUAs in that country and extracted those practices that were appropriate to Tajikistan. These cross visits in Tajikistan and in Kyrgyzstan were valuable because participants saw methods and practices that were feasible and applicable in the post-Soviet Central Asian setting. Their value in boosting the cross-fertilization of ideas and practices suggest that the number of cross visits could be expanded in the future.

Reliable Water Allows Double Cropping

A progressive farmer member of the WUA "Rossiya" (Rudaki District) now has a reliable and dependable source of irrigation water due to the WUASP intervention. On his land near Dushanbe, he raises his cucumbers in greenhouses. Recently, he acquired improved cucumber seed from Holland at a cost of $280 per 1,000 seeds. He trains the cucumbers vines to grow vertically on string lines and claims yields of up to 25 kilogram per plant. Growing his cucumbers in a greenhouse permits him to produce an early crop that receive early crop prices in the green produce market of Dushanbe and beats the cucumber glut that occurs later in the season.

Cross visits could play a future role in promoting regional water management policy and mitigating water-related conflict in the Central Asian region. They support the exchange of locally inspired ideas, and feasible and applicable practices. They also permit participants to engage in a forum that strengthen democratic principles and good governance. Despite these salient points, cross visits need to consider the reality in Central Asia, where domestic politics may have detrimental impacts on interstate relations (e.g., Uzbekistan-Tajikistan, Uzbekistan-Kyrgyzstan) in the region.

WUASP replied to requests for information from farmers and officials on WUAs and the benefits of membership. In one instance, a group of farmers contacted WUSAP after it had learned about the project on the internet to find out how to become a WUA, which they eventually became (WUA "Safo" in Zafarobod District). WUAs working with WUASP also became founts of information for farmers. For example, WUA "Rossiya" (Rudaki District) has been approached many times by farmers from nearby areas who wanted to know more about WUAs and participate in trainings. This example highlights the true success of WUASP, whereby a WUA, with support from the project, becomes an exemplary organization that is financially sustainable and has gained the institutional capacity to train other farmers.

IR 5: Members of WUAs experience economic benefits

In April 2007, WUASP conducted an assessment on the change in net income in WUA members for 2005 – 2006. The assessment looked at a large sample of farmers in the 15 WUAs that WUASP had been working with in 2005 and 2006, the latter year being the end of the first full harvest season for them. A total of 307 WUA members participated in the assessment, at that time about 80 percent of total WUA membership, which reached 382. The farmers cultivated numerous crops and of various sizes, thereby providing a representative cross section of WUA membership. In addition, WUASP conducted a profitability report for 2008, for the years 2005, 2006 and 2008. This sample included 238 WUA farmers from 23 WUAs (15 in Khatlon, 8 in Ruhati), who grew 16 different crops on a total area of 989 hectares. Data from these assessments showed that WUA farmers earned a higher income from planting crops other than cotton (Appendix 10, Tables A-G).

WUA "Rossiya" (Rudaki District) farmer shows improved variety of cucumber grown from imported seed.

The Assessment Team observed and heard from farmers who had increased yields of crops as a result of agronomic training, and innovative farmers taking the initiative in applying the latest in agronomic practices of improved seed, fertilizer use, and crop management. With better wheat seed and agronomic practices, irrigation water facilitated increased yield, which improved the return to the farmer's efforts and resulted in increased income to the producer and allowed two crops on the same land in the same year. For example, with the improved wheat seed, farmer from WUA "Obi Hayot", WUA "Kubod" and WUA "Takhti Sangin" (all from Kubodiyon District) reported increased yields of 6 metric tons per hectare, which was a four-fold increase of yield over the wheat yields from crops grown with traditional wheat seed.

Many WUA members, for example, WUA "Mirob" and WUA "Saidkalandarshoh" (both in Rudaki District), expressed satisfaction with the availability of irrigation water. Ample water in their fields meant that farmers could plant and harvest a first crop, for instance, winter wheat, and then have land available to produce second crops, for example, onions, carrots, and tomatoes, and forage crops such as corn and alfalfa.

In addition to second crops, the reliable availability of irrigation water allowed farmers to diversify their crops, especially those of higher value. For example, a WUA farmer from WUA "Samarkandi" (Rudaki District) carried out an experiment in which he grew three different kinds of cucumbers on separate beds. At the end of this growing season, he will determine which variety of cucumber will perform best in terms of time to maturity, size and number. The farmer will then harvest and save seed from the chosen variety and plant this seed next season. According to this innovative farmer, without reliable irrigation water to ensure that the other parts of his field were cultivated, he would not have kept land aside to attempt the experiment.

WUASP also instilled confidence in farmers to assume greater risk. With maintained irrigation and drainage canals, and reliable water for fields, and trained in new agronomic skills, farmers can now count on harvests to support their livelihood. In turn, this support provide farmers with the opportunity to grow other crops, especially higher-value ones, or use other farming techniques.

WUA "Hojai Jom" (Shaartuz District) farmer holds export quality onions destined for the Russian market.

For example, a farmer from the WUA "Saidkalandarshoh" (Rudaki District) learned about raising strawberries from other association members. In the previous year, he consulted with a WUASP Administrative Organizer to obtain an economic analysis of growing strawberries and then acquired an improved variety of strawberry plants from the Baltic States. He grew the plants in a small demonstration plot, and decided to plant the improved variety in his 0.1 hectare of presidential land this year. He anticipates he will receive a yield of more than $2,200 for his efforts – far more than he could earn growing vegetables, forage, or winter wheat.

4.0 CROSS-CUTTING SECTOR AND CONCERNS

4.1 Gender

The ME&A Assessment Team integrated gender concerns throughout the assessment process in terms of segregation of data gathered from documentation, field assessments and opportunities to convene women-centered focus groups during the field work.

The Team assessed the manner in which WL, the implementer of WUASP, has addressed gender during the project implementation. First, the Team assessed activities that have been included as part of the implementation of the WUSAP and were purposefully designed to address the needs of a particular gender-based group. Second, the Team assessed gender equity of project activities, such as training. The Team did not assess the distribution of the wheat seed and fertilizer to farmers as the seed and fertilizer were distributed in an equitable manner to all farmers, regardless of gender.

WI engaged a Gender Specialist in mid-2005 to assess gender issues, develop action plans, provide training and information materials, and make recommendations on programs that

WUASP and the WUAs could develop to provide greater benefits to women. At the time of the gender assessment, female participation in WUA activities made up just over 9 percent of WUA membership. Several women were members of the Boards of Directors of some WUAs and take an active part in their respective WUAs.

Based on the recommendations of the Gender Assessment,[1] a number of actions were initiated. They included:

- Beginning in early 2006, WI listed "Implement gender assessment recommendations as may be appropriate" as one of the major activities expected in each future quarterly report. Also in early 2006, the decision was made by the WUA "Habib Fozilov" (Kubodiyon District) to train and engage a young female assistant to assist with WUA activities.
- By mid-2006, a volunteer worked exclusively with villagers (mostly women) in areas served by WUAs to demonstrate and teach new techniques and technologies about kitchen gardens to improve women's economic welfare. These WUA women took the lead to promote and undertake a school education program about water pollution. Roundtable meetings with women villagers were held involving some 55 female participants.
- Later in 2006, a WI Gender Specialist Consultant and its Home Office staff person developed a Gender Strategy. Also, two staff members attended an Aga Khan sponsored training course on "Kinship and Gender."
- In early 2007, a new thrust to address gender issues concentrated on activities within backyards to organize and schedule irrigation water provision just as are farm fields where women are traditionally the managers. In addition, specific discussions were held with the WUA Women Associate Managers concerning the lack of employment of young village women. Trainings were initiated in drying/preserving fruit and vegetables. These trainings were in response the women's solution to address the employment concerns. More women were trained in three quarters of 2007 than in all previous quarters of the project. Further, as a direct result of WUASP interventions, women from one WUA formed their own NGO to assist vulnerable women from villages in and around the area of the WUA.
- In 2008, a UNDP representative and consultant met with WUASP staff to cooperate in an upcoming project. Plans were made to engage a female *dekhan* farmer in Shaartuz District to prove awareness training for women of villages where WUASP has WUAs to address a desire by women to focus on explaining further what a WUA is, its functions, how it benefits everyone in the village and what is required from the community as a whole, but particularly for the women.
- In 2009, the results of a survey of women who recently participated in the fruit and vegetable preservation training described the impact the training had on increasing food preservation. These trainings helped the food security situation because more foods can be preserved for winter use.

[1] *Baseline Survey of Selected Dekhan Farmers in Shaartuz and Kubodiyon Districts of Tajikistan in regard to Their Knowledge, Attitudes and Practices toward Irrigation and Establishment of Water Users Associations.* Center for Sociological Research "Zerkalo." Dushanbe, Tajikistan. April-June 2009.

4.2 The USAID/CAR Gender Assessment and WUASP

During FY 2010, USAID/CAR conducted a gender assessment of the five Central Asian Republics.[2] The gender assessment was not directly an assessment of the WUASP gender issues. However, the gender assessment does serve as a third party estimate of the advancement made by the WUASP over the course of the implementation of the project. Further, the gender assessment provided suggestions for activities in the future to enhance the progress of the project to date.

The gender assessment stated, "The Water Users Association activity – including the engagement of more women in the associations – seems both well received and successful in alleviating some of the challenges related to water availability and usage in rural areas." Also, the gender assessment concluded, "Currently, there are few women in leadership positions in the associations, but the project activities seem to have developed the capacity of women to seek those positions in the future. Moreover, discussions among the group offered insights into opportunities to increase the economic and political empowerment of women in the community through improved water accessibility and usage. The community-building aspect that brings women and men together for common problem-solving seems to be one of the strongest reasons to continue supporting and deepening and activity."

Members of WUA "Samarkandi" (Rudaki District) stand proudly before their office. The woman in orange is the *mirob* (water bailiff), a position traditionally held by a man.

One recommendation from the gender assessment was to "continue developing water user associations using gender equitable approaches that involve both women and men and respond to community needs." Another recommendation was to "consider how to expand association activity beyond agricultural usage to include household water issues."

In summary, the gender assessment proposed that "WUASP build intended impacts into an activity not thought to address women's economic and social empowerment and relied on household dynamics to change behaviors among both men and women. Attentive project staff saw opportunities and seized them."

5.0 CHALLENGES

5.1 Ownership Canals and Relations with District Water Departments

Although WUASP made significant achievements toward meeting its objectives, there were challenges that prevented the project from attaining full success. Paramount among the concerns that farmers had was the ownership of canals, and its impact on the operation and maintenance of irrigation infrastructure. Because district water departments currently have ownership rights to the canals, they should be responsible for operating and maintaining the irrigation infrastructure. But in many cases, the district water departments do not provide these services. WUA members

[2] *Gender Assessment.* USAID/CAR. March 2010.

question whether their water user fees go to fund farmer services because they see little activity by the departments. In some cases, WUAs have requested to have ownership transferred to them, but district water departments have not done so. In other cases, WUAs have asked that the value of their contribution of labor and time into cleaning irrigation and drainage canals be subtracted from the water user fees they pay. The district water departments have responded that they will not lower water user fees accordingly but nonetheless still encourage farmers to clean the canals without any compensatory arrangements. In many cases, this state of affairs has strained relations between WUAs and local government departments.

For example, WUA "Saiburhon" (Kumsagir District) wants to pay water user fees that reflect the actual amount of irrigation water that its farmers use. According to legislation, a district water department representative has to accompany the association *mirob* when he measures the water flow in secondary and tertiary canals three times a day. Recording the amount of water through a flow meter installed in the canals and then finding the corresponding the water user fee as set by the chart in his journal, the *mirob* calculates an accurate fee, often less than what WUA members currently pay. However, the district water department prefers the higher flat fee, which may be one reason it does not send a representative to witness the water flow measurements.

Accurate Measurements, Lower Fees

In WUA "Shaynaki Gado" (Rudaki District), members received training in water use measurement. The purpose of the training was to understand and apply the use of a water meter to determine the actual water use over a given time rather than to use a "Hydro Model." The Hydro Model estimated water use according to the District Water Department calculations based on the volume of water needed to grow a crop rather than measuring the amount of water actually delivered. The District Water Department employees accompanied WUA "Shaynaki Gado" *mirobs* (water bailiffs) as they made measurements several times per day, accepted the WUA measurement of water use as accurate and received fee payment based on the actual water use. As a result, WUA members experienced a savings of about 42 percent in fees for actual rather than calculated water volume.

The challenge of providing a solution to the ownership of the canals and the present state of relations between local government officials and water users are being addressed within the current Tajik Irrigation Sector Reform process. The international donor community is collaborating at the ministerial level in the Tajik Irrigation Sector Reform process, and the WI resident advisor for WUASP has been invited to participate in the reform process in an advisory role. The major objective of the reform is to restructure the irrigation water management system to function at a river basin system level. At the river basin level, operations and maintenance of irrigation infrastructure would, in a transition phase, be assumed by Irrigation Scheme Management Organizations and eventually be passed to WUAs and Federations. The WUAs and Federations will be responsible for the collection of the water fees, a function presently assumed by the district water departments. The fees would be based on actual use of irrigation water. The WUAs and Federations would be responsible for the operation and maintenance of their respective portion of the overall river basin irrigation system. As a result, the proposed reform would lead to the elimination of the current function of the district level involvement in irrigation activities and, equally importantly, a reduction of interference and resulting corruption by local government officials. The Tajik Irrigation Sector Reform aims to address these issues and provide workable alternatives but will take time for full implementation and compliance.

5.2 Funding and Old Irrigation Infrastructure

An obstacle impacting the success of WUASP involved the availability of incremental funding. At one point in the life of the project, funding for the WUASP grant program was not available and the distribution of grants, which had been programmed as an important complementary component of the program, was halted due to an untimely delay in incremental funding from USAID. This problem was solved but the project implementation as planned and the overall progress of WUASP was negatively affected. USAID eventually reinitiated the funding for the WUASP grant program and, as a result, the grants were able to contribute greatly to the later success of the program, as was anticipated in the original project design.

A boy on mule poses next to a damaged irrigation canal that feeds into the irrigation network of WUA "Yangi Hayot" (Jilikul District).

Operating and maintaining and irrigation infrastructure is another obstacle to full success of WUASP. The irrigation network was a result of remarkable civil works but relied on large pumps and inexpensive hydroelectricity to power the pumping stations. In the post-Soviet environment, the drying up of government funds has left little money to be spent on pumps that have gone without maintenance and repairs for decades. In addition, once the subsidized cost of electricity was re-adjusted to more realistic levels, most of the irrigation systems that were designed to function with reliance on inexpensive energy sources are no longer being operated in an economical matter. Finally, regular maintenance has been neglected, resulting in the silting up of canals and drainage ditches to the point that without cleaning and rehabilitation they are nearly level with the surrounding land.

In response to the neglected irrigation infrastructure, WUAs targeted the use of their funds to clean and maintain canals whose operations had the largest impact on farmland. For example, WUA "Avoj" (Shaartuz District) channeled their funds and efforts into cleaning and maintaining eight kilometers of irrigation canals and installing gates, leading to the distribution of irrigation water for 100 hectares. Similarly, WUA "Majro" (Rudaki District), put efforts into cleaning and maintaining a good part of the 1,760 meter-canal it owns, and developing a water user payment scheme whose funds help to eventually open up 67 hectares of farmland to irrigation. These two examples show that WUAs, with assistance and training from WUASP, have committed money, time and labor to rehabilitate, repair and maintain irrigation infrastructure, even in the challenging fiscal environment of Tajikistan.

5.3 Duplication of Efforts

WUASP could have reached a higher level of success if closer coordination with other international donor organizations as well as other USAID-funded activities had existed. The result may have helped to avoid duplication of efforts. For example, WUASP accessed $960,000 with food security funding that had been set aside for the monetization of 597.7 tons of wheat

seed and 660 tons of fertilizer, and then selling them to WUA members at subsidized rates. The farmers would then re-sell the seed and fertilizer to fund the rehabilitation of irrigation canals and drainage systems, and the purchase of farm equipment for the rehabilitation. At the same time, CARE received wheat seed and distributed the wheat seed for free to farmers, whether or not they were affiliated with WUAs, which distorted market demand for inputs and undermined the effort by WUASP to contribute to the financial sustainability of the WUAs. Although this activity generated about $275,000, and WUA members were able to generate some revenue as planned, the full potential of the concept was thwarted because of the conflicting distribution schemes.

To prevent the duplication of efforts, make better use of funds and maximize the impact of activities, donor organizations need to coordinate the efforts of programs between projects of a particular donor as well as the efforts among projects of other donors. This coordination requires efforts on the part of project implementers as well as the efforts of other donors. At present, there are several water management-related projects in Tajikistan, some supported by USAID and some by other international donors (Appendix 11). Many representatives of these projects participate in the Donor Coordination Council, which is made up of international donor organizations in Tajikistan. In the past, the Council has formed six ministerial-level Working Groups and, through these consultative activities, has provided direction and leadership to address agrarian reform, including integrated water resources management system.

It is recommended that such participation and discussion should continue at the donor level, and should focus on sustainability and potential of creating synergism among the international donors in concert with the priority needs of Tajikistan. This task faces many challenges, but without a concerted by all donors to communicate and coordinate, development efforts will be hindered by duplication and inefficient utilization of limited donor funding. To demonstrate its leadership in water management activities and the development of the agricultural sector in Tajikistan and the Central Asia region, and to build on the progress achieved by its previous activities, USAID should take the lead on this challenge.

5.4 WUA Sustainability after WUASP

The Assessment Team visited 35 of the 41 WUAs and 2 of the 4 Federations that had received assistance from WUASP. These WUAs recognize that the organizational and financial sustainability of their organization is a concern. Sustainability of the WUAs depends upon membership. WUASP has conducted training for WUA members to improve the efficient and effective operation of the WUAs and the capacity of these associations to be of service to their membership. As a result of the training, WUA members have learned to be more productive and more financially stable. Concurrent with financially stable membership, there is an increased likelihood that the membership will pay their WUA membership fees.

WUAs have also taken steps to minimize administrative costs and maximize the internal sustainability of their organizations. For example, the staff of some WUAs receives only a nominal salary, while in other WUAs administrative personnel carry out their responsibilities on a voluntary basis. Using these cost-saving measures, WUAs maximize the use of their membership fees. At the same time, members see the dedication of those working for less or no salary, and the return to the WUA is greater overall cooperation from their members.

In addition, WUAs that have received heavy equipment such as tractors with back hoes and excavators, for example, WUA "Samarkandi" (Rudaki District), are developing equipment leasing schemes to farmers who are not member to generate income. The concept is to maximize the use of the equipment during periods when the equipment is not being required for use by the WUA members. Other WUAs, for example, WUA "Rossiya" (Rudaki District), have leveraged their success to receive equipment from other donor organizations (e.g., JICA) to expand their operations. Both examples demonstrate creativity on the part of WUAs to sustain their level of operation beyond the period of funding under the current WUASP.

To ensure institutional sustainability, especially to maintain good relations with their local governments, some WUAs, for example, WUA Samarkandi" (Rudaki District), welcome local officials to take part in their meetings. Other WUAs, for example, WUA "Safo" (Konibodom District), have encouraged local officials who are farmers and have land in the territory of the WUA to join as members. Having local government officials participate in meetings and become members promote the alignment of mutual interests. Local officials can better understand the role of WUAs while associations have more access to local governments to discuss issues that bear upon their activities. Such interaction will increase the probability of such cooperation leading to a sustainable operating model that includes their respective local government officials.

Another way to further relations between WUAs and local governments, and to institutionalize good governance and democratic principles is to encourage the participation of local officials, such as the district water department representatives, in Coordination Council meetings. These meetings are a regular activity of WUAs in WUASP and can serve as a forum in which WUA members, in addition to airing their opinions, and exchanging ideas and approaches, can solicit the input of local government officials to help solve problems. This on-going dialog and successful partnership will contribute to enhancing external conditions and thereby improve the institutional sustainability of WUAs after the completion of WUASP.

5.5 Success Leads to Other Concerns

Successfully addressing the limiting factor of irrigation water has led to a consequence of other worries. With improved access to and reliable availability of irrigation water, farmers now have higher yields and profits. Better productivity has moved farmers, for example, from WUA "Karakul" (Shaartuz District), WUA "Yangi Hayot" (Jilikul District) and WUA "Majro" (Rudaki District), to think about the need for storage, value-added processing, marketing and credit.

The need for storage is acute because surplus crops sold in markets depress prices, thus negating the intent of farmers who grow these crops for more profits. However, the method of storage would need to be technologically appropriate to Tajikistan. Some WUAs that the Assessment Team visited, for example WUA "Samarkandi" and WUA "Abdullojon Sarkor" (both in Rudaki District), have built cellar capacity into their office building to store crops such as potatoes. Although other storage methods, especially those of sophisticated technology, such as controlled environment storage, are available, they may not be feasible in Tajikistan due to unreliable electricity during certain times of the year, especially in winter.

Given the energy under-capacity and unreliability in Tajikistan, the storage of surplus crops is viable only for those crops that are not highly perishable, such as potatoes and apples. Other crops, such as onions, need to go to market as quickly as possible for farmers to capitalize on the availability of produce to consumers. In this context, there are other alternatives to storage.

One alternative is to process the surplus. Processing is not an issue with crops such as cotton, which goes to the cotton gin, and wheat, which gets sold by displaying the harvested grain on the roadside and is picked up by the middlemen. But processing is important for horticultural crops, such as strawberries, grapes, and cucumbers. In this respect, the training provided by WUASP on canning, drying and preserving training has opened to new ways to address surplus produce. Some WUA women members had talked about expanding their canning, drying and processing of their produce, and accessing capital to start their ventures, while other women had already started. Through their training, the women processed their surplus crop and sold them at nearby markets. The major costs to these farmer-entrepreneurs were, with the exception of their labor, the major inputs of pots, pans, jars, lids, and some salt, lime, or sugar. According to these women, the inputs, other than jars and lids, were limiting factors.

Such small-scale processing is an outlet to make use of surplus crops and add value to them, and could be scaled up. WUA members expressed opinions that agricultural processing would diversify on-farm economic activities, generate alternative revenue streams and create jobs. Although WUAs lack the finances to buy processing equipment, many of these associations, for example WUA "Kubod" (Kubodiyon District), have the land and facilities to house processing operations.

Another remedy to the storage problem is to expand markets for crops. But farmers will need knowledge and skills for marketing. Many of WUA members sell their produce to middlemen from larger markets, such as Dushanbe and Khujand, while others are already exporting their products to more distant places, such as Russia. Although farmers say that they receive adequate prices (finding out the range of prices from phone calls to acquaintances and friends who live where farm products are eventually sold), they would like to increase their marketing and negotiating skills. A possible venture to enhance knowledge about market condition would involve mobile phones, which most farmers have, and mobile technology to create a price data base.

The aforementioned issues are being addressed by other USAID has ongoing projects, such as the Productive Agriculture Project, whose major activities are focusing on the entire gamut of crop production, storage and marketing. From these activities, appropriate actions will be taken to solve some of the present problems. The challenge will be to develop solutions that are appropriate to and feasible for farmers in Tajikistan.

As farmers open up more land for cultivation, grow more crops and more diversified crops, and expand production, credit is critical. However, in Tajikistan, loans carry high interest rates, as much as 38 percent, which discourages farmers from applying for credit, Furthermore, farmers would have to use their land as collateral, which would be a high-risk course of action given the shaky prospects of the agricultural sector in Tajikistan. In addition, the repayment period is too short, in months when it should be longer to account for the extended cycle of farming activities. In short, although farmers are in need of capital, the credit picture in Tajikistan — high interest rates, risk of collateral loss and short repayment period — deter farmers from using credit.

However, at the same time, if WUA members are better managers and better planners, they might be able to get credit at any rate, and be able to pay with interest. For example, one farmer from WUA "Samarkandi" (Rudaki District) who grows grapes on his extensive field of potatoes

received a loan to build supports for grape vines. Although the interest rates were high, he paid the principal with interest on time, demonstrating that he had good management skills, was innovative and understood the value in farm planning.

Other existing USAID projects, as well as projects supported by other international donors, have the mandate to assess the credit and financing concerns, and to suggest and implement ways to increase credit to farmers in an effective and economical manner. These projects are in a better situation than WUASP, which did not have the mandate to address these issues. During the time that WUASP has existed, the credit and financing problem facing farmers continues and has yet to be resolved. Although credit to and financing for farmers are microeconomic issues, they are in essence related to the macroeconomic progress of Tajikistan. Tackling the issue at this high level will require commitment and funding that may not be in the scope of USAID projects that work at the lower management levels, such as WUAs and Federations.

WUAs are growing and the scope of their operations is expanding. In many ways, WUAs are becoming farmers associations, and are no longer only thinking about irrigation water but about the entire farming cycle, from inputs through planting and harvesting to harvest and marketing. In the context, the success of WUASP is evident, but farmers will need assistance to capitalize on the achievements of the past.

6.0 SUMMARY

WUASP has been a successful project. Its WUA methodology is being used as a developmental model and as a foundation organization for other activities. For example, the Local Development Initiative, a USAID regional 3-year local governance project in Central Asia, is adopting some elements of the WUA model for its proposed work in Tajikistan with *jamoats* (townships)and their citizens. In addition, the Tajikistan Stability Enhancement Project is working with WUASP and its associated WUAs to implement community infrastructure and outreach projects in rural areas. These activities with WUAs can only be undertaken if associations have proven themselves institutionally and financially capable. That these WUAs are working with USAID projects reflect the accomplishments and on-going success of WUASP.

WUA Office Buildings and Equipment

The construction of an office building, with labor provided by the WUA, averages $10,000 to $12,000. WUASP provided office furnishings, a computer, printer, safe and photocopier at $4,000 to $6,000. WUASP also provided a small equipment package to the WUAs including a generator, a welder, a cement mixer, a cutting tool and a hand drill kit for $2,135. Three tractors with front end loaders and backhoes were provided at $45,000 each for their use and the use of neighboring WUAs.

WUASP has been successful in meeting its objectives because it has adhered to its primary goal of addressing the limiting factor of irrigation water in Tajikistan. WUAs have maintained and operated irrigation and drainage canals. With better access to and reliable availability of irrigation water, WUA farmers have opened up more land for cultivation, increased their yields and diversified their crops. In turn, many farmers have enjoyed profits from their labor when they had little or none before. With a more reliable revenue stream, farmers are able to plan more efficiently and assume risk management. Although many problems still exist, such as operating and maintaining more kilometers of irrigation and drainage canals, acquiring quality inputs and

seeds, and accessing financing, WUAs and their member farmers have made strides. Their challenge is to capitalize on their achievements.

WUASP has surpassed the level of expectation for its activities. This assessment has found that WUAs and their members have a sense of purpose and unity that was lacking before working with WUASP. WUAs provide forums for farmers to address common concerns and work together to resolve these issues. An example of this newly found solidarity is the WUA office building. With land given to the WUAs by the local government and funding from WUASP, WUAs now have a tangible symbol of their associations as real, functional organizations. WUA staff and members express pride in having a place to call their own. Previously, meetings with local government representatives had to take place in a farmer's home. They now occur in an official establishment, with furniture, computer, software, a library and an informational board that documents their history and achievements. In WUA sites where no office building had yet to be constructed, association members showed the architectural designs of their future buildings and took the Assessment Team to where the foundations had been laid.

The cost of constructing a WUA office building is relatively low — the local government gives land, and WUA members contribute cost-share in labor, time and materials — but the return to this investment is high. This activity underscores the foresight of WSUAP in its work with WUAs in Tajikistan and the commitment it has to work with grassroots organization to make them institutionally and financially sustainable. Any USAID water management activity in Tajikistan in the future will be well served to build upon this success.

ANNEX

Appendix 1: Meetings with Organizations and Personnel Met

Washington D.C. Area

Bob Wallin, ASIA/SCAA, USAID/Washington D.C.
Carol Stoney, Director of Program Development, Winrock International
Paula Feeney, Senior Advisor, Business Development and Marketing Unit, Cardno
Bikram Ghosh, Senior Manager, Governance and Public Sector Development Unit, Cardno
Russ Webster, Managing Director, Governance and Public Sector Development Unit, Cardno

Almaty, Kazakhstan

John Morgan, Program Officer, USAID/CAR
Jeremy Strauss, Economic Growth Office and COTR, USAID/CAR
Mike Trainor, Economic Growth Office, USAID/CAR
Nina Kavetskaya, ACTOR and Regional Environmental Compliance Officer, USAID/CAR

Tajikistan

Jeff Lehrer, Country Director, USAID
Kevin Dean, Deputy Country Director, USAID
Daler Asrorov, Economic Growth Sector, USAID
Bill Bell, Chief of Party, USAID Water User Association Support Program (WUASP)
Saidalli Asoev, Administration Organizer, USAID WUASP
Ed Beeman, Senior Consultant, German Technical Cooperation
Bakhtiyor Inamov, Deputy Country Director, USAID Local Development Initiative
Nassim Jawad, Coordinator, FAO Coordination Office in Tajikistan
Petra Geraedts, EU/SENAS
Will Bullock, Chief of Party, for the USAID Productive Agriculture in Tajikistan
Rakhmat Bobokolonov, Minister, Ministry of Amelioration and Water Resources
Mr. Mirzoev, Head of Department on WUAs, Ministry of Amelioration and Water Resources
Duane Beard, ME&A Chief of Party, USAID Tajikistan Safe Drinking Water Project
John Strickland, Director, Tajikistan Stabilization Enhancement Project, Mercy Corps International

Appendix 2: Assessment Questions

1. Has WUASP succeeded in its stated objectives and to what extent? Has WUASP succeeded in other objectives that were unstated? Provide a quantitative analysis of the project's results.

2. What specific elements of the project's design, management and strategy contributed to its performance? These should include an assessment of WUASP's duration, budget, scale and scope.

3. What external elements such as geography, legislative environment, and characteristics of partners and beneficiaries influenced the program's performance?

4. What strategic, operational or management choices contributed significantly to the project's results? What alternative choices could be recommended?

5. How effectively did the project coordinate and leverage related efforts of donors and host-country institutions and initiatives? What could have been improved?

6. Was WUASP cost-effective? What specific elements of the project's costs contributed to this assessment? What could have been done differently to enhance cost-effectiveness?

7. Is the design scalable? What approach could be taken to scale it up? What would the estimated costs for this be?

8. To what extent are WUASP activities sustainable in Tajikistan? What could have been done differently to enhance sustainability?

9. What role, if any, did WUASP play in regional water management policy or agreements? How can such activities inform efforts to mitigate water-related conflict in the region?

The questions that the Assessment Team asked WUASP staff, and WUA staff, members and beneficiaries concerned the operations and activities, and extent of attitudinal changes before during and after the program included but were not limited to:

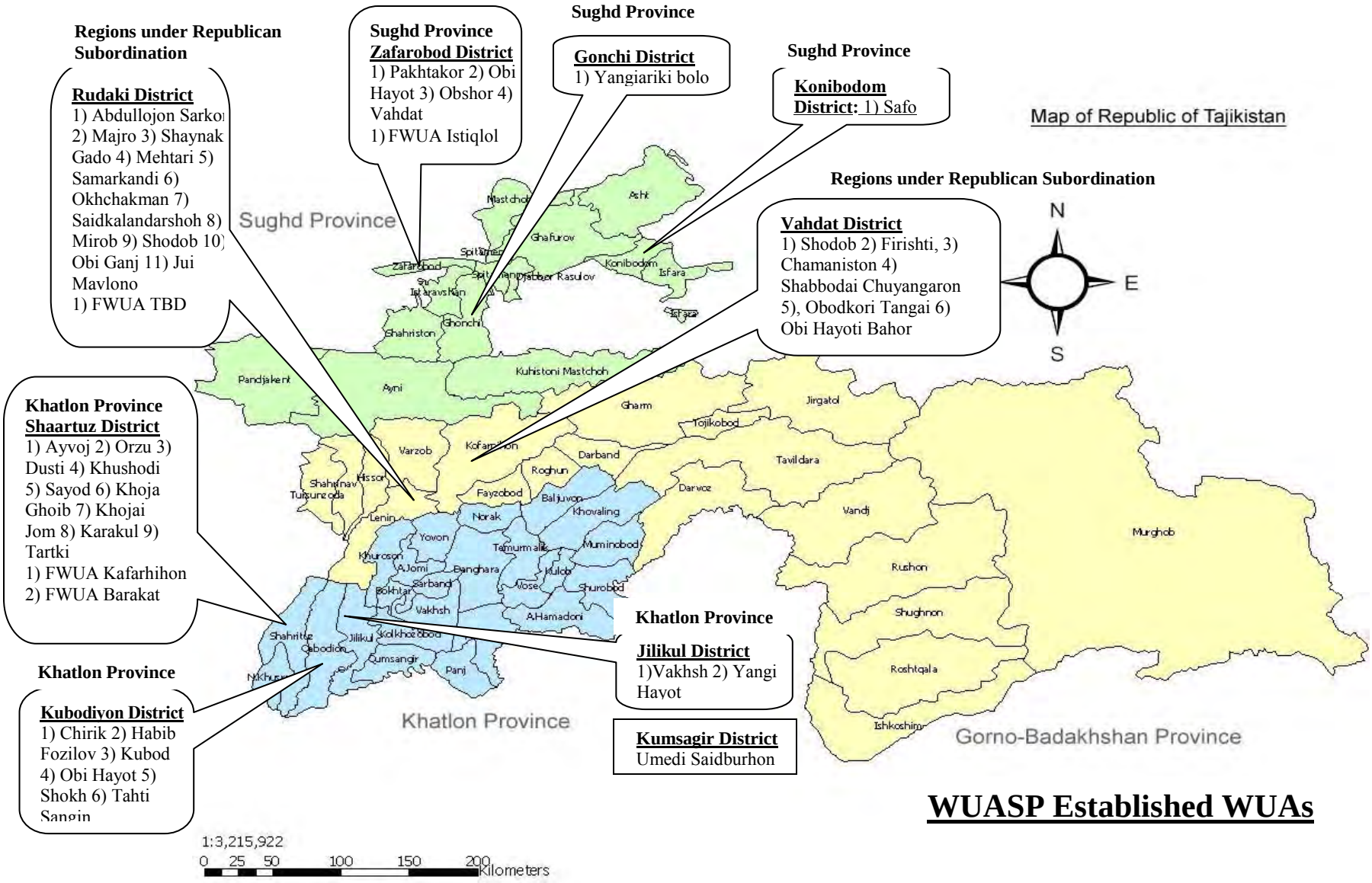
- How many members does the WUA have?
- How many women members does the WUA have?
- What are the maintenance activities conducted by the WUA?
- Where are the levels of WUA fees?
- What are the levels (percentage) of payment by WUA members?
- How many trainings were conducted?
- What were the subjects of the trainings?
- What trainings were of particular interest to women?
- What trainings would you like to receive in the future?
- How many hectares are under irrigation?
- What type of crops do you grow?
- What percentage of cultivated land do these crops make up?

- How is water flow and amount measured in the canals of the WUA?
- How are relations with local government officials/the district water department?
- Did schoolchildren take part in water-related educational activities?

The questions that the Team asked other stakeholders and donor organizations concerned policies and activities related to WUAs and irrigation. These questions included but were not limited to:

- What policies does your office/organization foresee as having impacts on the activities of WUAs?
- How does your office/organization work to maximize these impacts?
- What does your office/organization foresee as the role of local governments and WUAs under the new local governance law (passed in August 2009)?
- How does your office/organization collaborate with other offices/organizations on policies and activities that affect the operations of WUAs?
- What does your office/organization see as obstacles to improving the agricultural sector in Tajikistan?
- What areas does your office/organization see as potential opportunities to work with WUAs?
- What aspects of WUAs do your office/organization find that are laudable/need improvements?

Appendix 3: Tajikistan, WUASP and WUAs



Appendix 4: Assessment Field Visit Itinerary

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
March 29 Leave Dushanbe to Shartuuz in afternoon	**March 30** Shartuuz 1. Dusti 2. Ayvoj	**March 31** Shartuuz: 1. Hojai Jom 2. Sayod 3. Khoja Ghoib	**April 1** Kubodiyon: 1. Chirik 2. Takhti Sangin	**April 2** Kubodiyon: 1. Obi Hayot 2. Kubod	**April 3** Jilikul: 1. Yangi Hayot	**April 4** Fly to Khujand
	2nd visit Shartuuz: 3. Orzu 4. Khoshodi	2nd visit Shartuuz: 4. Karakul 5. Tartki	2nd visit Kubodiyon: 3. Shokh 4. Habib Fozilov		2nd visit Kumsangir: 2. Umedi Saidburhon; return to Dushanbe	
April 5 Zafarobod: 1. Pakhtakor 2. Vahdat 3. Obi Hayot 4. Obshor	**April 6** Konibodom:Safo Fly to Dushanbe	**April 7** Rudaki: 1. Abdujollon Sarkor 2. Shaynaki Gado	**April 8** Rudaki: 1. Rossiya	**April 9** Dushanbe	**April 10** Rudaki: 1. Samarkandi 2. Okhchakman	**April 11** No WUA visited
		Rudaki: 3. Majro	Rudaki: 2. Ob Ganj 3. Juyi Mavlona		Rudaki: 2. Mehtari	
April 12 Rudaki: 1. Saidkalandarshoh 2. Mirob						
Vahdat: 3. Obi hayoti Bahor 4. Shodob						

Appendix 5: WUA Field Visit List

	Water User Association	District	Province	Date (2010)	# of WUA female participants	# of WUA male participants	Total # of WUA participants	# of female WUA admin. participants	# of male WUA admin. participants	Total # of WUA admin. participants	Total # of participants
1	Orzu	Shaartuz	Khatlon	Mar 30	0	3	3	0	1	1	4
2	Khoshodi	Shaartuz	Khatlon	Mar 30	0	2	2	0	1	1	3
3	Dusti	Shaartuz	Khatlon	Mar 30	0	3	3	0	1	1	4
4	Ayvoj	Shaartuz	Khatlon	Mar 30	0	3	3	0	1	1	4
5	Hojai Jom	Shaartuz	Khatlon	Mar 31	0	0	0	0	1	1	1
6	Sayod	Shaartuz	Khatlon	Mar 31	0	5	5	0	1	1	6
7	Khoja Ghoib	Shaartuz	Khatlon	Mar 31	0	0	0	0	1	1	1
8	Karakul	Shaartuz	Khatlon	Mar 31	0	2	2	0	3	3	5
9	Tartki	Shaartuz	Khatlon	Mar 31	2	1	3	0	2	2	5
10	Chirik	Kubodiyon	Khatlon	Apr 1	0	2	2	0	2	2	4
11	Takhti Sangin	Kubodiyon	Khatlon	Apr 2	0	0	0	0	1	1	1
12	Shokh	Kubodiyon	Khatlon	Apr 1	0	1	1	0	0	0	1
13	Habib Fozilov	Kubodiyon	Khatlon	Apr 1	0	1	1	0	4	4	5
14	Obi Hayot	Kubodiyon	Khatlon	Apr 2	0	6	6	0	1	1	7
15	Kubod	Kubodiyon	Khatlon	Apr 2	0	1	1	0	0	0	1
16	Yangi Hayot	Jilikul	Khatlon	Apr 3	0	6	6	0	1	1	7
17	Umedi Saidburhon	Kumsangir	Khatlon	Apr 3	0	3	3	0	2	2	5
18	Pakhtakor	Zafarobod	Sughd	Apr 5	1	5	6	0	4	4	10
19	Vahdat	Zafarobod	Sughd	Apr 5	0	3	3	0	4	4	7
20	Obi Hayot	Zafarobod	Sughd	Apr 5	0	1	1	0	5	5	6
21	Obshor	Zafarobod	Sughd	Apr 5	0	0	0	0	1	1	1
22	Safo	Konibodom	Sughd	Apr 6	6	23	29	0	2	2	31
23	Abdujollon Sarkor	Rudaki	RRS	Apr 7	0	11	11	0	1	1	12
24	Shaynaki Gado	Rudaki	RRS	Apr 7	0	2	2	0	1	1	3
25	Majro	Rudaki	RRS	Apr 7	4	4	8	0	1	1	9
26	Rossiya	Rudaki	RRS	Apr 8	0	9	9	1	1	2	11

27	Ob-Ganj	Rudaki	RRS	Apr 8	0	8	8	0	1	1	9
28	Juyi Mavlona	Rudaki	RRS	Apr 8	0	0	0	0	1	1	1
29	Samarkandi	Rudaki	RRS	Apri10	3	5	8	0	2	2	10
30	Okhchakman	Rudaki	RRS	Apri10	3	3	6	0	1	1	7
31	Mehtari	Rudaki	RRS	Apr 10	2	9	11	0	2	2	13
32	Saidkalandarshoh	Rudaki	RRS	Apr 12	3	19	22	0	2	2	24
33	Mirob	Rudaki	RRS	Apr 12	2	6	8	0	1	1	9
34	Obi Hayoti Bahor	Rudaki	RRS	Apr 12	5	9	14	0	1	1	15
35	Shodob	Rudaki	RRS	Apr 12	4	5	9	0	1	1	10
	Total				**35**	**161**	**196**	**1**	**55**	**56**	**252**

Total, women	**36**
Total, men	**216**
Total participants	**252**

Appendix 6: WUA Statistics

.	WUA Name	District	Irrigated Area, hectares				WUA *Dehkan* Farmers			Total Beneficiaries
			Total	*Dekhan* Farms	Kitchen Gardens	Pres. Land	Total	Men	Women	
1	Yangiariki bolo	Ghonchi	865	760	80	25	17	17	0	2,610
2	Vakhsh	Jilikul	970	478	455	37	18	18	0	5,926
3	Yangi Hayot	Jilikul	1,455	1,188	244	23	36	32	4	4,971
4	Safo	Konibodon	236	236	0	0	161	139	22	910
5	Chirik	Kubodiyon	1,081	880	114	87	29	23	6	5,787
6	Habib Fozilov	Kubodiyon	513	370	88	55	18	18	0	4,068
7	Kubod	Kubodiyon	5,286	960	3,920	406	38	31	7	41,070
8	Obi Hayot	Kubodiyon	544	347	120	77	34	33	1	6,714
9	Shokh	Kubodiyon	922	800	67	55	24	24	0	5,018
10	Takhti Sangin	Kubodiyon	509	210	184	115	19	18	1	8,125
11	Umedi Saidburhon	Kumsangir	1,052	750	240	62	21	21	0	8,145
12	Abdullojon Sarkor	Rudaki	137	94	38	5	22	19	3	960
13	Juyi Mavlona	Rudaki	1,062	504	529	29	243	213	30	28,240
14	Majro	Rudaki	167	117	41	9	17	15	2	2,325
15	Mehtari	Rudaki	155	99	50	6	29	26	3	4,054
16	Mirob	Rudaki	152	99	45	8	59	53	6	2,650
17	Ob-Ganj	Rudaki	528	440	81	7	134	116	18	15,344
18	Okhchakman	Rudaki	201	154	38	9	28	22	6	2,100
19	Rossiya	Rudaki	839	341	415	83	142	129	13	18,461
20	Saidkalandarshoh	Rudaki	265	219	44	2	62	54	8	3,327
21	Samarkandi	Rudaki	377	307	59	11	44	40	4	3,108
22	Shaynaki Gado	Rudaki	105	40	53	12	8	6	2	3,522
23	Ayvoj	Shaartuz	897	690	195	12	24	22	2	5,324
24	Dusti	Shaartuz	405	256	125	24	22	22	0	2,736
25	Hojai Jom	Shaartuz	1,312	961	280	71	66	59	7	9,225
26	Karakul	Shaartuz	874	632	161	81	42	41	1	3,288
27	Khoja Ghoib	Shaartuz	718	498	162	58	44	39	5	4,106
28	Khushodi	Shaartuz	438	238	175	25	19	19	0	4,238
29	Orzu	Shaartuz	597	421	161	15	26	22	4	2,647
30	Sayod	Shaartuz	1,041	664	288	89	48	44	4	4,965
31	Tartki	Shaartuz	1,072	630	381	61	58	53	5	13,016
32	Chamaniston	Vahdat	207	130	69	8	57	54	3	7,352
33	Firishti	Vahdat	158	108	48	2	43	37	6	4,658
34	Obi Hayoti Bahor	Vahdat	258	171	78	9	74	61	13	8,871
35	Obodkori Tangai	Vahdat	268	136	123	9	115	106	9	9,723
36	Sh. Chuyangaron	Vahdat	148	93	47	8	82	68	14	4,638
37	Shodob	Vahdat	190	167	13	10	72	65	7	9,875
38	Obi Hayot	Zafarobod	1,247	1,225	0	22	136	126	10	3,500
39	Obshor	Zafarobod	1,871	1,830	6	35	87	82	5	1,794
40	Pakhtakor	Zafarobod	460	450	0	10	56	56	0	1,355
41	Vahdat	Zafarobod	677	664	0	13	70	63	7	1,958
	Total:		**30,259**	**19,357**	**9,217**	**1,685**	**2,344**	**2,106**	**238**	**280,704**
	Federations									
1	TBD	Rudaki/Vahdat	2,717	1,956	682	79	727	637	90	65,825
2	Kofarnihon	Shaartuz	1,759	1,162	450	147	92	83	9	9,071
3	Barakat	Shaartuz	2,337	1,605	656	76	91	85	6	14,945
4	Istiklol	Zafaobod	4,255	4,169	6	80	349	327	22	8,607
	Total		**11,068**	**8,892**	**1,794**	**382**	**1,259**	**1,132**	**127**	**98,448**

Appendix 7: WUASP Training 2004-2010

Governance
(e.g., meeting facilitation, formulation of by-laws, WUA organizational & leadership development, planning & reporting, effective working committees, conflict management)

	2004	2005	2006	2007	2008	2009	2010	Project Total
Events	5	46	31	20	49	37	4	192
Men	23	637	670	185	315	558	80	2,468
Women	7	29	98	134	756	45	20	1,089
Total participants	30	666	768	319	1071	603	100	3,557

Business
(e.g., financial management, activity management, budgeting and prioritizing, marketing)

	2004	2005	2006	2007	2008	2009	2010	Project Total
Events	0	30	23	30	82	181	34	380
Men	0	423	361	384	223	923	365	2,679
Women	0	14	1	163	1,110	1,452	55	2,795
Total participants	0	437	362	547	1,333	2,375	420	5,474

Water Management
(e.g., development of water use plan, maintenance plan, calculation ISF, water measurement)

	2004	2005	2006	2007	2008	2009	2010	Project Total
Events	0	10	22	142	26	19	7	226
Men	0	130	310	2,707	383	325	123	3,978
Women	0	0	85	140	2	9	8	244
Total participants	0	130	395	2,847	385	334	131	4,222

Total for Trainings in Governance, Business and Water Management

	2004	2005	2006	2007	2008	2009	2010	Project Total
Events	5	86	76	192	157	237	45	798
Men	23	1,190	1,341	3,276	921	1,806	568	9,195
Women	7	43	184	437	1,868	1,506	83	4,128
Total participants	30	1,233	1,525	3,713	2,789	3,312	651	13,253

Appendix 8: Legislation on Agriculture and Water Management in Tajikistan

Law on Water User Associations

Signed by the President of Tajikistan and b Parliament in November 2008, the Law on Water User Associations strengthens water user associations and water resource management as a whole. The law has six chapters and twenty-five articles, and specifically addresses WUAs, which heretofore had to answer to the Law on Public Associations.

The contents of the law are:

- Chapter 1: General Provisions
- Chapter 2: Establishment and Liquidation of WUAs
- Chapter 3: Legal Status of WUAs
- Chapter 4: WUA Management
- Chapter 5: Property Belonging to the WUA
- Chapter 6: Final Provisions

Decree 111 (Freedom to Farm)

In March 2007 the Government of Tajikistan issued Decree 111, which gave farmers the right to choose what crops to plant on their land without intervention from government authorities. The decree sought to halt the growing debts accumulated by farmers who had to borrow inordinate amounts of loan to grow cotton. Responding to the acute debt accrued by farmers who had cotton debt situation. Decree 111 needs to be fully implemented because many farmers are still planting in response to local government coercion.

Water Code of the Republic of Tajikistan

In 2002, the GoT pass the Water Code. The purpose of the Water Code of the Republic of Tajikistan to regulate water relations in order to ensure rational use of water for the needs of the population, branches of economy and the natural environment, protection of water from pollution, damage and exhaustion, preventing and liquidating adverse impact of water, improvement of condition and protection of water bodies, strengthening of lawfulness and protecting the rights of individuals.

The contents of the chapters are:

- Chapter 1: Principle Provisions
- Chapter 2: Allocation, Designing, Construction and Implementation of Enterprises, Facilities and Other Projects That Influence the Quality of Water
- Chapter 3: Works on Water Bodies and in Water Protection Zones
- Chapter 4: Types of Water Use
- Chapter 5: Water Users and Water Use Projects
- Chapter 6: Procedures and Conditions for Giving Water
- Chapter 7: Rights and Obligations of Water Users

- Chapter 8: Cessation of Water User Rights
- Chapter 9: User of Water Bodies for Drinking, Social and Other Needs of the Population
- Chapter 10: Use of Water Bodies for Medical, Resort and Rehabilitation Purposes
- Chapter 11: Use of Water Bodies for Agricultural Needs
- Chapter 12: Use of Water Bodies for Industrial Purposes and Needs of Hydropower Engineering
- Chapter 13: Use of Water Resources for the Needs of Water and Air Transport
- Chapter 14: Use of Water Bodies fir the Needs of Fishing Farms
- Chapter 15: Use of Water Bodies for the Needs of Hunting Farms
- Chapter 16: Use of Water Bodies for the Needs of Sanctuaries
- Chapter 17: Use of Water Bodies for Discharging of Sewage
- Chapter 18: Use of Water Bodies for Anti-Fire Needs, Liquidation of Emergency and Similar Situations
- Chapter 19: Operation of Reservoirs
- Chapter 20: Settlement of Disputes over Water Use
- Chapter 21: Water Protection
- Chapter 22: Prevention and Liquidation of Harmful Influence of Water
- Chapter 23: State Control, Accounting and Planning of Water User
- Chapter 24: Responsibility for Violation of Water Legislation

Appendix 9: WUASP Informational Materials Developed for Farmers

	Title	Pub. Date	English	Tajik	Russian	Uzbek	Total
1	WUA Support Program	Oct „04-Jul „05	500	1,000	500	200	2,200
2	Irrigation Service Fee	Jul „05	200	600			800
3	Problems with Over-Irrigation	Sept „05	100	500	200		800
4	Procedure for Taxation-Microcredit	Oct „05	200	400			600
5	Water Cycle	Jun „06		200			200
6	Increasing Production on Small Plots	Jun „06		200			200
7	WUASP-Tajikistan Project Activities	Jun „06	200	800			1,000
8	Beekeeping	Aug „06		400			400
9	Veg. Production in Gardens (WUASP/Uz-stan)	Aug „06				50	50
10	Financial Management (Book 1)	Sept „06		300			300
11	Tax and Taxation in Dekhan Farms						400
12	Tajik WUA Law	Sept „06		800			800
13	Participatory Irrigation Management	Mar „07		200	200		400
14	Presidential Decree on Farmers' Rights	May-Sept „07		1,300			1,300
15	Water Measuring for WUAs (SDC Project	May „07			30		30
16	Dekhan Book Recordkeeping	May „07		3,250			3,250
17	Net Income Change of WUA Members: 2005-06	Apr „07	200	300			500
18	Water Fee	Jul „09		1000			1,000
19	Prevention of Disease in Chicken, Cows, Sheep	Jun „07		200			200
20	Water Bill and Water Measuring Devices of Hydroposts	Aug „07			30		30
21	Booklets under SDC Project	Jan „09			1,600		1,600
22	Manual of Bio-Products	Mar „08			200		200
23	Land Code of RoT	Mar „08		500			500
24	Drying Technologies of Vegetables, Fruits	Mar „08-Jun „09		1,000		600	1,600
25	Food Preservation	Sept „08- Jun „09		900		200	1,100
26	Growing Wheat	Nov „08		650			650
27	Growing Lemons	Dec „08		200			200
28	Manual on Vegetable Crop Growing	Mar „09		300			300
29	Method of Seedling Growing	Mar „09		250			250
30	Growing Corn	Jun „09		300			300
31	Preparing & Applying Organic & Mineral Fertilizers	Aug „09		400			400
32	Traditional Ways of Plant Production	Aug „09		400			400
33	Handouts on Pest Control	Sept „09		400			400
34	Developed by Other NGOs					730	730
	Total		**1,400**	**17,150**	**2,760**	**1,780**	**23,090**

Appendix 10: WUASP Assessment of Farm Income

A. Number of WUA Farmers in the WUASP Assessment of Farm Income*

	WUA	# of Farmers
1	Abduljoni Sarkor	8
2	Avadj	8
3	Dusti	11
4	Habib Fazilov	13
5	Khoshohdi	7
6	Majro	16
7	Mehtari	29
8	Mirob	39
9	Okchakman	22
10	Orzu	10
11	Shanaki Gado	9
12	Saidgalandanshoh	64
13	Samarkandi	33
14	Shokh	18
15	Tartki	20
	Total	**307**

* Based on comparison of area under irrigation and yields of irrigated crops in 2005 and 2006 growing seasons.

B. Area of Crops Grown in 2005 and 2006

Crop	Hectares		Change from 2005 to 2006, %	Change from 2005 to 2006, hectares
	2005	2006		
Cotton	1,505.38	1,470.35	56.14	-35.0
Wheat	648.94	607.75	23.20	-41.2
Alfalfa	110.90	187.84	7.17	76.9
Orchard*	174.14	175.88	6.72	1.7
Vegetables^	73.35	139.23	5.32	65.9
Strawberry	11.76	14.80	0.57	3.0
Rice	13.50	12.50	0.48	-1.0
Sesame	7.50	6.00	0.23	-1.5
Barley	3.70	2.70	0.10	-1.0
Fish	2.00	2.00	0.08	0.0
Total	**2,551.17**	**2,619.05**		**67.8**

*Orchards included apricots, apples, pomegranates, persimmon, almonds, lemons, figs and grapes.
^ Vegetables included onions, carrots, onions, cucumbers, watermelons, melons, tomatoes, potatoes, corn, cabbage, pumpkin, beans, peppers, beets and eggplant.

C. Percent Increase in Net Income per Hectare, $, due to Irrigation

Crop	$/hectares, 2005	$/hectares, 2006	% Increase, 2005-2006
Fish	2,206	12,109	449
Cotton	67	294	339
Orchard	274	966	253
Wheat	157	422	169
Barley	189	456	141
Rice	461	1,102	139
Strawberry	744	1,619	118
Vegetable	361	729	102
Sesame	202	282	40
Lucerne	348	342	-2
Average	**$501**	**$1,832**	**175**

Notes: One farmer reported a non-traditional crop. WUASP included these data due to its „crop' potential. 3.4 Tajik Somoni (TJS), = $1 (for this table and subsequent tables). The average is for all crops combined (total net profit/total # of farmers).

D. Total Net Income by Crop Because of Irrigation, $, 2005 and 2006

Crop	2005	2006	Increase	% Increase
Cotton	55,156	401,716	346,560	628
Fish	4,412	24,217	19,805	449
Orchard	43,362	144,944	101,582	234
Vegetable	22,104	66,468	44,364	201
Lucerne	14,455	42,065	27,610	191
Strawberry	7,229	18,777	11,548	160
Wheat	98,076	249,054	150,978	154
Rice	5,809	14,049	8,240	142
Barley	655	1,186	531	81
Sesame	2,061	1,466	-595	-29
Total	**$25,332**	**$96,394**	**$71,062**	**221**

E. Value of Cotton, Wheat and High-Value Crops, 2006

Crop	% of Area	Total Net Income, $
Cotton	56.1	346,560
Wheat	23.2	150,978
High-Value Crops	12.6	157,494

Compared to cotton; higher value crops returned more than twice the net income on an area one fourth the size. Compared to wheat; higher value crops returned a higher net income on just over half the area.

F. Crop Comparison, 2005, 2006, 2008

Crop	2005	2006	2008	Crop	2005	2006	2008
Corn Seed				**Potato**			
# of farmers	-	-	24	# of farmers	-	-	29
# of hectare	-	-	21	# of hectare	-	-	13
Kg/hectare	-	-	2,600	Kg/hectare	-	-	15,800
$/kg	-	-	0.48	$/kg	-	-	.38
Net $/hectare	-	-	550	Net $/hectare	-	-	2667.65
Cotton				**Strawberry**			
# of farmers	97	97	15	# of farmers	21	27	5
# of hectare	1,505	1,470	169	# of hectare	12	15	0.4
Kg/hectare	1,750	2,662	2,325	Kg/hectare	5,900	7,200	4,500
$/kg	0.21	0.26	0.40	$/kg	0.22	0.29	0.88
Net $/hectare	67.06	294.12	-544.12	Net $/hectare	744.12	1617.65	2500.00
Fruit				**Vegetables**			
# of farmers	67	69	8	# of farmers	57	87	33
# of hectare	174	176	20	# of hectare	73	139	15
Kg/hectare	3,335	6,251	2,000	Kg/hectare	9,150	9,050	20,000
$/kg	0.15	0.19	0.21	$/kg	0.12	0.15	0.26
Net $/hectare	273.53	916.18	189.71	Net $/hectare	361.76	735.29	2,276.47
Melon				**Watermelon**			
# of farmers	-	-	40	# of farmers	-	-	27
# of hectare	-	-	66	# of hectare	-	-	76
Kg/hectare	-	-	18,000	Kg/hectare	-	-	16,300
$/kg	-	-	0.24	$/kg	-	-	1.15
Net $/hectare	-	-	764.71	Net $/hectare	-	-	1,205.88
Onion				**Wheat**			
# of farmers	-	-	38	# of farmers	246	246	177
# of hectare	-	-	47	# of hectare	645	608	519
Kg/hectare	-	-	23,250	Kg/hectare	1,900	2,000	3,100
$/kg	-	-	0.60	$/kg	0.15	0.18	0.44
Net $/hectare	-	-	2294.12	Net $/hectare	157.35	422.06	752.94
All Crops							
# of farmers	307	307	438	$/kg	-	-	0.37
# of hectare	2,550	2,620	989	Net $/hectare	217.65	588.24	647.06
Kg/hectare	-	-	1823.53				

Notes: The „All Crops' category takes overall costs minus overcall income, and then is divided by total area. Due to disastrous weather, data from 2007 are not included.

G. Net Profits, $, 2008

Crop	Net Profit
All Crops	647
Potato	2,268
Strawberry	2,500
Onion	2,294
Vegetable	2,276
Watermelon	1,206
Melon	765
Wheat	753
Corn	550
Fruit	190
Cotton	-544

Note: For many farmers, cotton is not a good money-generating crop because they are forced by the government to grow a certain acreage of cotton to maintain the country's share of the world's cotton exports as well as to buy inputs from the government, take out loans to grow their quota, and sell their crop to the government at prices below market prices.

Appendix 11: Water Management Projects in Tajikistan

Water Management-related Projects in Tajikistan

	Project Name	Donor Organization	Project Implementer	Major Sectors	Project Dateline	Budget	Geographic Target
1	Productive Agriculture Project	USAID	ACDI/VOCA	Helping farmers access better quality inputs; supporting processing, packaging, warehousing, transport, and marketing of agricultural products for local and regional markets; expanding use of quality standards and certifications; increasing access to finance for farmers, support service providers, and processors; strengthening market linkages between farmers and consumers	9/2009 – 9/2014	US$ 9.5 million	RRS, Western Khatlon Province, Sughd Province
2	Land Reform Project	USAID	Chemonics	Developing and implementing market-driven land policies and legislations; promoting transparent processes for restructuring of farms; conducting awareness campaigns targeted at land users, training; providing legal aid to farmers.	10/2009 – 11/2012	US$ 4.5 million	Khatlon Province, Sughd Province, RRS
3	Tajikistan Safe Drinking Water Project	USAID	ME&A	Increasing access to potable water in rural communities; decreasing incidence of water-related diseases through household hygiene interventions; improving long-term technical and financial sustainability of potable water services and management of potable water quality and quantity in target communities	10/2009 – 9/2012	US$ 5.3 million	RRS

4	Tajikistan Water Supply and Sanitation Project	Swiss Agency for Development and Cooperation	Oxfam, GB	Creating favorable conditions to develop rural water supply and sanitation sector, establish network of organizations, build local capacities, establish water trust funds to support investment in the sustainable project activities	7/2009 – 9/2012	CHF 4.0 million	Khatlon Province
5	Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan	GEF	UNDP	Implementing replicable sustainable land management at the local level, building capacity of local structures and land users	2006 – 2011	US$ 1.17 million	Western Khatlon Province
6	Community Agriculture and Watershed Management Project	World Bank	UNDP	Agriculture, fishing, and forestry	6/2004 – 4/2011	US$ 16.75 million	Tajikistan
7	Tajikistan Irrigation Rehabilitation Project	ADB	ADB	Rehabilitating irrigation and drainage facilities, providing rural water supply systems, providing farm support services to increase crop yields, improving on-farm water management in demonstration areas, building capacity of Ministry of Amelioration and Water Resources to promote participatory irrigation management through WUAs.	7/2005 – 6/2011	US$ 22.7 million	RRS, Eastern Khatlon Province, Sughd Province
8	Dushanbe Water Supply Project (additional financing)	World Bank	Tajikistan Vodakanal	Water, sanitation and flood protection	12/2006 – NA	US$ 5.7 million	Dushanbe
9	Sustainable Water Use and Management	GTZ	UNDP	Participatory forestry management and rehabilitation; energy efficiency, technical innovation for markets	2003 – 2008	N/A	Gorno-Badakhshan

10	Sustainable Use of Natural Resources in Central Asia	German Federal Ministry for Economic Cooperation and Development	GTZ	Land management, protection of biodiversity and water resources, climate change	2002 – 2013	N/A	Tajikistan
11	Transboundary Water Management in Central Asia	German Federal Foreign Office	GTZ	Building expertise and management capacities of regional water management institutions	2009 – 2011	N/A	Tajikistan
12	Regional Rural Water Supply and Sanitation Project	Swiss Agency for Development and Cooperation	International Secretariat for Water Resources (Canada)	Rehabilitating or building new village water supplies	2004 – 2011	US$ 5.6 million	Sughd Province (and Andijan and Ferghana Provinces, Uzbekistan,)
13	Southern Tajikistan Water Rehabilitation Project	EBRD	State Unitary Enterprise "Khojagiyu Manziliyu Kommunali"	To improve water supply and sanitation	4/2010 – 4/2011	US$ 6.17 million	Southern Tajikistan
14	Ferghana Valley Water Resources Management Project	World Bank	Ministry of Amelioration and Water Resources	Public Administration; law and justice; agriculture, fishing, and forestry ; water, sanitation and flood protection	7/2005 – 5/2011	US$ 14.17 million	Sughd Province
15	Integrated Water Resources Management in Fergana Valley Project (Phase IV)	Swiss Agency for Development and Cooperation	Interstate Commission for Water Coordination of CA, International Water Management Institute	Land productivity and fair water distribution and Construction of water measuring devices	5/2008 – 12/2010	US$ 3.7 million	Tajikistan (and Uzbekistan and Kyrgyzstan)