Agricultural Activities, Water, and Gender in Tajikistan's Rural Sector:

A Social Assessment of Konibodom, Bobojon Ghafurov, and Yovon

THE WORLD BANK | WATER RESOURCE MANAGEMENT PROJECT (FVWRMP) | GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN FERGHANA VALLEY

Agricultural Activities, Water, and Gender in Tajikistan's Rural Sector:

A Social Assessment of
Konibodom, Bobojon Ghafurov, and Yovon

World Bank | Government of the Republic of Tajikistan
Ferghana Valley
Water Resources Management Project (FVWRMP)
August 2009

Table of Contents

Acknowledgements	v
Glossary of Terms	vi
Executive Summary	vii
Purpose, Scope, and Impact	vii
Summary of Findings	vii
1. Background, Rationale, and Methodology	1
1.1 Introduction	1
1.2 Social Assessment Focus	2
1.3 Social Assessment Methodology	2
1.4 Previous Studies on Tajikistan's Rural/ Agricultural Sector	3
1.5 Organization of the Report	4
2. Socioeconomic Conditions, Access to Land, and Agricultural Activities	5
2.1 Introduction	5
2.2 Demographic Profile	5
2.3 Migration	6
2.4 Employment	7
2.5 Income and Subsistence	7
2.6 Access to Land	8
2.7 Farming Practices and Possession of Livestock	11
2.8 Gender and Agricultural Activities	12
2.9 Summary of Main Findings	14
3. Access to Water and Structure of Water Provisions	15
3.1 Introduction	15
3.2 Background	15
3.3 Institutional Setting	16
3.4 Access to Water and Water Shortages	18
3.5 Consequences of Water-Related Difficulties	21
3.6 Water Conflicts	23
3.7 Summary of Main Findings	24
4. Water Users Associations	26
4.1 Introduction	26
4.2 Institutional Background	26
4.3 WUAs Covered in This Study	27
4.4 Demonstrated Benefits of WUAs	28
4.5 Challenges to the Operation of WUAs	29
4.6 Summary of Main Findings	32

5. Synthesis of Findings and Recommendations	33
5.1 Introduction	33
5.2 Agricultural Activities, Water, Gender, and Poverty: A Structural Analysis.....	33
5.3 Improving the Water Provision Structure	40
Annex A: Supplementary Notes on Methodology.....	45
A.1 Quantitative Survey Methodology	45
A.2 Qualitative Methodology	47
A.3 Calculation of Household Income Measure.....	48
Annex B: Supplementary Notes on Methodology.....	50
B.1. Introduction.....	50
B.2. Water Resources, Distribution Channels, Drainage Networks, and Melioration.....	50
B.3 Legal Basis of Water Management and Provision	52
B.4 Water Resources Management Institutions	53
B.5 Current Water Resources Management Difficulties	56
B.6 Water Users Association.....	60
References	66
Annex C: Survey Instruments.....	69
C1. Questionnaire	69
SECTION A: Household Information.....	71
SECTION B: Information on land and agricultural activities	73
SECTION C: ACCESS TO WATER	76
SECTION F: Miscellaneous	85
C.2. Focus Group Discussion Issues	87
Annex D: Tables	90
Age and Literacy	90
Migration.....	92
Employment	94
Income and Borrowining	96
Land	100
Agricultural Activities.....	109
Gender	115
Access to Water	116
Water Users Assocaitons.....	129

Tables:

Table A.1.1: Sample breakdown in Bobojon Ghafurov.....	46
Table A.1.2: Sample breakdown in Konibodom.....	46
Table A.1.2: Sample breakdown in Yovon.....	47
Table A.2.1: List of interviewees in Konibodom, Ghafurov, and Yovon.....	48
Table B.4.1: Water resources management institutions staff and salaries by district.....	55
Table B.5.1: Bobojon Ghafurov water infrastructure repairs and maintenance operations in 2006.....	57
Table B.5.2: Access to water for free and willingness to pay for water	58
Table B.5.3: Water Users Debts to Water Suppliers as of May 1, 2007 (in Somoni)	58
Table B.5.4: Debts of water suppliers as of April 1, 2007 (in Somoni).....	58
Table B.5.5: High ground water level in agricultural enterprises.....	59
Table B.5.6: High ground water level on presidential lands.....	59
Table B.5.7: High ground water level in villages (in %).....	60
Table B.6.1: WUAs established through Farms Privatization Support Project funded by the World Bank	65
Table B.6.2: WUAs established through Rural Infrastructure Rehabilitation Project of the World Bank	66
Table D.1: Age.....	90
Table D.2: Ability to read and write	90
Table D.3: Total years of schooling	91
Table D.4: School Attendance	91
Table D.5: Households with migrants in the last five years.....	92
Table D.6: Return of migrants.....	92
Table D.7: Purpose of Migration	93
Table D.8: Total value of remittance the household has received in the past year.....	93
Table D.9: Impact of Migration.....	93
Table D.10: First, second (part-time), third, and overall important employment.....	94
Table D.11: First occupation by sex across the three districts	95
Table D.12: Borrowing in 2006.....	96
Table D.13: Main reason for borrowing/obtaining lone(s).....	97
Table D.14: Mean and median household income by district.....	98
Table D.15: Annual income quintiles by district.....	98
Table D.16: Change of family income in the last three years.....	98
Table D.17: Own estimate of family's financial status	99
Table D.18: Size of house garden and presidential land.....	100
Table D.19: Percentage of land cultivated	100
Table D.20: Reason for not cultivating all house garden	101
Table D.21: Reason for not cultivating all presidential land	102
Table D.22: Land documentation for house garden is under this person's name	103
Table D.23: Documentation for presidential land is under this person's name	103
Table D.24: Sex of document holder for house garden.....	104
Table D.25: Sex of document holder for presidential land	104
Table D.26: Experienced land restructuring of the Kolkhoz/Sovkhoz, JSC, or large collective farm.....	104
Table D.27: Possession of individual or multi-family farm.....	105
Table D.28: Total area of individual or multi family farm in sotiq.....	105
Table D.29: Type of document for individual or multi family farm.....	105
Table D.30: Sex of person on document for individual/multi-family land	105
Table D.31: Reason why people in your area did not get shares in big farm	106

Table D.32: Reason why people in your area did not get house garden	107
Table D.33: Reason why people in your area did not get presidential land	108
Table D.34: Household's agricultural activities.....	109
Table D.35: Main difficulties in increasing agricultural production	110
Table D.36: Access to machinery	111
Table D.37: Agricultural activities on house garden.....	112
Table D.38: Agricultural activity on presidential land	113
Table D.39: Livestock assets.....	114
Table D.40: Division of labor on household plot/presidential land	114
Table D.41: Division of labor on Khojagii Dihqonii Kollektivi, JSC, Kolkhoz/sovkhoz, or other joint farms	115
Table D.42: Women's wages lower than that of males.....	115
Table D.43: Do you think in the last ten years women have become poorer as compared to men in your village?	115
Table D.44: Do you think women are often coerced to do very low paying work (such as picking cotton) on the farms?	116
Table D.45: Access to or use of various sources of water for house garden and home use	116
Table D.46: Main uses of various sources of water for house garden and home use	117
Table D.47: Frequency of access to water for house garden and home use	118
Table D.48: Satisfaction with quality of water for house garden and home use.....	119
Table D.49: Satisfaction with amount and reliability of water used for house garden and home use	120
Table D.50: Who provides the water for house garden/home use.....	121
Table D.51: Reasons for use of this source of water for house garden/home use.....	122
Table D.52: Storing water at home.....	123
Table D.53: Access to water for presidential land, individual farm or multi-family small farm	124
Table D.54: Cost of water for presidential land, individual farm or multi-family small farm from canal/streams/river.....	124
Table D.55: Satisfaction with water quality for presidential land, individual farm	125
or multi-family small farm.....	125
Table D.56: Availability/frequency of water from canals, streams or rivers.....	125
for presidential land, individual farm or multi-family small farm	125
Table D.57: Provider of water for presidential land, individual farm or multi-family.....	126
small farm from canal, streams, or rivers.....	126
Table D.58: Outcome of water going through a neighboring farm.....	127
Table D.59: Is there any water conflict in the village and if there is how is it solved?	128
Table D.60: Do you think in your village some people have more/less access to water?	128
Table D.61: Has the high level of water table caused illness in your village?.....	129
Table 62: Impact of WUA.....	129
Table D.63: Willingness to establish WUA	130
Table D.64: Representing family in WUA or member of WUA	130

Acknowledgements

This Social Assessment (SA) was prepared by a team of consultants supervised by Helen Shahriari (ECSSD). Funding for the SA was provided by Bank-Netherlands Water Partnership Program (BNWPP). Pooya Alaedini (consultant and faculty member of the University of Tehran) was lead consultant and prepared the final report. Firouzeh Afsharnia (consultant) was in charge of the focus group discussions and interviews and contributed to the report. Anne Kuriakose (BNWPP consultant) participated in one field visit, organized some of the focus group discussions, and provided comments on the report. Local consultants Saidali Vohidov and Latif Hadiazoda assisted with field work on the qualitative and institutional parts of the SA. Agency Nau in Khujand carried out the field work for the quantitative survey. Peer reviewers were Nora Dudwick (PRMPR) and Wendy Wakeman (MNSSD). The report benefited from the assistance of Beulah Nobel (ECSSD).

The team is grateful to Usaid El-Hanbali (project TTL during the SA preparation) and management and staff of the Fergana Valley Water Resources Management Project (FVWRMP) in Tajikistan. The team also wishes to thank the World Bank staff in Dushanbe for assistance during repeated visits to Tajikistan, especially Bobojon Yatimov, Janna Yusupjanova, and Takhmina Mukhamedova.

Glossary of Terms

<i>Dihqon farm</i>	General term for larger collectives and farms belonging to one or more families
<i>Dirams</i>	Equal to 1/100 of a somoni
<i>Hashar</i>	Collective help
<i>Hawz</i>	Small cistern
<i>Hukumat</i>	General term for government, usually local types
<i>Jamoat</i>	Self-governing village-level unit
<i>Khojagi</i>	General term ambiguously used to both denote a household and a farming unit
<i>Kolkhoz</i>	Soviet collective farm organized as a cooperative
<i>Mahalla</i>	Neighborhood or settlement
<i>Mirob</i>	Water-monitoring technician
<i>Nohiya</i>	District
<i>Oblast</i>	Previous name for viloyat, referring to a province
<i>Rais</i>	Head
<i>Raion</i>	Previous name for nohiya
<i>Raivodkhoz</i>	Water authority at the nohiya (raion) level
<i>Somoni</i>	Tajik currency equal to around 0.3 US\$ at the time of the survey
<i>Sotiq</i>	100 square meters
<i>Sovkhoz</i>	State collective farm under the Soviet system
<i>Viloyat</i>	Province
<i>Vodkhoz</i>	Water authority

Executive Summary

PURPOSE, SCOPE, AND IMPACT

This social assessment (SA) was conducted under the Fergana [Farghona] Valley Water Resources Management Project (FVWRMP), which is providing assistance to the Government of Tajikistan to address irrigation and drainage deficiencies in eastern Sughd. The main SA objectives were to understand how prevailing structures of water provision, land reforms, and gender relations impact rural livelihoods; to analyze experiences in establishing inclusive Water Users Associations (WUAs); and to provide recommendations to FVWRMP with the aim of enhancing its programs.

The SA targeted nine jamoats divided equally among Bobojon Ghafurov, Konibodom, and Yovon districts. The two northern districts were covered by FVWRMP and the Farm Privatization Support Program (FPSP) operated in the southern district (Yovon). Yovon's jamoats were selected specifically to analyze their WUAs formed in conjunction with farm privatization carried out under FPSP. Due to the limited number of community-based water management initiatives in the above-mentioned target areas, other WUAs were included in this study. A survey questionnaire was administered to 1275 households. Fifteen focus groups (mostly-female) and 38 in-depth interviews (with officials from districts hukumats, jamoats, State Water Resources Departments, agricultural enterprises, WUAs, and NGOs) were also conducted.

The SA results raise stakeholder awareness of the main water-related issues faced in the target areas as well as the major factors influencing WUA operations. While some of the study's recommendations are beyond the scope of FVWRMP and must be dealt with through other initiatives, as a response to the SA findings, the project is now aiming to continue its work on the rehabilitation of irrigation networks, drainage systems, and reservoir dykes and to emphasize institutional development through establishing water users associations and issuing land use certificates.

SUMMARY OF FINDINGS

Socioeconomic Conditions, Access to Land, and Agricultural Activities

Demographic profile

In the study area, traditional forms of family structure and a very young population are observed. Some 17 percent of households are female-headed. Literacy rates are quite high with no discernable difference between men and women, but a significant percentage of children are not attending school now and it appears that the educational opportunities available to women in earlier times may not be available for the present generation.

Migration

Seeking work is the main reason for migration. Remittances sent home by migrant workers constitute a significant share of household incomes and are the most important positive outcome of migration. Among the 1275 sample households, on average, less than 1 person per household has migrated in the past five years and around 0.4 person per household has returned. The absence of migrants may have a

number of negative impacts including loss of technical know-how. Most migrants are male but more than five percent of sample households across the three districts have female migrants. Women are not more empowered when male migrants are absent from the household if there are other males who de facto become household heads. Despite this, migration as a survival strategy is an increasingly attractive option in response to the debilitating matrix of factors at home, including water management system failures that challenge organic and local solutions to earning a livelihood in favor of external strategies.

Employment

Most male household members are self-employed in non-farm businesses, followed by trade, industry, and transport/services and agricultural wage labor. For female household members, the most important occupations are homemaker, agricultural wage laborer, trade, industry, and services employee, and household plots/presidential lands worker. The most important second and third occupations in the sample comprise work on household plots/presidential lands. Household plots are significant for food security and providing supplementary household income. Typical household livelihood strategies, especially among women, include a mix of formal sector employment and small-scale commercial cultivation. Women's employment opportunities are limited to large farm labor and a few informal sector activities, in addition to their work on household plots and presidential lands.

Income and subsistence

Slightly more than ten percent of household incomes is earned from wage labor on large farms and less than ten percent is derived from pension or social assistance. The rest of household earnings are divided evenly among non-agricultural activities, work on household plots/presidential lands, and remittance. The mean annual household income is 5,189 somonis and the median is 4,550 somonis. Generally, people in the study area believe that incomes have stagnated or declined in the past few years in purchasing power terms. Opportunities for formal borrowing for productive purposes are scarce or nonexistent; so whatever borrowing takes place is informal.

Access to land

The state has been reluctant to relinquish control over prime as opposed to marginal farmlands. Breaking up or renaming former kolkhozes and sovkhoses into collective farms has not increased farmer control over land through land shares. About one-third of households in the quantitative survey have members who work on large collective farms. Three-quarters of these households report not having shares and the rest report little control over their shares. In non-cotton-producing areas there is some evidence of more meaningful land reform. Almost all households across the three districts have household plots with a median size of 5 sotiqs. Slightly more than 80 percent of household lands are cultivated and close to 70 percent of households cultivate all of their household plots. Yet, only about 40 percent of households have presidential lands (with a median size of about seven sotiqs). Close to one-third of the total area of these lands is not cultivated due to lack of access to water or other difficulties. Few single- or multi-family dihqon farms exist and most are concentrated in Yovon. Yet, sometimes as an additional incentive to work on cotton farms, a tiny piece of the collective farm is loaned to workers to cultivate as they wish and these arrangements prove beneficial due to the autonomous choice of crop and proximity to water, in spite of the modest plot size.

Farming practices and livestock ownership

Given the current prices and lack of access to water on personal plots, farmers are reluctant to produce cotton on lands they directly control. Therefore cotton production is sustained only through state quotas

on large farms and farmers tend to raise grains, fruits, cotton, or livestock, when they have the choice. Most households believe that their recent production has decreased or remained the same and attribute this to difficulties such as limited access to water in some areas, poor soil conditions, a rising water table, high cost of inputs, and lack of machinery. Water scarcity is more significant on presidential lands compared to household plots. Despite the importance of livestock to overall household livelihood strategies, livestock assets are modest and mostly concentrated in Yovon.

Gender and agricultural activities

Many women are engaged in low-wage, basic cotton work on large farms, where lack of infrastructure and machinery means that most work is performed by hand. Some instances of implicit coercive practices may occur with regard to basic cotton work performed by women on large collective farms but, for the most part, the structure of village economy and lack of alternatives push women to accept hard work for little remuneration on collective farms. Women's wages are generally lower than men's most often due to gender-differentiated tasks on large collective farms. Cash and in-kind wages are below subsistence level. There is no evidence of official gendered land-titling practices. However, household plots and presidential lands are usually registered to the head of household, most often male. Land shares on large collective farms do not exist in any real sense, but men and women have equal chance of exercising some kind of claim to them.

Challenges to most important livelihood means

Personal farming activities on household plots and presidential lands generate more household income than cotton farm work, but personal farming is affected by land location, soil quality, and water access, and constrained by taking place on the fringes of cotton farming on large farms, which limits resources otherwise utilized to enhance personal food security. Present regulations discourage privatization of irrigated lands while new allocations for household plots are limited.

Access to Water and Structure of Water Provision

Main water problems

Following Tajikistan's independence rural infrastructure has fallen into terrible conditions due to the combined effects of an end to Soviet-era agricultural subsidies, a devastating civil war, years of neglect, and state water authorities' scarce resources. Derelict irrigation and drainage networks and failing lift technology have resulted in considerable water loss and rising water tables. Water-logged soils due to non-functioning melioration infrastructure have rendered large land areas impossible to cultivate. Neglected drainage systems can no longer manage water runoff, leading to floods, erosion, soil salinity, and declining yields. Waterway contamination is widespread due to upstream activity, pesticides, rampant pollution, and little regulation of the agricultural and industrial sectors.

Water subsidies under the former state system and more recently by large farms that in sense trade water for labor have created the illusion that water is a free public good. Also, the crisis in the agricultural sector and the collapse of irrigation and drainage systems have constrained user resources and diminished their will to support local water authorities, so that water fee collection rates are only around 50 percent. The water management system is facing serious funding shortages, and reforms to introduce market mechanisms have created ambiguities about responsibilities for secondary and tertiary infrastructure.

Water is allocated to each collective farm based on the number of hectares devoted to cotton cultivation. Because villagers get their water from canals used to irrigate the cotton fields, they are locked into the existing cotton production arrangements even though they could earn more income from raising fruits and vegetables. Furthermore, since drinking water provision was not explicitly planned for when the irrigation infrastructure was developed, it remains a pressing need for people and livestock, especially during the winter months. Not only do people suffer from the inadequate and degraded state of the networks and widespread infrastructure failures, but also from disparities in access to water due to structural, geographic, and seasonal factors, all of which threaten their livelihoods.

Impacts of water problems

Due to problems associated with water access and quality, household food security is threatened, nutritional status is declining, and literacy rates are dropping. Due to water-logging in some areas and water shortages in others, large areas of arable land cannot be cultivated, and valuable hours are lost compensating for household water shortages or system maintenance to prevent flooding.

In the face of rising poverty and lack of income-earning opportunities, households increasingly rely on personal farms for food security and surpluses to barter or sell as well as raising livestock. But these livelihood strategies are threatened by the persistent emphasis on irrigating large-scale cotton farms, failing infrastructure, and poor water quality. Farmers have recently witnessed stagnation or decline in their agricultural yields and incomes, in no small part related to their water problems.

Canals remain the primary source of household water despite high levels of contamination, causing significant human suffering and draining already meager household resources. Women in particular lose an inordinate amount of productive time to procuring and transporting water, and children who are taken out of school often spend hours queuing for water. Meanwhile entire communities devote productive time to cleaning irrigation system drainage overflows and preventing flooding.

Water conflicts

Household water often arrives through a large farm or a neighboring small farm, which means that individual households have no control over their own water supply. As a result, conflicts related to water access and flow are rampant among households, villages, and regions. Inter-village disputes about water allocation and drainage are directed towards mirops of the Vodkhoz or sometimes resolved through ad hoc water diversion. Intra-village water disputes may be dealt with through neighborhood mechanisms, or remain unresolved.

Water Users Associations

Demonstrated benefits of Water User Associations and their minimum requirements

The demonstrated benefits of Water User Associations (WUAs) include a more systematic and equitable water monitoring process, higher rates of fee collection, increased yields and incomes, and enhanced food security. However, the state of water infrastructure and the slow pace of land reforms create obstacles to ongoing attempts at local water management since community-based initiatives require a minimum base of operation and water delivery capacity that are lacking in Tajikistan. In general, the traditional top-down pattern and cultural internalization of authority collude to undermine independent community-based initiatives. Thus, official efforts are needed to curb the influence of the local hukumats and increase transparency and accountability in water access and use.

Donor disengagement and financial difficulties

WUAs often fail to meet their obligations after donor organizations depart. They may not be able to sustain engagement with their members or maintain an ongoing ownership identity among them. Furthermore, whereas longer-term WUA operations must be financially sustainable, tariff collection rates are often too low to maintain the irrigation system.

Lack of front-end development, expertise, technology

Community-based maintenance and management initiatives are not successful without some front-end work by state organizations to enhance water infrastructure. WUAs have wide resource and capacity gaps due to water fee collection shortfalls, depleted technical resources, and little infrastructure ownership. Technical expertise is scarce in rural areas due to large-scale migration of skilled technical workers, the breakup of large kolkhozes, and farm debts while funding shortages prevent WUAs from accessing technological inputs.

Insufficient inclusion of women

Female participation in WUAs is hampered by their traditional role and multiple livelihood strategies. Despite examples of women's participation and lack of formal institutional barriers, evidence suggests that most rural women avoid active involvement in decision making, which hampers their inclusion in WUA structures. Women do not participate in community-based water management initiatives proportionate to their burden of livelihood maintenance, the rising trend of female-headed households, or their direct interest in improving water provision.

Summary of Recommendations

Land rights

In cotton-producing areas, a relatively closed cycle of low wages and low productivity has been established that locks many rural households in lives of poverty. Land tenure inequalities preserve this poverty cycle while the exogenous factor of migrant remittances relieves it. Land reforms are thus needed to equitably distribute control over prime (versus marginal) lands now under the control of collectives to lay farmers and allow them to engage in agricultural activities that increase food security, improve arability of land, enhance production, and mitigate environmental effects. Furthermore, land rights must be augmented with access to credit, infrastructure, technology, and know-how as well as to education and health services. Furthermore, while the recognition of land rights through an overhaul of the structure of collective farms, as well as proper water and drainage management and provision of infrastructure may be hypothesized to strengthen the position of women, these will still not be adequate unless all development programs in the study area target women specifically.

Water institutions and fee collection

The state should redefine roles and responsibilities for institutions that administer water resource operations, and create new local-level institutions to fill the void created by privatization. Water fee collection must be re-examined and improved through community-based initiatives. Fairness and rate stability may be maintained by developing a clear mechanism for agreement between water suppliers and users.

Water for household consumption

Comprehensive national guidelines and regulations are required to control, limit, and reverse damages as a result of pollution and runoff from industry and farmlands. Local solutions to address villagers'

multiple-use water allocation needs through targeted measures should be developed in collaboration with water authorities and community-based water initiatives. Organic village arbitration and monitoring initiatives at access points should also be encouraged toward an equitable water distribution.

Requirements for optimal operation of WUAs

Optimal WUA functioning can be achieved only by enacting meaningful land reforms and removing distortions in the cotton sector. Furthermore, institutions that support the operation and viability of WUAs must be strengthened, public spending on maintenance and management of infrastructure must be increased, and technical expertise and technology must be provided. To increase success rates among WUAs and sustain community engagement, more resources must be allocated to front-end development. For example, seed money is needed to set up information and data management systems, to provide technology for water gauging and regulating equipment, and to supply logistical support. A re-examination of regulations pertaining to WUA financial and technical solvency are also needed with the aim to grant certain tax exemptions and to provide long term, low cost loans for the provision of expertise or technology.

Local empowerment, sensitization, and improving knowledge base

Community-based initiatives require using and strengthening local institutions. Mahalla committees provide a good base from which to mobilize bottom-up construction of WUAs and other community-based initiatives. Public awareness must be raised about the livelihood benefits of participatory water management. Dialogue and greater interest in effective WUA participation must be encouraged to enhance community knowledge base.

Accountability and trust

Since previous organic initiatives were undermined by corruption and mistrust of authority, fostering accountability and trust is crucial. Transparency must be maintained through processes such as democratic elections by secret ballot, an open-book policy for member inspection, public discussion of policies, and full financial disclosure to members.

Inclusion

Women's participation is challenged by structural factors, despite the lack of significant formal barriers. There is still considerable work to be done to encourage women water users to participate in Water Users Associations. Inclusion strategies for women could build on specific outreach programs and on mahalla village structures.

Creating a two-tiered WUA structure

WUAs should include two levels—the WUA and legal entities as members at one level and water user groups (WUGs) at the second level as members of WUA. The WUGs could be organized around provision of drinking water, maintaining drainage pumps, among others. Such bottom-up WUG organizing could generate local organizational experience and serve user-identified needs at watercourse and village level (e.g., ensuring that household plots, water storage cisterns, and individual presidential land plots get allocations). Furthermore, a federation of WUAs is required to address the competing interests among various WUAs along the canal and increase their influence in relation to the local water authorities.

1. Background, Rationale, and Methodology

1.1 INTRODUCTION

Tajikistan is a landlocked mountainous country in Central Asia with a surface area of some 143,000 square kilometers and a population of around 6.7 million.¹ The country suffered a long and devastating civil war during the 1990s that left tens of thousands of people dead and displaced several hundred thousand more. Since the war ended and the first democratic elections were held in 1999, Tajikistan has experienced a respectable annual GDP growth rate of around eight percent.² Yet, despite recent improvements, poverty headcount ratio (\$2 a day, PPP) in Tajikistan stands at 42.8 percent.³ Furthermore, the overall poverty rate for the provinces with the most populations and the highest incidences of poverty, Khatlon and Sughd, stood at 64 and 78 percent respectively in 2005.⁴ Tajikistan ranked 122nd out of 177 counties in terms of human development index in 2006.⁵

Tajikistan has rich water resources but scarce arable lands which are concentrated in the Farghona Valley and Khatlon. Most of the country is mountainous; so agricultural development is restricted by land scarcity and the high cost of water delivery to the fields. Nevertheless, agriculture plays an important economic and social role in the life of most Tajiks—three-quarters of the population are in rural areas and most of the labor force is directly engaged in agriculture. Across Tajikistan, most agricultural activity consists of irrigated farming, followed by rain-fed production. Cotton-farming constitutes 11 percent of gross domestic product (GDP) and contributes over 20 percent to total export revenues.⁶

The Farghona Valley is a rich and fertile region that is now shared by the Republics of Tajikistan, Kyrgyzstan, and Uzbekistan. Tajikistan's portion of the valley (named after the ancient but larger region of Sughd or Sogdiana) has the most fertile soil, the most abundant surface- and ground-water sources, and the highest population density of any region in the country. An unfortunate by-product of Tajikistan's profound political and economic changes in the past decade and half has been underinvestment in the water supply system. The irrigation and drainage networks of the Farghona Valley, Khatlon, and elsewhere in the country have fallen into disrepair, creating water shortages, water-logged soils, reduced soil fertility, and decreased crop yields. This has reduced total irrigated land in the Farghona Valley by a significant factor, affecting the lives of around two million local residents.

Against this background, the Government of Tajikistan has sought World Bank assistance to implement the Fergana [Farghona] Valley Water Resources Management Project (FVWRMP), which aims to (i) enhance productivity of irrigated agriculture and increase the incomes of about 250,000 people by improving land and water management; and (ii) improving regulation and dam safety of the Kairakkum reservoir and the efficiency of water management at the basin level.⁷

¹ World Bank general data on Tajikistan.

² Ibid.

³ Ibid.

⁴ World Bank, *Republic of Tajikistan Poverty Update*, 2005.

⁵ UNDP, *Human Development Report*, 2006.

⁶ World Bank, *Tajikistan Country Brief*, 2005.

⁷ See World Bank, *FVWRM Project Appraisal Document*.

This social assessment (SA) was conducted to inform the World Bank and the Government of Tajikistan on the interplay of social and institutional aspects of water, agricultural activities, and gender as major issues affecting FVWRMP implementation. The SA target areas were two districts (nohiya) in Sughd covered by FVWRMP, and a district in Khatlon used to compare and complement the information. The overall SA goal was to ensure that FVWRMP responds to the needs of rural people, farmers, and water users. The assessment built on earlier studies on water use, land tenure, and farming practices to see how existing structures of water provision, land reforms, and gender relations affect rural livelihoods.

1.2 SOCIAL ASSESSMENT FOCUS

The SA investigated the FVWRMP target areas—Konibodom and Bobojan Ghafurov in the Farghona Valley—in more detail and among a wider range of beneficiaries. It also covered Yovon, a district in the South. Based on the SA results, this report analyzes current agricultural practices and land tenure, drainage and water provision systems, gender relations in agricultural production, and poverty and vulnerability. It focuses on the level of household access to drinking and irrigation water from various sources as well as the impact of the current water situation on target households and on women. Water users associations (WUAs) have been proposed as a mechanism to deal with the institutional void in water provision and some have been established in the SA coverage area. The report analyzes the structure of existing WUAs, their levels of success, and their shortcomings. Finally, the report probes some of the cross-cutting and side issues that are important to understanding the SA's main areas of focus—gender dimensions of land-titling and the impact of labor out-migration on rural households and on women as well as family structures, employment, and incomes.

1.3 SOCIAL ASSESSMENT METHODOLOGY

In each district covered by the SA, the research team selected three jamoats (sub-districts) to ensure diversity in terms of donor projects, land reforms, agricultural practices, water and drainage conditions, and the existence of water users associations. Two jamoats in each of the three districts were covered by either FVWRMP or Farm Privatization Support Program of the World Bank, as detailed below.

- *Ghafurov*: Qataghon and Isfisor (under FVWRMP) and Ovchikalacha (non-project)
- *Konibodom*: Lohuti and Sharifov (under FVWRMP); and Ortiqov (non-project)
- *Yovon*: Ozodi and Chorgul (under Farm Privatization Support Program); and Obi-Muki (non-project)

Yovon's jamoats were selected specifically to analyze their WUAs formed in conjunction with farm privatization carried out under FPSP. Since the target areas listed above had so few community-based water management initiatives, WUAs from elsewhere were included in the quantitative and qualitative assessments. The quantitative assessment used a survey of 1,275 households randomly selected and equally divided among the districts. The qualitative assessment used 38 key informant interviews (with officials from districts hukumats, jamoats, State Water Resources Departments, agricultural enterprises, WUAs, and NGOs) and 15 focus-group discussions. Participation of females in the focus groups was specifically emphasized to allow for a thorough gender analysis while being cognizant of its implication

for representativeness. An institutional analysis was also conducted through an in-depth literature review as well as through interviews with aforementioned key informants. More information on SA methodology is in Annex A. Survey instruments are in Annex C.

1.4 PREVIOUS STUDIES ON TAJIKISTAN'S RURAL/AGRICULTURAL SECTOR

Few government and/or international organization studies are available in Tajikistan regarding agricultural production or rural socioeconomic conditions.⁸ All highlight the difficulties faced by the rural/agricultural sector since independence, including difficulties related to land, infrastructure, and water with their negative impacts on livelihoods and social and gender relations. These studies report low agricultural productivity and widespread rural poverty, primarily due to deteriorating agricultural infrastructure, inefficient land and water exploitation, sub-optimal state cropping plans, and lack of auxiliary agricultural services or credit. Nevertheless, these studies expect that, under favorable conditions, improvement in land tenure, water provision, and infrastructure will allow the agricultural sector to experience robust growth in productivity and output.

Land restructuring has been a major ongoing issue in the agricultural sector and the Tajik government has opted for a gradual process of transforming old-style kolkhozes and sovkhoses into smaller land holdings and other entrepreneurial market-based entities. However, studies on land reform in Tajikistan generally conclude that until now farm restructuring has been more or less cosmetic. There has been a great deal of reluctance to relinquish control over prime farmlands and little shift of land tenure to households.⁹ By end-2005, of the 380,000 hectares of land reformed into private farms, only 30,000 hectares were irrigated farmland, of which 18,000 hectares were under World Bank's 10 pilot farm projects.¹⁰ Even where land rights were transferred, tenure security remains weak. Furthermore, a recent draft report¹¹ prepared for the World Bank on knowledge, attitudes, and farmer practices regarding land restructuring indicates that less than half of the surveyed farmers believed themselves to have a good knowledge of land reforms; women farmers were considerably less knowledgeable than their male counterparts. Farmers also believed they had no decision making power regarding cultivation of cotton versus other crops, even when some land rights existed.

Most gender studies in Tajikistan concur that widespread changes in the country since independence have more negative effects on women than on men. Thus women have become among the most vulnerable groups in the rural sector while male migration trends have resulted in many female-headed households--this against the background of Tajikistan's traditional, male-dominated society. An

⁸ See, for example, World Bank, "Republic of Tajikistan Poverty Assessment Update," 2005; World Bank, "Tajikistan Poverty and Social Impact Analysis of Cotton Farmland Privatization," 2004; H. Shahriari, "Social Assessment for Second World Bank Alleviation Project in Tajikistan," Draft report prepared for the World Bank, 2001; SECO/World Bank, "Priorities for Sustainable Growth: A Strategy for Agricultural Sector Development in Tajikistan," 2006; Temelsu Company, "Fergana Valley Water Resources Management Project: Agriculture and Agro-Economic Systems Report," Prepared for FVWRMP, 2005.

⁹ See for example, World Bank Fergana Valley Water Resources Management Project, "Rapid Social Assessment," Draft Report, 2005.

¹⁰ World Bank, "Implementation Completion Report, Farm Privatization Support Project", Report No. 36487, June 2006.

¹¹ World Bank, "Results of a Baseline Survey and Qualitative Analysis of Knowledge, Attitudes, and Practices of 1500 Farmers in 15 Tajikistan Raions Concerning Land Use Rights and Farm Restructuring," Draft report, August 2007.

estimated 18 percent of households are headed by women and half of them are considered very vulnerable. Many women in the rural areas are active in cotton production with little pay. Furthermore, privatization is believed to have had an overall negative impact on women as men have controlled the process.¹²

Although Tajikistan has some of the most important global water resources, potable and irrigation water provision has become a central impediment to rural development. Recent water-related problems coupled with difficulties in land tenure are primary factors in rural poverty and its disproportional impact on women. In 2004-05, during project preparation for the FVWRMP and as a precursor to this study, a BNWPP-funded Rapid Social Assessment (RSA)¹³ was conducted that focused on poverty and social conditions among target area inhabitants, their traditional water use, and effects of recently-established WUAs. The RSA confirmed that better water management improved local people's quality of life and their willingness to pay tariffs, but also that WUAs face serious financial constraints, poorly developed organizational structure, large-scale out-migration of technical staff, and underdeveloped legal and institutional capacity including limited land tenure. The RSA highlighted the slow progress of agricultural reforms and privatization, government's reliance on cotton as a cash crop, and mounting debt to domestic and foreign futures companies as reasons for little improvement in the lives of most farmers, who continue to labor under the persistent but deteriorating old organizational structures. The RSA concluded that better water management would improve the yields of family gardens as well as the drinking water supply, thus enhancing livelihoods and reducing exposure to water-borne diseases.

1.5 ORGANIZATION OF THE REPORT

This report is divided into five main parts and a set of annexes. This first part has discussed the background and methodology of the social assessment. The next part analyzes general socioeconomic conditions of surveyed households (including family structure, employment, income, and migration) on the one hand and their agricultural activities and access to land on the other. The next two parts of the report deal with the structure of water provision and water users associations. Each section draws on results from the quantitative and qualitative assessments. Section five synthesizes all findings and offers a set of recommendations. The annexes provide survey instruments and more information on methodology. Furthermore, to keep the main body of the report short, the institutional analysis of water and quantitative tables are also placed in the annexes.

¹² See I. Akimushkin, "Economic Rights and Opportunities of Tajik Women," Draft report prepared for the World Bank, undated; J. Falkingham, "Women and Gender Relations in Tajikistan," Prepared for the Asian Development Bank, 2000; Asian Development Bank, "Women in Tajikistan," 2000; UNDP, "Tajikistan: National Status Report on Women," 1999.

¹³ Fergana Valley Water Resources Management Project, "Rapid Social Assessment," Draft Report, 2005.

2. Socioeconomic Conditions, Access to Land, and Agricultural Activities

2.1 INTRODUCTION

This part of the report first summarizes general socioeconomic findings from quantitative and qualitative assessments; topics include general demographic profile, migration, employment, and income. It then examines households' access to land; their agricultural activities on household plots, presidential lands, and single and multi-family dihqon farms; and their land shares and agricultural activities on collective farms. The last section before a summary of main findings discusses the gender aspects of agricultural activities.

2.2 DEMOGRAPHIC PROFILE

The rural populations of Konibodom, Ghafurov, and Yovon were 128,900, 242,500, and 130,900 respectively when the survey were conducted. Total populations of villages in the target jamoats were 69,684 in Konibodom, 64,109 in Ghafurov, and 68,508 in Yovon. Ghafurov (as well as Konibodom) has a significant Uzbek population who are Tajik citizens. Uzbek households comprised more than half of the quantitative sample. Inhabitants of the three investigated districts were quite young, reflecting high birth rates across Tajikistan (see Table 1, Annex D). The average age of sample household members was 26 and their median age was 22. Households included large percentages of extended family members such as sons- and daughters-in-law, grandparents, grandchildren, aunts, and uncles—exhibiting the high prevalence of extended family structure in the districts.

While the majority of households were male-headed, the proportion of female-headed household, at 17 percent of the total, was significant. Female-headed households were more prevalent in Ghafurov and Konibodom than in Yovon. This observation together with sex ratio figures found through the survey in Ghafurov and Konibodom (uncharacteristically more females than males) could be due to significant male migration in these two districts and perhaps more gender-balanced migration in Yovon (see discussion on migration below).

Literacy rates were high in the sample as is well-known in Tajikistan, although some five percent of the sample in the relevant age range could not read and write—four percent of males and six percent of females. Most female and male adults reported an average of nine years of schooling. School non-attendance among children in the relevant age group was relatively high at around 17 percent; non-attendance was higher among females at 18.2 percent than males at 15 percent. Qualitative assessments indicated that younger women may have fewer educational opportunities during this period of economic transition (Tables 2-4, Annex D).

2.3 MIGRATION

Significance

Tajikistan began to experience significant labor out-migration after its independence and the outbreak of civil war through the established ties in former Soviet Republics, especially Russia. Recent migration trends are believed to be based on simple demand and supply factors. Labor demand in Russia has increased due to a decline of the working-age population whereas the Russian economy has expanded. Responding to this demand, the supply of labor from Tajikistan and a number of other former Soviet Republics has increased as a result of a booming population, prevalent unemployment and under-employment, low earning potentials, and general economic hardship back home. The number of Tajik migrants was officially estimated as 421,000 in 2004. Unofficial sources say it was closer to 1.0-1.2 million.¹⁴

In the quantitative sample, around 62 percent of all households across the three districts (more in Ghafurov and less in the other two districts) reported at least one migrant worker during the previous five years (some may have returned); in 21 percent of households, that person was the head. For every sample household slightly less than 1 person had migrated in the past five years and around 0.4 person had returned. The cited purpose of migration in the overwhelming majority of cases (more than 98 percent) was to find work (more details in Tables 4-8 in Annex D). Quantitative results highlighted the significance of male migration. Yet, they also showed that more than five percent of all households had female migrants. Focus group discussions and interviews revealed that high migration rates reflected attempts by rural households to mitigate their livelihood hardships due to difficulties in earning a living and with access to land and water (of which more later). For example, key informants indicated that 20,000 people from Konibodom – which is located at the end of the canal – had left for the cities, Russia, or other places due to an increasingly compromised water supply.

Impact

Some 77 percent of respondents cited remittances as the most important migration outcome while 16 percent said there was no remittance and by extension no positive impact.¹⁵ A total of 623 respondents from 793 households reported receiving remittances from migrant household members. The mean value of remittance was 3,841 somonis and the median 3,400 somonis. These observations align with findings elsewhere that suggest migrants earn an average monthly income of around US\$275 dollars and remit slightly less than half to Tajikistan.¹⁶ Furthermore, later sections reveal that remittance constitutes a large portion of household income in the study area. Apart from the income impact, survey respondents cited negative impacts of migration as the absence of family members and the burden that placed on women. Few respondents thought that the absence of male migrants actually empowered women (see further Tables 7-8, Annex D).

Qualitative assessments revealed more nuanced impacts of migration. First, sending a household member to Russia or elsewhere requires significant sacrifice considering the meager resources of the rural

¹⁴ World Bank, “Tajikistan Policy Note: Enhancing the Development Impact of Remittances,” 2006.

¹⁵ Indeed, UNDP estimated the annual flow of remittance to Tajikistan as amounting to 600 million US dollars annually. See UNDP, “Tajikistan: Mobilization of Labor Remittances into Infrastructure Rehabilitation,” www.europeandcis.undp.org, 2007.

¹⁶ Ibid.

population in the survey districts. Focus group participants reported the heavy cost of travel, about \$300; people often sell precious assets or borrow to send a member abroad. Second, although most focus group participants indicated that a significant portion of their household income came from remittances, these payments were frequently irregular. Third, when male householders are absent, the burden of agricultural activities falls on women, and sometimes, family controlled land may not be cultivated at all due to the absence of able bodies, particularly presidential lands as discussed below. Focus group participants reported that male migrant returnees often arrived during winter when the agricultural season was over.

2.4 EMPLOYMENT

Most adult male household members (except pensioners, handicapped, and unemployed) were self-employed in non-farm business outside home (42.6 percent), employees in trade, services, or industry (17.42 percent), or agricultural wage laborers (11.20 percent). Female household members were homemakers (45.02 percent), agricultural wage laborers (19.1 percent), employees in trade, industry or services (11.43 percent), or engaged in farming and related activities on household plots or presidential lands (3.81 percent). Other occupational categories such as public employee, teacher and home handicraft production were rarely cited. Furthermore, 23.05 percent of male household members and 14.04 percent of female household members were unemployed and looking for jobs, although they might have worked on household plots or presidential lands (Tables 10-11, Annex D).

Many household members had more than one occupation. Women in particular often worked in several positions to earn a living, including on household plots and cotton farms. Therefore the relative importance of the above-cited occupations would differ if all employment channels cited for household members were taken together. Indeed, most respondents reported that working household plots and presidential lands was the second or third most important occupation and one of the most important sources of household income.

These observations indicate a lack of employment opportunities as well as the significance of household plots and presidential lands in providing food security and perhaps supplementary household incomes. They underscore the importance of access to water to enable rural households to maximize benefits from household plots and presidential lands.

2.5 INCOME AND SUBSISTENCE

This study did not aim for a “highly accurate” computation of a welfare index. Since the main goal of the exercise was to probe the issues of water, land, and gender rather than welfare pre say, the study only collected enough data to construct a basic income profile of the sample population. Variables used to calculate the mean and median household incomes and calculation procedures are in Annex A. Household incomes in the sample across the three districts may be disaggregated as slightly more than one-tenth from wage labor on large farms and less than one-tenth from pension/social assistance. The rest is evenly distributed among non-agricultural activities, work on household plots/presidential lands, and remittances.

The mean annual income value across the three districts was 5,189 somonis and the corresponding median value was 4,550 somonis (Table 14, Annex D). Mean and median income values were significantly higher in Yovon compared to the other two districts. The lowest mean and median values were recorded in Ghafurov. Yovon is close to Dushanbe and its residents can earn extra incomes through various business interactions with the capital. Land reforms in Yovon have also been deeper than the other two districts.¹⁷ Part III of this report further shows that residents of Yovon are more likely to own livestock and have a higher prevalence of individual and multi-family small land holdings. It also that average sizes of land parcels available to households are higher in Yovon in comparison to the other two districts. In contrast, jamoats surveyed in Ghafurov have faced delayed land reforms and significant water and drainage network difficulties.

No significant income differences were observed between households with members working on the large farms and those without. Yet, there were indications that households with members who were self-employed in non-farm businesses were better off in comparison to other households. Finally, the mean income of households in the highest income quintile was found to be about three times those in the lowest income quintile, indicating some income inequality in the study area (see Table 15, Annex D).

About 22 percent of respondents reported positive changes in their incomes in the last three years while 22 percent reported no changes and 56 percent reported negative changes (Table 16, Annex D). An overwhelming majority of households across the three districts felt that money sufficed only for minimal requirements of clothes and food or stated that money did not suffice even for food purchases (Table 17, Annex D). Thus, most households lived on the verge of poverty and slightest shocks, such as illnesses or livestock losses, could have severe negative consequences for their wellbeing. As explained later, diseases related to poor water quality are widespread and erode livelihoods in terms of real and opportunity costs. Furthermore, the survey revealed little access to formal borrowing for productive purposes; any borrowing took place through informal means (Tables 12-13, Annex D).

2.6 ACCESS TO LAND

Household experience with land reforms

Households in the study area may have access to several types of land. Household plots are adjacent to homes, while presidential lands have been allocated to some households through presidential decree (most often from erstwhile unused or marginal lands). As a result of land reforms, households may also theoretically possess individual or multi-family separate farms or have shares in large farms formed out of the previous kolkhozes and sovkhoses.

Land reform in the study target areas has taken on different forms depending on land values, water availability, and the extent of cotton-farming potential. In prime cotton-growing areas such as Ghafurov, kolkhozes and sovkhoses still exist, although they are smaller and referred to by new names. This demonstrates public sector's reluctance to relinquish control of and divide prime agricultural lands in favor of dealing with many inexperienced small owners. The three jamoats surveyed in Ghafurov had four large collectives between 1,000 and 5,300 hectares, each with over 1,000 farm workers. Around 60 percent of the land was under cotton cultivation. There were several individual and multi-family dihqon

¹⁷ Yovon, as mentioned earlier, has been under World Bank's Farm Privatization Support Project (FPSP).

farms; however the sizes (averaging 0.54 hectares across a total of 36 farms) and magnitudes of their operations were negligible. In contrast, Lohuti, the very last jamoat in Konibodom relative to the canal water flow had 24 large farms and 443 individual and multi-family dihqon farms at average sizes of 178 and 4.1 hectares respectively. Less than ten percent of the agricultural land in Lohuti was dedicated to cotton at the time of the survey with the rest under fruits, grains, and vegetable cultivation..¹⁸

Setting aside the allocation of household plots and presidential lands, the survey found that, for most farmers, nominal changes in land tenure did not constitute real land reform. The quantitative survey revealed that land reforms had no meaningful impact for 60 to 65 percent of households across the three districts. Former collectives continued business as usual under different names and lay farmers worked there at below-subsistence wages with little knowledge of the privatization process. Some focus groups indicated that the few single or multi-family separate farms had gone to the elite (see below).

Household plots and presidential lands

Households have near total control over household plots and presidential lands. These land holdings are thus a main source of subsistence for a large number of households surveyed.¹⁹ Yet, due to sustained emphasis on cotton production as well as the premium placed on irrigated lands, the government in recent years has slowed down the process of new personal land allocations. Whereas household plots are next to homes, presidential lands are typically small plots located elsewhere, far from canals, and difficult to work on. In spite of this, presidential lands are still desired by many rural households who do not have them.

Almost all sample households (1250 out of 1275) across the three districts had household plots with a mean size of 6.6 sotihs²⁰ (averages were 4.9 in Ghafurov, 5.1 in Konibodom, and 9.8 in Yovon). The median size of the household plot for the entire sample is a better measure—5.0 sotihs. The corresponding median size in Yovon at 8.0 sotihs was much higher than the 4.0 sotihs found in the other two districts. Most households reported having titles for household plots, issued in the name of the head of household, regardless of gender, although most titles were issued to men. Ownership of presidential land was far from universal at about 40 percent for the sample. More households in Konibodom held presidential lands than in either Yovon or Ghafurov, although average sizes were larger in Yovon than the other two districts. The mean sizes of presidential lands were 5.9 sotihs in Ghafurov, 8.0 in Konibodom, and 11.3 in Yovon. The more accurate median sizes in the three districts were recorded as 5, 7, and 7 sotihs respectively. Households cited land scarcity as the main reason some people received presidential land while others did not. Most respondents reported possessing their presidential land titles, issued primarily under the name of the male heads of households. Yet, their percentage was lower than the case of household plots (Tables 18-19, Annex D).

Focus group discussions revealed that tiny parcels of collective farms (0.05 - 0.1 ha) were sometimes available to workers to cultivate as an additional incentive to work on cotton farms. This arrangement was considered common in focus groups in Ovchikalacha Jamoat in Ghafurov, for example. These tiny land

¹⁸ Information obtained through interviews.

¹⁹ According to a study conducted by Swiss Secretariat for Economic Affairs (SECO) in 2003, household plots in Tajikistan accounted for 69% of agricultural output growth both in the crop and livestock sub-sectors (crop production accounting for 40% and livestock 29%). See Swiss Secretariat for Economic Affairs, Rep. of Tajikistan, "Priorities for sustainable growth: A Strategy for Agriculture Sector Development in Tajikistan," 2003.

²⁰ Sotih = 100 square meters

parcels on which farmers could cultivate their choice of crop were prized for their proximity to water. The rental arrangement was captured in the quantitative assessment as “other types of land” (52 respondents, mainly Ghafurov and Yovon).

A significant proportion of households with presidential land reported not doing much with the plot (around 43 percent in Ghafurov and about 20 percent in the other two districts). Across the three districts, on average, close to one third of the presidential lands and slightly more than 80 percent of household plots were cultivated. Furthermore, around 70 percent of households with presidential land and about 68 percent of those with household plot cultivated all of the land holdings (Table 33).

The main reasons for non-cultivation of household plots were low land quality, including a high water table, and lack of access to water. Although similar reasons were cited for non-cultivation of presidential lands, lack of access to water was a more significant factor. Further reasons included no one available to work the land, no markets, and unavailable or unaffordable agricultural inputs. Overall, households had little difficulty in accessing water for their household plots, but in the case of the presidential lands, water scarcity was cited as a major problem (Tables 20-21, Annex D).

Possession of shares in large farms

The study found that dividing up kokhozes and sovkhozes has not resulted in farmer control over land through land shares. Indeed, cotton workers on the new collectives (khojagii dihqonii Kollektivi) have little say in crop cultivation choices (Table 26, Annex D). Many focus group participants were unaware of large farm land shares or land certificates, let alone how to participate in the decision-making process. When women cotton workers in Yovon were asked to explain the concept of “land share”, they described it as work-for-hire—payment for work on the fields. None of the workers knew the owner of the dihqon farm she was working on. In Qataghon (Ghafurov), some participants believed that privatization would occur in the future. Those who thought there were actual shares believed the head brigadier was holding on to them. Even when focus group participants had land shares and land certificates, these seldom translated into concrete instruments of wellbeing. In some cases, while individual shares were reported to represent 0.8-1.2 hectares of land, they were said to be attached to US\$700 to US\$800 of collective farm debt.

The above findings were confirmed by the quantitative data in which about one-third of sample households reported household members employed on the large farm but many of them reported not having shares. The evidence was strongest for Ghafurov where close to 73 percent of households lacked shares, and smallest, although still significant, in Yovon where about 43 percent reported that they did not have shares. A partial explanation is that in Ghafurov most holdings are still large collective farms as compared to Yovon. Study data also indicated that many workers/share holders on large farms did not know the location of their land shares. Among workers who reported having shares on the large farms, most indicated their shares yielded no payments, but some 10 percent reported some relatively small payments (Table 31, Annex D).

Access to individual and multi-family dihqon farms

Only 50 households in the quantitative sample had individual or multi-family dihqon farms, and of these 45 households were from Yovon (almost equally distributed between individual or multi-family dihqon farms). Some focus groups participants believed that individual or multi-family dihqon farms were distributed to citizens through a form of lottery; others suspected malfeasance. So few of these farms are

available that selection criteria may be suspected to relate to influence, status, or wealth. For example, one focus group indicated that the former head of the kolkhoz managed to get an individual farm. Nearly all respondents who had individual and multi-family dihqon farms stated that all of their lands were under cultivation and most reported having land titles (Tables 27-29).

2.7 FARMING PRACTICES AND POSSESSION OF LIVESTOCK

Farming Practices

In the surveyed districts, the main agricultural activities of the households across all land types were production of fruits, vegetables, cotton, and livestock (see further Tables 35-38, Annex D). In Yovon, cotton had less importance while animal husbandry was more significance. In case of household plots and presidential lands, in Ghafurov and Konibodom, the main three agricultural activities were production of fruits, vegetables, and livestock. A similar situation was observed in Yovon, except that production of grains was also an important activity on the household plots in this district. Same use pattern was observed for presidential lands. The situation in Yovon may be partially explained by the larger parcels of land available to households. The main activities on individual and multi-family dihqon farms were production of grains, cotton, and vegetables (note that the majority of these farms were found in Yovon and not in the other two districts).

Since Tajikistan's independence, the government has removed most state quotas on agricultural production, liberalized prices, and carried out measures that support small and medium sized enterprises. But the state maintains control of the country's main cash crop—cotton. This is the flip side of the slow pace of land reforms. Survey findings showed that most households were disinclined to grow cotton on lands they controlled. This suggests that cotton production is unprofitable at current prices and only sustained through state quotas that are only possible through state control over agricultural land. Some cotton is produced on individual or multi-family dihqon farms, which may be less due to profitability and more due to the terms agreed to during acquisition of these scarce and highly desirable farms.

Overall some 78.8 percent of households reported that agricultural production had declined on lands they directly controlled, including individual or multi-family dihqon farms; 12.9 percent reported that production was stable; 3.5 percent reported increases; and 4.7 percent declined to respond or found the questions inapplicable. Among the most cited difficulties in agricultural production were limited access to water, unavailable or unaffordable agricultural inputs, a rising water table, and poor quality soil.

Most agricultural activities on household plots and presidential lands are small-scale. Inputs are made locally and access to machinery is limited. Most respondents across the three districts produced their own seeds for cultivating household plots and presidential lands; a smaller number of households also reported producing their own fertilizers; and livestock feed was both purchased and self-produced. Some farmers accessed machinery by renting from large farms or leasing companies, but most farmers had very little access to machinery.

Livestock Assets

Livestock are important assets and a sign of the relative economic wellbeing of the households that own them. In the study area, focus groups indicated that the proceeds from selling a single cow might easily exceed proceeds from cotton field labor. Thus, in the environment of almost-universal vulnerability

existing in the study areas, livestock owners are most well positioned to face external shocks such as drought, illness, or natural disasters. At the same time, this important asset is also vulnerable to draught and lack of access to quality water. Despite the significance of livestock, results from the quantitative assessment showed that the average, median, and maximum numbers of cattle, sheep and goat, poultry and other domestic animal holdings were rather small across the three districts (Table 39, Annex D). Qualitative findings also indicated that livestock were held only by a minority of households. Initial and running capital involved in this activity and the need for pasture or other means of animal feed provision make it a difficult activity to undertake. This said, in Yovon, a relatively larger number of households (compared to the other two districts) had dairy cows and buffalos. Furthermore, a higher percentage of households in Yovon indicated increases in their numbers of cattle and buffalo as compared to the other two districts (the corresponding figure for the whole sample was around 60 percent, mainly attributed to natural birth). This highlights the importance of the activity in Yovon as an exception. In particular, a main reason for the prevalence of livestock (on one side of the canal) in Yovon was found to be the availability of pasture. About 5 to 10 percent of households in the quantitative sample marketed their produce.

2.8 GENDER AND AGRICULTURAL ACTIVITIES

Gender Division of Labor

The study found that many individual women's livelihood strategies included a mix of formal sector employment and small-scale commercial cultivation. For example, a female teacher or a librarian may also cultivate her household plot and work on a large collective farm. The study also found that female employment opportunities outside the home were limited to wage labor at the large farms (except for working on household plots and presidential lands). Also, women were more likely than men to work on large collective farms as their primary occupation. By contrast, many men were able to become self-employed in non-farm businesses. The quantitative assessment and focus group discussions revealed that both women and men performed basic cotton work on the large farms. Respondents believed that men and women were equally likely to do manual work in agricultural activities, but men more often performed specialized tasks such as irrigation, driving tractors, or as work group leaders.²¹ The quantitative assessment found that overt unemployment was higher among males, but these findings were at odds with perceptions of male and female unemployment or underemployment in the qualitative assessment (Tables 42-44).

Coercion and Discrimination

The SA team did not discover any instances of outright coercion or discrimination against women in agricultural activities. Most focus group participants said that no one was forced to work in the cotton fields for so little money. However, widespread poverty and rural socioeconomics offered few alternatives and women suffered most from these conditions. Young girls also appear to be drawn into this low-wage field work, especially during harvest when farm team leaders gather all able bodies to work on the large farms. Under the current structure, women shoulder most of the production burdens but earn very little. Private interviews revealed that older high school and college students risk penalties

²¹ According to IMF ("Republic of Tajikistan: Poverty Reduction Strategy Paper," 2006), women-dominated social groups are the most economically marginalized and continue to be excluded from decision-making processes. The same study indicates that only 6.8 percent of dihqon farms were managed by women in 2004.

unless they work in cotton fields for a month or two each year. If this information is accurate, other coercive practices may also be widespread. To quantify this issue, respondents who participated in the quantitative assessment were asked whether they thought women were often coerced into low paying work on large farms. About 55 percent of respondents believed this to be the case in Ghafurov and Konibodom. The corresponding figure in Yovon was around 30 percent.

Women's Wages

The quantitative assessment did not find any significant differences between the mean incomes of male- and female-headed households. Yet, some wage differentials based on gender were recorded as being due to the different type of activities undertaken by men and women. Focus group sessions revealed a low and/or irregular pay for female (as well as male) labor on large farms, although women cotton workers also cited additional non-wage benefits of access to cotton stalks used as cooking fuel. According to the officials and also stated in some of the group discussions, female farm workers in the collectives were reported to earn a monthly salary of about 15-20 somonis in regular months but to receive about 50-70 somonis during harvest season (11 dirams per kg of harvested cotton, that is, on the average about 6 somonis per day). During weeding and harvesting many members of the farmers' families were drawn to work in order to speed up the process to get the most financial benefit out of the activities. Men were reported to receive higher wages (around 60 somonis pre month) when they performed more specialized tasks. Worse cases were also reported in some of the focus group discussions. Some women reported working for months only to be paid in-kind or the equivalent of a few dollars at the end of the cotton season.

The quantitative assessments captured beliefs about gender-based wage differences. Two-thirds of respondents believed that females were paid less than males and the remaining one-third believed that differences were based on task assignments. The quantitative survey also sought opinions on whether women had become poorer as compared to men in the last ten years. Well over half of the respondents thought women had always done worse than men while another one quarter of respondents thought men and women in the same family were at the same level. Another one quarter of the respondents thought that women had become poorer as compared to men because the latter group had more options.

Women's Access to Land/Land Shares

Because most document holders for household plots and presidential lands were heads of households, whether men or women, it would be difficult to conclude that women were discriminated against in this regard. Indeed, around 15 percent of title holders were women for both types of land holdings, which reflects the high numbers of female-headed households in the sample. Respondents were also asked about the gender of people in their villages who did not get a household plot, presidential land, or land shares in large farms; based on their opinions, there were no differences between males and females, or at least the survey results yielded no discernable pattern. Also, according to officials and group discussants, every person in farm collectives, regardless of gender, was registered as having shares, although women would still have little say about crop selection on cultivated lands.

Women's Access to and Agricultural Inputs/Machinery

Research revealed no serious evidence of gender-differentiated access to agricultural machinery or agricultural inputs, which, in the case of the study areas, means that men and women face equal shortages and deteriorating, unreliable infrastructure. However, since women have fewer livelihood options and shoulder many family burdens, the impact of these shortages may be even more severe, especially since

obsolete or deteriorating farm machinery means that women perform most of the farm work by hand, and that women and girls must regularly carry heavy loads for several kilometers due to transport shortages.

2.9 SUMMARY OF MAIN FINDINGS

1. The rural social structure is traditional with a high incidence of extended families and a young population. While educational attainments are high, women's educational opportunities are becoming limited.
2. Migration is quite significant. It has a positive remittance impact but also a set of negative social effects.
3. Household plots play a significant role in livelihoods. While men may find work in non-farm activities, the most important economic activities of women outside home are work in the large farms and cultivation of household plots.
4. Slightly more than one tenth of household incomes is from wage labor on (large) farms and less than one tenth is derived from pension/social assistance. The rest of household earnings are evenly divided among non-agricultural activities, work on household plots/presidential lands, and remittance.
5. Almost all households have household plots whereas only around 40 percent of households have access to presidential lands. The number of single or multi-family dihqon farms is very small.
6. Barriers to increasing agricultural production and cultivating all household land holdings include limited access to water, poor soil conditions, rising water table, unavailable or unaffordable inputs, and lack of machinery.
7. Household livestock assets—mostly found in Yovon which is under more favorable conditions—are modest.
8. Large collective farm land shares are almost nonexistent, but access to some kind of claim to them is undifferentiated by gender.
9. Women undertake hard manual labor on collective farms for little remuneration due to the structure of village economy and a lack of income-generating alternatives.

3. Access to Water and Structure of Water Provisions

3.1 INTRODUCTION

This social assessment aimed to analyze the relationship between livelihoods and water in rural Tajikistan. In the previous part of this report, issues such as income and employment, migration and remittance, and agricultural practices and land holdings were explored to set the stage for an analysis of water. This and the next part of the report explore the impacts of water-related issues on people in the study area, particularly women. A detailed description of the target areas' water resources, management institutions, and infrastructure failures are provided in Annex B. The two sections that follow this introduction partly draw on this annex to describe the background and institutional setting of water provision. Another section examines qualitative and quantitative findings on households' access to water, from the point of view of beneficiaries. This is followed by an analysis of the consequences of water and drainage shortcomings. The next part of the report focuses on water users associations which have been proposed for rural Tajikistan, and some have already been established to deal with water management difficulties.

3.2 BACKGROUND

Sughd and Khatlon, targeted in this study, are Tajikistan's two main irrigated cotton-producing regions situated within the Farghona and the Vakhsh irrigation networks respectively. The Vakhsh tunnel was among the first irrigation projects of the former Soviet Union, undertaken in 1933, to redirect the river and adjacent streams to feed the Yovonsu Valley. In 1939, the Big Farghona Canal was built to harness the waters of Sirdaryo (Jaxartes) and its tributaries to irrigate the large cotton farmlands in the Farghona Valley (spanning Uzbekistan, Kyrgyzstan, and Tajikistan). Among the three districts covered in this study, the major water sources in Konibodom are Kairakkum water reservoir (served by Sirdaryo), the Big Farghona Canal, and Isfarinka River. Ghafurov is served by the Kairakkum water reservoir, Sirdaryo, and to some extent by the Big Farghona Canal and Khojabakirgon River. Baigazi water facility on Vakhsh River serves Yovon through two canals.

Despite providing some economic benefits for area residents, the massive water diversion networks have had severe environmental impacts. For example, diverting water to the 270 km Farghona Canal and completing the Kairakkum reservoir in the 1960s contributed to the drying up of the Aral Sea. On a smaller scale, agrochemical-laced runoff from cotton farmlands has polluted the waters, raising the nitrogen and sulfur combinations to several times the maximum allowable levels in many areas and increasing water and soil salinity.

Furthermore, much of Tajikistan's water infrastructure and drainage system is in an advanced state of deterioration due to decades of low-quality construction and operation, funding shortages, and institutional deficiencies in the post-Soviet transition period. These conditions have created a livelihood-threatening water paradox—many areas face water shortages for irrigation and personal consumption, but many rural people and agriculture suffer the effects of rising water table and increasing soil salinity. Across the three districts in this study, considerable water loss occurs through the poorly-lined networks

because melioration wells and pumps are unable to control severe water-logging in the area, and low irrigation efficiency undermines the productivity of agricultural lands. All these feed into a poverty cycle.

Some 30% of agricultural farmland is dependent on lift irrigation that uses underground water resources. The problem of water-logging due to canal seepage has only increased the need for lift technology. Around 86 percent of 300 vertical boreholes in Ghafurov and Konibodom are inoperable as are more than two-thirds of pumping stations in the project territory. In Konibodom, only 14 the existing 108 pumps are still in working condition.²² The rising water tables and increasing demands on lift technology for household water consumption and irrigation increase household dependence on ever-failing equipment. It has been claimed that cotton yield in the 10 year period after Tajikistan's independence almost decreased from 800,000 to 450,000 tons with 16% of the formerly irrigated lands no longer under production since 1991 (although there has been some improvements in recent years).²³ In Konibodom alone, 8,895 hectares or up to 40 percent of irrigated lands are severely water-logged.²⁴ Water-logging damage, high humidity, and mildewed walls are visible in the study area and potentially lead to respiratory problems, bone ailments, and infectious water-borne diseases such as malaria (see below and Annex B).

3.3 INSTITUTIONAL SETTING

National and Regional Water Authorities

Distribution of water, especially irrigation water, is highly centralized in Tajikistan, organized mainly around cotton farming. The Ministry of Melioration and Water Economy (MMWE) is the institution responsible for the management and oversight of the water sector and maintenance and development of irrigation and drainage networks. Its regional arms, the State Water Resources Departments known as the Vodkhoz are the main bodies responsible for managing water resources at the district level. In the study area, the following institutions have primary responsibility for water provision and drainage management.

1. Konibodom: Konibodom State Water Resources Department (KSWRD);
2. B. Ghafurov: Ghafurov State Water Resources Department (GSWRD);
3. Yovon: Yovon Productive Operational-Melioration Unit (YPOMU).

All three of these public organizations face serious funding shortages (notwithstanding the impact of purely technical factors). Chronic budget shortages are responsible for deterioration of more than half of basic irrigation and manifold-drainage systems assets—especially water pumps and vertical drainage wells—and for heightened soil salinity and water-logging. System sustainability requires developing some type of market mechanism in the water sector, in particular collecting fees from water users, which will be discussed later in this report.

Supporting Institutions

While State Water Resources Departments directly deal with water issues, oblast and district levels of government and village councils managed by jamoats also influence water provision. Moreover, village-

²² Local hukumat data.

²³ Asian Development Bank, "Proposed Loan and Technical Assistant Grant Irrigation and Rehabilitation Project," by P. Bozakov, 2004.

²⁴ Local hukumat data.

level semi-formal or informal institutions such as mahalla committees may exercise limited water-related decision-making authority. These supporting institutions are explained below.

District hukumats, headed by government-appointed raises, are to implement national policy and administer services and regulations. These have a pivotal position in water allocation and a proactive role in agriculture that includes allocating land, appointing heads of farmers associations, imposing cotton quotas, and allocating irrigation water for land under cotton production.

Jamoats, according to the Constitution, are village- and settlement-levels self-governance structures. In practice, a jamoat is a small entity headed by a hukumat appointee with no budgeting authority and very little independent responsibility for service delivery, including water. However, since the state does not provide services in many rural areas, jamoats are supposed to organize community-based delivery of some public services.

Local mahalla committees are informal institutions, rooted in the Tajik culture, with three to five members democratically elected from among local elders and respected settlement members. Mahalla committees organize community activities such as weddings and funerals, and help elderly or disabled people. They also often serve to resolve local problems and conflicts or to mobilize support for hashar (collective help) to clean the streets after flooding for instance. They may be important actors in collection of fees for a hand pump or in mediating between two neighbors when in conflict over water.

Large farms are the main apparatus of control over water distribution to settlements and despite the main institutions of water management described above, the de facto organizing principle for the Tajik irrigation system is to serve the water needs of these farms. Most large farms are now collectives, but some are individual or multi-family dihqon farms.

Water Management at the Local Level

The breakup of the previous command and control system has created a number of ambiguities with regard to the authority and responsibility for parts of the system. Rural reforms and diminished direct public sector involvement have blurred responsibility for maintaining downstream irrigation systems, manifold-drainage networks, and household water delivery that used to be handled by state-owned enterprises. This issue is of high significance since the newly-formed farms are secondary water users to which the public water management institutions may not feel responsible and for which no funds are available.

District water management institutions control and administer the primary canals; they regulate weekly farm water access and scheduling through their mirobs (water monitoring technicians) according to type of crop and farmland area. Traditionally the large farms pay the water fees and large collective farm mirobs allow villagers to access water, often free of charge, in part as a quid pro quo to ensure a regular supply of villager labor, and in part to maintain good community relations. The villagers monitor intra-farm tertiary canals through informal agreements and organic scheduling but the arrangement is far from smooth because responsibility for maintaining downstream canals is unclear, and no oversight mechanism is in place to monitor where the water goes. As a result, household water supply can be completely erratic because water flow is determined by variables such as household geographic location in relation to the farms, mirob control and access, land conditions, and water quality. All this has been

reason for the introduction and establishment of water users associations that are discussed in the next part of the report (as well as in Annex B for the national level).

Cost Recovery and Fee Collection

Against the background of changes in the water provision system, budget shortfalls, and state inclination to introduce market mechanisms in the water sector, fees have been set by the state to be collected from water users in order to cover part but not all water delivery costs (see Annex B on this). Although collection rates have recently improved, they have been quite low for several reasons. First, users do not want to pay for water because it used to be free; second, fees are being demanded as service levels are plummeting due to deteriorating infrastructure; and third, even if water users were willing to pay, existing collection mechanisms are underdeveloped. As a result, significant debts have accrued at all levels, from water users to water delivery organizations (see Annex B for debts and improvements).

In the study area, significant numbers of households receive free water for household plots and presidential lands while a smaller number of households must pay for water, which means that fee collection improvements are experienced in relation to the large collective farm system, at least in our study area. Furthermore, even if all fees were collected the amount would be insufficient for system maintenance. Since these revenues are essential to address widespread water delivery problems, fee collection rate and willingness to pay are important issues in maintaining the water provision system.

Formally-levied fees do not reflect actual household water costs, which qualitative findings indicate may be significant. Although this cost is for the most part related to water transport, instances were also found where the local community had created some makeshift micro-systems with informal fees for the provision of water.

3.4 ACCESS TO WATER AND WATER SHORTAGES

General Sources of Water

The primary waterway grid across Sughd and Khatlon is supplied by rivers, their tributaries, and a network of underground streams and waterways, accessed through a vast array of pumping stations. However, in the study area, financial, technical, managerial, and institutional difficulties have led to widespread infrastructure failure that compromises water delivery. As a result, local people have had to develop their own sources of water such as collective and individual wells, captured rainfall, and purchased, transported and stored water for drinking and essential consumption needs. The survey indicated that in some locations households travelled long distances to carry spring water back to their homes, while in others households frequently used canal water for household and livestock consumption. Quantitative details on water access are in Tables 45-57, Annex D.

Water Needs of Large Farms Supersede Household Water Needs

The main determinant of household access to water is proximity to large cotton farms. Those closest to large farms are likely to have sustainable livelihoods because they can access water for personal irrigation and household needs, whereas more distant households are faced with water shortages and its consequences. Since large-scale cotton monoculture was the primary form of agricultural production, irrigation and drainage systems were constructed for continuous water flow to the large farms. When the snow melts in spring, the reservoirs fill up, electric plants resume full-time operation, the few functioning

pumps are set into motion, and canals serve the intensive irrigation demands of the cotton farming industry. Meanwhile, since potable water delivery was not expressly planned, the canals are also the primary source of water for personal consumption.

Access to Water for Household Plots and Home Use

Across the surveyed districts, 68 to 98 percent of households cited a canal, stream, or river as their primary access to water. Piped water, water from communal or individual wells, and natural springs served personal and household consumption needs. In Yovon, some 58 percent of respondents reported using collected and stored rainwater.

Konibodom and Ghafurov respondents reported that large farms supplied their water from canals, stream, and rivers. For most Yovon respondents water came from the large farms, but more than ten percent received their water from WUAs. A few respondents also cited mahalla committees and Vodkhoz as water providers through canals, streams, or rivers. In Yovon, rainwater collection prevailed and the mahalla managed water sources, although ten percent of respondents also cited large farms as a water provider. In Ghafurov and Konibodom, large farms and mahalla committees managed communal wells; Ghafurov respondents also cited Vodkhoz as a provider. Typically, mahalla committees manage spring water provision.

Many homes had hawzes (small cisterns or covered ponds) to store purchased and transported water, or rainwater collected from rooftops through downspouts (around 20 percent in Ghafurov; 40 percent in Konibodom; negligible in Yovon). Hawzes provide off-season water storage for months when the canals are not operating, or for villages too far from canals. Most households filled their hawzes two or three times during the winter months. The cost of constructing a new hawz was said to be beyond the means of elderly, disabled villagers, or poor women-headed households. Some households (mostly in Yovon) also saved water in storage tanks or containers, which cost less to build but were smaller and therefore needed to be filled more frequently. Between 20 to 40 percent of the surveyed villagers stored water.

Few participants reported paying for water, in part due to the study being conducted during the irrigation season when canals are in full operation. Typically, households that had to pay for water were among the poorest in the settlements, lived furthest from natural sources, and were least likely to afford the modest cost of water and its transport.

Access to safe drinking water

According to the World Health Organization, the average daily water requirement for individual basic activities is 20 liters. Children under five years of age who use less than this amount are 1.6 times more likely to contract illnesses such as diarrhea.²⁵ In some parts of rural Tajikistan, it is estimated that only between ten and fifty percent of people have access to safe drinking water, since potable water delivery was not explicitly planned when the irrigation infrastructure was built.²⁶ The problems this creates were confirmed by site visits during the qualitative part of the study. Drinking water sources, reliability, and systems maintenance responsibilities varied and included government, participatory actions, NGOs, and self-provisioning. Access to drinking water varied across and within villages and due to and seasonally.

²⁵ World Health Organization, "Highlights on Health in Tajikistan," 2005.

²⁶ For example, based on Asian Development Bank estimates in 2004.

In Ghafurov, over half of respondents reported having access to piped water; in Konibodom and Yovon, only a third of people or less had access. However, piped water is available only part of the time and water quality can be below standards, so access to safe drinking water is actually lower than these percentages suggest. Nevertheless, households expressed satisfaction with the quality of piped water, perhaps unsurprising in this context of serious constraints to water access.

Scarcity of safe drinking water in Tajikistan is also due to high pollutant levels in water resources, and many alternate water resources available to rural people are either difficult to access or equally polluted, due to poor waste management practices.

Access to Water for Presidential Land, Individual Farms or Multi-Family Small Farms

Concerning presidential lands as well as individual and multi-family small farms, the main sources of water for the quantitative assessment respondents were canals, streams or rivers in Konibodom and Ghafurov. In Yovon, in addition to these sources, rain water was also found to be important. Some respondents also stated that they had very little access to water for these types of land in Yovon. The cost of water was either zero or small. Satisfaction with the quality of water from stream, river, or canal water was average to low across the three districts. The quantitative assessment showed that in Ghafurov, for the majority of respondents, water from canals, streams and rivers was available at least half of the week. In Yovon, half of the respondents reported irregular access. In Ghafurov and Konibodom, the overwhelming majority of respondents reported the large farm system as the provider of water. WUAs were also cited as a provider in addition to large farms in Yovon.

Differential Access to Water

The study found differential access to water among locations and even within individual settlements. Differences were primarily linked to distances from the main canals, competition from large farms, and water resource seasonality. Some survey respondents also believed that politically or socially influential people had better access to water.

Head and tail-end disparities in water flows that are prevalent in surface water irrigation systems everywhere are also found in Tajikistan. Generally, villages farther away from canals receive less water and are poorer. For example, the village of Jigdelik in Konibodom is the last village on the Farghona Canal, and has a maximum monthly average water flow of only 4-6 days at the height of the cotton season. Consequently, Jigdelik inhabitants must transport almost 100 percent of their water consumption needs which creates significant livelihood burdens. Similarly, the Lohuti dihqon farm is number 11 of 12 outlets on the canal and suffers inadequate water flows. Focus group respondents in Lohuti reported that canals were empty of water from September to March.

Differences in the provision of drinking and irrigation water to individual households also have a structural dimension. While on the one side large collective farms often continue to provide water to village residents for free, on the other side, proximity to cotton farms may in the long-run be detrimental to the quality and sustainability of the livelihood of the village population. The cotton monoculture has traditionally been the prime focus of the command and control political economic system based on the capture of scale economies. The irrigation and drainage systems have thus been constructed in such a way as to support a continuous flow of water to large-scale farms. This structure has in turn subjected the

livelihoods of the village populations to the needs of the large collective. While irrigation canals operate to support cotton production for the most part, the needs of horticulture and production of crops beneficial to the wellbeing of the households, is not taken into account.

Seasonality is another factor that differentiates water access among settlements. Across most of the study area, when the cotton season ends around October or November, electricity plants cease 24-hour operations and supply only a few hours of electricity each night during the winter, which ultimately halts the water flowing through the canals. Local people in some areas admitted in focus group discussions that they continued to use whatever water remains, even drinking stagnant, bacteria- and growth-infested waters. In off-season between November and March, there is no water in the canals unless it rains, and villagers are forced to seek alternatives. During these months, procuring water for drinking, livestock, and household needs takes precedence over all other activities.

3.5 CONSEQUENCES OF WATER-RELATED DIFFICULTIES

Direct Impacts on Livelihoods

Infrastructure failure and water management shortcomings have led to water shortages, water-logging, water and soil contamination, flooding, soil erosion, and desertification (see Annex B), all of which have depleted arable land quality and householders' livelihoods. Close to one-third of arable lands in the study area are no longer productive due to low water quality, water shortages, or rising water tables. Cultivation of household plots and presidential lands, an important source of household subsistence, has become unviable or more difficult due to limited or lack of water access, rising water tables, or poor soil quality; presidential lands in particular suffer from lack of water. As indicated earlier, 79 percent of survey respondents believed their agricultural production had recently decreased and 56 percent expressed an income decline in the previous three years. This situation was most evident in Konibodom, where household income is one of the lowest in the study area. Efforts to own and increase livestock assets, crucial to the survival of the rural family, are hampered by water shortages and water contamination.

The opportunity costs of time spent accessing water are high but people have few alternatives. Villagers must dig trenches and clean overflowing drainage systems by hand when it rains, invest in hand pumps to drains dangerously flooded homes; people spend hours every day fetching water for the household—a task frequently performed by children who have been taken out of school to make the long walk in search of water, or by women who must triage their time among productive activities, caring for their families, and fetching water. Household resources to cope with basic livelihood challenges are shrinking, which forces many women back to large-scale cotton farms to earn below subsistence wages.

Meanwhile, organizing irrigation systems around the cotton monoculture has further depleted the resources of distant villages such as those in Chorgul Jamoat, Yovon, that are spread out in three tiers in between two irrigation canals with cotton farms located in the lower two tiers. At one time there were underground streams at the top end of the Jamoat but all of these have been redirected to feed cotton farms and now the upper levels of the Jamoat have dried up. Villagers have lost their access to irrigation sources and now rely mainly on rain-fed farming for limited cultivation of wheat and fodder; they take their livestock down to water in open ditches, exposing them to risks inherent in stagnant waters and contaminated drainages.

Severe water-logging and flooding due to drainage inefficiencies are also threatening infrastructure. Buildings, roads, and bridges are in precarious condition due to rising water tables. In 2002, 342 homes in Sharifov Jamoat in Konibodom were deemed uninhabitable due to increased ground water, and the inhabitants were recognized as ecological refugees.²⁷ Many homes are dangerous to live in and schools are crumbling. According to hukumat officials who were interviewed by the study team, 33 of 54 schools in Konibodom were in dire need of repair—their basements flooded and their foundations under threat of collapse. This level of devastation of key infrastructure such as schools undermines the country's future.

Water Contamination and Health Problems

Intensive development of irrigated farming has increased levels of water contamination via water drainage—primarily from agrochemicals that wash out through drainage systems into streams and rivers and seep underground. Household water discharge is the second largest source of water contamination in streams, rivers, and underground waters. In the Sirdaryo basin the mineral content of upstream water has been measured at 0.3-0.5 g/l while the downstream water is reported as 1.3-1.4 g/l (exceeding 1.7-2.3 g/l in Kazalinsk). Mineral content has risen for magnesium, copper, iron, sulfate, and chloride. Sirdaryo water quality at the inlet to Kairakkum water reservoir in Konibodom and Ghafurov districts has been reported unsatisfactory because the mineral contents exceeds 35-38 percent; so water from Sirdaryo is not potable in many areas, in particular in Sughd.²⁸

The Farghona Canal and Isfara River make their long trajectories through Kyrgyzstan and Uzbekistan before arriving in Tajikistan, passing through Bobojon Ghafurov, and ending up in Konibodom. Pesticides, agricultural runoff from rice plantations, sewage, and waste pollute the waters along the way, putting villagers towards the end of the canal increasingly at risk. Only abundant rainfall temporarily improves water quality by diluting contamination. Underground reservoirs are polluted by irrigation runoff and pesticides; for example, the underground well near the village of Kuikuzian in the Ortiqov Jamoat in Konibodom has been found to contain 27 percent chemicals.²⁹ The situation is exacerbated by non- or low-functioning melioration wells (only 14-30 percent are in operation) and pumping stations related to Kairakkum water reservoir, land reclamation in neighboring Kyrgyz Republic, and electricity shortages. Similarly in Khatlon, along the banks of 70 km long Yovonsu river that flows from the mountains to the Vakhsh River and onto Omudaryo (Oxus), waste from chemical plants and pesticides from farmlands is deposited in the waters which test up to 47 percent in chemical and 54 percent in bacteriological contaminants. Yovon chemical plant and Vakhsh nitric fertilizer plant poison groundwater.³⁰ According to observers, in many locations contaminants in underground water are ten times the maximum allowable level. Water hardness exceeds allowable levels by a factor of five, and bacterial sources of serious illnesses are present. Many alternate water resources are difficult to access or equally polluted by poor waste management practices and unregulated agricultural toxins (see Table 61, Annex D).

²⁷ World Bank Fergana Valley Water Resources Management Project, "Rapid Social Assessment," 2005.

²⁸ Information supplied by Oblast.

²⁹ Data from Konibodom Hukumat.

³⁰ World Bank data; see also UNEP-GRID-Arendal Norway Website - Research Laboratory for Nature Protection.

The combined effects of lack of access to piped water, polluted irrigation canals, water-logging, and blocked and non-functioning drainage have resulted in the spread of hepatitis, malaria, typhoid, and gastrointestinal ailments. Water-borne diseases were a main source of 969 reported illnesses across the nine target jamoats last year.³¹ Many deaths from these ailments were reported in Konibodom, which has higher levels of contamination due to its location at the end of the Farghona Canal.³² Many young children died in Bobojon Ghafurov during 2005-06. Indeed, mortality rates for children under five years old, adjusted for under-reporting, is estimated as 118 per 1,000 in Tajikistan, much higher than the figure set by the Millennium Development Goals,³³ in part due to lack of access to clean water. Earlier subsidies, estimated at 40 percent of GDP in 1991, have disappeared, exacerbating health problems associated with access to clean water.³⁴

There are also psychological dimensions to inadequate accessibility of water. In the hot summer months, temperatures can rise up to 40 centigrade and beyond, putting additional physical and psychological strain on those further away from water resources. In a Yovon focus group, perceptions were to the effect that those away from the canals were “more emotional”, “less rational” mostly referring to women. Unfortunately, these trends help strengthen stigmas in a traditional culture where discrimination against woman are on the rise following the loss of their socialist rights.

Sanitary and healthcare shortcomings also drain already meager household resources that could be used for school fees, clothes, or food. For example, savings toward the cost of school supplies—about 100 somonis—could be wiped out by one serious illness. Survey findings indicate that health problems are among the main reasons for borrowing money. Indeed, the most frequently reported shocks experienced by households were illnesses and injuries, from which only a quarter of households had recovered. These narrow margins between survival and disaster are likely the reason most survey respondents believed that money was sufficient only for absolute minimum needs.

3.6 WATER CONFLICTS

Water flow to households is a function of the geographical location of farms vis-à-vis the source on the one hand and control exercised by water authorities and mirobs at various levels on the other. The differences in means and circumstances among regions, villages, and households have led among other things to continuous water conflicts and tensions. At various levels, those who find themselves compromised sometimes resort to desperate, improvised, and sometimes even clandestine efforts to reroute resources for their own benefit (see further Tables 59- 60, Annex D).

Water conflicts at the macro-level are represented by disputes between bordering governments, cross-border tensions, and disregard for treaties. Under the Soviet Union, water resources flowed unhampered across what are now separate and sovereign Central Asian nations. Funds for the repair and maintenance of the water system infrastructure were also provided centrally to ensure efficient irrigation management. As a negative side effect of the recent geopolitical changes, water resource management has now fallen

³¹ Based on local team data.

³² Data from Konibodom District’s Health Department, 2007 (in Tajiki).

³³ World Health Organization, “Mortality Fact Sheet,” 2006.

³⁴ Asian Development Bank, “Women in Tajikistan: Tajikistan in Transition,” 2006.

prey to competitive struggles across newly-drawn boundaries and emerging regional stakes. These conflicts are further compromising disadvantaged downstream communities.

Water conflicts at the local level are best observed between the needs of the bigger and better-connected cotton farms on the one side and the requirements of smaller land holdings. For over 80 percent of the quantitative assessment respondents, access to water for household plots and presidential lands was through a large farm or a neighboring small farm. A large number of households further either stated that they received very little or low-quality water as a result. While only a small minority of respondents chose to cite actual incidents of conflictual relationships through the quantitative assessment, upon further probing in focus groups, recurrent admissions of diversionary tactics and sometimes overt conflict were recorded. Some of the focus group participants reported having to steal water in the middle of the night by breaking the gates, thus risking recurrent confrontations with the mirops who invariably chose to ignore these operations.

There are also conflicts over drinking water. Long waits and overcrowding at points of access lead to tension and at times aggression. In Chorgul Jamoat in Yovon there is only one source of sweet drinking water for 14 villages, an underground access to a well constructed by CARE International. Disputes at this watering point are frequent, once even leading to death, as one impatient neighbor killed another with a shovel while standing in line. In another incident a woman was beaten while trying to take water out of turn after a 15 km walk. Even though the aggressor was arrested, this is an illustration of the level of contention and stress caused within the community due to the scarcity of water.

Inter-village disputes regarding water allocation (as well as irrigation and drainage issues such as pump rehabilitation) are generally directed towards the mirop of the Vodkhoz in a vertical manner. Intra-village disputes however are more common and resolutions are attempted organically through neighbors, village elders, and mahalla committees. For most conflicts the primary coping strategy seems to be resignation. Some 60 percent of survey respondents cited “no arbitration” to conflicts, alluding to acceptance of their own limited power relative to that of larger stakeholders. Other respondents cited ad hoc organic conflict resolution methods such as mutual agreements, or mediation through neighbors and village elders.

3.7 SUMMARY OF MAIN FINDINGS

1. Economic difficulties have resulted in the breakdown of water infrastructure, leading to extensive water shortages, water-logging, and high levels of contamination.
2. Large areas cannot be cultivated due to water-logging and water shortages, which limit the income-generating opportunities of households.
3. Water fee collection rates are low due to widespread poverty, a sense of entitlement to free water, and low-quality water delivery services.
4. Water provision is organized around the needs of the large cotton farms. Households are dependent on these farms for water, which often leads to household members, primarily women, supplying below-market value labor to large farms as a quid pro quo for their household water supply.
5. Drinking water was not specifically planned for and remains a pressing problem.

6. Water contamination and water shortages have a severe impact on rural health indicators, and some households never recover financially from family illness due to the medical costs.
7. Against the background of water shortages and households' dependence on large farms, water conflicts and tensions have become prevalent.

4. Water Users Associations

4.1 INTRODUCTION

The previous part of the report discussed how, since independence, Tajikistan's public institutions have not had the means to maintain and rehabilitate the antiquated irrigation and drainage systems. This has further resulted in potable and irrigation water shortages as well as water-logging and water contamination which have in turn severely impacted agricultural production, rural livelihoods, and health indicators. It was also suggested that water infrastructure continues to function around the needs of large farms which provide water to rural households at least partially in exchange for their cheap labor. While this leaves rural households at the mercy of large farms, a sense of entitlement to free water further prevails in rural areas that obstructs the introduction of fee-for-use system for water that would create partial cost-recovery for water suppliers. The situation has been exacerbated by recent structural changes and shortcomings that have created a void in water management at the local level.

This part of the report focuses on water users associations (WUAs) whose establishment is on the agenda of FVWRMP, aiming toward an effective ownership and management of the secondary and tertiary water delivery networks. A number of international and domestic organizations have already been involved in creating WUAs across Tajikistan, and an examination of their experiences can help FVWRMP to set up its WUAs in an effective and sustainable manner. A detailed description of the legal and institutional aspects of WUAs is provided in Annex B and summarized as part of the background in the next section. The sections that follow introduce several WUAs and initiatives to establish WUAs in the near future in Yovon and in Sughd to draw lessons from their experiences. The analysis also benefits from WUA experiences elsewhere.

4.2 INSTITUTIONAL BACKGROUND

The agricultural sector of Tajikistan is undergoing extensive restructuring with the aim of establishing market mechanisms by replacing former state-owned kolkhozes and sovkhozes with smaller farms. In addition to the problems with land reforms discussed earlier, it is unclear where responsibility lies for maintaining the irrigation system, the manifold drainage networks, and water delivery to households served by state-owned enterprises. Tajikistan needs to create a water management structure that prevents over-consumption and ensures equitable distribution. Under the existing situation, households and small farms are secondary water users and water companies feel neither responsible nor accountable to them; nor is there any funding to service them. Experience elsewhere has shown water users associations, with their members drawn among water users, to be effective in managing water provision, consumption, network maintenance, and melioration. Water users associations are supposed to provide for a fair distribution of water, maintain the irrigation and drainage networks, and allow for the voices of their members to be heard at the level of public organizations. Water users associations are also expected to reduce overall expenses, increase investment efficiency, and ultimately lead to increased crop yields and lower negative environmental impacts.

In 2006, the President signed a Law on Water Users Associations intended to create a firm legal basis for WUAs and to replace and/or complement the earlier ad hoc legal structures. The Law, which regulates relations between public water authorities and water users, stipulates that WUAs must provide for water users' participation in managing water infrastructure and water delivery. WUAs have the authority to set fees to cover their expenses including irrigation system maintenance costs. Both WUA members and non-members must pay fees for using WUA services in the association service area. WUAs should be registered with a ministry-level office that monitors their activities and provides legal, technical, and financial assistance. Furthermore, three regional WUA Support Units are being organized under Sughd Oblast Water Resources Department, Kurgantube Territorial Water Resources Department, and Kulob Territorial Water Resources Department. WUA Support Units are also being established at the district level (see Annex B for further details).

4.3 WUAs COVERED IN THIS STUDY

About one hundred WUAs have been established across Tajikistan under the old and new legal frameworks, primarily with funding from international organizations, including the World Bank under the Rural Infrastructures Rehabilitation Project and the Farm Privatization Support Project (see Annex B). Local hukumats, district water resources departments, dihqon farm associations and local NGOs also have initiatives to establish WUAs. Each funding agency has its own way of establishing a WUA, including differing levels of funding, technical assistance, administration arrangements, equipment, staff, and service areas. Not surprisingly, these different inputs have produced WUAs with different levels of efficiency, influence, and sustainability.

Of the nine jamoats covered across the three districts in this study, only Yovon's jamoats have experience with WUAs. In 2002, a WUA called Ten Years of Tajikistan was established in the Ozodi Jamoat (comprising 10 villages with a population of 11,033) as part of the Bank Farm Privatization Support Project, which involved 308 members, eight specialists, 72 dihqon farm members, and 754 hectares of irrigated land. A sibling WUA was also initiated in the Chorgul Jamoat but due to an array of difficulties is now defunct. As expected, quantitative assessment only captured evidence of WUAs in Yovon. Yet, the numbers were still small with about 40 percent of respondents being aware of WUAs and only around 5 percent indicating their Khojagi's (large collective or individual/multifamily small farms) membership in WUAs (see further Tables 62-64, Annex D).

Among Konibodom's jamoats covered in this study, only in Lohuti has a WUA been initiated. An NGO helped to register the association and an engineer was initially chosen among dihqon farm directors to head the WUA. Yet this WUA was not found to be functioning in any discernable way by the study. Yet this study concluded that the WUA was not functioning in any discernable way. Preparatory work for establishing WUAs was also reported in Sharifov and Ortiqov, although progress has been slow due to delayed mobilization of human and material resources. Accordingly little evidence of WUAs was captured in the quantitative assessment of Konibodom's targeted jamoats. However, two WUAs have been fully established elsewhere in Konibodom outside the study area. Ravot-1 and Ravot-2 were set up in Puloton Jamoat in 2005 with ACTED financial and technical assistance, and further support from District Hukumat, Raivodkhoz and Puloton Jamoat. Ravot-1 WUA service area includes Ravot and Yangi Ravot villages; its water supply source is Isfarinka River, and its members comprise six dihqon farms with 1100 hectares of irrigated land and 1,273 shareholders. Ravot-2 WUA members are two dihqon

farms with 400 hectares of irrigated land and 264 shareholders (including Kyzyl-nur, Patar and Yakkaterak villages) and water for the service area is pumped from the Big Farghona Canal.

Additionally, since there was no WUA in Ghafurov (where large farms are still kept in the form of joint stock companies and production cooperatives, and meaningful land restructuring has not yet started), except for early initiatives in Qataghon, an alternative WUA elsewhere in Sughd, that is Jabbor Rasulov, was targeted by this study in order to have adequate evidence on the subject. The Zarafshon WUA in Jabbor Rasulov was established in 2003 in the framework of Integrated Water Resources Management in Farghona Valley. Funding was provided by Swiss Agency for Development and Cooperation (SDC) and the project was jointly implemented by International Water Resources Management Institution (IWRMI) and Scientific Information Center of Interstate Coordination Water Economy Commission. ACTED has also given this project a small amount of funding while the main financial source to run the WUA is supposed to be water fees. The WUA service area includes 65 farms with a total area of 1050 hectares distributed among 1966 land shareholders living in 5 villages and 1,180 households. In Zarafshon, water authorities transferred the usage of off-farm channels to the WUA but provide funds for it to operate and maintain the system.

Below are lessons learned from the study WUAs and a discussion of their strengths and weaknesses. These findings are supplemented by citing information from WUA experiences elsewhere in Tajikistan, including those related to the Rural Infrastructures Rehabilitation Project, the Farm Privatization Support Project, Water Users Associations Support Project (WUASP) implemented by Winrock International and funded by USAID, and Asian Development Bank initiatives.

4.4 DEMONSTRATED BENEFITS OF WUAS

The success of WUAs is supposed to lead to improvements in the deteriorating water infrastructure through budgetary and investment efficiencies as well as enhancement of the conditions of adjacent farmlands, ultimately resulting in increased yield potentials and improved livelihoods of users. Additionally, responsible water management is supposed to have positive environmental impacts and to further result in improved sanitation and health of rural households. While research into the operation of target WUAs found mixed overall results, it also illustrated a number of benefits associated with WUAs that had experienced some degree of success. In some WUA projects, 10-20 percent increases in water fee collection rates were witnessed. Farm Privatization Support Project WUAs elsewhere are also reported to have increased fee collection by 20 percent while WUAs established under the Rural Infrastructures Rehabilitation Project are said to have enhanced fee collection by 19%. Water provision to dihqon farms under these two sets of projects are also reported to have increased by 3-13 percent. Among target associations, water resources management was reported to have improved somewhat at the local level. Furthermore, crop yields were reported to have increased in the Zarafshon WUA's service area from 1.9 ton/ha to 2.3 ton/ha between 2003 and 2006 and similar increases of around 15 to 20 percent were anecdotally reported as an outcome of the establishment of Ravot-1.

Many of these improvements are due to an active users association that collects fees on behalf of all members and deals directly with water authorities, circumventing the challenge of dealing with many different users. The new arrangements have yielded a more systematic and equitable water monitoring process by introducing meters and gauging technology to assess and dispense water according to need,

type of crop, and surface area. Before such measures were implemented, water users at the beginning of the canal would open the gates and take more water than needed and water users at the end of the canal would have little or no water. The new arrangements have also enhanced food security, improved maintenance of secondary and tertiary water infrastructure, and helped meliorate adjacent farmlands. These benefits have strengthened community-based involvement by creating ownership and accountability links that have resulted in increased cohesion, trust, and awareness of sanitation and good practices. Additional future benefits may include bridging mechanisms for agricultural marketing and contract farming arrangements.

4.5 CHALLENGES TO THE OPERATION OF WUAS

The sustainable operation of WUAs hinges on effective community participation and sustained engagement of the users by way of expertise, resources, and connection to the core issues of the operation and management of the water infrastructure as well as a deep understanding of the concerns of water users. Organizations active in the target area have opted for different approaches with various outcomes. An analysis of these variations demonstrates a number of challenges linked to slow pace of land reforms and inadequate transparency, deteriorating infrastructure and lack of technological inputs, depleted financial resources and insufficient expertise, and failure to engage water users in general and to include women in particular.

Slow Pace of Land Reforms

The slow pace of meaningful land reforms and prevalent farm policies pose serious obstacles to community-based water management initiatives. Under the current setting, organizations striving to set up WUAs find themselves working on the edges of large cotton farming interests and must deal with the impact of future company monopolies and top-down dictations by local hukumats. In territories where large-scale cotton production dominates, as in Ghafurov, farms continue to exist and operate much as they used to in spite of the official position advertising otherwise. As a consequence, WUA activities in these areas have a limited scope of operation.

Deteriorating Infrastructure

Across the study area, dilapidated water delivery systems are working at a greatly reduced capacity. Electricity flow is also severely reduced during winter months and impacts the operation of the few functioning pumps. Ongoing challenges are thus posed to the successful establishment and operation of WUAs due to the progressive failure of infrastructure and lack of capacity on behalf of governing institutions to provide a minimum base of operations for irrigation, drinking, and multiple-use needs. Fundamental support gaps creating an erosion of confidence and trust in water delivery management continue to undermine local water management initiatives. For example, having adequate level of equipments, including computers, Zarafshon WUA manages two secondary channels, namely, Ak-kalya (5 km 453 ha) and Bystrotok (5.2 km, 597 ha) from which the water is delivered through 28 derivations to farms and villages (water comes from Gulyakandoz's main canal as well as the main canal of Khojabaqirgon-3). Yet, despite its achievements, it is unable to sustain its water supply, since Khojabaqirgon canal has no regulating water storage (reservoir) and depends solely on the water level of Khajabaqirgonsoy, which faces shortages. Water shortages should have been anticipated and reservoirs constructed to provide continuous water supply during breakdowns, until the pumps could resume operation. Lack of safeguards erodes water user confidence and undermines WUA operations. As a result,

local people revert to traditional water user patterns, and subsequent efforts to organize WUAs are met with resistance and lack of trust.

Financial Difficulties

A major issue in the long-term operation of WUAs is financial sustainability. While funding organizations have covered start-up expenses, it is often expected that in the medium-term water fees satisfy WUAs' financial needs. However, fee-based financial sustainability is not automatic. It is a gradual process, requires careful planning in advance, and may further need other non-cash financial incentives (exemptions, etc.). For example, the WUA in Ozodi Jamoat of Yovon under the Bank Farm Privatization Support Project, had an agreement with Raivodkhoz on water supply and irrigation system maintenance. The WUA was able to pay staff salaries during the 2002-03 implementation, but when the start-up was completed in 2005, WUA finances deteriorated and staff salary payments were so late that five of the eight staff left the project. Even the mirobs were not paid on time, and their work attendance was irregular. Obviously, this deteriorating situation decreased WUA effectiveness and scope of the work and fee collections declined. Most user fees, especially from cotton farms, are now collected directly by Raivodkhoz. As mentioned above, the sibling organization in Chorgul is defunct for the same reasons. Elsewhere, an example from Asian Development Bank (ADB), which established and wholly funded a WUA—providing bicycles for the mirobs, water meters, computers, and salaries for the first year—expected the association to become self-sustaining. But after the ADB stopped paying salaries, the WUA disintegrated in a web of internal corruption, non-collection of fees, and disillusioned users.³⁵

Similarly, the price of water was reported to be a significant problem for farmers of Ravot-1 and Ravot-2 WUAs. Fee collection levels translate into how much water can be requested by dihqon farms from Raivodkhoz and determines the profitability of farm activities. Dihqon farms started paying Raivodkhoz for water in 1996. Price was set at 0.006 somoni for 1 m³ of water or 60 somonis per 1 ha. In 2003, before additional payments were requested by the WUA, water fees amounted to 13% of all expenses of the dihqon farms, including seeds, fertilizers, fuel etc. Due to various financial difficulties faced by the farms, water users have not been able to pay their fees and have accrued significant water debts to the Raivodkhoz, amounting to approximately 25% of gross annual income from sale of crops. Ravot-1 WUA Board has had to approve additional payments in the amount of 0.001 somoni per 1 m³. In order to pay for electricity and for technical expenses linked to three pumps, Ravot-2 WUA added 0.0024 somoni per 1 m³ (an increase of 40%) resulting in a total figure of 0.0084 somoni per 1 m³ of water. These experiences show that lack of planning for the financial sustainability of WUAs lowers the chances of their survival.

Overall, WUAs have not been able to meet all of their obligations due to low rate of fee collection. In particular they are often not able to maintain the irrigation system they are responsible for due to the absence of adequate funds. WUAs do not have the minimum requirements of office, office equipment, and means of transport. More importantly, most WUAs do not have the necessary equipment for melioration and other related work. As of yet, there is no credit available to WUAs for the procurement of equipment and repair work. The WUA support units do not provide any financial support either. The

³⁵ See Asian Development Bank, "Support for Monitoring Policy Reforms and Improving Farm and Water Management Project," TA No.4472-TAJ, Dushanbe, 2007 (in Russian); and Asian Development Bank, "The Irrigation Rehabilitation Project," TA No.4143-TAJ, Dushanbe, 2004 (in Russian).

status of WUAs as non-commercial organizations also limits their activities to some extent in financial terms.

Problems with Human Resources

Large-scale migration of technical staff, breakup of large kolkhozes, and farm debts have depleted the rural landscape in terms of technical expertise. Qualification levels of WUA technical personnel remain low. The technical staff active in WUAs today often does not have a full comprehension of its responsibilities. Indeed, WUA's continue to be challenged in terms of competent human resources in the absence of specialists, hydro-engineers, technicians, agronomists, business and financial managers. Institutional arrangements are also absent for improvement of WUA service personnel. To make matters worse, as suggested above, WUAs' financial difficulties related to fee-based operations act as an obstacle to attraction and retention of expert staff. For example, Ravot-1 and Ravot-2 WUAs have an annual agreement with Raivodkhoz for water supply, make annual water distribution plans, and in accordance with their capabilities, maintain irrigation systems in working conditions (having made partial repair of gutters, pipes, small electric pumps, etc). Despite all this, the absence of hydro-engineer as well as specialized equipments is particularly noticeable.

Inadequate Transparency and Accountability

Anecdotal information gathered through the research shows that hierarchic influence peddling often intervenes in the work of WUAs. In particular, placement of prominent but largely ineffectual favorites in key positions is a detriment to the operation of the associations. It compromises the fundamental strength of WUAs which are supposed to be democratic institutions with transparent procedures and accountable to their members. In the study, the ex-deputy of a Jamoat who had been without employment was simply appointed to the position of the head of a WUA, although demonstrating a clear lack of expertise and inability to cope with developing challenges. Inadequate leadership and lack of sufficient mandate often lead to management breakdowns, erosion of confidence, and subsequent failure of the WUAs. Furthermore, traditional top-down models and cultural internalization of authority in general collude to undermine the independent rise of community-based initiatives. Efforts are thus needed to officially curb the influence exerted by the local hukumats as well as impressing guarantees of freedom of operation on local community institutions.

Insufficient Front-End Development

Much work is needed for a successful implementation of community-based water initiatives as the case of Yovon WUA illustrated. In particular, the quantitative survey showed that for the most part households in Yovon felt that there was no impact resulting for the WUAs with a sizable number thinking that things had even gotten worse. Without front-end work on behalf of state organizations to enhance the water infrastructure, community-based maintenance and management initiatives are bound to fail. There is some evidence of good although still not adequate front-end efforts in the study area. For example, significant efforts were made to mobilize people in the process of WUA establishment in Ravot-1 and Ravot-2. ACTED arranged seminars on mobilization and organization of WUAs, methods of compiling water use plan, technical evaluation, monitoring, and repair of irrigation networks, , and a few other topics. These seminars were effective in organizing Ravot-1 WUA and Ravot-2 WUA.

Disengagement of the Donor Organization and Ownership Challenges

Many WUAs in the study area failed after donors disengaged because local people had never really developed a sense of ownership. Sometimes this happened because outsiders were contracted to administer start-up in the interest of speeding up front-end work to establish a WUA but this undermines local capacity building and ownership. Instead, community participation is essential from the inception – to develop business plans, supervise functions and operate the organization, a process that builds skills and ownership incrementally. In fact, in examples from elsewhere, some donors have even adopted a sliding scale that makes donor grants contingent on levels of user participation. Another element that has weakened WUAs is paying salaries to some WUA members, which has compromised community links and seemed to send a message. Instead, enforcing a modest symbolic payment of even one somoni signals that WUAs are user-owned-and-operated associations, which establishes and strengthens ownership links from the outset. The USAID and Swiss Agency for Development and Cooperation (SDC) adopted this approach to sustaining user engagement.

Insufficient Inclusion of Women

Although widespread male migration has significantly increased the number of female-headed households, women's participation in WUAs in Tajikistan is hampered by a post-Soviet societal return to traditional gender roles and the necessity of women's multiple livelihood strategies. Given women's new responsibilities as heads of households, their economic contributions could suffer as they are not involved in key decisions affecting their livelihoods. The study found no formal institutional barriers to female participation and some examples of women participating in community groups, but most evidence suggests that rural women avoid active involvement in decision making. Some female focus group participants commented, "Women do not travel to government offices," and said that they "...persuade their men to talk on their behalf." Women's involvement in the community-based water management initiatives thus falls considerably short of their disproportionate burden of livelihood, the rising trends in female-headed households, and the direct interest they have in the improvement of water provision.

4.6 SUMMARY OF MAIN FINDINGS

1. Establishing WUAs has yielded several benefits such as more systematic and equitable water monitoring, higher rates of fee collection, increased crop yields and incomes, and enhanced food security.
2. The challenges to successful WUA operation include the slow pace of land reforms, lack of transparency and accountability, deteriorating infrastructure and lack of technological inputs, depleted financial resources, insufficient expertise, and failure to gain the trust and participation of water users in general and women in particular.
3. Official intervention is needed to curb influence peddling by local hukumats and ensure democratic, transparent, and accountable operations among community institutions.

5. Synthesis of Findings and Recommendations

5.1 INTRODUCTION

This study was conducted with the aim to inform FVWRMP in two main areas. First, as the central focus of FVWRMP is on water, the social assessment sought to shed light on household's access to water and the structural dimensions of water provision, including the working of recently-established WUAs. Second, since it was hypothesized that rural poverty in the study has a strong gender aspect, the study probed how the (changing) socioeconomic structure of the rural society and the formal and informal institutions of agricultural production, including those related to water and land, affect women. This brought the study to cover, apart from water and gender, demographic situation, incomes and wages, employment, and agricultural activities as well as various aspects of access to land, possession of land shares on large farms, and titles for land holdings and land shares.

This part of the report synthesizes study findings and is organized in two main sections. The first section examines the interplay of the main issues covered in the study to discuss in a structural manner various aspects of poverty and vulnerability in general and as they affect women. It also suggests an outline of a framework that may lead to an improved overall situation for the households and for women in the long-run as well as of short-term measures that can have poverty alleviation and gender equity impacts. This acts as a prelude to the second section discussing the water situation whose improvement is among the short- to medium-term measures that can enhance agricultural production and farm earnings. Furthermore, water users associations have been proposed and established in a few instances to improve the structure of water provision, but they have experienced various shortcomings that have hampered their operation on balance. The last portion of the second section thus suggests ways to ensure their growth, sustainability, and satisfactory performance.

5.2 AGRICULTURAL ACTIVITIES, WATER, GENDER, AND POVERTY: A STRUCTURAL ANALYSIS

Rural development entails increased incomes, reduced vulnerability, improved sanitation and health, better access to services, and enhanced human capital. These improvements have further cross-effects. For example, enhanced human capital has a positive impact on incomes. Yet, these improvements will still be inadequate if they are not distributed equitably among households, across various social and ethnic groups, and between men and women. In the area covered by this study and perhaps across Tajikistan, a number of factors act as barriers to development while a set of opportunities also exists.

Apart from some self-employment channels for men as well as a few public sector and trades and services occupations, the most important first employment of household members in the study area comprises agricultural activities on the large farms. This is particularly the case for women. Furthermore, the second productive activity of most household members is working on the household plots and presidential lands. These employment channels are also augmented with minor informal sector activities. Indeed, it is not uncommon for livelihood strategies of women and men to include a mix of formal and informal sector employment. Yet, high levels of labor migration (which does translate into significant

earnings for the households) suggest unemployment and underemployment, inadequate wages, and low levels of productivity in the study area.

Despite reported economic growth in Tajikistan, there is a general feeling of poverty among the population of the study area. The overwhelming majority of the households feel they have only enough money for the absolute minimum of clothes and food, or even less than minimum. Indeed, the roughly-estimated median and mean annual incomes are quite low with remittance constituting about a quarter of the money households receive. Many households have a feeling that their financial situation is stagnant or getting worse (indeed against the background of rising prices). Households are vulnerable to shocks and there is little access to formal borrowing.

Working on large farms is a main formal-sector, income-generating channel for many rural household members, in particular women, although it brings in little. Workers continue to labor at the large farms for small amounts of cash, some in-kind wages, and cotton stalks used for fuel. There are few new opportunities available in the industry. Most manufacturing units and workshops that existed in the past were closed down during post-independence economic disruption. There is also a social structure at work made up of households, large farms, and power institutions, acting among other things through the provision of water from large farm networks to individual houses and household plots, which pushes many villagers (in particular women) back to the low wage jobs at the collectives. On this last point, note that village water comes from the canals irrigating the cotton fields, making these settlements wholly dependent on maintaining the existing cotton production set-up (despite the possibility of higher returns from fruits and vegetables the sale of which could also benefit women).

Large farms pay low wages mainly as a result of several factors. Labor productivity is low on these farms. Machinery and equipment are obsolete or non-existent and application of scientific know-how is minimal due in part to migration of high-skilled labor and the disruption of the previous knowledge system. The water and drainage networks and electricity shortages exacerbate the situation. The wages are also low since the farms have significant debts to future companies and others (including water debt). Yet, debt has been accrued due to financial mismanagement and possibly malfeasance. Finally and quite importantly, large farms must meet state cotton quotas while they sell their outputs at low prices due to both prevailing international low cotton prices and the monopsony through which cotton is purchased from the farms. This situation is operationalized and exacerbated by a collusive structure that extracts and takes away surplus from lay workers at the large farms, thus precluding both increased rural household consumption and reinvestment in productive activities of the collectives.

The fact that few large farm workers have a clear understanding of the land shares they are supposed to have is an indication of this convoluted structure. Indeed, land reforms are meaningless from the point of view of a majority of households. In particular, there has been reluctance to relinquish control over prime as opposed to marginal farmlands. Cotton-growing kolkhozes and sovkhoses have been turned into a few smaller collectives that operate more or less on the old principles and large-scale cotton production still predominates as under the Soviet period (although in non-cotton-producing areas there is some evidence of more meaningful land reform).

Thus in cotton-producing areas, a complete and relatively closed low-wage, low-productivity cycle is established that keeps many rural households in poverty with the only exogenous factor affecting it being migrants' remittances. What should be emphasized is that exploitation per se does not hamper poverty

reduction or development. The developmental obstacle here is rather the particular exploitation structure whereby surplus is extracted but is not reinvested in the localities. There is no evidence either that the proceeds are invested domestically elsewhere in productive activities that may lead to increased demand for labor. If the surplus was reinvested where it was extracted (or for example in manufacturing units around urban areas), it would be possible for an upward spiral to be established through which gradual improvements in productivity coupled with an expansion of the economy and job opportunities could take the population out of poverty.

Every system of exploitation must have its labor reproduction mechanisms. Yet, of necessity, in the above-mentioned low-wage, low-productivity rural exploitation structure, the reproduction mechanism continues to preserve poverty in order to keep the increasingly feminized labor at work in the large farms. Gender relations against the background of removal of previous socialist programs are thus an important part of the reproduction mechanism of the low-wage, low-productivity structure of exploitation and poverty cycle. Despite high levels of educational achievements in the study area (and in fact across Tajikistan's rural regions) among females, formalization of women's work, and high prevalence of female-headed households, traditional forms of family structure remain the norm with their implications for gender relations. Against this background, the feminization of low-wage labor keeps the exploitation and production structure operating. Whereas female labor at the large farms has low bargaining power, male labor is either recruited by the collusive structure or can find income-earning opportunities in some businesses and quite importantly through migration. On this last point, note that the absence of overwhelmingly male migrants does not empower women and weakens the cohesion of the family and by extension the society by depleting it of high-skilled human resources. All these help reproduce the low-wage, low-productivity (female) labor required at the large farms.

Furthermore, with such low wages offered at the large farms, household plots and presidential lands are significant in providing food security and supplementary incomes for many households. Yet, households covered in this study believe that their produce on these types of land is stagnant or even decreasing. Notwithstanding the small sizes of these land holdings and their meager potentials, the main reasons behind their low level of output are water shortages in some places and water-logging in others due to deteriorated water and drainage network structure, little possibility to apply scientific know-how, limited access to inputs, migration of able bodies, and low productivity of land or inaccessibility in the case of presidential lands. Also, despite the importance of livestock in the overall livelihood strategies of the households, livestock assets are for the most part modest—a further manifestation of poverty or at least lack of productive opportunities in this area. All these mean that household plots and presidential lands only act to reproduce labor for the large farms, rather than release the households from the poverty trap.

Even health problems may be thought of as having a reproduction function. The compound effects of lack of reliable drinking water and polluted irrigation canals, rising water tables and water-logged homesteads, deteriorating water delivery systems, and blocked and non-functioning drainages are the main source of widespread illnesses. The health and wellbeing impacts of the current water management situation are a drain on the inhabitants' already meager resources which are otherwise needed to sustain or enhance livelihoods. With the current economic strife, large-scale migration of the able bodied male population, and collapse of the socialist programs, there are heavier demands on the shrinking means of the rural households to close health and service gaps. The negative health consequences of the deteriorating water infrastructure as well as time and energy spent in procurement of suitable water alternatives lay first claim on the limited resources that would otherwise be used in provision of

education or on realizing livelihood potentials. The resultant opportunity costs are decreasing food security and lack of proper nutrition that feed into a cycle of poverty and create a new generation of disadvantaged rural folks. Furthermore, for these people the slightest shock to scant livelihood assets can tilt the balance of the scale and plunge them into a survival crisis. With these unfortunate circumstances, (increasingly feminized) labor is pushed back to work on the large farms.

In spite of the vicious cycle of poverty, there are some developmental opportunities in the study area as well. High level of educational achievements enjoyed by both men and women are certainly the first thing that strikes observers in Tajikistan's rural areas. Indeed, excluding Tajikistan's neighbors, it is difficult to find another place at the same level of per capita income that enjoys universal literacy. In fact, the Tajik situation may provide a counter-example to theories of endogenous growth and human development that place education-based human capital at the core of development.³⁶ This need not be the case if we still accept the importance of human capital but attribute underdevelopment in Tajikistan's rural areas to the pervious and existing political economic structure (including that related to the process of physical capital formation). That is, the high level of human capital in Tajikistan's rural areas is a great potential that can be tapped into under the right development circumstances.

Related to the above observation are the possibilities that exist with regard to female labor force participation both for women and for Tajikistan's development trajectory. Traditional gender relations have perhaps been reinforced due to the removal of earlier social programs, increasing poverty which affects women more than men, and possibly a resurgence of patriarchal religious beliefs. Yet, not only are women in Tajikistan's rural areas much better educated than their counterparts across the predominantly-Muslim world, but their rate of formal-sector economic participation is quite significant. Indeed, although women's labor in Tajikistan brings in low wages (in low-productivity activities), its formalization has important ramifications. High rates of women's participation in the formal sector can form the basis of future export-oriented industries which have been a main driving force in East Asian development and industrialization.

In fact, in Tajikistan, women's labor is the driving force of an export industry—cotton. The problem is that cotton, in terms of its current production structure, is not the right type of export industry that can lead to respectable and sustainable growth in the medium- or long-term. It has all the characteristics of primary goods exports with their historically disappointing performance. Its nature is in contrast to activities such as small-scale farming where barriers to entry and exit are low and productivity may be enhanced over time by incremental application of capital. Such a system allows incomes to increase incrementally, yielding an increasing source of tax revenues for the purpose of infrastructure expansion, and resulting in better income distribution. Under a small-scale farming structure, as much of the income is both retained and distributed where it is earned, a network of villages and towns may emerge that can

³⁶ See World Bank, *The East Asian Miracle*. Oxford: Oxford University Press, 1993; Barro, R. "Government Spending in a Simple Model of Endogenous Growth," *Journal of Political Economy*, October 1990, pp. 103-125; Barro, R. "Economic Growth in a Cross Section of Countries," *Quarterly Journal of Economics*, 106, May 1991; Romer, P.M. "The Origins of Endogenous Growth," *Journal of Economic Perspectives*. Vol. 8, Winter 1994; Lall, S. "Human Resources Development and Industrialization, with Special reference to Sub-Saharan Africa," in *Human Development and International Development Strategy for the 1990s*, edited by K. Griffin and J. Knight. London: McMillan, 1990.

facilitate local exchange of goods and services via a central town with other regions. Cotton production is also vulnerable to external factors that inhibit local economic activities which could otherwise arise as a result of exports. It may be the case that at least some of the earnings from cotton production, in its current form, are in fact taken out of the country by foreign firms—a process facilitated through their local associates. The situation is further exacerbated since the value-added processing stage of the production chain is located elsewhere. The initial stages of the production thus remain at the mercy of the market with no guarantee that the terms of trade do not further deteriorate.³⁷

This brings us back to the issue of land and agricultural activities. As an important recent World Bank report asserts, the main issue with regard to rural development is property and land-use rights.³⁸ For land tenure inequality is believed to stall growth, increase poverty, and degrade the environment.³⁹ In contrast, land reforms that distribute control over prime (versus marginal) lands and give decision-making authority on agricultural activities to farmers are believed to allow for increased food security, land improvements, enhanced production, and better conservation of the environment.

As discussed, households in the study area may cultivate land of their own (household plots or presidential lands) or large collective lands for which they should have land shares. The number of single or multi-family dihqon farms is very small. Almost all households across the three districts have household plots—most of which are cultivated—and face modest difficulties in accessing water (although to increase their production they may face water scarcity). Furthermore, less than half of all households have presidential lands (generally low quality lands and farthest from water sources), a significant percentage of which are not cultivated due to lack of water, inputs, or able bodies, or due to their distance from households' residences. The main reason some households are not in possession of presidential land is for the most part their unavailability. Furthermore, very few households lack household plot or presidential land titles (with little indication of payments involved), the majority of which are issued under the name of the head of household (men for the most part).

With households having full access to household plots and reasonable access to presidential lands, perhaps part of the rural reform agenda is fulfilled—at least in terms of providing some food security and income. Yet, household plots are quite small and presidential lands are neither universally available to households nor necessarily arable. The key to rural development then lies with the collectives. Household members working on these farms are supposed to have land shares, that is, the collectives are to act as joint stock cooperatives. However, the establishment of new, smaller collective farms has not meant

³⁷ See Baldwin, R.E. "Patterns of Development in Newly Settled Region," *Manchester School of Social and Economic Studies*, Vol. 24, 1956, pp. 161-79; Auty, R.M., *Resource-Based Industrialization: Sowing the Oil in Eight Developing Countries*. Oxford: Clarendon Press, 1990; Beckford, G.L. *Persistent Poverty*. Oxford: Oxford University Press, 1972; Furtado, C. *Economic Development of Latin America*. Cambridge: Cambridge University Press, 1976; Girvan, N. *Foreign Capital and Economic Underdevelopment in Jamaica*. London: Allen and Unwin, 1971; Kessel, N. "Financial Aspects of the Mining Industry in Aambia," in *The Financing of Economic Development*, edited by W.T. Newlyn, Oxford: Clarendon Press, 1977.

³⁸ World Bank, *World Development Report 2008: Agriculture for Development in a Changing World*, World Bank, 2006.

³⁹ Deininger, K., *Land Policies for Growth and Poverty Reduction*. Washington, DC and Oxford: The World Bank and Oxford University Press, 2003; Deininger, K. and H. Binswanger, "The evolution of the World Bank's land policy," in *Access to Land: Rural Poverty and Public Action*, edited by Alain de Janvry, et al, New York: Oxford University Press, 2001.

increased farmer control over land via land shares. In some cases there are shares but no control while in other farmers are not aware of shares or the land restructuring process altogether.

Thus the main task in the study area is to give control of the productive lands now under the collective system to farmers. The Tajik Government with assistance from the World Bank is working on further land restructuring that will give control of land to individual farmers by breaking up the collectives. While it is not the purpose of this report to endorse a particular model of land restructuring or prescribe any alternative methods, it is certain that shift of control over land and agricultural activities should include management of the proceeds as well as crop choice. This means that the current collusive structure of surplus extraction must be dismantled and replaced. Furthermore, the goals of food security, equitable income distribution, and poverty alleviation will not materialize unless land rights are augmented with access to credit, infrastructure, technology and know-how, and certain other auxiliary services (in particular education and health).

Despite its appearance, the land situation may be thought of as an opportunity as well in Tajikistan. The government theoretically owns all the lands which is certainly not the case in most other developing countries that urgently require land reforms. This means that with relative ease the government can restructure the lands in a way that farmers gain control over what they grow and the agricultural surplus. The problem is that cotton production, as a main foreign exchange earning activity of the country, is maintained by the government through the collective farm system. That is why, excluding a few pilot programs, public policy is reluctant to release control of the collective farm system through genuine land restructuring. Unfortunately, as mentioned, the current cotton production and export structure will not help to alleviate poverty or increase investment in agriculture or other productive activities.

Currently, due to the low prices offered for cotton in Tajikistan, no household is willing to grow cotton on the lands s/he fully controls (household plots and presidential lands). Small land plots and inadequate access to water further preclude cotton farming on household-controlled lands. Cotton is for the most part grown on lands over which the government has control and for whose cotton produce it can set quotas. Yet, there are many international examples of farmers with full control over their lands choosing to produce cotton. Therefore, the problem is not cotton production per se, but the structure of cotton production in Tajikistan, which now requires heavy government intervention to sustain. However, if control over prime lands is relinquished to farmers and cotton middlemen are taken out of the picture so that farmers receive a fair price, then cotton exports could be sustained, and perhaps even enhanced. This system would return enough cotton proceeds to farmers to lift them out of poverty, and the government share would arise through taxes, instead of being extracted through a structure that maintains the poverty cycle.

For Tajikistan with its highly rural character to really develop what may also be needed is *export substitution*.⁴⁰ This would be a gradual shift of Tajikistan's export basis from traditional goods to other products that are still labor intensive but embody relatively simple technologies that allow for international competitiveness. The labor-intensive production process of the new products can expand to provide adequate employment and eventually higher wages. Under such a scenario, farmers who are given control over land and their production can produce for the national market whereby surplus can

⁴⁰ Ranis, G. "Challenges and Opportunities Posed by Asia's Superexporters: Implications for Manufactured Exports from Latin America," *The Quarterly Review of Economics and Business*, Vol. 21, Summer 1981, pp. 204-226.

circulate locally and regionally, thus giving rise to a gradual process of reinvestment and development. Surplus workers will also be absorbed into the new export industry.

Export substitution would be a medium- to long-term program which requires an overhaul of the economic orientation. Immediate benefits as described above can however result from land restructuring with the output of individual farms or perhaps true cooperatives with tightened operations so that surplus is better distributed to workers and reinvested locally. Yet, another issue that has an intimate connection with land rights and food security is water provision and drainage management. The current water and drainage situation has become an obstacle to increased food security and incomes on household plots and presidential lands. Potable water scarcities are also negatively affecting health and by extension economic wellbeing of households. Furthermore, canal infrastructure is designed mainly to feed and irrigate large cotton farms with their characteristics described above. Since those farthest from the main canals have less access to water, their ability to engage in alternate, personal sources of farming is restricted. Farmers in these areas then find themselves at the mercy of low-paying cotton farming arrangements and dependent on the petty wages, in-kind payments and terms dictated by large farm managers. This in turn only re-enforces the current cotton farming practices at long term detriment to the majority of rural population. Immediate attention to these issues is therefore required and must go hand in hand with farm restructuring discussed above. Since water and drainage are the main areas of focus for the FVWRMP, the report provides a full synthesis of its findings and its recommendations on access to water, structure of water provision, and water users associations in a separate section after this.

Turning back to gender issues, despite the traditional character of gender relations, exploitation of women in the study area is not exactly overt. There are no laws that discriminate against women or set lower wages for them. Women are as likely as men to have shares on large farms—at least on paper. Water shortages and drainage shortcomings are not specifically targeting women. Nonetheless, as detailed in this report, poverty, infrastructure and services shortcomings, opaque land rights, water and drainage problems, and most importantly the structure of cotton production affect women more negatively than men. Indeed, the collapse of the former socialist system, the civil war that resulted in many deaths and displacements, and the economic upheavals that followed have caused widespread impoverishment and a public sense of despair and are believed to have progressively worsened the position of women. Perhaps the most far reaching social and psychological fallout of the current situation and the continuing challenges around household access to land, water, and basic necessities is the increasing feeling of disempowerment in relation to one's own fate among women which in turn affects perceptions of possibilities and resignation. It has the ironic effect of reinforcing the very same policies that are responsible for the current predicament in the first place as so many women find themselves with no viable alternative but to return to the fields and further entrench the inequitable system.

Therefore, recognition of land rights through an overhaul of the structure of collective farms, proper water and drainage management, and provision of infrastructure may be hypothesized to strengthen the position of women in the study area. Yet, these will still not be adequate unless all programs target women specifically in their development agendas. Furthermore, in the short-term women will have to be targeted by specific enabling programs and auxiliary services. As women shoulder most of the burden and become central in daily livelihood activities due to shifting responsibilities traditionally shared or undertaken by their male counterparts, their involvement in key decisions effecting access to livelihood assets become more crucial. In particular, following the dramatic increase in the number of female headed households, it is only in the best interest of women to take up active engagement in all potential

instruments of well being. While the level of women's participation in local governing mechanism is not minimal, it nevertheless requires active encouragement.

5.3 IMPROVING THE WATER PROVISION STRUCTURE

This study has captured the extent of water and drainage difficulties faced by the rural sector and rural households in the study area. Much of the irrigation and melioration networks in the study area are in a state of disrepair or collapse as a result of the removal of earlier state subsidies and investment. Water provision has thus faced serious disruptions in many areas while water-logging due to non-operating melioration networks has made large tracts of land impossible to cultivate. Water contamination spreads water-borne diseases and increases salinity and toxicity that damages agricultural production. Obtaining potable water is a severe problem for local people, and water conflicts are becoming widespread. Increasing productivity and output and reducing poverty in rural Tajikistan hinges upon addressing these problems. Water users associations have been proposed and established in a few cases as a response. While there are some successful stories, on balance, the work of water users associations has faced difficulties that stem from their structural set-up as well as unclear land rights. Against this background, it is possible to provide the following water-related recommendations as short-term measures, interim strategies, and long-term solutions.

General Recommendations on Water Provision

New focus and structure for water provision institutions

In the aftermath of limited privatization undertaken in the study area, no agency or organization has clear responsibility for operating and maintaining secondary and tertiary irrigation and drainage canals. This vacuum has triggered a downward spiral in the condition of the water and drainage networks resulting in water access conflicts that damage local livelihoods. Therefore, the state must first redefine the roles and responsibilities of institutions that administer water resources, and create new local-level institutions that fill the void created by privatization. Furthermore, system repair and rehabilitation efforts must aim to protect household consumption needs and strengthen livelihoods of households that depend on personal farms and livestock rearing.

Improving quality of potable and homestead water and preventing adverse health effects

Comprehensive national guidelines and regulations are required to control, limit, and reverse damage caused by pollution and agricultural runoffs from industry and farmlands. As the main employer and patron of large-scale industry, the central government has authority to mandate such standards. International donors can provide incentives by stipulating standards as a condition of engagement. Sustained pressure should also be placed on upstream governments through incentives, negotiations, and international instruments such as joint monitoring commissions, to achieve responsible use and preservation of water resources.

In spite of the current economic difficulties, recent trends demonstrate a moderate increase in spending in Tajikistan's health sector. World Health Organization estimates total national expenditure on health in Tajikistan at five percent of GDP in 2006,⁴¹ a modest but significant rise over the previous years. Some of the increased funding should be targeted to coping with adverse effects of poor water quality and to

⁴¹ World Health Organization; Country Data - 2006

bridge the gap left after independence. Programs could include providing water purification tablets and nutritional supplements as well as and increasing awareness. Community outreach programs could also be developed for local awareness of beneficial health and sanitation practices to improve hygiene and safety behaviors.

Local solutions addressing settlements' multiple-use water allocation needs should be developed in collaboration with water authorities and community-based water initiatives (e.g., redirection of water from irrigation sources or underground streams for collection and use in homesteads, irrigation of household plots, or providing allocations for hawzes). Local solutions must be found for construction and rehabilitation of boreholes and communal wells, as well as provision of small pumps to mitigate problems of water-logging and to harness irrigation water for small plots and household use. Local drinking water initiatives could include construction of reservoir tanks and point-of-use filtration and purification outlets. Measures should be developed for safe water storage to lower risks posed by mosquitoes, snails, and insects to prevent spread of infectious diseases. Infrastructure add-ons for village use, such as access points for livestock, would prevent contamination and improve sanitation conditions. Perhaps water treatments such as iodine could be introduced. Community-based groups would be the best place to start addressing local gaps and devising ongoing development and monitoring schemes in collaboration with local water authorities. Organic village arbitration and monitoring initiatives at access points should be encouraged to resolve conflicts and ensure equitable water distribution. Outreach programs to educate local people about their legal rights as well as instruments and options available for conflict arbitration, particularly for women, should be encouraged.

Sustaining institutional financial resources

Low water fee collection rates contribute to a chronic lack of resources within water administering institutions, leading to non-payment of salaries, staff absenteeism, and serious challenges to operating capacity. Efforts must to be made to improve the collection system through community-based initiatives, while maintaining rate fairness and stability through a clear mechanism of mutual agreement between water suppliers and users. The state water authorities must reassess water collection fees based on achieving some cost-recovery for providing lift and gravity irrigation that considers water destination, type, crops, and other factors. Rate setting should be revisited regularly taking into consideration the incremental improvements to infrastructure, land policies, and user affordability.

Recommendations Concerning Water Users Associations

Prerequisites for optimal WUA operation

In the context of unequal land-holding and state restrictions on crop diversity, bypassing the state governance structures and focusing only on WUA improvement may not be effective despite all the benefits of WUAs. Consolidation of WUAs should be addressed in the context of state regulations on water use, rights, and fees. Progress in meaningful land reforms and removal of distortions in the cotton industry are pre-requisites to optimal functioning of WUAs. Strengthening institutions peripheral to the operation and viability of WUAs, increasing public spending on maintenance and management of infrastructure, and providing technical expertise and input technology are also required. Water supply deficiencies must be resolved and system breakdowns addressed to establish and maintain trust among water users. Further requirements include better information dissemination and transparency regarding land and water rights.

Possible functions of WUAs

WUAs could participate in canal cleaning and canal lining (with Vodkhoz), collection of user fees, water distribution conflict resolution, and drinking water and drainage infrastructure investment and

maintenance. Recent experience elsewhere demonstrates possible roles for WUAs in agricultural services, particularly as delivery channels for inputs and intermediaries for contract farming arrangements or marketing. These will require land use rights and tenure.

Need for adequate seed money and front-end development

To increase WUA success rates and sustain community engagement, more time and resources should be allocated to front-end development. Seed money is required for initial set-up to provide better management of information and data, technology for water gauging and regulating equipment, and logistical support. These resources should be augmented with capacity-building initiatives such as workshops and seminars on management, business plan development, accounting, record keeping, taxes, contracting and procurement, and arbitration and consensus-building. Regarding physical works, improvement of local water delivery networks through cleaning drainage systems and repairing pumps and basic infrastructure are essential. Other front-end initiatives should include building technical capacity for efficient water management, expanded farm activities, crop maximization, sanitation, and conservation.

WUA financial sustainability

Regulations for WUA financial and technical solvency are needed to grant tax exemptions and provide long-term, low-cost loans for seed money to acquire expertise or technology crucial to WUA operations.

Local empowerment

Local participation is key to finding local solutions; any community-based initiative will require strengthening and using local institutions. Mahalla committees provide a good base from which to launch grass roots mobilizing for WAUs and other community-based initiatives. Mahalla committees are influential among local people and have a traditional role as conflict mediators and social organizers, for example for hashar to clean drainage systems during floods, or marshaling village resources around a collective concern. Other mechanisms to consolidate and promote a shared sense of community could be built around existing local groups; special efforts should be made to include young people to foster a sense of community responsibility from an early age and entrench good practices.

Building a knowledge base

WUA users workshops are useful for exchanging ideas and good practices, building a knowledge resource base, establishing WUA users assistance networks, encouraging dialogue and more effective WUA participation, and enhancing participation, including among marginalized groups such as women and ethnic minorities.

Raising public awareness

Efforts must be made to develop a strategy for raising public awareness about the benefits of participation in WUAs to improve water management, including enhanced livelihoods, improved health indicators, and reduced conflicts. The public awareness strategy could include tactics such as outreach campaigns on water use, canal maintenance, contamination and environmental concerns, and collective responsibility. This information strategy should be based on an information audit of local capacity, channels, and existing knowledge base, among others, and include monitoring and evaluation indicators.

Accountability and trust

Tajikistan's traditional top-down governance structure is not conducive to community-based initiatives in terms of perceptions, collective democratic principals, and pro-activeness. If WUAs are to address community needs, their organic powerbase should be strengthened. Local hukumats should rethink their traditional roles with respect to authority and management of their jurisdiction and relinquish some control of water management to water users. Lobbying mechanisms to strengthen the voice of WUAs within the legal system and the hukumat should be promoted. The possibility of overrule by authorities or local interests in spite of formally agreed policies must be contained. Attempts to exert influence, extract illicit payments, or manipulate WUAs decisions should be checked. Since organic initiatives have previously been challenged by corruption and mistrust of authority, fostering accountability and trust is an important building block. A formal contract between the WUA and the Vodkhoz could create a mutual commitment to facilitate public scrutiny and accountability. To this end, all efforts must be made to preserve transparency through democratic processes such as secret ballots, open book policy for member inspection, public discourse on policies, and full financial disclosure to members.

Inclusion and voice

The report has stressed elements of inequality between men and women in its probe of livelihoods and water system impacts. While gender inequality may be more subtle than inequalities among households due to differences in land ownership and access to water, it is nevertheless quite important to highlight. Although no formal barriers to female participation exist in the public sphere, societal factors present challenges because most women are subordinate to their male counterparts in making decisions regarding property, household finances, and use of remittances. Considerable work remains to be done to encourage women to participate in WUAs. Inclusion strategies targeting women could build on specific outreach programs and on mahalla village structures. Male and female participation quotas could be considered in WUAs. female forums within the structure of WUA and local women's groups designed for conflict resolution might help overcome some social conventions.

Creating a multi-tier WUA structure

Based on findings on water allocation at meso- and micro-levels (i.e., inter-village/dihqon farm, and watercourse/household level), and to accommodate all users, it is suggested that the WUA structures include several levels of functioning – apex bodies/federations (at least) at the secondary level, WUAs at the tertiary level, and water user groups (WUG) at watercourse level. That is, new WUAs could include two tiers. The WUA itself with legal entities as members (dihqon farms and WUGs organized as associations) comprise the first tier. The secondary tier comprises village-level WUGs with membership from among senior male and female householders. The WUGs could be organized especially around multiple-use issues, including potable water infrastructure and drainage pump rehabilitation. Such bottom-up WUG organizing could build local organizational experience and serve user-identified needs at watercourse and village level (e.g., ensuring that household plots, water storage ponds, and individual presidential land plots get water allocations). Later-stage WUA functioning at distributaries and canal levels could be strengthened by sharing WUG experiences and priorities at the WUA-level. This sequencing of interventions would build local capacity and advance project efforts in institutional development.

Safeguards are necessary to ensure continued public ownership of water delivery systems and long-term protection of user interests. When donors relinquish the newly established resources to users, there is a risk of capture by profit-driven private ownership that could compromise the collective interests of end

users. Therefore, stipulating a clause between the water user group, local hukumat and the participating investor of the new infrastructure (as has been done in some WUA cases) would be advisable. Furthermore, clarity should be established how land size, political prominence, and individual authority of WUA members affect water interests and allocations because conflicts will undoubtedly arise between the needs of households and large farms and have to be resolved within the same governing and managing WUA body. These potential conflicts must be considered in the design of the multi-tier WUA structure.

Moreover, WUAs solve problems of water management within their own territory, that is, on the level of secondary and tertiary channels. Yet, responsibility, access, and use of the main canal remain unresolved. One solution would be to establish a WUA federation to organize the canal management for equitable user benefits. After all WUAs conclude a “horizontal agreement” among themselves for equitable distribution of water and payments for system operation and maintenance, the federation can be formed and can conclude an agreement with the District Water Resource Management Department on water delivery from primary sources as well as operation and maintenance of the irrigation structure of the main canal.

Annex A: Supplementary Notes on Methodology

A.1 QUANTITATIVE SURVEY METHODOLOGY

A total of three districts (nohiya) were covered by the survey. Two of the districts, Ghafurov and Konibodom, are in the Farghona Valley in the north while the third one, Yovon, is in the south where the WB Farm Privatization Support Project (FPSP) has been active. In each district, 3 jamoats were purposively selected to ensure diversity as much as possible. In Konibodom and Ghafurov, two selected jamoats were from FVWRMP while a third one was a jamoat with a different set of attributes. In Yovon, two jamoats were those with WUAs developed under the WB project, while a third one was a jamoat with different attributes. The selected jamoats are:

In Yovon: Ozodi and Chargul (WB); and Obi-Muki (non-project)

In Ghafurov: Qataghon and Isfisor (WB); and Ovchikalacha (non-project)

In Konibodom: Lohuti and Sharifov (WB); and Ortiqov (non-project)

Sample size in each district was 425 divided among 3 jamoats in proportion to their populations. The draft questionnaire was revised several times after two rounds of training with enumerators and pilot-testing around 15 questionnaires in Bobojon Ghafurov and Konibodom. Furthermore, a total of 50 questionnaires (5 percent of sample size) were pilot-tested again before the finalization of the questionnaire. Quantitative sample selection is discussed in the next subsection. The questionnaire is provided in Annex C of this report.

Sample Selection

After assigning sample sizes for each village to be covered based on its population weight, it was envisaged that random sampling for the quantitative part of the survey would be achieved by making use of a comprehensive village household list and a sampling step. However, in practice there were instances where either the list did not become available or the list could only be partially used due to various errors. In the latter case, the research team divided up a village into clusters and used appropriate steps to draw the sample households. The steps and clustering introduced small discrepancies between the planned sample sizes for the villages and the actual number of questionnaires filled in each. The size of the sample in each district was strictly observed at 425 households.

Table A.1.1: Sample breakdown in Bobojon Ghafurov

Jamoat	Village	Number of households	Population	Number of questionnaires
Ovchiqalacha	8 villages	3559	18020	125
	Qalacha	1261	6593	44
	Ovchi	942	4502	33
	Shaikhon	522	2714	18
	Dehnav	181	845	6
	Pakhtaobod	121	581	4
	Michurin	443	2258	16
	Yangi mehnat	18	52	0
	Sebzor	71	475	4
Qataghon	2 villages	1950	10648	68
	Qataghan	1822	9954	64
	Mehnatabad	128	694	4
Isfisor	6 villages	6612	33816	232
	Isfisor	5956	30120	209
	Madaniyat	65	308	2
	Kuptulyuk	89	419	4
	Yangiyor	83	340	3
	Shaukhak	67	313	2
	Gorkiy	352	2316	12

Table A.1.2: Sample breakdown in Konibodom

Jamoat	Village	Number of households	Population	Number of questionnaires
Ortiqov	9 villages	4010	24183	151
	Kuykuziyon	133	657	6
	Tagoykuychi	473	2584	18
	Firuzoba	556	3007	21
	Shurkurgon	630	3172	24
	Tutiqabola	265	4381	10
	Shohidqarayantoq	1028	5469	38
	Qurghoncha	326	1857	12
	Kalinin	366	1930	14
	Ainy	233	1126	8
Sharifov	6 villages	4665	20884	149
	Niyozbek	1817	9335	66
	Mahram	1370	7364	52
	Madaniyat	313	1573	12
	Pakhtakor	311	1596	12
	Botirkurgan	817	828	6
	Yangibotirkurgan	37	188	1
Lohuti	3 villages	3268	17441	142
	Lohuti	1230	6633	64
	Qarakchikum	1727	9093	66
	Jigdalik	311	1715	12

Table A.1.2: Sample breakdown in Yovon

Jamoat	Village	Number of households	Population	Number of questionnaires
Ozodi	20 villages	32924	2419	151
	Ozodi	1653	183	12
	Beshbulak	1550	174	11
	Beshbulak 2	372	46	3
	Ohujar	970	120	8
	Charoghchi	14501	185	12
	Hasani	1031	124	8
	Shrinbuloq	1559	192	12
	Tutak	1023	122	8
	Mulobaroti	464	70	4
	Kuymot	1092	146	9
	Darai	505	55	3
	Chormaghzak	1153	132	8
	Utagak	535	56	3
	Navobod	810	112	7
	Dashtiroki bolo	763	104	6
	Dashtiroki poyon	1882	203	12
	Dusti	535	77	5
	Zulmobod	1737	219	14
	Toshokhur	625	76	5
	Duniyo	164	23	1
Obi Muki	10 villages	23054	3048	173
	Dashtobod	2273	530	20
	Parchasoy	4424	499	32
	Kaynama	1485	171	10
	Sarayantoq	1120	129	8
	Obi muki	3826	500	30
	Qirgochak	2577	325	20
	Qashqaraha	3036	379	23
	Tagoyobod	1634	216	13
	Kirgizobod	629	75	4
	Pingirchar	2050	224	13
Chorgul	5 villages	12694	1648	101
	Chorgul	1287	175	10
	Gulafshon	3224	386	24
	Kulobod	3214	392	24
	Sabzazor	1442	237	15
	Shurcha	3527	458	28

A.2. QUALITATIVE METHODOLOGY

Focus Group Discussions

Focus group discussions were conducted with around 15 farmer groups in the districts covered by the quantitative part of the survey. It was made sure that the groups covered all diverse household categories. Participants comprised heads of households and cotton workers. The discussions were conducted with the aid of mapping and wealth ranking tools. These were augmented by walking surveys and interviews with local and municipal authorities, members of various NGO's, and organizations involved in the

establishment of water users associations. Focus group discussion guides used in the study are provided in Annex C of this report.

Literature Review, Interviews, and Institutional Analysis

A literature review and a total of 38 interviews were conducted to inform the project team of previous studies on water, land, and gender in Tajikistan and to understand the structures in charge or in place that deal with water provision and water users associations. The literature was partially reviewed in main body of the report. Furthermore, the literature review and the interviews were used to provide an institutional analysis of water resources management and water users associations. The interviews also augmented the findings of the focus group discussions whenever possible. The list of interviewees is provided in the following table.

Table A.2.1: List of interviewees in Konibodom, Ghafurov, and Yovon

Organization	Interviewees
Districts Hukumat	Deputy Chairman; key specialists of divisions on economic development, social division; division on work with women and family, statistics division, district agency on land management, agricultural management, healthcare division and others.
Jamoat	Chairman, Deputy Chairman, specialist on work with women and family, land management specialist and others.
State Water Resources Department	Heads of Departments, irrigation specialists, mirobs.
Agricultural enterprises	Heads and members of collective dihqon farms, production cooperatives, family and individual dihqon farms, association of dihqon farms;
WUA	Heads, key specialists, mirobs, and members of WUA.
NGO	Heads, key specialists, members .

A.3 CALCULATION OF HOUSEHOLD INCOME MEASURE

Variables used to calculate the income measure are:

1. Average monthly cash wage of all household members from working on farms not individually owned (joint-stock farm, collective farm, Kolkhoz/Sovkhoz, or large dehqan farm cultivated by more than one household)
2. Average value of monthly in-kind wages paid at a regular basis of all household members from working on farms not individually owned
3. Total annual value of produce or cotton-stem or other in kind items any of the household members has on occasion received from working on farms not individually owned
4. Total annual value of dividend from shares owned by family members
5. Value of total sales of produce from individual dihqon farm during the entire year excluding what was consumed by household

6. Value of total sales of produce from your presidential land excluding what was consumed by household
7. Value of total sales of produce from your household plot excluding what was consumed by household
8. Value of sales of livestock, poultry, silk or fish products for the entire year excluding what was consumed by household
9. Average monthly value of wages all household members have received for work in non-agricultural activities
10. Total household earnings from work at home during the year
11. Total value of pension received by all household members per month
12. Total value of social assistance received by all household members during the year
13. Total value of any other income any of the household members have received (cash or in kind) during the year
14. Approximate total value in of gifts received by household during the year
15. Total value of rents the household has received from any assets during the past year
16. Total value of remittance the household has received in the past year
17. Total value of all agricultural products produced and consumed by household during the year (crop, fruits, animal meat and products)

For record, the following procedure was used to make the calculation. After summing all variables, households with missing values were excluded. Furthermore, to find outliers, z-scores were calculated. In an iterative manner comprising several rounds, households with z-scores higher than 4 (considering the relatively large number of data) were excluded. A total of 1248 household remained. Household incomes were thus calculated based on the above variables.

Annex B: Supplementary Notes on Methodology

B.1. INTRODUCTION

This Annex was prepared to supplement discussions on water resources management and water users associations in Parts III and IV. It first provides general information on water resources, distribution channels, drainage networks and melioration in the study area. It then turns to a review of legal and institutional aspects of water resources management as well as water management difficulties. The last portion of this Annex is dedicated to a legal and institutional examination of water users associations.

Sources for the tables in this Annex are provided in footnotes. Quantitative information from our questionnaire survey used in one subsection is clearly identified. While much of the rest of information cited here are from interviews and focus group discussions a list of which was provided in Annex A, other used references are listed at the end of the Annex.

B.2. WATER RESOURCES, DISTRIBUTION CHANNELS, DRAINAGE NETWORKS, AND MELIORATION

General

Tajikistan has significant water resources although their geographical distribution is extremely uneven (with few sources in Sughd, Kizilsu-Yakhsu, Khatlon, Kafarnigan). Irrigation of farmlands accounts for around 85 percent of water consumption with the rest divided between drinking/household use and industrial consumption.

Over 500 km³ of high quality fresh water, that is almost 52% of total reserves of fresh water of the region, is preserved in Tajikistan's glaciers (about 10 thousand units). Around 44 km³ of water is in the lakes from which 20 km³ of fresh water has drinking quality. Average annual river flow on the territory of Tajikistan is 64 km³. Surface flow control is performed by water reservoirs with a total capacity of 15 km³, and the possibilities for flow control of up to 68 km³. The total volume of underground water reservoirs is estimated at 6.6 km³. Around 66.82 km³ of water is accessible for consumption and use in Tajikistan. The Omudaryo river basin provides 63.12 km³ or 95.46% of accessible water resources. Intake capacity from all sources in Tajikistan is in the range of 14.6-12.8 km³, and water consumption is in the range of 10.9-12.6 km³.

Water Resources in the Surveyed Districts

a) *Konibodom*. The total area of Konibodom is 32,436 ha. The district's irrigated land area is estimated as 23,450 ha. A major source of water supply in the district is the Kairakkum water reservoir⁴², served by

⁴² **Kairokkum water reservoir** has a length of about 65 km, a width ranging from 8 to 20 km, and a water-surface area of 513 square km. The general capacity of the water reservoir is 3413.5 million m³, with a conservation zone (the project data) of 2743 m³. The length of the floodwall is about 30 km, located on the left-bank of the water reservoir in the surveyed region. The current condition of this floodwall is causing serious anxiety, since it is being washed by water in a number of places (approximately 18.0-20.0 km).

Sirdaryo River,⁴³ which provides water for the irrigation of 3,940 ha of land. The Big Farghona Canal⁴⁴ irrigates 13,944 ha of land and Isfarinka River⁴⁵ irrigates an area of 4,439 ha. Based on 2006 figures, the number of water-using entities in the district is estimated as 174 organizations, which use 133,284 thousand m³ of water. Water loss during delivery is assessed as considerable in the Konibodom district, estimated at 41,318 thousand m³ or 32% of the total.

b) *Ghafurov*. Irrigated lands are reported as 34,646 ha. The main sources of water supply of the district are Kairakkum water reservoir, Sirdaryo River, and to some extent Big Farghona Canal and Khojabakirgon River. According to 2006 estimates, the number of water-using entities in the district is 101 units taking 309,445 thousand m³ of water. Water loss is reported to amount to 52,606 thousand m³ in the Ghafurov district or 17% of the water intake.

c) *Yovon*. Irrigated lands in Yovon are estimated to cover 25,783 ha in the district. The Baigazi water facility on Vakhsh River is in this district with a rock-filled embankment 55 meters in height and 450 meters in width. Irrigation water delivery to the valley is made from the Vakhsh River through a 7.4 km tunnel with a throughput of 70 m³/sec. Water is distributed from the tunnel through the Left Feeder Main Canal (LFMC) and the Right Feeder Main Canal (RFMC). Water is delivered to the lands situated higher than the main canals through pumping stations. About 12,401 ha of land are irrigated by pumps in this district. Irrigation of lowlands does not require pump action. The total length of the canals is 221.4 km. Around 60-70 percent of the agricultural land in Yovon is irrigated.

Manifold-Drainage Networks in the Surveyed Districts

a) *Konibodom*. The total length of the manifold-drainage network in Konobodm is 676.55 km with open networks between farms having a length of 80.44 km and those within farms being of 596.11 km in length. All discharge from manifold-drainage system is carried out to Kairakkum water reservoir through pumping stations and three gravity dischargers. Previously, a considerable part of the irrigation canals in the Konibodom district was counted on the statement of assets and liabilities of large agricultural enterprises. The smaller farms that have appeared following land reforms do not feel responsible for the canals since these are not included on their statements of assets and liabilities. At the moment, in the Konibodom district somewhere between 837 and 155 km of irrigation channels between farms are on the statement of assets and liabilities of water resources department, while another 682 km or 81% of the total is in an ambiguous state. The same situation prevails with the manifold-drainage networks. Around 540 km or 87% of the total length of the manifold drainage networks previously on the statement of assets

⁴³ **Sirdaryo River** is second in volume of water and first in length in the Farghona region (3019 km from Naryn). The source of water is in central Tine Shan and Sirdaryo is formed after Karadaryo and Naryn merge, with the outflow of the river taking place in Kyrgyzstan. Sirdaryo crosses Tajikistan and Uzbekistan and flows into the Aral Sea on the territory of Kazakhstan. The total capacity of water resources from Sirdaryo amounts to 37, 2 km³, including 27.6 km³ of trans-border waters. Spring-summer tide is typical for the water regime, which starts from April. The basic outflow of Sirdaryo River is formed on the territory of Kyrgyzstan.

⁴⁴ **Big Farghona Canal**, on the territory of Uzbekistan and Tajikistan, was built in 1939-1940 with the involvement of 160 thousand collective farm workers. It is formed from the basic source of Sirdaryo-Naryn River. Over 1000 hydraulic structures are on the canal (50 are large ones). The canal is used for water refilling to Naryn and Karadaryo, for redistribution of river outflow of southern outskirts of Farghona Valley, and for direct irrigation of agricultural lands.

⁴⁵ **Isfarinka River** is rather a small river originating in the mountains of Batkent oblast of Kyrgyzstan and flowing onto the territory of Tajikistan. It provides water to Isfara and Konibodom.

and liabilities of big agricultural enterprises has fallen into an ambiguous state. It is estimated that over 50 percent of the manifold-drainage network is in an unsatisfactory condition due to erosion.

b) *Ghafurov*. The total length of manifold-drainage network of the district is 414.89 km from which the network between farms (that is on the statement of assets and liabilities of the state structures on regulation water using) is 110.89 km in length, and the inter-farm network (that is on the statement of assets and liabilities of dihqon farms and joint stock companies) has a length of 304.0 km. Land reforms have had a rather slow pace in this district. Large farms have been kept in the form of joint stock companies and production cooperatives (very similar to kolkhozes and sovkhozes). Around 3,707 km of irrigation channels and 415 km of manifold-drainage network are in the district. From them 3427 km or 92% of irrigation channels, and 304 km or 73% manifold-drainage network are on the statement of assets and liabilities of indicated agricultural enterprises. Material and technical basis and financial difficulties do not allow these farms to maintain irrigation and manifold-drainage network in working conditions.

c) *Yovon*. The Inter-farm irrigation network was built in the form of closed gravity asbestos cement pipe lines situated through 400-500 m, in 1.5-4.0 km length, with hydrants through 60-120 m. The total length of the closed irrigation network is 976 km and gutters of channels are around 79 km. A drainage network was built in the district on an area of 19,448 ha for drainage discharge -- including closed tubular network on 19,154 ha and open network on 294 ha. However, many closed drains are obstructed for different reasons, including improper garbage disposal, and do not function.

Melioration Wells in Surveyed Districts

There are currently 300 melioration wells in Konibodom and Ghafurov districts, which are on the statement of assets and liabilities of Water Resources Departments of both districts (107 units in Konibodom district and 193 units in B. Ghafurov district). Their main task is to decrease groundwater level and to reduce the level of mineral formation. Unfortunately, at the moment, due to various reasons (insufficient funds, electricity shortages, and absence of spare parts for repair of equipments) a majority of these wells are not up to their tasks. Gravity irrigation systems and pumping stations have experienced over 50% and 65% deterioration/wear respectively. Thus, in Ghafurov, only 41 units or 21.3% of the 193 wells are operational. The corresponding figure for Konibodom is around 14% of the 107 wells. All this means that water table has risen to critical levels (up to 1.8 m) in significant parts of the farmlands. For example, in 2006, the total area with critical water level was reported as 5,696 ha. When wells do not function, water table rises, salinity increases, health problems become widespread, and poverty levels worsen. Furthermore, it is reported that about 30% of the population must purchase drinking water for cash with its negative impact on the financial situation of the households.. There are also significant areas in Yovon with melioration problems. The situation is evaluated as unsatisfactory for an area of 5,465 ha (including Right Branch of Main Canal occupying 1938 ha; there is also percolation from Right Branch of Main Canal).

B.3 LEGAL BASIS OF WATER MANAGEMENT AND PROVISION

According to the Constitution of the Republic of Tajikistan, water is the exclusive property of the state which guarantees the effective exploitation and protection of water on behalf of the people. The main legal documents concerned with water resources management are Water Code of the Republic of Tajikistan and a number of laws and acts that to some extent interpret the implementation of the Code provisions.

In November 2000, a new Water Code was ratified in Tajikistan, in which the economic mechanisms, organizations, and regulatory systems of water use are detailed. The code also deals with water users associations (WUAs). Work is also currently under way to bring other legislations in line with the Water Code. Furthermore, the National Conception of Rational Exploitation and Protection of Water Resources passed in 2001 is of high significance in the development of water and nature protection legislation in Tajikistan as well as for the country's bilateral and multilateral cooperation with other Central Asian countries on water-related issues.

Water resources management system according to the Water Code is based on a combination of basin and administrative-territorial principles. Regulation of water relations inside the country is carried out on the basis of licensing of water usage and requiring payment for services toward water delivery. Issues of the right of management of hydro-economic irrigation systems by domestic and foreign legal bodies are yet to be dealt with at the legislative level. National legislation also deals with the development of democratic processes and market relations, guaranteeing equal rights to water for all consumers, participation of water users in water resources management, and organizational forms of hydro-economic and water protection activities.

The Water Code of the Republic of Tajikistan also provides the basis for the establishment of Water Users Associations (WUAs). According to the Code, the Government is responsible for determining water consumption fees which are to cover operations and maintenance costs. The Resolution of the Government of the Republic of Tajikistan dated June 25, 1996 Ref.#281 augments the Water Code on this. Also, the Law on Water Users Associations (of which more later) signed by the President of the Republic of Tajikistan on November 21, 2006 further compliments the Water Code and provides significant legal basis for the work of water users associations.

B.4 WATER RESOURCES MANAGEMENT INSTITUTIONS

National Level

Water resources management in Tajikistan is organized on a multi-branch/diversified basis with the main management body being Ministry of Melioration and Water Economy. The possibility of transition to hydrographic (basin) water resources management principles have also been considered – taking into account inter-sectoral interests and privatized enterprises of various water using sectors of the economy. Currently, the main organizations in charge of water management and provision are:

- i. Ministry of Melioration and Water Economy of the Republic of Tajikistan is the main body responsible for the management of agricultural water supply, including water for pasture, as well as overseeing water exploitation in river basins, in territories, and in the Republic as a whole. It is in charge of the provision of water to consumers/users based on specific regulations, limits and forecasts of water consumption. The Ministry is also responsible for the introduction of a melioration cadastre; certification of irrigation, drainage, and other hydrological systems and structures; and data collection and analysis on melioration cadastre, certification, hydro-economic measures, plans and forecasts of rational water usage, and amount and quality of surface and underground water. The Ministry cooperates with other state organs toward

exploitation of water resources (taking into account water users demands and economic expediency), preventing water resources exhaustion and negative impacts of water on land productivity, and a number of other related issues.

- ii. State Department for Nature Protection and Forestry under the Ministry of Agriculture of the Republic of Tajikistan coordinates water preservation and protection measures.
- iii. State Geological Department, directly under the Government of the Republic of Tajikistan, controls and monitors underground water reservoirs.
- iv. Committee for State Oversight on Safe Works in Industry and Mountainous Areas, directly under the Government of the Republic of Tajikistan, oversees the conditions and rational exploitation of medicinal, mineral and thermal, and industrial underground water.
- v. Ministry of Health of the Republic of Tajikistan monitors the quality of drinking water and sources of potable water supply.

Oblast, District, and Local Levels

Oblast and district structures of Ministry of Melioration and Water Economy are oblast units, district water resources departments, and productive operational-melioration units. Their responsibilities include irrigation water delivery to water users with a view of land protection, quality control of irrigation water, and control of water discharge to the drainage network. All are state organizations funded through the state budget and have their own settlement accounts. Water supply to consumers is based on specific contracts and is in accordance with water delivery schedules. Fees for services of water suppliers, amount of delivered water, and other terms and conditions are set in the contracts.

As a rule, water provision plans at the level of each district down to the level of farm, depending on structure of sown area of irrigated crops, are drawn by specialists of district hydro-economic bodies once every three to five years. Planned water application rate and irrigation rate per 1 ha of gross field are based on existing standards and maximum hydro-module. Depending on technical equipment, scale of irrigation, and type of irrigation and drainage system these services differ according to their terms of reference, number of workers and status.

At the district level, water resources institutions exist based on the above-mentioned conditions. Sometimes two or more districts are served by an inter-district association of irrigation systems. In this way, there may only exist an operational section in each of the districts, which forms a part of the inter-district association and is thus not financially independent. In contrast, a water resources department responsible for a district is more independent in terms of finances and is included in the structure of the oblast units. The three districts covered by this study have the following types of water institutions:

4. Konibodom district – Konibodom State Water Resources Department (KSWRD);
5. B. Ghafurov district – Ghafurov State Water Resources Department (GSWRD);
6. Yovon district - Yovon Productive Operational-Melioration Unit (YPOMU).

Water resources departments and operational-melioration units have different functions, and responsible for different tasks. The work of the district water resources management departments has the following scope:

- Operation and maintenance of canals, drainage systems, and pumping stations, toward high and sustainable yields of crops on irrigated lands.
- Oversight of melioration of irrigated lands and prevention of rising water table and soil salinity.
- Rationalization of water consumption through irrigation system (control and measuring) and timely and uninterrupted water delivery to water users according the established schedules.
- Water fee collection from water users.

Operational-melioration units (legally not independent, without separate budgets, and subordinate to extra-district water associations or district water resources departments) have the following responsibilities:

- Maintenance and repair of pumps and other irrigation structures.
- Regulation and control of water delivery and measuring water flow on hydraulic engineering stations.
- Drawing water consumption schedules and plans.
- Conclusion of formal agreements and signing water contracts with farms and water using enterprises.

The following table provides information on the staff and salaries of the water resources management.

Table B.4.1: Water resources management institutions staff and salaries by district⁴⁶

Districts	According to the staff list	Actually working	Vacancies	Average salary (somoni)	Salary debt as of April 01, 2007 (somoni)
Ghafurov SWRD	709	666	43	119	558,296
Konibodom SWRD	352	306	46	123	275,000
Yovon POMU	329	297	32	121	98,000

There is a three-level administrative structure below the national government in Tajikistan consisting of Oblasts (managed by Oblast Public Authorities), Districts (managed by District Public Authorities), and village councils (managed by Jamoats). The form and distribution of responsibilities among different levels are described in the Constitution. There has been an initiative in the last few years to clarify the various roles of each level of public administration with regards to various functions and tasks. The responsibility and authority of oblast and district public authorities regarding water management and provision are provided in Article 7 of the Water Code. Some of their main responsibilities include: Outlining the main directions and providing the legal basis of water exploitation and protection on their territories; taking measures to preserve and improve water-related infrastructure and institutions with the view for water conservation, pollution control, and riverside and flood control; provision of drinking water and protection and development of the centralized and decentralized water distribution systems of

⁴⁶ Data from Ghafurov, Konibodom, and Yovon, Districts' State Water Resources Departments, 2007 (in Tajiki).

drinking water to consumers; and providing a framework for the work of related enterprises. In accordance with Article 114 of the Water Code, Jamoats have the responsibility of resolving disputes between citizens on issues of water exploitation within their jurisdictions. Legally speaking, units, departments and operational irrigation systems are not subordinate to districts hukumats, but since their areas of coverage for the most part coincides with those of the hukumats, these water institutions are responsive to the hukumats in practice.

There are also older structures in existence at the village level, the most important of which are mahalla committees acting as village councils. These institutions have considerable informal power and in many cases discuss and frequently solve problems which the community faces, including resolution of conflicts related to water use. Mahalla committees often play active roles in the collection of community members' contributions directed toward village improvements and providing services to residents of the community. Furthermore, there are many instances village elders or "patriarchs" which wield significant although informal influence in a large number of villages. They are often involved in conflict resolution and can act as arbiters in water conflicts.

B.5 CURRENT WATER RESOURCES MANAGEMENT DIFFICULTIES

General

The last table in the pervious sub-section, apart from providing information on the number of workers in each district, is also indicative of financial difficulties of the water institutions. The last column indicates the amount of debt owed by the respective organizations to their staff members in terms of unpaid salaries while the column to the left of the last column shows the average amount of salary drawn by workers. Indeed, an analysis of district water services shows significant difficulties in the area of irrigation water which are related to short finances of institutions and water users on the one hand and interrupted and unreliable work of pumping stations. Other problems related to finances that may be easily discerned include lack of modern means of communication (bicycles and other individual means of transport are used to check water-related infrastructure). Yet, a major issue is also the fact that sections of manifold-drainage networks and vertical boreholes/wells on current farms remain on the statement of assets and liabilities of large agricultural enterprises (joint-stock companies, productive cooperatives and collective dihqon farms). Indeed, in case of any reorganization and divestment of enterprises/farms, the question is posed regarding the responsibility for the networks and infrastructures. It is in this connection and with the purpose of effective water resources management that the establishment of water users associations (WUAs) has been felt, proposed, and established in some instances. The rest of this sub-section provides more details on the problems faced in water provision in Tajikistan. After this, we turn the discussion to WUAs.

Funding

After Tajikistan's independence, the earlier sources of funding for the maintenance and repair of the irrigation system were reduced. Current, albeit reduced funding comes from national and local budgets. Yet, actual financing for 2006 from these sources as well as from water delivery fees was one tenth that of the 1990. These budget shortages have translated into the deterioration of more than half of the basic assets of irrigation and manifold-drainage systems, especially water pumps and vertical drainage wells, as well as heightened soil salinity water logging. Up to 40% of irrigated lands in the Republic are served

by pumping stations (64% of these located in Sughd oblast, especially in Ghafurov and Konibodom districts). State funding from national and local budgets together with the paid fees for water delivery amounted to only 70% of the actually approved budget in 2006 which was itself 11 times smaller than the corresponding budget for 1990. Part of the problem is also that water users are not able to cover their fees. All this means that, for example, water resources departments in Sughd have been unable to fulfill their planned duties concerning repairs and maintenance of irrigation systems. To provide a more detailed example, the following table depicts the result of the funding shortages in the B. Ghafurov district.

Table B.5.1: Bobojon Ghafurov water infrastructure repairs and maintenance operations in 2006⁴⁷

Types of works	According to the plan for 2006	Actually achieved	Achievement in percentage
Cleaning of irrigation networks	75 thousand m ³	10 thousand m ³	13%
Cleaning of drainages	120 thousand m ³	22 thousand m ³	18%
Repair of hydraulic structures	24 units	13 units	54%
Repair of water-meters	16 units	8 units	50%
Shore protection	50 thousand Somonis	15 thousand Somonis	33%
Repair of pump station buildings	12 units	5 units	42%
Repair pump substations	6 units	2 units	33%

Yet in Yovon, which is the third district covered in this study, no funds have become available for the repair of the irrigation system in the last 3 to 4 years. Whatever fund available from local and state budgets and from water delivery fees have not even been enough to cover salaries of the district water resources department workers. The situation has been exacerbated due to the large debts owed by water users to the system.

Water Fee Collection

Water sector reforms were initiated with the adoption of Decree of the President of the Republic of Tajikistan dated April 8, 1996, Ref.#460 "On introduction of fee for water delivery services to consumers from the state irrigation and water systems." This has been rather a first step on the way to introduce market mechanisms in the water sector, as fee set by the state does not commensurate all expenses for water delivery, not mentioning water's opportunity cost as a natural resource. Due to the financial problems faced by farming enterprises and a number of other issues, fee collection amounted to 15%-17% of the actual set capacity in 1996-1999 and to 60% of the expected amount in 2006.

Our quantitative part of the survey probed the issue of fee payments for water received at home and household plot and on presidential lands through the questionnaire. It found either a small indication of payments or small payments for the water households received for house garden and home use as well as for presidential lands. Concerning house garden, in Ghafurov and Konibodom, more than a quarter and more than a third of households respectively indicated that the large farm was still providing them with water for free. The corresponding figure for Yovon was quite low in comparison. Around 15 percent or so of the respondents in Yovon and Ghafurov stated that they were already paying for water they use on household plot while the corresponding figure in Konibodom was half as much. The percentages of respondents indicating they would pay for water if the quality was improved were found to be 15, 12, and 23 in Ghafurov, Konibodom, and Yovon respectively. Furthermore, the percentages of those stating they would pay if the reliability of water improved were 16, 12, and 5 in Ghafurov, Konibodom, and Yovon respectively. For presidential land, the percentages of responses indicating households were getting water from large farms for

⁴⁷ Data from Ghafurov District State Water Resources Department, 2007(in Tajiki).

free were 27, 47, and 8 in Ghafurov, Konibodom, and Yovon respectively. The percentage of responses indicating payments was found to be very low for all three districts. Across the three districts about one quarter and more than one third of respondents indicated they would pay if the quality and the reliability respectively improved. The number of respondents in the quantitative part of the survey to the question addressing individual or multi-family small farms was too low to draw any meaningful conclusions (see table below).

Table B.5.2: Access to water for free and willingness to pay for water⁴⁸

			Total
Household plot	The large farm still provides us water for free	% of total responses*	21.28
	We have already been paying for our water	% of total responses*	12.59
	We are willing to pay for the water we have been getting until now	% of total responses*	0.73
	If the quality of water improves we are willing to pay	% of total responses*	16.25
	If the reliability of water improves (more frequent access) we will pay	% of total responses*	38.02
	We are not willing to pay no matter what	% of total responses*	11.13
	Total number of responses		1231
	Total count of all those responding for household use and garden		1165
Presidential land	The large farm still provides us water for free	% of total responses*	30.92
	We have already been paying for our water	% of total responses*	2.66
	We are willing to pay for the water we have been getting until now	% of total responses*	0.48
	If the quality of water improves we are willing to pay	% of total responses*	6.76
	If the reliability of water improves (more frequent access) we will pay	% of total responses*	24.15
	We are not willing to pay no matter what	% of total responses*	35.02
	Total number of responses		414
	Total count of all those responding for presidential land		407

*Percentages are calculated taking all responses to first and second responses together as an overall measure of the importance of a category.

Table B.5.3: Water Users Debts to Water Suppliers as of May 1, 2007 (in Somoni) ⁴⁹

Districts	Total debts
Ghafurov Water Resources Department	4,454,821
Konibodom Water Resources Department	1,275,339
Yovon Productive Operational-Melioration Unit	2,118,679

Table B.5.4: Debts of water suppliers as of April 1, 2007 (in Somoni)⁵⁰

Districts	Main debts	Debts on salaries
Ghafurov Water Resources Department	7,317,888	558,296
Konibodom Water Resources Department	1,166,200	275,000
Yovon Productive Operational-Melioration Unit	1,116,880	98,000

⁴⁸ Data based on findings from quantitative survey conducted for this study.

⁴⁹ Data from Ghafurov, Konibodom, Yovon Districts' State Water Resources Departments., 2007 (in Tajiki).

⁵⁰ Ibid.

Water users still owe large sums to the public sector for water delivery, as depicted in Table B.5.3 for the three districts under investigation. In fact, almost all water users in the surveyed districts have debts to water resources department for water delivery services. Yet, the main debtors are agricultural enterprises, which owe 4,142,348 somonis in Ghafurov, 1,003,476 somonis in Konibodom, and 1,864,409 somonis in Yovon. No penalties have been considered in the case of water-users' non-payment. In fact there is no real mechanism to settle accounts among various users and providers (considering the seasonality of agricultural activities) since the system is still based on the old style command structure rather than market mechanisms. Needless to say, the debt of water users translates into the debt of water departments as depicted in Table B.5.4.

Total debts of water users to water suppliers in Tajikistan currently stands at around 72 million somonis while that of water suppliers to other organizations is estimated at 34 million somonis. It is reported that the staff members of many water resources departments are frequently absent from work due to low salaries or late wage payments. What should however be noted is that even if fee collection is fully achieved, it will still not compensate all expenses for the upkeep of the irrigation system. Indeed, the fee, set at 0.6 dirhams for one cubic meter of water or 6 somonis for 1000 cubic meters of water, is not high enough to achieve the intended results. There are suggestions to introduce different fees for various climatic zones, delivery means, and levels of profitability.

Extent of Water-Logging

Rising ground water table and heightened mineralization in the Ghafurov district were recorded on 6,474 ha of irrigated land in 2006. In Konibodom, land area with critical ground water level was reported as 8895 ha or 39.4% of whole irrigated area in the same year. The following tables detail the situation. High level of ground water means close to swamp conditions while medium level refers to a situation when cultivation is not possible. Low level means difficulties are just becoming discernable.

Table B.5.5: High ground water level in agricultural enterprises⁵¹

No	Districts and jamoats	High level (ha)	Medium level (ha)	Low level (ha)
I.	Konibodom region			
	Jamoat Sharipova	580	1607	1071
	Jamoat Lahuti	128	552	1932
	Jamoat Artiqow	913	1435	747
II.	Gafurow region			
	Jamoat Katagan	270	146	80

Table B.5.6: High ground water level on presidential lands⁵²

No	Districts and jamoats	High level (ha)	Medium level (ha)	Low level (ha)
I.	Konibodom			
	Jamoat Sharipov	480	-	-
	Jamoat Lahuti	392	-	-
	Jamoat Artiqov	90	205	-
II.	Gafurow region			
	Jamoat Qataghon	40	8	12

⁵¹ Data on socioeconomic indicators of the region obtained from Jamoats of Kanibadam and Ghafurov Districts, 2007 (in Tajiki).

⁵² Ibid.

Table B.5.7: High ground water level in villages (in %)⁵³

No	Districts and jamoats	High level (ha)	Medium level (ha)	Low level (ha)
I.	Konibodom			
A.	<i>Jamoat Sharipov</i>			
1	Mahram	35%	45%	10%
2	Niezbek	30%	50%	10%
3	Pahtakor	65%	30%	5%
4	Madaniyat	50%	40%	10%
5	Dashtqarayantoq	60%	30%	10%
6	Botir-Kurgan	55%	35%	10%
B.	<i>Jamoat Lahuti</i>			
1	Lahuti			40%
2	Karakchikum			45%
3	Chigdalik			30%
C.	<i>Jamoat Artiqov</i>			
1	Shurkurgan	55%	30%	15%
2	Tagai-Kuichi	60%	35%	5%
3	Firuzoba	65%	30%	5%
4	Kuikozien	50%	40%	10%
5	Tutikavala	60%	30%	10%
6	Shaitqarayantoq	55%	35%	10%
7	Kurgancha	45%	30%	25%
8	P. Kalinin	50%	35%	15%
9	P.Aini	65%	30%	5%
II.	Gafurow region			
A.	<i>Jamoat Qataghon</i>			
1.	Qataghon	47%	32 %	21%

B.6 WATER USERS ASSOCIATION

Legal Basis

Until the end of 2006 the legal establishment of WUAs in Tajikistan was based on the Constitution of the Republic of Tajikistan, the Water Code of the Republic of Tajikistan, the Civil Code of the Republic of Tajikistan, the Resolution of the Government of the Republic of Tajikistan dated June 25, 1996 Ref.#281 concerning water fees, and a few less important acts. However, due to the inadequacy of this legal framework for the establishment and regulation of WUAs and the importance the government has attached to the issue of efficient water provision, the Law on Water Users Associations was signed by the President of the Republic of Tajikistan on November 21, 2006. The aim was to create a firm legal basis for WUA establishment as well as to regulate the relations between the state water organizations and water users through the participation of the latter in management and distribution of water. According to this Law, “A water users association is a non-profit organization established by legal bodies that have rights to land exploitation for agricultural production... established with the purpose of keeping and exploiting farm irrigation networks that are in common and individual use for a fair, effective, and timely

⁵³ Ibid.

distribution of water among members and other water users, for fee collection against water delivery, and for conflict resolution among members and other water users.” WUAs main tasks are defined as⁵⁴:

- Concluding agreements with water resources departments for water supply in the Water Users Association coverage zone;
- Managing irrigation systems in the Water Users Association’s service area and distributing water on a contractual basis among Water Users Association’s members as well as non-members;
- Maintaining, rehabilitating, repairing and if necessary constructing irrigation system in the Water Users Association’s service area and, if necessary, implementation of construction works;
- Procuring, assembling, and maintaining hydraulic engineering equipment in the service area;
- Keeping records of capacity and quality of used water and submitting statistical reports to authorized state organs concerned with regulation and exploitation of water;
- Preventing water contamination in Water Users Association service area;
- Protecting and improving the melioration conditions of land in the service area;
- Training WUA members and other water users on irrigation techniques and on water saving methods;
- Resolving water disputes among members and between members and non-members.

Members of the WUA may be either individuals or legal bodies that have rights to agricultural lands located in the service area of the association. Their participation in the WUA is entirely voluntary. WUA members have the following rights according to the Law:

- to demand irrigation water from Water Users Association in accordance with norms and plans of water use;
- to enjoy Water Users Association’s services regarding water supply according to established norms;
- to participate in the WUA decision-making process as stipulated in the Charter of the association.
- to participate in the General Assembly or an assembly of reprehensive to introduce measures in these gatherings;
- to nominate themselves for the leadership of the WUA;
- to demand their rights in accordance with the legislation of the Republic of Tajikistan and the charter of WUA;
- to demand compensation for land or property in case of damages as a result of the work of the WUA in accordance with the laws of the Republic of Tajikistan;
- to have access to the records of the WUA;
- to cancel their memberships in the association upon the completion of a fiscal year according to the legislation of the Republic of Tajikistan.

The Law states that a WUA must be led by a Board headed by a Chairman elected by WUA members in the General Assembly. The affairs of the executive organs of a WUA are governed by the Charter of WUA. Fees to cover the expenses of the WUA including for the upkeep of the irrigation system are decided upon by the General Assembly of the association. These fees are to be collected from both WUA members and non-members using the services of the WUA in the association’s service area.

Water users associations can procure property and other tangible and non-tangible assets (including through imports) although they do not have the right to sell or rent out their basic assets of irrigation and

⁵⁴ Republic of Tajikistan, Law on Water Users Associations, Dushanbe, 2006 (in Tajik).

maintenance. In case a WUA is liquidated, its assets will be returned to the original owners. They are expected to enter into formal agreements with the state water resources departments on the one side and water users on the other. They should pay fees to the water departments and charge fees to water users. They may gain access to land if necessary for laying canals, drainage network and roads, and in case of damages to compensate the owners according to the Land Code of the Republic of Tajikistan. WUAs can form Water Users Association Federation. They are supposed to maintain irrigation structures in working condition and, if necessary, to construct new structures on the one hand and oversee fair distribution and control over effective water exploitation on the other. They are also supposed to work towards environmental protection and prevention of natural disasters and submit proposals for their activities to the relevant state organs.

Water Users Associations are regulated by the state organ put in charge by the Government of the Republic of Tajikistan which keeps a list of registered WUAs. This organ provides legal, technical, and financial assistance to the WUAs and monitors all aspects of water exploitation in order to ensure water resources are used in a rational manner and are protected in accordance with a set plan.

WUA Formation and Registration Process

The process of WUA formation and registration consists of several phases. At the outset it is necessary that water users form a group that also includes a water management specialist, an economist, and other qualified and experienced persons. The group, after familiarizing itself with the methodologies and procedures, convenes its General Assembly to discuss and reach agreement on the organization and structure of the WUA within the territory of dihqon farms, the name of the WUA, and the charter of the WUA. The General Assembly also elects WUA Board Members, including its chairman and the members of the Inspection Commission. The second phase entails the official registration of the WUA. The WUA Board needs to submit the following documents for the institution's official registration.

- i. Protocol of decisions of the General Assembly on the organization of WUA with signatures of all founders.
- ii. WUA Charter passed in the General Assembly of water users.
- iii. Statement of the Chairman of WUA to Ministry of Justice about juridical appraisal and official registration of WUA.
- iv. Certificate of local Hukumat about location and address of WUA as well as personal file of WUA Chairman with photo.
- v. Certificate showing that founders (dihqon farms) are officially registered in the local notary office.
- vi. Certificate from local tax organ about debt or clearance of debt of the founders.

The above documents are submitted to the Ministry of Justice of the Republic of Tajikistan. After the registration of WUA Charter in the Ministry of Justice, the WUA receives permission from the Internal Affairs Organ to make its own seal and to open a bank account. The WUA gets registered in the State Statistics Office, District Tax Office and the Pension Fund. Following these steps, the WUA becomes a full legal body and start its official work in accordance with its charter.

WUA Support Units

Success of WUAs depends to a large degree on the support of the public sector. Yet, earlier unsuccessful attempts, convinced MMWR officials to seek international assistance in this regard and also set up specialized units in support of the effective establishment of WUAs. Based on recommendations by specialists and through the Minister's decree dated May 10, 2007, the central WUA Support Unit was established in the

central office of MMWR and its area offices were set up in oblast and district departments. The establishment of these units as part of the structure of the Ministry is a sign of the long-term commitment of the state to strengthen the institutional mechanisms of irrigation system development in Tajikistan. Policy support to the central Unit has been provided on monitoring reform and on improving farm and water management by some international organizations, in particular, the Asian Development Bank. The staff of the central WUA Support Unit at the Ministry consists of 5 specialists. The main objective of WUA Support Units is to make WUAs viable, since established WUAs have faced numerous institutional and operational difficulties. Since its establishment, the central WUA Support Unit has prepared a set of administrative guidelines, operational guidelines, and financial plans. It has also worked out a detailed plan for the establishment of regional support units. Furthermore, the Unit has identified needs for financial and technical assistance (including training). While the Unit has studied the structures and functions of WUA founded by other projects and water users, the level of their sustainability and their forms of interaction with MMWR, consultation with various key players are still under way to develop a program of successful WUAs duplication across the country based on the experiences gained through earlier pilot projects. Specific guidelines are to be developed on WUA establishment, its areas of responsibility, its financial bases, and its basic structures and functions to be adopted across Tajikistan. It is also necessary to define what modalities of long-term support by MMWR will be required for the most efficient way of facilitating WUA development.

WUA Support Unit of MMWR Oblast Water Resources Department

At present three regional WUA Support Units are being organized under Sughd Oblast Water Resources Department, Kurgantube Territorial Water Resources department and Kulyab Territorial Water Resources Department. Their respective offices have been set up in oblast and territorial water resources departments. Their staff consists of 3 specialists: WUA specialist, water resources management specialist and engineer-irrigator. *WUA Specialist* provides assistance and support on all aspects of establishing and strengthening of WUA, helps in the arrangement of training programs for the management of WUA, works with treasurers and financial officers of WUA, and coordinates with the personnel of district WUA Support Units (see below). *Water Resources Management Specialist* helps to develop programs within oblast directed to increase efficiency of water exploitation, coordinates training programs to strengthen WUA capability in the sphere of operations and maintenance of irrigation system, acts as an instructor or selects instructors for training water management at the farm level, and helps WUAs in preparing annual plans of their irrigation system maintenance. *Engineer-irrigator* provides assistance in making plans of repair of irrigation network, teaches WUAs' irrigators on methods of proper maintenance, operation of irrigation system and irrigation at the farm level.

Oblasts and territorial WUA Support Units work with districts consultative groups, which are headed by Chairman of a district Hukumat and consist of representatives of concerned ministries as well as private farmers and such agricultural organizations as suppliers of agricultural resources and ginneries. Oblasts and territorial WUA Support Units work under the MMWR WUA Support Unit, based on the latter's strategy on the introduction of effective programs of WUAs development within oblasts/territories. Oblast and territorial Units are responsible for making programs on WUA advocacy and for providing training which should satisfy specific local demands. Furthermore, these units should work with District Water Resources Departments and establish under within them WUA Support Units with the purpose of working out a dynamic plan on WUA establishment. Taking into consideration that the personnel of Oblasts Water Resources Departments do not have particular experience with farmer organizations, they may recruit appropriate specialists.

Main objective of the Oblasts and territorial WUA Support Units is to help development long-term implementation programs on forming sustainable WUAs in the oblasts/territories. These programs will be worked out in cooperation with central WUA Support Unit of MMWR as well as jointly with WUA Support Units in corresponding districts. While Central WUA Support Unit of MMWR in Dushanbe will be involved in the development of macro-policy, including preparation of training material, the oblasts and territorial WUA Support Units will be working closely with appropriate district units, helping them to develop sustainable WUAs. The functions of WUA Support Units under Oblast Water Resources Departments include:

- i. Planning of WUA advocacy campaign at oblast and district levels as well as among farms located on the territory of the oblast;
- ii. Working out long-term and annual plans as well as required budgets for WUA establishment in the oblast;
- iii. Providing juridical registration of WUA in the oblast and solving problems related to their registration with the Ministry of Justice;
- iv. Identifying instructors and personnel responsible for arrangement of training courses and seminars;
- v. Developing programs on raising efficiency of farms' water exploitation;
- vi. Working with personnel of district WUA Support Units;
- vii. Monitoring WUAs establishment process within WUA Support Unit activity area.

WUA Support Unit of District Water Resources Department

The staff of districts units, at the moment, consists of 1 specialist on WUA support. WUA specialist works with leaders of district WUAs so as to direct their actions in the process of preparation of necessary materials for their WUAs registration. In the framework of the given process, the specialist provides assistance in arrangement of educational programs on guiding and managing a WUA. This specialist also works with financial consultants of different projects so that treasurers of WUAs on the district territory may set up transparent accounting records and accounts. WUA Specialist cooperates with WUA hydraulic engineers when planning annual programs of infrastructure maintenance. The specialist also trains them to define annual demands in repair and construction works. Besides, s/he arranges training of accountants and accounts clerks of WUAs. The functions of District WUAs Support Units consist of:

- i. Conducting WUA advocacy campaign among farms located on the territory of the district;
- ii. Working out long-term and annual plans as well as required budgets for WUA establishment in place of the earlier kolkhoz and sovkhoz structures;
- iii. Helping establish WUAs so that they would be registered as juridical entities;
- iv. Organizing educational courses and seminars for WUAs personnel;
- v. Organizing educational programs for technical personnel of WUAs toward perfecting irrigation management at the farm level;
- vi. Helping WUAs in keeping solid financial positions and establishing transparent audit systems;
- vii. Assisting WUAs in solving any institutional, financial and technical problems;
- viii. Monitoring and documenting WUA establishment process within the district.

WUA Support Units need to set up a monitoring process with the involvement of concerned parties in order to check the work of each newly formed WUA in the district. Inevitably, with a rapid pace of WUA establishment, some WUAs will have problems of personnel recruitment, funding or leadership. WUA Support Units will need to be very familiar with such water users groups and to be aware of potential

difficulties in any WUA. Since the strength of WUAs is an extremely important factor for providing a solid financial basis for Districts Water Resources Departments, it is in the interest of the Departments to work with WUAs and to keep them in sustainable condition.

WUAs' Record of Establishment and Performance

Within the last half a decade or more, about one hundred WUAs have been established in Tajikistan through different projects funded by international organizations and local communities. Some of the major examples are given below.

- *World Bank*: Farm Privatization Support Project (9 WUAs); Rural Infrastructure Rehabilitation Project (21 WUAs); Ferghana Valley Water Resources Management Project (has started WUAs establishment in Konibodom and B. Ghafurov); Project on registration and cadastre system of land for sustainable development of agriculture (WUA establishment following agricultural enterprise reorganization).
- *Asian Development Bank*: Agriculture Rehabilitation Project (21 WUAs); Support for Policy Reform and Monitoring and Improvement of Farm and Water Management (financial and technical support toward the establishment of WUA Support Unit in Asht, Vahdat, Rushon, Farkhor and Pyanj districts).
- *USAID/Winrok*: Rendering assistance in setting up 26 WUAs.
- *Swiss Agency for Development and Cooperation (SDC)*: Funded from 2001 Central Asia Irrigation Sector Reform (basic element of these investments is Integrated Water Resources Management in Fergana Valley Project).
- *Other NGOs such as ACTED, GAA, Merci Corp*: Involved in WUA and WUG establishment and development.

Local hukumats, District Water Resources Department, and Dihqon Farm Associations (DFA) have also begun to participate in WUA establishment. In particular, local hukumats and DFAs are in the process of establishing WUAs in Konibodom. A WUA has already been registered in the Sharifov Jamoat (in the service of Area of Nazarov DFA) and preparatory WUA work is underway in Lahuti and Artykov. Work on WUA establishment in Ghafurov is going forward at a much slower pace since farm privatization has been delayed in this district.

The following table summarizes basic information about some of the established WUAs, as the last part of this Annex.

Table B.6.1: WUAs established through Farms Privatization Support Project funded by the World Bank⁵⁵

No	Districts	WUA title	Registration date	Irrigated lands, ha	Number of water users	Water users group
1	Kolkhozabad	Ittifoq	18/10/2002	472	147	1
2		J. Rahimov	30/08/2002	2770	822	5
3	Yovon	Firdavsi	10/06/2000	415	37	4
4		"10 years of Tajikistan"	15/02/2002	1500	308	9
5	Matcha	M. Azizov	05/10/2001	1789	108	3
6		E.Ashrapov	01/08/2002	7070	1862	4
7	Rudaki	Chiltan	22/06/2000	1539	327	5
8	Shahrinav	Mirob	12/12/2001	1200	466	9
9	Zafarobod	Kanz	15/08/2001	2152	612	15
	All	9		18907	4689	55

⁵⁵ From World Bank's Farm Privatization Support Project, Dushanbe, 2004 (in Russian).

Table B.6.2: WUAs established through Rural Infrastructure Rehabilitation Project of the World Bank⁵⁶

№	Districts	WUA title	Registration date	Irrigated lands, ha	Number of water users	Water users group
1	Kolkhozabad	Toshrobod	07/01/2003	3600	57	6
2		Vakhsh	10/01/2003	4437	50	2
3	Huroson	Mehnat	03/01/2003	2644	122	6
4		Farhod	04/01/2003	2463	72	5
5	Yovon	Chorgul	15/11/2002	1503	58	8
6		Norin	03/01/2003	2214	31	9
7		Navkoram	05/02/2003	1677	50	4
8	Zafarobod	Obi Haet	28/03/2003	2650	205	3
9		Sarob	03/02/2003	2282	145	9
10		Obshor	12/02/2003	2500	85	5
11		Obron	26/02/2003	3700	43	5
12		Sugd	17/06/2003	1898	107	5
13		S. Kenjaev	27/05/2004	1500	70	9
14		Mehrigon	26/02/2003	2200	170	5
15	Matcha	Ch.Odinaev	20/05/2003	1420	28	3
16	Rudaki	Obodoni	29/09/2003	1662	190	8
17		Zainab	04/08/2004	1200	218	10
18		Kuktosh	23/06/2003	2124	340	4
19	Shahrinav	Obi Toza	07/01/2003	1724	65	17
20		Navruz	14/10/2003	1060	11	3
21		Guliston	23/12/2002	1106	17	9
	All	21		45564	2134	135

REFERENCES

Asian Development Bank, "Support for Monitoring Policy Reforms and Improving Farm and Water Management Project," TA No.4472-TAJ, Dushanbe, 2007 (in Russian).

Asian Development Bank, "The Irrigation Rehabilitation Project," TA No.4143-TAJ, Dushanbe, 2004 (in Russian).

Bobojon Ghafurov District State Water Resources Department, Data on water use, 2007 (in Tajiki).

Government of Republic of Tajikistan, "Conception of Water Use," Dushanbe, 2001 (in Tajiki).

Government of Republic of Tajikistan, "Conception of Land Tenure," Dushanbe, 2004 (in Tajiki).

Johnson, H. III, "Appraisal Mission Rural Infrastructure Rehabilitation Project." Republic of Tajikistan, World Bank ECSSD. February-March 2000.

International Water Management Institute (SICWC), "Integrated Water Resources Management in Fergana Valley: How to establish a Water Users Association?," March 2003 (in Russian).

⁵⁶ From World Bank's Rural Infrastructure Rehabilitation Project, Dushanbe, 2005 (in Russian).

Bobojon Ghafurov District, Data on socioeconomic indicators of the region, 2007 (in Tajiki).

Konibodom District, Data on socioeconomic indicators of the region, 2007 (in Tajiki).

Yovon district District, Data on socioeconomic indicators of the region, 2007 (in Tajiki).

Konibodom District State Health Department, Data on health indicators, 2007 (in Tajiki).

Konibodom District State Water Resources Department. Data on water use, 2007 (in Tajiki).

Baumann P., "Social Diagnosis," Irrigation Distribution System and Management Improvement Project, 2002.

Republic of Tajikistan. Land Code of Republic of Tajikistan: Law on Land Tenure, Dushanbe, 1996 (in Tajiki).

Republic of Tajikistan, Law on Dihqon Farms, Dushanbe, 1998 (in Tajiki).

Republic of Tajikistan, Law on Land Reform, Dushanbe, 1997 (in Tajiki).

State Statistical Committee of Republic of Tajikistan, "Socioeconomic conditions of the Republic of Tajikistan in 2006," Efficient Information, Dushanbe, 2007 (in Tajiki).

State Statistical Department of Hukumat of Sughd Oblast, "Facts for 2006," Khujand, 2007 (in Tajiki).

Swiss Agency for Development and Cooperation. Dissemination of Integrated Water Resource Management (IWRM) Experiences Project, Dushanbe, 2007.

Republic of Tajikistan, Law on Water Users Associations, Dushanbe, 2006 (in Tajiki).

UNDP, "National Human Development Report 2003: How to Improve Management of Water Resources in Tajikistan, 2004 (in Russian).

UNIFEM, "Gender Equality in the Agriculture Sector," Dushanbe, 2007 (in Russian).

UNIFEM, "Women's Rights to Land Tenure," Dushanbe, 2005 (in Tajiki).

Republic of Tajikistan. Water Code and Bylaws: Regulation of Water Relations, Dushanbe, 2004 (in Tajiki).

Winrock International, The Water User Association Support Program, 2005.

World Bank, Community Agriculture and Watershed Management Project, Dushanbe, 2007.

World Bank, Farm Privatization Support Project, Dushanbe, 2004 (in Russian)

World Bank, Fergana Valley Water Resources Management Project, Dushanbe, 2007.

World Bank, "Irrigation in the Central Asia: Social, Economic and Nature Protection Consideration," Washington, D.C., 2003.

World Bank, Rural Infrastructure Rehabilitation Project, Dushanbe 2005 (in Russian).

Yovon District State Productive Operational-Melioration Unit, Data on Water Use, 2007 (in Tajiki)

Creibull, Y., et al, "Swiss Strategy in Central Asia on Water Use Sector for 2002-2006: Potential Strengthening of Regional Water Use Management," 2002.

questionnaire #

Data entry supervisor _____
Date of data entry _____
Data entry staff _____
Name of head of household: _____
Name of respondent: _____
Address and Telephone number: _____

Interviewers should write any general and interesting observation they have on this household here:

Note 1: This page contains confidential household information. Enumerators must explain to respondents that all links between the responses and households will be destroyed.
Note 2: Enter -99 for not applicable.

SECTION A: HOUSEHOLD INFORMATION

Please provide the following detailed information about your household members (must be living in the village with the household. For example, if husband has migrated write head of household for wife). *Note: A household consists of persons who live in the same dwelling and pool resources and expenses.*

2. Reference number of members	3. Name	4. Relations hip to head of household	5. Sex	6. Marital Status	7. Age, years	8. Able to read and write	9. Total years in school	10. Now attend School	11. If between 6 and 18 why not?	12. Disability?	13. Full time employment (if no full time employment fill out next column)	14. Second employment (or part-time)	15. Third employment
1													
Respondent													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
1=Head of household 2=Spouse 3=Son/daughter 4=Sister / brother 5=Son in law/daughter in law 6=Mother / father 7=Grandson / granddaughter 8=Grand mother/grand father 9=Mother in law / Father in law 10=Other (specify)...	1=M 2=F	1=Single 2=Married 3=Separated or divorced 4=Widow(er) -99=Not applicable, too young	1=Yes 2=No Not applicable since too young=-99	If too young to go to school, write -99 If no schooling, write "0"	1=Yes 2=No Write for all members even if old	-99=Not applicable 1=Difficult to get to school 2=Cannot afford charges 3=Needs to contribute to household income 4=Other	-99=Not applicable 1=Hearing 2=Seeing 3=Speech 4=Movement 5=Mental 6=Other	1=Self-employed in non-farm private business outside home or owner of such private business 2=Farming and related activities on any type of collective farm including Khojagii Dihqonii Kollektivi 3=Farming, etc. on Khojagii Dihqonii Oilagi/Infirodi 4=Farming, etc. on own presidential land/household plot 5=Farming, etc. some other type of land 6=Farming, etc. on land you do not own/ do not have shares of 7=Office or management employee on farm 8=Teacher or medical personnel 9=Employee in industry/factory or workshop 10=Employee in any type of services including transport 11=Housewife or other homemaker without pay 12=Private paid domestic work 13=Handicraft production at home 14=Pensioner 15=Has no job but is looking for a job actively now 16=Has no job and is not looking for another job actively 17=Pupil/student 18=Doing military service but staying at home 19- Cannot work due to old age or a handicap -99= Too young to work					

16. **Language spoken mainly at home :**

Tajiki...1 Uzbek...2 Russian...3 Qirgiz...4 Other...5_____

How many people in this family migrated to other places in the last 5 years? (if no one, write "0")

17.	Previous head of family (Enter 1 if this is the case; otherwise write "0")	
18.	Number of other males (Enter number if the case; otherwise, write "0")	
19.	Number of other females (Enter number if the case; otherwise, write "0")	

20. **How many of the above migrants have returned? # _____ (if no one has migrated to begin with, write -99; if you entered some number in the previous question, but no one has actually returned, write "0")**

What was the main reason for migration among your family members? (Maximum three reasons)

	21. First reason	22. Second reason	23. Third reason
Not applicable	-99		
Education	1	1	1
Work	2	2	2
Marriage	3	3	3
Military service	4	4	4
Other	5	5	5

24. **If you have had migrants in your family, what has been the impact on the family?**

	1st	2nd
Not applicable	-99	
Not much impact can be seen	0	
Migrants send money and that is good	1	1
Migrants send very little money, so there is no positive impact in terms of extra money	2	2
Migrants' absence from the family means that women have to take care of all household chores which is difficult	3	3
Migrants' absence from the family means that women have to take care of all household chores. While this is difficult, it has also empowered women to some extent	4	4

Main Agricultural Activities of the Household in general as a whole (circle one only in each column)

Type	25. First most important	26. Second most important	27. Third most important	28. Fourth most important
Not involved in agricultural activities	-99			
Cotton	1	1	1	1
Grain	2	2	2	2
Fruits	3	3	3	3
Vegetables	4	4	4	4
Animal husbandry	5	5	5	5
Poultry production	6	6	6	6
Sericulture	7	7	7	7
Fishing/aquaculture	8	8	8	8
Other (specify).....	9	9	9	9

SECTION B: INFORMATION ON LAND AND AGRICULTURAL ACTIVITIES

Do you have presidential, nazdi howoli or any other land (not to include Khojagii Dihqonii Inferodi and Khojagii Dihqonii Oilagi or share in Khojagii Dihqonii Kollektivi or Kolkhoz/Sovkhoz, JSC, and large collective). Note: by rental land we mean you actually rent a land plot, pay for it, and can sell or consume what you grow on this plot

Type of Farm	29. Size	30. Unit: 1-ha 2-sotiq	31. Activity on land?			32. % of land cultivated	33. 1st reason	34. 2 nd reason	35. Under whose name do you have proper documents for this land?	36. Sex of that person	37. Amount you paid to get this land?
			a	b	c		Why is it that you do not cultivate all of the land?				
a. House Garden											
b. Presidential											
c. Rental land											
d. Other											
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>-99=Do not have this type of land 1=Not much 2=Cotton 3=Grain 4=Fruits 5=Vegetables 6=Animal husbandry 7=Poultry production 8=Sericulture 9=Dry farming 10=Other (specify).....</p> </div> <div style="width: 30%;"> <p>-99=We do cultivated all 1= Part of it is used as fallow to be rejuvenated 2 = Low quality of land 3=lack of access to water 4=No money to buy inputs 5= No one to work on land 6=No market for produce 7=Land is too far 8= Land is fragmented 9= High water table 10=Other (specify).....</p> </div> <div style="width: 30%;"> <p>-99=Have no documentation 0=Head of household 1=Spouse 2=Son/daughter 3=Sister / brother 4=Son in law/daughter in law 5=Mother / father 6=Grandson /granddaughter 7=Grand mother/grand farther 8=Mother in law / Father in law 9= A migrant to other places 10=Other (specify relative to head of household)</p> </div> <div style="width: 10%;"> <p>1=M 2=F -99= Not Applicable</p> </div> <div style="width: 10%;"> <p>If not paid, write 0. For rental write annual fee. -99= Not Applicable</p> </div> </div>											

38. Have you experienced land restructuring of the Kolkhoz/Sovkhoz, JSC, or large collective farm system?

Not applicable since our household was never involved in agricultural activities at the Kolkhoz/Sovkhoz, JSC, or large collective farm	-99
Not really, our Kolkhoz/Sovkhoz, JSC, or large collective farm system has only been renamed and some of our household members work on the renamed farm	1
Yes, the (earlier renamed) JSC, Kolkhoz/Sovkhoz, or large collective farm has been broken down into Khojagii Dihqonii Kollektivi on which some of our family members work	2
Yes, the JSC, Kolkhoz/Sovkhoz, or large collective farm has been broken down and we have land on which our extended family works (Khojagii dihqonii oilagi)	3
Yes, the JSC, Kolkhoz/Sovkhoz, or collective farm has been broken down and our family has received its own land (Khojagii dihqonii infirodi)	4

Information on family members who work on (renamed) Kolkhoz/Sovkhoz, JSC, or large collective farm or a restructured Khojagii Dihqonii Kollektivi or have shares in the farms.

	39. Have shares?	40. Do you know boundary of share? 1=Yes 2=No	41. Did you have to pay to get share? 1=Yes 2=No
No one in the family works on this type of farm or has shares	-99		
Some family members work on this farm, but no one has shares	0		
All family members who work on this type of farm have shares	1		
Only some family members who work on this farm have shares	2		
No family member works in the farm but some have shares	3		
We only get a plot of land from the large farm to grow what they ask us to do (for example grow cotton); we get some benefit out of this by getting for example cotton stems or because we are allowed to cultivate part of this for our own use	4		

If you have experienced land restructuring and you now have a Khojagii Dihqonii Oilagi or Khojagii Dihqonii Infirodi fill out the following. Otherwise write -99 in the first column and skip the table.

42. Type of Farm	43. Size	44. Unit: 1-ha 2-sotiq	45. Activity on land?			46. % of land cultivated	47. 1st reason	48. 2nd reason	49. # of full-time persons working on the land	50. # of families	51. Amount you paid to get this land in Somo ni	52. Type of document	53. Sex of person under whose name document is issued
			a	b	c		Why is it that you do not cultivate all of the land?						
1=Khojagii Dihqonii oilagi 2=Khajagii Dihqonii Infirodi -99=No such land		1=Not much 2=Cotton 3=Grain 4=Fruits 5=Vegetables 6=Animal husbandry 7=Poultry production 8=Sericulture 9=kishti lolmi 10=Other					-99=We do cultivated all 1= Part of it is used as fallow to be rejuvenated 2 = Low quality of land 3=lack of access to water 4=No money to buy inputs 5= No one to work on land 6=No market for produce 7=Land is too far 8= Land is fragmented 9= High water table 10=Other (specify).....					1=None 2=Single Certificate/Shahodatnoma 3=A joint certificate or Shahodatnoma	1=M 2=F 3=M & F -99=Not applicable

If there are some people in your villages who have not received land or share of land, please provide the following information on land allocation (for renamed or broken down kolkhoz or large farm, nazdi howli, and presidential)?

(Maximum two reasons)	Land from big farm		Nazdi howli		Presidential	
	54. 1st	55. 2nd	56. 1st	57. 2nd	58. 1st	59. 2nd
There is no such person that we know of	-99		-99		-99	
Kolkhoz/Sovkhoz, JSC, or large collective farm system was just renamed and no one received any shares	1	1	1	1	1	1
Kolkhoz/Sovkhoz, JSC, or large collective farm system was either renamed or restructured (broken down) and they did not give some farmers shares or any land	2	2	2	2	2	2
Getting land or land share cost money and some people could not afford it	3	3	3	3	3	3
Some farmers were married to someone from somewhere else and they got shares or land elsewhere	4	4	4	4	4	4
Some farmers were married to someone from somewhere else and they did not get shares either here or elsewhere	5	5	5	5	5	5
Some farmers had lost their spouses and did not get shares or land	6	6	6	6	6	6
Some farmers whose spouses were absent (migrated) did not get shares or land	7	7	7	7	7	7
Some farmers who had become handicapped did not get shares or land	8	8	8	8	8	8
Due to other reasons some farmers did not get land or shares	9	9	9	9	9	9
There was not enough Nazdi howli land available for everyone	10	10	10	10	10	10
There was not enough Presidential land available for everyone	11	11	11	11	11	11
Only influential people could get land or land share	12	12	12	12	12	12

60. Who are the people that did not get land or share of land?

Mostly men....1 Mostly women....2 Men and women, equally....3 Not applicable or do not know....-99

Livestock assets

	61. At this moment how many do you have?	62. Do you market you animal products (live or produce)? 1=Yes 2=No	Has the number of your animals increased in the past 2 years?	
			63.	64.
a. Dairy cows				
b. Other cattle				
c. Sheep, goats				
d. Poultry				
e. Other, specify				
<div> <div> -99=Not applicable 0=No it has not 1=Yes, because of Higher profit 2=Yes, because of Better access to information 3=Yes, because of Better access to input </div> <div> 4=Yes, because of Better access to credit 5=Yes, because of Better veterinary services 6=Yes, because of Received money from remittance 7=Yes, because of Received money from other sources 8=Yes, due to natural birth 9=Yes, other </div> </div>				

SECTION C: ACCESS TO WATER

What are the main sources of water you actually use for drinking, other home use, or watering your household plot (nazdi howli)?

Source	65. We use this source (enter number for all)	66. Actual use?			67. Approximate cost per month in somoni. If you use the source but it is free write zero.	68. Level of satisfaction with quality?	69. Frequency of availability	70. Satisfaction with amount and reliability?	71. Who provides the water?	72. Reasons for this choice of source?	73. Distance to the main source of water? ((Write in KM the distance to the actual main canal or well))
		i	ii	iii							
a. Canal/stream/river											
b. Rain collection											
c. Pipes (plumbing)											
d. Communal well in village											
e. Individual well											
f. Spring in village											
g. Bottle /container											
	1=Yes 2=No	1=Cultivating household plot 2=Livestock breeding 3=Poultry 4=Sericulture 5=Drinking 6=Household Needs 7=Other (specify).....			1=High 2=Average 3=Low	1=Every day 2=Every other day 3=Half of the week 4=Only some days during the month 5=It is not regular	1=OK 2=To some extent 3=Not very satisfied 4=Not satisfied at all	1=Kolkhoz/ Sovkhoz, JSC, etc. 2=Khajagii Dihqoni Kollektivi 3=Water users' association 4=Mahallah 5=Vodkhoz 6=Private company/persons 7=Other (.....)	1=One of few sources of water available to us 2=Cost 3=It is reliable 4=Easy access 5=Other (specify).....		

Do you save water at home? If your answer is yes, fill this out. Otherwise place -99 in the first column.

Hawz	74. Do you save water this way?	75. Importance for you family
Container		
	1=Yes 2=No -99=Not applicable	1=Very important 2=Somewhat important 3=Not important

What are the main sources of water you actually use for your presidential land or individual khojagii dihqoni (Infirodi) or Khojagii Dihqonii Oilagi farm? If you do not have this type of land, place -99 in the first row of first column.

Source	76. We use this source (enter number for all)	77. Actual use?			78. Approx imate cost per month in sometri. If you use the source but it is free write zero.	79. Level of satisfaction with quality?	80. Frequency of availability	81. Satisfaction with amount and reliability?	82. Who provides the water?	83. Reasons for this choice of source?	84. Distance to the main source of water? (Write in KM the distance to the actual main canal or well)
		i	ii	iii							
a. Canal/stream/river											
b. Rain collection											
c. Pipes (plumbing)											
d. Communal well in village											
e. Individual well											
f. Spring in village											
g. Bottle/container											
h. We have very little access to water for this type of land											
	1=Yes 2=No	1=Cultivating plot 2=Livestock breeding 3=Poultry 4=Sericulture 5=Drinking 6=General Needs 7=Other (specify).....				1=High 2=Average 3=Low	1=Every day 2=Every other day 3=Half of the week 4=Only some days during the month 5=It is not regular	1=OK 2=To some extent 3=Not very satisfied 4=Not satisfied at all	1=Kolkhoz/ Sovkhoz, JSC, etc. 2=Khojagii Dihqoni Kollektivi 3=Water users' association 4=Mahallah 5=Vodkhoz 6=Private company/persons 7=Other (.....)	1=One of few sources of water available to us 2=Cost 3=It is reliable 4=Easy access 5=Other (specify).....	

If you were accessing water free of charge for your household use, household plot, presidential land, or Khojagii Dihqonii Oilagi/Infirodi but now the newly-established water user's association or Vodkhoz is asking you to pay, under what condition are you willing to pay?

	85. Nazdi Howli or household use	86. Presidential land	87. Khojagii Dihqonii Oilagi/ Infirodi
Not applicable: either source of water is different or no such land	-99	-99	-99
We are under (renamed) Kolkhoz/Sovkhoz, JSC, etc. or under Khojagii Dihqonii Kollektivi and they still provide us water for free	0	0	0
We have already been paying for our water	1	1	1
We are willing to pay for the water we have been getting until now	2	2	2
If the quality of water improves we are willing to pay	3	3	3
If the reliability of water improves (more frequent access) we will pay	4	4	4
We are not willing to pay no matter what	5	5	5

Does water you are receiving first go through other neighboring farms before reaching you?

	88. Nazdi Howli or household use	89. Presidential land	90. Khojagii Dihqonii Oilagi/ Infirodi
Not applicable: our source of water is different or do not have such land	-99	-99	-99
No, water comes to our land first	0	0	0
Yes, it goes through (renamed) Kolkhoz/Sovkhoz, JSC, or large collective farm	1	1	1
Yes, it goes through a Khojagii Dihqonii Kollektivi	2	2	2
Yes, it goes through a Khojagii Dihqonii Infirodi/Oilagi	3	3	3

If water you are receiving first goes through other neighboring farms, fill out the following. Otherwise choose -99 in the table.

	91. Nazdi Howli or household use	92. Presidential land	93. Khojagii Dihqonii Oilagi/ Infirodi
Not applicable: our source of water is different or do not have such land	-99	-99	-99
Water goes through a neighboring farm first and they either give us very little water or give us water whenever they have extra	1	1	1
Water goes through a neighboring farm first and they give us bad quality water	2	2	2
Water goes through a neighboring farm first and they have or want to charge us a lot of money for the water	3	3	3
The water goes through a neighboring farm first and they are very cooperative with regards to providing us with water	4	4	4

94. Do you think in your village some people have more/less access to water? (circle all that apply)

a. No, every one has equal access	0
b. Yes, people who are poor have less access	1
c. Yes, influential people have better access	2
d. Yes, men have better access than women	3
e. Yes, those who are farther away from the main source have less access	4

95. In your village, if people face shortage of water (or cannot afford to pay for water) what do they do? (circle all that apply)

a. Not applicable	-99
b. They do nothing	1
c. They try to divert water from neighboring houses	2
d. They divert water from somewhere along the main source	3
e. They try to get water when there it is not their turn	4
f. They try to bribe mirobs	5
g. Other (specify.....)	6

96. If you are either in possession of a Khojagii Dihqonii Oilagi/Infirodi or work in a Khojagii Dihqonii Kollektivi, is your Khojagi a member of a water users' association (WUA)? If question does not apply to you, choose -99.

Yes.....1 No.....2 Not applicable..... -99

97. If you now have a WUA , what do you think about the impact of this institution?

Not applicable	-99	Many things have improved	4
We have better access to water	1	Some things have improved but the cost of water has actually increased	5
Water quality has gotten better	2	No change	6
Water reliability has improved	3	Overall, things have gotten worse	7

98. If you have a WUA, are women also members of the WUA or participate in the meetings? (circle only one)

Not applicable	-99	Yes, some women are members or participate in meetings but they do not have much say in the decisions	2
Women are seldom members or participate in the meetings	1	Yes, many women are members or participate in meetings and they have a lot of say in water decisions	3

99. If you do not have a WUA, are you willing to establish one to have a more organized way of distributing the water? (circle only one)

We already have a WUA.....-99

I do not know much about WUAs to say anything.....1

No, we do not believe such organizations can help us....2

Yes, but we are not sure how such organizations can help us....3

Yes, I think such organizations can help us.....4

Who decides on the source of water and how it should be used for household purposes and on the household plot, presidential land, or infirodi/oilagi dihqoni land in possession of your household? (circle only one in each row)

	Head of Family	Other Male	Other Female	Whoever	Not Applicable
100. For household use	1	2	3	4	-99
101. For farming/animal husbandry	1	2	3	4	-99

Who from the household does the negotiation on water-related issues for household use and for the household plot, presidential land, or infirodi/oilagi dihqoni land

Negotiation	Head of Family	Other Male	Other Female	Whoever	Not Applicable
102. Accessing water in general	1	2	3	4	-99
103. Cost	1	2	3	4	-99
104. Conflicts with others	1	2	3	4	-99
105. With the WUAs	1	2	3	4	-99

106. If there is a WUA in the village, who from your household is a member or represents your household in the WUA?

Head of Family	Other Male	Other Female	Whoever	Not Applicable, do not have WUA	We have WUA but our family is not directly represented
1	2	3	4	-99	0

SECTION D: AGRICULTURAL ACTIVITIES

107. If you own household plot, presidential land, Khojagii Dihqonii Infirodi or Khojaii Dihqonii Oilagi, have you increased your production in the last two years, including livestock production if that is a major activity of yours?

Not applicable (we do not have such land or agricultural activities are not a major source of our livelihood).....-99

Yes, we have increased.....1 No, it has actually decreased.....2 No, it has been the same.....3

What are the main difficulties in increasing your agricultural/livestock produce from household plot, presidential land, Khojagii Dihqonii Infirodi or Khojaii Dihqonii Oilagi (Maximum two answers)?

	108. First difficulty	109. Second difficulty
Not applicable: We do not have or cultivate such land commercially	-99	
Not difficult, we have been increasing our produce or we can increase our produce if we want to	0	
Limited or lack of access to water	1	1
No access to market outside the village and/or no agriculture processing business nearby	2	2
Our quality of soil is low	3	3
Water table has risen and we cannot cultivate land or use it for other purposes	4	4
Limited access to or high cost of inputs	5	5
Limited access to or high cost of machinery	6	6
Limited access to or high cost of credit	7	7
Out produce is of low quality and not marketable	8	8
Other (specify.....)	9	9

If you market your farm produce, fill out the following table (choose only one option in each row; if you do not market, choose -99 on all options)

	Not applicable	Who is responsible for this marketing?			
		Head of household	Other male in household	Other female in household	Whoever, does not matter
110. We sell them in the market	-99	1	2	3	4
111. We barter them with other households	-99	1	2	3	4
112. We barter them with the future companies for input	-99	1	2	3	4
113. Other (specify.....)	-99	1	2	3	4

Access to inputs for cultivation of your presidential land, household plot, Khojagii Dihqonii Oilagi/Infirodi, or to raise livestock/poultry (If not applicable choose -99 on all options)

Farm Assets	Not applicable	Self-produced	Bought in the market	Self-produced and bought in the market	Have no access or no money to buy
114. Seeds	-99	1	2	3	4
115. Fertilizer	-99	1	2	3	4
116. Crop production chemicals	-99	1	2	3	4
117. Animal feed	-99	1	2	3	4

Access to machinery on your presidential land, household plot, Khojagii Dihqonii Oilagi/Infirodi, or to individually raise livestock/poultry (Maximum choose two)

	118. First	119. Second
Not applicable	-99	
We use no or very little machinery (tractors, etc.)	0	
We use our own machines	1	1
We borrow machines from friends and neighbors	2	2
The large farm lets me use their machines for free	3	3
We rent the machines from the large farm, leasing companies or others	4	4

Do you think women have less access to machinery or inputs than men in your village?

120. **Machinery:** Yes...1 To some extent...2 No, whoever has money can get what they want...3

121. **Inputs:** Yes...1 To some extent...2 No, whoever has money can get what they want...3

Division of labor for each task in agricultural activities on the khojagi farm on which you work

Categories	122. On household plots or presidential land	123. On Khojagii Dihqonii Kollektivi, JSC, Kolkhoz/sovkhoz, or other joint farms	124. On Khajagii Dihqonii Infirodi or Oilagi
a. Basic cotton worker			
b. Basic gardener			
c. Taking care of livestock (basic)			
d. Taking care of poultry (basic)			
e. Taking care of sericulture (basic)			
f. Other basic worker			
g. General technician			
h. Mirob			
i. Tractor/maching operator			
j. Animal technician			
k. Sardar of Khajagi			
l. brigadier			
m. Accoutant			
n. Engineer			
o. Other			
1=Men 2=Women 3=Both men and women 4=Mostly men 5=Mostly women -99=Not applicable			

SECTION E: HOUSEHOLD INCOME, BORROWING AND EXPENDITURE

Indicate wages of those household members who are engaged in agricultural activities on a full-time or part-time basis on JSC, large collective or cooperative, large joint Khojagii Dihqoni, or Khojagii Dihqonii Oilagi (in possession of more than one family)

	125.	126.	127.	128.	129.	130.	131.	132.
Enter reference number from first table in this questionnaire and write name	Part-time or full-time on farm?	Total number of months worked last year	Type of work on farm	Monthly cash payment in somoni	Value of monthly in-kind payment in somoni	Annual value of occasional cash or in-kind payment (such as during cotton-picking or from receiving cotton stem (somoni)	Annual value of Divident from owning shares (somoni)	Annual value of any other type of payment (somoni)
	1=Part-time 2=Full-time		1=Basic cotton worker 2=Basic gardener 3=Taking care of livestock (basic) 4=Taking care of poultry (basic) 5=Taking care of sericulture (basic) 6=Other basic worker 7=General technician 8=Mirob		9=Tractor/machine operator 10=Animal technician 11=Sardar of Khajagi 12=brigadier 13=accountant 14=Engineer 15=Other			

133. If some of your household members are engaged in agricultural activities on a full-time or part-time basis on JSC, large collective or cooperative, large joint Khojagii Dihqoni, or Khojagii Dihqonii Oilagi (in possession of more than one family), in their experience are women's wages (cash and in-kind) on such farms lower than male wages?

Not applicable.... -99

No, they are the same.....1

Yes, women's wages are generally lower.....2

Yes, but this is because men and women do different things on the farm....4

Family income last year

		Somoni
134. Average monthly cash wage of all household members from working on farms not individually owned (joint-stock farm, collective farm, Kolkhoz/Sovkhoz, or large dehqan farm cultivated by more than one household)	x 12=	
135. Average value of monthly in-kind wages paid <u>at a regular basis</u> of all household members from working on farms not individually owned (joint-stock farm, collective farm, Kolkhoz/Sovkhoz, or large dehqan farm cultivated by more than one household)	x 12=	
136. Total annual value of produce or cotton-stem or other in kind items any of the household members has <u>on occasion</u> received from working on farms not individually owned (joint-stock farm, collective farm, Kolkhoz/Sovkhoz, or large dehqan farm cultivated by more than one household)		
137. Total annual value of dividend from owning shares (somoni) owned by family members		
138. Value of total sales of produce from your individual dehqan farm during the entire year (if you have such land) excluding what you have consumed yourself		
139. Value of total sales of produce from your presidential land (if you have such land) excluding what you have consumed yourself		
140. Value of total sales of produce from your household plot (if you have such land) excluding what you have consumed yourself		
141. Value of sales of livestock, or poultry, or sericulture [abrisham, pila] or fish (meat, silk, cheese, milk, eggs, fish, etc.) for the entire year excluding what you have consumed yourself (either product or whole animal)		
142. Average monthly value of wages all household members have received for work in non-agricultural activities	x 12=	
143. Total household earnings from work at home (for example handicraft production) during the year		
144. Total value of Pension received by all household members per month	x 12=	
145. Total value of social assistance received by all household members during the year		
146. Total value of any other income any of the household members have received (cash or in kind) during the year		
147. Approximate total value in somoni of gifts received by household during the year		
148. Total value of rents the household has received from any assets during the past year		
149. Total value of remittance the household has received in the past year		
150. Total value of all agricultural products produced and consumed by household during the year (crop, fruits, animal meat and products) during last year		

151. How has your family income from all income sources changed in the past 3 years?

INCREASED.....1 NO CHANGE.....2 DECREASED3

152. How do you estimate your family's financial status? (circle ONE only)

Money is enough, no problem	1
Money is enough to make large purchases (furniture, household appliances), but purchase of a car not possible	2
Money is enough to satisfy all our requirements for clothes and food, but larger purchases (furniture, household appliances) is inaccessible to us	3
Money suffices only for minimal requirements of clothes and food	4
Money does not suffice even on purchases of food	5

Borrowing in 2006 (Not to include group borrowing for joint khojagii dehqoni, collective, Kolkhoz/Sovkhoz, or JSC)

	153. In the last 12 months, how many times did this household borrow any money that he/she had/has to repay? (Place -99 if no access in your village to this source; place 0 if you did not borrow)	154. What was the main reason for borrowing/obtaining this/these loan(s)?	155. What was the total amount borrowed in the last 12 months? (Somon)	156. What kind of guarantee did the borrower provide the lender(s) for this/these loan(s)?	157. Rate of interest
a. Banks					
b. Credit union, formal borrowers groups, credit cooperatives, or credit NGOs					
c. Informal borrowers groups					
d. Friends, neighbors, or relatives					
e. Money lender					
	1= Agricultural inputs 3=Animals 5=Non-farm business 7=Home repara 8=Medical and emergency	2=Farm equipment 4=Acquiring land 6=Consumption 8=Consumer durables 9=Other	1=Land asset 3=Livestock 4=Machinery or vehicle 5=None 6=Other (specify).....	2=Crop	

Households sometimes experience unexpected sudden events. I would like to ask about any bad surprises that have affected the family financially over the past 1 year

Incidents	158.	159.		160.	161.	162.			163.
	Did this event occur in your household?	When did it happen?		How long did it last? (months)	What proportion of household income was lost due to this event?	How did the household cope with this problem? (enter up to three coping mechanisms)			Has the household recovered from this event?
		Month	Year			A	B	C	
a. Serious injury or illness that kept household member from doing normal activities									
b. Loss of a regular job of a household member									
c. Cut-off or decrease of remittances / regular transfers from relatives or others									
d. Termination or decrease of government subsidies or payments									
e. Abandonment or divorce									
f. Theft, fire, or destruction of home or property (including vehicle or livestock)									
g. Failure of business / bankruptcy									
h. Other (specify).....									
	1=Yes 2=No	Enter month if known, else only enter year			1=All 2=Most 3=Half 4=Some 5=None	-99=Did nothing 1=Spent savings or investments 2=Sold or pawned household assets 3=Sold livestock, poultry, etc. 4=Other members worked more 5=Borrowed/got help from relatives 6=Borrowed/got help from friends/neighbors 7=Obtained loan from bank 8=Borrowed from money lender 9=Obtained help from charity/NGO 10=Stopped consuming some products or services 11=Insurance benefits 12=Unemployment benefits 13=Other (specify)			1=Not recovered 2=Partially recovered 3=Completely recovered

SECTION F: MISCELLANEOUS

164. **Is there any water conflict in the village and if there is how is it solved?**

Yes, community leaders/elders arbitrate	1
Yes, it is taken to the police or judiciary	2
Yes, officials arbitrate (jamoat or mahalla committee)	3
Yes, religious leader arbitrate	4
Yes, local mirobs arbitrate	5
Yes, officials from WUAs or their mirobs arbitrate	6
Yes, and no one arbitrates	7
Yes, neighbors arbitrate	8
Yes, others arbitrate (specify.....)	9
Yes, but we usually reach an agreement ourselves	10
No, we have no conflicts over water	11

Division of labor within the household (not concerned with farming activities)

(circle all that apply)

	a. Adult male members of household	b. Adult female members of household	c. Young male child of household (Under 16)	d. Young female child of household (Under 16)
165. Shopping	1	2	3	4
166. Fetching water	1	2	3	4
167. Cooking	1	2	3	4
168. Washing and cleaning	1	2	3	4
169. Keeping and accounting family money	1	2	3	4
170. Other (specify).....	1	2	3	4

171. **Are there in your village employable people who don't have a job at the moment?**

YES1 NO.....2 DO NOT KNOW-99

Who are mostly these unemployed people? (from huge to small size)

	172. First group (circle ONE only)	173. Seco nd group (circle ONE only)	174. Thir d group (circle ONE only)
Not applicable	-99		
Men	1	1	1
Women	2	2	2
Youth	3	3	3
Educated people	4	4	4
Disabled people	5	5	5
Other (please, specify).....	6	6	6

175. Do you carry out some farm activities jointly with other farms/farmers/relatives (related to your Nazidi howli, presidential land, or Khojagii Dihqonii Infirodi; not related to larger Khojagi dihqonis)?

Activities	
a. Not applicable	-99
b. Yes, in production of Crops/Animal	1
c. Yes, in processing	2
d. Yes, in joint use of machinery and equipment	3
e. Yes, in purchasing farm Inputs	4
f. Yes, in receiving Credit	5
g. No, WE DO NOT	6
h. Other (<i>specify</i>) _____	7

176. Do you think in the last ten years women have become poorer as compared to men in your village?

Yes, they have, since men have more options....1 Yes, to some extent....2
 No, women and men in the same household are at the same level...3 Women have always done worse than men financially....4

177. Do you think women are often coerced to do very low paying work (such as picking cotton) on the farms?

Yes, it is often the case....1 Yes, but it is because they need to work....2
 No, they are not coerced; they financial situation dictates that....3 No, never....4

178. Has the high level of water table caused illness in your village?

Not applicable.....-99
 We have the problem of high level of water table, but it has caused little health problem....1
 We have the problem of high level of water table and it has caused a lot of health problem among women who work in the fields...2
 We have the problem of high level of water table, and it has caused a lot of health problems among both men and women....3

In your opinion, what are the main problems facing the village community or women in particular? (*write down answer and post-code, only 3 answers are possible for each part*)

179. Village Community:

a. _____
 b. _____
 c. _____

180. Women:

a. _____
 b. _____
 c. _____

C.2. FOCUS GROUP DISCUSSION ISSUES

Note: The guide is intended to serve as a general tool for leading focus group discussions. It is not necessary to pose each and every question especially since different types of FGDs will be held with different groups; rather the guide is to assist in probing deeper and bringing added focus into the discussions. Each focus group discussion should last about 2 hours.

Land:

Main issues: type of land, ownership status, the use of land, the role of the respondent on that land (working for a wage, cultivating for household use), and division of labor on the land.

Ownership status: Do they have land? What kind of land do they have – dihqon farm, presidential land or household plot? What is the quality of their land? Can they cultivate it? Is there water? Is it contiguous? Do they have shares/certificates for their land? Do they know exactly where their land is? Did they have to pay anything for it? Did they know *how* to get land (where to go, who to go to, how much to pay)? If they have agricultural land, are they happy with the land they got? Is it close to them or close to the water? Can they grow anything on it? How has it changed their life? If they don't have land what are the reasons for that? Who do they think got the best land? Do they know if there are workers on the farm who did not receive land shares? Why and who (probe for their characteristics and reason)? For those who did not receive land or a share, did they get land elsewhere?

Use and income from the land: Are they working on their own land or do they get a salary? If working on cotton fields, do they get money as wages or do they get in-kind or both? How much or what do they get? Is that what they want? Do they think they are paid fairly for their work? Can they ask for more? Who determines the rates? Do they have other sources of income? If they have HH plot or other land, do they grow anything on their land? How did they decide what to grow on their private land or HH plot? Are they free to decide what to grow? Do they make money from it? How many in their HH work on cotton fields? What do they get paid? Do they want to work on the cotton fields? If not, why do they do it and do? Do large farms provide any services for the village? What do they think is their responsibilities and what services would they like to see them provide for them?

Water:

Main issues: sources of water, different use, cost, affordability, reliability, access

Sources: Where do they get water for their HH plots, presidential land, livestock and personal use? What is their water source? How close or far are they from the source of water? How is the quality of water they use? Who fetches water if it is far? Do they get water from the large farm or does it flow to them directly? Do they pay anyone for it? To whom?

Access and affordability: Do they have enough water for their HH plots, private farms, and HH needs? What do they do when there is not enough or no water at all? Where do they get water from? Do they buy water? Are they able to pay for it? What happens if they cannot pay? What are the other means of getting water?

Conflicts: Do they have any conflicts with their neighbors over water? What is the nature of these conflicts? Can they give some examples? How do they solve it? Where do they take their issues in general? Are they satisfied with how they are being handled?

Reliability: Do they know what are the best and the worst timings of their water flow? Can they tell us which months they have more or less? If large farms provide them with water, do they get it as needed or as available? How reliable is receiving water from them? Is there a WUA in their village? if so how reliable is getting water from them? How does the lack of water affect their lives and how do they live differently during the months where there is less water?

Other water-related issues: Do they have livestock? What do they have? Do they have enough water for their livestock? Who takes care of them? What do they do if there isn't enough water for their livestock? Do they ever have to ration water? What gets priority? Who do they think has better access to water? How and why? Do they think their access to water is affected by the fact that they are women? In what way and how? Are there people in the village who get a lot less than they need? If so, what are their characteristics? Are there any water-related problems and humidity in their house? Do they or their families get sick because of it? Can they give some examples? What is the prevalence of water-related maladies in their area? Do they have medical facility near them? If not, what do they do? Has the problem of humidity affected their HH crops? How about their other crops or livestock?

Participation:

What do they think can be done to give them better and more constant access to water? Are they involved in any community meetings, WUA's, Jamoat or other gatherings in order to better voice their concerns regarding water use and control? Do they take any leadership roles in such gatherings? What have they experienced as women participant in such gatherings? Are they allowed to participate freely? can they easily voice their opinions? If there is no WUA where they live, are they willing to establish one? If yes, for what purpose? Who do they think should be members of such association? At what level such associations should be established? Do they participate in any social clubs in their village? Are there women in their village who have similar concerns and problems? Do they have any leadership roles in these gatherings? Do they think they should pay for water? Are they willing to pay for water if they would have more reliable flow and access? Are they willing to pay for water used in their HH, for drinking and for their livestock? How do they think they could improve the water flow? Do they think it is the responsibility of large farms to resolve water flow issues for them? How about the Vodkhoz or Hukumat? What services would they like to see them provide? Who do they think is responsible to address their water issues? Why?

Division of Labor and Control Over Assets:

Issues: What is the division of labor in their household? Who does what and what is a typical day like? What is life like in their household?

Who takes care of them if they are sick or out of work or have no money? Who manages their money? Do they have any other assets of their own (livestock, etc.)? If it is someone other than them in control, why is that? Is this by choice? Do they know of households in their village who are really in need? Why are they in need? Are these households mostly headed by men or women? Do they think women have a harder life in this village? Why?

Migration and Household Well Being:

Has anyone from their HH left this village in search of work? Where have they gone? How do they feel about that? How often do they return? Do they send money? What did they do before they left and who performs those tasks now? How has their life changed since they left? Was it easier when they were here and without work or is it easier now that they have gone but send them money? Are there households that are moving up in the village? What are their characteristics?

Main Problems:

What are some of the problems in their village? How do they see the lives of women in their village? How can they help?

Do they know of other women in this village who are head of household? Do they think life here is more difficult for them as a woman? In what way? Do others in the village help them if they need food or water? Are there any social problems in their village like alcoholism, violence, divorce? Have these problems increased in the past few years or has it always been the same? If increased why is that? Have they experienced any type of discrimination or particular problems being a woman? Please explain? Why do they think? What institutions are used to provide support, mediate or resolve conflict in the village? Are they effective? How can they be better utilized? What are some of their ideas to make life better in this village? If there was one thing they could change in their life, in their HH or in their village, what would it be?

Life Situation and Coping Strategies:

How is their life? What are some of their problems and issues? Is their life better or worse than 5 years ago? If better why do they think? If worse why do they think? What do they think can be done? Do they think things are getting better now? Do they have enough money to buy input (seeds, fertilizer etc.)? If not, who do they borrow from? Do they have enough machinery to work the land? How did they get them? If they don't have any, can they get help or borrow machinery? Can they borrow money to buy them or not? Do they have debt? To whom and why? When do they think they will be able to pay it off? How? What are they doing to pay off the debt sooner? Are they optimistic? Do they pool together HH production for barter or sale? What changes would they make in their current farming practices to make things better? What other kinds of village activities or gatherings can they help form and participate in to take their issues to?

Other Issues:

Do they have any comments or suggestions for the wellbeing of their village?

Are they hopeful and optimistic? Do they think life is getting better or worse? How do they see the lives of their children? Do they think their children are going to have a better life than theirs? In what way? Who do they consider a rich person in their village? What asset does a rich person have? Do they think they can ever be rich? Do they consider themselves rich or modest or poor?

Annex D: Tables

AGE AND LITERACY

Table D.1: Age

Years of household members		District			Total
		Ghafurov	Konibodom	Yovon	
Male	N	1274	1266	1745	4285
	Median	23.00	24.00	20.00	26.21
	Mean	26.52	28.04	24.66	22.00
	Minimum	0	0	0	0
	Maximum	92	95	95	95
Female	N	1333	1321	1701	4355
	Median	23.00	24.00	20.00	22.00
	Mean	27.50	27.84	24.23	26.33
	Minimum	0	0	1	0
	Maximum	96	92	85	96
Total	N	2631	2637	3509	8777
	Median	23.00	24.00	20.00	22.00
	Mean	26.94	27.88	24.28	26.16
	Minimum	0	0	0	0
	Maximum	96	95	95	96

Table D.2: Ability to read and write

Sex of household members		District			Total
		Ghafurov	Konibodom	Yovon	
Male Literate	Count	999	1026	1332	3357
	%within district	95.8%	96.1%	96.5%	96.1%
	%of Total	28.6%	29.4%	38.1%	96.1%
Female Literate	Count	1042	1035	1307	3384
	%within district	92.7%	93.8%	95.5%	94.1%
	%of Total	29.0%	28.8%	36.3%	94.1%
Total Literate	Count	2053	2094	2670	6817
	%within district	94.2%	94.8%	96.0%	95.1%
	%of Total	28.6%	29.2%	37.2%	95.1%

Table D.3: Total years of schooling

Years of schooling		District			Total
		Ghafurov	Konibodom	Yovon	
Male	N	1069	1098	1416	3583
	Median	10	10	10	10
	Mean	9.14	9.30	9.12	9
	Minimum	0	0	0	0
	Maximum	17	18	18	18
Female	N	1150	1146	1402	3583
	Median	10	10	9	10
	Mean	8.53	10	8.27	9.18
	Minimum	0	0	0	0
	Maximum	18	18	17	18

Table D.4: School Attendance

Sex of household members			School Attendee
Male	Attending school	Count	968
		%within district	85.0%
		%of Total	85.0%
	Not attending school	Count	171
		%within district	15.0%
		% of Total	15.0%
Female	Attending school	Count	931
		%within district	81.8%
		%of Total	81.8%
	Not attending school	Count	207
		%within district	18.2%
		%of Total	18.2%
Total	Attending school	Count	1925
		%within district	83.3%
		%of Total	83.3%
	Not attending school	Count	385
		%within district	16.7%
		%of Total	16.7%

MIGRATION

Table D.5: Households with migrants in the last five years

			Migrants					
			Previous head of HH	Other than head of HH				Total No. of HHs with at least one member
				At least one male member	Two or more males	One female member	Two or more females	
District	Ghafurov	Count	83	109	35	14	2	214
		% within District	19.5%	25.6%	8.2%	3.3%	.5%	50.35
		% of Total	6.5%	8.5%	2.8%	1.1%	.2%	16.78
	Konibodom	Count	100	160	56	44	5	288
		% within District	23.5%	37.6%	13.2%	10.4%	1.1%	67.76
		% of Total	7.8%	12.5%	4.4%	3.5%	.4%	23
	Yovon	Count	83	104	123	2	1	291
		% within District	19.5%	24.5%	21.7%	.5%	.2%	68.47
		% of Total	6.5%	8.2%	9.7%	.2%	.1%	22.82
Total		Count	266	373	214	60	8	793
		% of Total	20.9%	29.3%	16.8%	4.7%	.6%	62.20

Table D.6: Return of migrants

			Return of migrants		Total No. of HHs with at least one member having returned
			1 migrant	Two or more migrants	
District	Ghafurov	Count	80	25	105
		% within District	18.8%	5.9%	24.7%
		% of Total	6.3%	2.0%	8.2%
	Konibodom	Count	108	39	147
		% within District	25.4%	9.2%	34.6%
		% of Total	8.5%	3.1%	11.5%
	Yovon	Count	69	35	104
		% within District	16.2%	8.2%	24.5%
		% of Total	5.4%	2.7%	8.2%
Total		Count	257	99	356
		% of Total	20.2%	7.8%	27.9%

Table D.7: Purpose of Migration

Purpose	Counts for first reason	Percent for first reason cited among HHs with actual migrant and with response	Counts for second reason	Counts for third reason
No migrant	482	-	-	-
No response	38	-	-	-
Education	2	.3	3	2
Work	745	98.7	3	0
Marriage	3	.4	10	5
Military Service	0	0	2	0
Other	5	.7	24	7
Total	1275	-	-	-

Table D.8: Total value of remittance the household has received in the past year

District	Mean	N	Median	Maximum
Ghafurov	3196.97	156	2500.00	30000
Konibodom	3712.63	216	3000.00	71500
Yovon	4351.79	251	3500.00	27600
Total	3841.02	623	3400.00	71500

Table D.9: Impact of Migration

Impact	Counts for first main impact	Percent for first main impact cited among HHs with actual migrant with response	Counts for second main impact
No migrant	482	-	-
No response	30	-	-
Not much impact can be seen	28	3.7	0
Migrants send money and that is good	588	77.1	0
Migrants send very little money, so there is no positive impact in terms of extra money	123	16.1	21
Migrants' absence from the family means that women have to take care of all household chores which is difficult	20	2.6	419
Migrants' absence from the family means that women have to take care of all household chores. While this is difficult, it has also empowered women to some extent	4	.5	22
Total	1275	-	-

EMPLOYMENT

Table D.10: First, second (part-time), third, and overall important employment

	District									
	Ghafurov					Konibodom				
	Full time employment	Second employment (or part-time)	Third employment	Overall important activity*		Full time employment	Second employment (or part-time)	Third employment	Overall important activity*	
Self-employed in non-farm private business outside home or owner of such private business	7.2%	.2%	.3%	4.0%		11.8%	.2%	.1%	6.7%	
Farming and related activities on any type of collective farm including Khojagii Dihqonii Kollektivi	9.1%	1.2%	.3%	5.4%		6.6%	.4%	0	3.8%	
Farming, etc. on Khojagii Dihqonii Oilagi/Infirodi	.0%	.0%	.0%	.0%		.0%	.1%	.0%	.0%	
Farming, etc. on own presidential land/household plot	1.4%	47.4%	.3%	15.3%		1.7%	45.1%	.4%	13.8%	
Farming, etc. some other type of land	.1%	.3%	.1%	.2%		.2%	.0%	.0%	.1%	
Farming, etc. on land you do not own/ do not have shares of	.4%	.1%	.0%	.2%		.0%	.0%	.0%	.0%	
Office or management employee on farm	3.9%	.5%	.0%	2.3%		4.1%	1.1%	.0%	2.6%	
Teacher or medical personnel	.7%	.1%	.0%	.4%		.3%	.2%	.0%	.2%	
Employee in industry/factory or workshop	1.4%	.1%	.1%	.8%		1.0%	.2%	.0%	.6%	
Employee in any type of services including transport	2.7%	.1%	.3%	1.5%		1.7%	.2%	.0%	1.0%	
Housewife or other homemaker without pay	9.5%	.1%	.1%	5.2%		10.2%	.1%	.0%	5.8%	
Private paid domestic work	.9%	.0%	.3%	.5%		.3%	.1%	.3%	.2%	
Handicraft production at home	.3%	.1%	.0%	.2%		.0%	.2%	.0%	.1%	
Pensioner	8.2%	.0%	.0%	5.1%		10.3%	.1%	.0%	5.6%	
Has no job but is looking for a job actively now	9.2%	.4%	.0%	5.1%		9.9%	.1%	.0%	2.6%	
Has no job and is not looking for another job actively	1.4%	.1%	.0%	.8%		.8%	.0%	.0%	.5%	
Pupil/student	23.9%	16.9%	33.7%	23.2%		22.9%	18.9%	35.6%	23.7%	
Doing military service but staying at home	.3%	.0%	.0%	.1%		.6%	.0%	.0%	.3%	
Cannot work due to old age or a handicap	1.4%	.3%	.0%	.8%		1.2%	.0%	.0%	.7%	
Too young to work	18.1%	32.1%	64.3%	29.4%		16.6%	33.3%	63.5%	28.4%	
Total Count	2571	1447	722	4740		2584	1299	683	4566	
						3334	1573	810		

*Percentages are calculated taking all responses to first, second, third major activities together as an overall measure of the importance of an activity

Table D.11: First occupation by sex across the three districts

	Male	%	Female	%	Total	%
Self-employed in non-farm business outside home	780	42.60	73	3.71	853	22.47
Farming and related activities for a wage	205	11.20	376	19.13	581	15.30
Farming, etc. on Khojagii Dihqonii Oilagi/Infirodi or other type of farm (not including household plot or presidential land)	28	1.53	37	1.88	65	1.71
Farming, etc. on own presidential land/household plot	7	0.38	75	3.81	82	2.16
Teacher or public employee	24	1.31	5	0.25	29	0.76
Employee in trade enterprise, industry/factory, or transport/services	319	17.42	223	11.34	542	14.27
Housewife or other homemaker without pay	21	1.15	885	45.02	906	23.86
Private paid domestic work	20	1.09	10	0.51	30	0.79
Handicraft production at home	5	0.27	6	0.31	11	0.29
Unemployed (has no job but is looking for a job actively now)	422	23.05	276	14.04	698	18.38
Total	1831	100.00	1966	100.00	3797	100.00

INCOME AND BORROWING

Table D.12: Borrowing in 2006

Number of times HH borrowed money in last 12 months												
		No access or response	0	1	2	3	4	5	6	10	Total	
From banks	Ghafurov	Count	388	5	4	2		0	0	0	416	
		%within district	93.3%	1.2%	1.0%	.5%	.0%	.0%	.0%	.0%	100.0%	
	Konibodom	Count	407	5	0	0	1	0	0	0	416	
		%within district	97.8%	1.2%	.0%	.0%	.2%	.0%	.0%	.0%	100.0%	
Yovon	Count	0	395	24	3	0	0	0	0	0	422	
		%within district	93.6%	5.7%	.7%	.0%	.0%	.0%	.0%	.0%	100.0%	
	Total	Count	1190	34	7	2	1	0	0	0	1254	
		%within district	94.9%	2.7%	.6%	.2%	.1%	.0%	.0%	.0%	100.0%	
From CU, formal BG, or credit cooperative/NGO	Ghafurov	Count	386	2	3	0	0	0	0	0	410	
		%within district	94.1%	.5%	.7%	.0%	.0%	.0%	.0%	.0%	100.0%	
	Konibodom	Count	396	0	0	0	0	0	0	0	414	
		%within district	95.7%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%	
Yovon	Count	0	411	6	2	0	0	0	0	0	419	
		%within district	98.1%	1.4%	.5%	.0%	.0%	.0%	.0%	.0%	100.0%	
	Total	Count	1193	8	5	0	0	0	0	0	1243	
		%within district	96.0%	.6%	.4%	.0%	.0%	.0%	.0%	.0%	100.0%	
From informal borrowers groups	Ghafurov	Count	390	0	3	0	0	0	0	0	411	
		%within district	94.9%	.0%	.7%	.0%	.0%	.0%	.0%	.0%	100.0%	
	Konibodom	Count	396	0	0	0	0	0	0	0	414	
		%within district	95.7%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%	
Yovon	Count	0	410	8	2	0	0	0	0	0	420	
		%within district	97.6%	1.9%	.5%	.0%	.0%	.0%	.0%	.0%	100.0%	
	Total	Count	1196	8	5	0	0	0	0	0	1245	
		%within district	96.1%	.6%	.4%	.0%	.0%	.0%	.0%	.0%	100.0%	
From friends, neighbors, or relatives	Ghafurov	Count	331	35	30	10	2	1	0	1	414	
		%within district	80.0%	8.5%	7.2%	2.4%	.5%	.2%	.0%	.2%	100.0%	
	Konibodom	Count	316	60	24	6	3	3	0	1	415	
		%within district	76.1%	14.5%	5.8%	1.4%	.7%	.7%	.0%	.2%	100.0%	
Yovon	Count	0	349	36	16	8	4	2	1	3	419	
		%within district	83.3%	8.6%	3.8%	1.9%	1.0%	.5%	.2%	.7%	100.0%	
	Total	Count	996	131	70	24	9	6	1	5	1248	
		%within district	79.8%	10.5%	5.6%	1.9%	.7%	.5%	.1%	.4%	100.0%	
From Money lenders	Ghafurov	Count	386	6	4	1	0	0	0	0	401	
		%within district	96.3%	1.5%	1.0%	.2%	.0%	.0%	.0%	.0%	100.0%	
	Konibodom	Count	391	5	2	1	0	0	0	0	401	
		%within district	97.5%	1.2%	.5%	.2%	.0%	.0%	.0%	.0%	100.0%	
Yovon	Count	0	414	1	1	1	0	0	0	0	417	
		%within district	99.3%	.2%	.2%	.2%	.0%	.0%	.0%	.0%	100.0%	
	Total	Count	1191	12	7	3	0	0	0	0	1219	
		%within district	97.7%	1.0%	.6%	.2%	.0%	.0%	.0%	.0%	100.0%	

Table D.13: Main reason for borrowing/obtaining lone(s)

		Agricult. inputs	Farm equipment	Animals	Acquiring land	Non-farm business	Consumption	Home repair	Consumer durables	Medical and emergency	Other	Total
From banks	Ghafurov	.0%	12.5%	25.0%	.0%	25.0%	.0%	.0%	.0%	37.5%	.0%	100.0%
	Komibodom	.0%	.0%	20.0%	.0%	.0%	20.0%	.0%	.0%	60.0%	.0%	100.0%
	Yovon	7.7%	7.7%	23.1%	.0%	11.5%	15.4%	3.8%	3.8%	26.9%	.0%	100.0%
	Total	2	3	9	0	5	5	1	1	13	0	39
From CU, formal BG, or credit cooperative/NGO	Ghafurov	5.1%	7.7%	23.1%	.0%	12.8%	12.8%	2.6%	2.6%	33.3%	.0%	100.0%
	Komibodom	.0%	.0%	.0%	33.3%	.0%	33.3%	.0%	.0%	33.3%	.0%	100.0%
	Yovon	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%
	Total	14.3%	14.3%	28.6%	.0%	.0%	14.3%	.0%	.0%	28.6%	.0%	100.0%
From informal borrowers groups	Ghafurov	1	1	2	1	0	2	0	0	3	0	10
	Yovon	10.0%	10.0%	20.0%	10.0%	.0%	20.0%	.0%	.0%	30.0%	.0%	100.0%
	Total	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%	.0%	100.0%
	Total	12.5%	.0%	.0%	.0%	12.5%	12.5%	12.5%	.0%	50.0%	.0%	100.0%
From friends, neighbors, or relatives	Ghafurov	1	0	0	0	1	1	1	0	5	9	18
	Komibodom	11.1%	.0%	.0%	.0%	11.1%	11.1%	11.1%	.0%	55.6%	100.0%	100.0%
	Yovon	1.3%	.0%	1.3%	.0%	.0%	18.2%	13.0%	7.8%	58.4%	.0%	100.0%
	Total	.0%	.0%	.0%	.0%	.0%	27.7%	4.3%	9.6%	58.5%	.0%	100.0%
From Money lenders	Ghafurov	.0%	1.4%	.0%	.0%	1.4%	38.6%	7.1%	11.4%	40.0%	.0%	100.0%
	Komibodom	1	1	1	0	1	67	19	23	128	0	241
	Yovon	.4%	.4%	.4%	.0%	.4%	27.8%	7.9%	9.5%	53.1%	.0%	100.0%
	Total	.0%	.0%	.0%	.0%	.0%	10.0%	.0%	10.0%	70.0%	10.0%	100.0%
From Money lenders	Ghafurov	.0%	.0%	.0%	.0%	.0%	27.3%	.0%	9.1%	63.6%	.0%	100.0%
	Komibodom	.0%	.0%	.0%	.0%	.0%	50.0%	.0%	.0%	50.0%	.0%	100.0%
	Yovon	0	0	0	0	0	5	0	2	15	1	23
	Total	.0%	.0%	.0%	.0%	.0%	21.7%	.0%	8.7%	65.2%	4.3%	100.0%

Table D.14: Mean and median household income by district

District	N	Mean	Median
Ghafurov	417	4536.6327	3850.0000
Konibodom	416	4613.2104	3971.0000
Yovon	415	6421.4130	5588.0000
Total	1248	5188.9085	4550.0000

Table D.15: Annual income quintiles by district

		Quintiles					Total
		Highest	Second highest	Middle	Second lowest	Lowest	
Ghafurov	Count	58	78	82	85	114	417
	% within District	13.9%	18.7%	19.7%	20.4%	27.3%	100.0%
Konibodom	Count	54	83	91	97	91	416
	% within District	13.0%	20.0%	21.9%	23.3%	21.9%	100.0%
Yovon	Count	137	92	74	68	44	415
	% within District	33.0%	22.2%	17.8%	16.4%	10.6%	100.0%
Total	Count	249	253	247	250	249	1248
	% within District	20.0%	20.3%	19.8%	20.0%	20.0%	100.0%

Table D.16: Change of family income in the last three years

		Ghafurov	Konibodom	Yovon	Total
Increased	Count	69	87	112	268
	% within District	17.2%	21.2%	27.1%	21.9%
No change	Count	98	79	89	266
	% within District	24.4%	19.3%	21.5%	21.7%
Decreased	Count	234	244	213	691
	% within District	58.4%	59.5%	51.4%	56.4%
Total	Count	401	410	414	1225
	% within District	100.0%	100.0%	100.0%	100.0%

Table D.17: Own estimate of family's financial status

		Ghafurov	Konibodom	Yovon	Total
Money is enough, no problem	Count	1	0	0	1
	% within District	.2%	.0%	.0%	.1%
Money is enough to make large purchases (furniture, household appliances), but purchase of a car not possible	Count	4	1	1	6
	% within District	1.0%	.2%	.2%	.5%
Money is enough to satisfy all our requirements for clothes and food, but not larger purchases	Count	22	33	26	81
	% within District	5.3%	7.9%	6.2%	6.5%
Money suffices only for minimal requirements of clothes and food	Count	178	178	157	513
	% within District	43.1%	42.7%	37.3%	41.0%
Money does not suffice even on purchases of food	Count	208	205	237	650
	% within District	50.4%	49.2%	56.3%	52.0%
Total	Count	413	417	421	1251
	% within District	100.0%	100.0%	100.0%	100.0%

LAND

Table D.18: Size of house garden and presidential land

		Area of house garden in Sotiq	Area of presidential land in Sotiq
Ghafurov	Mean	4.9	5.9
	N	420	103
	Maximum	50	18
	Minimum	0.1	1
	Median	4	5
Konibodom	Mean	5.1	8.0
	N	414	240
	Maximum	30	15
	Minimum	0.02	3
	Median	4	7
Yovon	Mean	9.8	11.3
	N	416	170
	Maximum	50	60
	Minimum	0.5	1
	Median	8	7
Total	Mean	6.6	8.7
	N	1250	513
	Maximum	50	60
	Minimum	0.02	1
	Median	5	7

Table D.19: Percentage of land cultivated

		Percent of presidential land cultivated	Percent of house garden cultivated
Ghafurov	Mean	80.92	74.04
	N	103	419
	Percentage cultivating 100%	58.71	74.76
Konibodom	Mean	69.04	80.48
	N	240	414
	Percentage cultivating 100%	67.63	60.00
Yovon	Mean	77.41	87.99
	N	170	416
	Percentage cultivating 100%	80.77	74.12
Total	Mean	74.20	80.82
	N	513	1249
	Percentage cultivating 100%	69.02	67.64

Table D.20: Reason for not cultivating all house garden

		Chafurov		Konibodom		Yovon		Total	
		First reason	Second reason	First reason	Second reason	First reason	Second reason	First reason	Second reason
All of the land is cultivated	Count	247	-	280	-	324	-	851	-
	% within District	58.81	-	67.63	-	77.88	-	68.08	-
	Count	8	-	27	-	6	-	41	-
No response	% within District	1.90	-	6.52	-	1.44	-	3.28	-
	Count	103	1	73	0	22	0	198	1
	% within District	24.52	1.33	17.63	0.00	5.29	0.00	15.84	0.59
Part of it is used as fallow	Count	15	0	2	2	15	9	32	11
	% within District	3.57	0.00	0.48	3.03	3.61	32.14	2.56	6.51
	Count	11	72	24	47	45	17	80	136
Lack of access to water	% within District	2.62	96.00	5.80	71.21	10.82	60.71	6.40	80.47
	Count	0	1	1	0	1	0	2	1
	% within District	0.00	1.33	0.24	0.00	0.24	0.00	0.16	0.59
No money to buy inputs	Count	4	1	3	3	1	1	8	5
	% within District	0.95	1.33	0.72	4.55	0.24	3.57	0.64	2.96
	Count	0	0	0	2	0	0	0	2
No market for produce	% within District	0.00	0.00	0.00	3.03	0.00	0.00	0.00	1.18
	Count	0	0	3	11	0	0	3	11
	% within District	0.00	0.00	0.72	16.67	0.00	0.00	0.24	6.51
High water table	Count	32	0	1	1	2	1	35	2
	% within District	7.62	0.00	0.24	1.52	0.48	3.57	2.80	1.18
	Count	420	75	414	66	416	28	1250	169

Table D.21: Reason for not cultivating all presidential land

		Chafurov		Konibodom		Yovon		Total	
		First reason	Second reason	First reason	Second reason	First reason	Second reason	First reason	Second reason
All of the land is cultivated	Count	77	-	144	-	126	-	347	-
	% within District	74.76	-	60.00	-	74.12	-	67.64	-
No response	Count	12	-	35	-	14	-	61	-
	% within District	11.65	-	14.58	-	8.24	-	11.89	-
Part of it is used as fallow	Count	0	0	4	0	1	0	5	0
	% within District	0.00	0	1.67	0	0.59	0	0.97	0
Low quality of land	Count	1	0	7	12	5	5	13	17
	% within District	0.97	0.00	2.92	32.43	2.94	38.46	2.53	32.69
Lack of access to water	Count	9	0	33	1	9	2	51	3
	% within District	8.74	0.00	13.75	2.70	5.29	15.38	9.94	5.77
No money to buy inputs	Count	0	0	1	2	4	1	5	3
	% within District	0.00	0.00	0.42	5.41	2.35	7.69	0.97	5.77
No one to work on land	Count	2	0	7	3	5	5	14	8
	% within District	1.94	0.00	2.92	8.11	2.94	38.46	2.73	15.38
No market for produce	Count	1	2	2	17	2	0	5	19
	% within District	0.97	100.00	0.83	45.95	1.18	0.00	0.97	36.54
High water table	Count	0	0	4	2	2	0	6	2
	% within District	0.00	0.00	1.67	5.41	1.18	0.00	1.17	3.85
Other	Count	1	0	3	0	2	0	6	0
	% within District	0.97	0.00	1.25	0.00	1.18	0.00	1.17	0.00
Total	Count	103	2	240	37	170	13	513	52

Table D.22: Land documentation for house garden is under this person's name

			Ghafurov	Konibodom	Yovon	Total
Categories	No documentation	Count	3	4	0	7
		% within District	.7%	1.0%	.0%	.6%
	Head of HH	Count	402	401	414	1217
		% within District	95.7%	96.9%	99.5%	97.4%
	Spouse	Count	4	3	0	7
		% within District	1.0%	.7%	.0%	.6%
	Son/daughter	Count	2	0	1	3
		% within District	.5%	.0%	.2%	.2%
	Sister/Brother	Count	1	0	0	1
		% within District	.2%	.0%	.0%	.1%
	Son in law/daughter in law	Count	0	0	1	1
		% within District	.0%	.0%	.2%	.1%
	Mother in law / Father in law	Count	6	4	0	10
		% within District	1.4%	1.0%	.0%	.8%
	Grandfather/Grandmother	Count	2	1	0	3
		% within District	.5%	.2%	.0%	.2%
	Other	Count	0	1	0	1
		% within District	.0%	.2%	.0%	.1%
Total		Count	420	414	416	1250

Table D.23: Documentation for presidential land is under this person's name

			Ghafurov	Konibodom	Yovon	Total
Categories	No documentation	Count	4	9	9	22
		% within District	3.9%	3.8%	5.3%	4.3%
	Head of HH	Count	84	187	152	423
		% within District	81.6%	77.9%	89.4%	82.5%
	Spouse	Count	1	21	4	26
		% within District	1.0%	8.8%	2.4%	5.1%
	Son/daughter	Count	11	18	2	31
		% within District	10.7%	7.5%	1.2%	6.0%
	Sister / brother	Count	1	0	0	1
		% within District	1.0%	.0%	.0%	.2%
	Son in law/daughter in law	Count	1	5	0	6
		% within District	1.0%	2.1%	.0%	1.2%
	Mother / father	Count	1	0	2	3
		% within District	1.0%	.0%	1.2%	.6%
	Mother in law / Father in law	Count	0	0	1	1
		Count	.0%	.0%	.6%	.2%
Total		Count	103	240	170	513

Table D.24: Sex of document holder for house garden

			Ghafurov	Konibodom	Yovon	Total
Categories	Have no documentation	Count	3	4	0	7
		% within District	.7%	1.0%	.0%	.6%
	No response	Count	3	3	0	6
		% within District	.7%	.7%	.0%	.5%
	M	Count	325	345	388	1058
		% within District	77.4%	83.3%	93.3%	84.6%
	F	Count	89	62	28	179
		% within District	21.2%	15.0%	6.7%	14.3%
Total		Count	420	414	416	1250

Table D.25: Sex of document holder for presidential land

			Ghafurov	Konibodom	Yovon	Total
Categories	Have no documentation	Count	4	9	8	21
		% within District	3.9%	3.8%	4.7%	4.1%
	No response	Count	1	1	2	4
		% within District	1.0%	.4%	1.2%	.8%
	M	Count	84	180	140	404
		% within District	81.6%	75.0%	82.4%	78.8%
	F	Count	14	50	20	84
		% within District	13.6%	20.8%	11.8%	16.4%
Total		Count	103	240	170	513

Table D.26: Experienced land restructuring of the Kolkhoz/Sovkhoz, JSC, or large collective farm

		Ghafurov	Konibodom	Yovon	Total
Not applicable or no response	Count	252	281	277	810
	% within District	59.3%	66.1%	65.2%	63.5%
Kolkhoz/Sovkhoz, JSC, or large collective farm system renamed and some household members work on renamed farm	Count	59	10	8	77
	% within District	13.9%	2.4%	1.9%	6.0%
The (earlier renamed) JSC, Kolkhoz/Sovkhoz, or large collective farm has been broken down into Khojagii Dihqonii Kollektivi on which some of our family members work	Count	113	131	106	350
	% within District	26.6%	30.8%	24.9%	27.5%
The JSC, Kolkhoz/Sovkhoz, or large collective farm has been broken down and we have land on which the extended family works (Khojagii dihqonii oilagi)	Count	1	3	26	30
	% within District	.2%	.7%	6.1%	2.4%
Yes, the JSC, Kolkhoz/Sovkhoz, or collective farm has been broken down and our family has received its own land (Khojagii dihqonii infirodi)	Count	0	0	8	8
	% within District	.0%	.0%	1.9%	.6%
Total	Count	425	425	425	1275

Table D.27: Possession of individual or multi-family farm

		Ghafurov	Konibodom	Yovon	Total
No response	Count	1	2	3	6
	% within District	100.0%	50.0%	2.3%	8.3%
Multi-family	Count	0	2	23	25
	% within District	.0%	50.0%	53.5%	52.1%
Individual	Count	0	0	19	19
	% within District	.0%	.0%	44.2%	39.6%
Total	Count	1	4	45	50

Table D.28: Total area of individual or multi family farm in sotiq

District	N	Mean	Median	Minimum	Maximum
Konibodom	2	150.00	150.00	100.00	200.00
Yovon	4	519.77	300.00	5.00	6000.00
Total	47	504.04	200.00	5.00	6000.00

Table D.29: Type of document for individual or multi family farm

Category		Number
No response	Count	5
	% within District	10.4%
None	Count	4
	% within District	8.3%
Single certificate/shahodatnoma	Count	28
	% within District	58.3%
A joint certificate/Shahodatnoma	Count	11
	% within District	22.9%
Total	Count	48

Table D.30: Sex of person on document for individual/multi-family land

Category		Number
Not applicable	Count	4
	% within District	8.3%
No response	Count	5
	% within District	10.4%
M	Count	30
	% within District	62.5%
F	Count	3
	% within District	6.3%
Male and female	Count	6
	% within District	12.5%
Total	Count	48

Table D.31: Reason why people in your area did not get shares in big farm

	Ghafurov		Konibodom		Yovon		Total	
	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *
There is no such person that we know of	Count	325	331	-	335	-	989	-
	% within District	76.00	77.88		78.35		77.41	
Kolkhoz/Sovkhoz, JSC, or large collective farm system was just renamed and no one received any shares	Count	55	19	12.26	1	0.67	75	16.59
	% within District	12.94	4.47		0.24		5.88	
Large farm was renamed or restructured (broken down) and they did not give some farmers shares or any land	Count	26	43	30.32	31	22.15	100	24.78
	% within District	6.12	10.12		7.29		7.84	
Getting land or land share cost money and some people could not afford it	Count	2	2	1.94	3	2.01	7	2.43
	% within District	0.47	0.47		0.71		0.55	
Some farmers were married to someone from somewhere else and they got shares or land elsewhere	Count	4	1	1.29	11	7.38	16	3.76
	% within District	0.94	0.24		2.59		1.25	
Some farmers were married to someone from somewhere else and they did not get shares either here or elsewhere	Count	3	0	1.29	8	5.37	11	2.88
	% within District	0.71	0.00		1.88		0.86	
Some farmers had lost their spouses and did not get shares or land	Count	1	4	5.81	5	6.04	10	4.65
	% within District	0.24	0.94		1.18		0.78	
Some farmers whose spouses were absent (migrated) did not get shares or land	Count	1	3	1.94	3	5.37	7	2.65
	% within District	0.24	0.71		0.71		0.55	
Some farmers who had become handicapped did not get shares or land	Count	4	8	7.74	5	6.04	17	5.75
	% within District	0.94	1.88		1.18		1.33	
Due to other reasons some farmers did not get land or shares	Count	4	10	29.68	5	32.21	19	28.32
	% within District	0.94	2.35		1.18		1.49	
Only influential people could get land or land share	Count	0	4	7.74	18	12.75	22	8.19
	% within District	0.00	0.94		4.24		1.73	
Total	Count	425	425	-	425	-	1275	-

*Percentages are calculated taking all responses to first, second, third and fourth response together as an overall measure of the importance of a category.

Table D.32: Reason why people in your area did not get house garden

	Ghafurov		Konibodom		Yovon		Total	
	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *
There is no such person that we know of	Count	327	325	-	273	-	925	-
	% within District	76.94	76.47	-	64.24	-	72.55	-
Some farmers were married to someone from somewhere else and they got shares or land elsewhere	Count	0	0	0	1	0.65	1	0.28
	% within District	0.00	0.00	0	0.24	0.65	0.08	0.28
Some farmers had lost their spouses and did not get shares or land	Count	0	0	0	2	1.31	2	0.56
	% within District	0.00	0.00	0	0.47	1.31	0.16	0.56
Some farmers who had become handicapped did not get shares or land	Count	0	1	0.97	0	0	1	0.28
	% within District	0.00	0.24	0.97	0.00	0	0.08	0.28
Due to other reasons some farmers did not get land or shares	Count	17	10	9.71	7	4.58	34	9.52
	% within District	4.00	2.35	9.71	1.65	4.58	2.67	9.52
There was not enough Nazdi howli land available for everyone	Count	79	89	89.32	142	93.46	310	88.52
	% within District	18.59	20.94	89.32	33.41	93.46	24.31	88.52
Only influential people could get land or land share	Count	2	0	0	0	0	2	0.84
	% within District	0.47	0.00	0	0.00	0	0.16	0.84
Total	Count	425	425	-	425	-	1275	-

*Percentages are calculated taking all responses to first, second, third and fourth response together as an overall measure of the importance of a category.

Table D.33: Reason why people in your area did not get presidential land

		Ghafurov		Konibodom		Yovon		Total	
		First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *	First reason	Combined reasons in percent *
There is no such person that we know of	Count	280	-	294	-	221	-	795	-
	% within District	65.88		69.18		52.00		62.35	
Getting land or land share cost money and some people could not afford it	Count	0	0	0	0	1	0.49	1	0.21
	% within District	0.00		0.00		0.24		0.08	
Some farmers were married to someone from somewhere else and got land elsewhere	Count	0	0	0	0	1	0.49	1	0.21
	% within District	0.00		0.00		0.24		0.08	
Some farmers whose spouses were absent (migrated) did not get land	Count	3	2.04	1	0.76	3	1.47	7	1.45
	% within District	0.71		0.24		0.71		0.55	
Some farmers who had become handicapped did not get land	Count	0	0	0	0	2	0.98	2	0.41
	% within District	0.00		0.00		0.47		0.16	
Due to other reasons some farmers did not get land	Count	34	23.13	46	35.11	52	25.49	132	27.39
	% within District	8.00		10.82		12.24		10.35	
There was not enough residential land available for everyone	Count	107	72.79	84	64.12	145	71.08	336	69.71
	% within District	25.18		19.76		34.12		26.35	
Only influential people could get land or land share	Count	1	2.04	0	0	0	0	1	0.62
	% within District	0.24		0.00		0.00		0.08	
Total	Count	425	-	425	-	425	-	1275	-

*Percentages are calculated taking all responses to first, second, third and fourth response together as an overall measure of the importance of a category.

AGRICULTURAL ACTIVITIES

Table D.34: Household's agricultural activities

		Ghafurov			Konibodom			Yovon		
		First	Second *	Overall **	First	Second *	Overall **	First	Second *	Overall **
Not involved in agricultural activities	Count	9	-	-	13	-	-	6	-	-
	% within District	2.1	-	-	3.1	-	-	1.4	-	-
Cotton	Count	70	4	8.11	52	3	5.65	49	0	4.31
	% within District	16.5	1.11		12.2	0.82		11.5	0	
Grain	Count	7	11	1.96	42	18	7.23	108	41	14.30
	% within District	1.6	3.06		9.9	4.95		25.4	10.59	
Fruits	Count	194	137	32.44	196	128	34.48	108	97	24.94
	% within District	45.6	38.06		46.1	35.16		25.4	25.06	
Vegetables	Count	78	152	26.02	70	148	24.93	64	151	22.18
	% within District	18.4	42.22		16.5	40.66		15.1	39.02	
Animal husbandry	Count	59	40	19.25	46	46	18.35	87	90	28.35
	% within District	13.9	11.11		10.8	12.64		20.5	23.26	
Poultry	Count	1	4	6.42	1	4	2.69	1	5	4.71
	% within District	.2	1.11		.2	1.10		.2	1.29	
Sericulture	Count	1	4	2.58	0	2	1.30	0	1	0.73
	% within District	.2	1.11		.0	0.55		.0	0.26	
Fishing and aquaculture	Count	0	0	0	0	0	0.19	0	0	0
	% within District	0	0		0	0		0	0	
Other	Count	6	8	3.21	5	15	5.19	2	2	0.49
	% within District	1.4	2.22		1.2	4.12		.5	0.52	
Total	Count	425	360	-	425	364	-	425	387	-

Notes: *Numbers and percentages are given for only those households who provided answers to inquiries about their second important agricultural activities.

**Percentages are calculated taking all responses to first, second, third, and fourth major agricultural activities together as an overall measure of the importance of a category.

Table D.35: Main difficulties in increasing agricultural production

	Ghafurov		Konibodom		Yovon		Total	
	First response	Taking all responses *	First response	Taking all responses *	First response	Taking all responses *	First response	Taking all responses *
Not applicable: We do not have or cultivate such land commer	Count	21	20		15		56	
	% within District	4.94	4.71	-	3.53	-	4.39	-
Not difficult, we have been increasing our produce or we can	Count	5	3		2		10	
	% within District	1.18	0.71	-	0.47	-	0.78	-
Limited or lack of access to water	Count	236	268		353		857	
	% within District	55.52	63.06	33.8	83.06	45.0	67.22	37.6
No access to market outside the village and/or no agricultur	Count	7	4		0		11	
	% within District	1.65	0.94	1.3	0.00	0.1	0.86	0.8
Our quality of soil is low	Count	15	27		8		50	
	% within District	3.532	6.35	18.0	1.88	12.0	3.92	13.3
Water table has risen and we cannot cultivate land or use it	Count	14	34		9		57	
	% within District	3.298	8.00	8.2	2.12	2.7	4.47	5.5
Limited access to or high cost of inputs	Count	89	45		24		158	
	% within District	20.94	10.59	21.7	5.65	25.4	12.39	24.2
Limited access to or high cost of machinery	Count	4	3		0		7	
	% within District	0.94	0.71	3.5	0.00	1.8	0.55	3.6
Limited access to or high cost of credit	Count	2	1		0		3	
	% within District	0.478	0.24	4.4	0.00	0.1	0.24	2.7
Out produce is of low quality and not marketable	Count	8	8		0		16	
	% within District	1.88	1.88	5.2	0.00	0.8	1.25	4.2
Other	Count	24	12		14		50	
	% within District	5.65	2.82	3.9	3.29	12.1	3.92	8.1
Total	Count	425	425	862	425	827	1275	2422

*Percentages are calculated taking first, second, third, and fourth responses together. The percentages do not include not applicable as well those stating that there is no difficulty in increasing agricultural product.

Table D.36: Access to machinery

	Ghafurov		Konibodom		Yovon		Total	
	First response	Taking all responses*	First response	Taking all responses*	First response	Taking all responses*	First response	Taking all responses*
Not applicable	Count	-	251	-	229	-	798	-
	% within District	74.8%	59.1%		53.9%		62.6%	
We use no or very little machinery (tractors, etc.)	Count	-	3	-	43	-	49	-
	% within District	.7%	.7%		10.1%		3.8%	
We use our own machines	Count	2	0	0	0	0	2	0.7
	% within District	.5%	.0%		.0%		.2%	
We borrow machines from friends and neighbors	Count	1	0	1.2	12	7.8	13	4.7
	% within District	.2%	.0%		2.8%		1.0%	
The large farm lets me use their machines for free	Count	7	2	1.2	1	1.3	10	2.8
	% within District	1.6%	.5%		.2%		.8%	
We rent the machines from the large farm, leasing companies	Count	94	169	99.4	140	91.5	403	94.9
	% within District	22.1%	39.8%		32.9%		31.6%	
Total	Count	425	425	172	425	153	1275	429

*Percentages are calculated taking first, second, third, and fourth responses together. The percentages do not include not applicable responses as well as those stating that there is no difficulty in increasing agricultural product.

Table D.37: Agricultural activities on house garden

		District					
		Ghafurov		Konibodom		Yovon	
		First agricultural activity	Overall*	First agricultural activity	Overall*	First agricultural activity	Overall*
Not much	Count	19	2.06	23	2.67	15	1.77
	% within District	4.52		5.56		3.61	
Cotton	Count	14	1.84	18	2.21	0	0.24
	% within District	3.33		4.35		0.00	
Grain	Count	3	0.54	13	2.67	79	14.17
	% within District	0.71		3.14		18.99	
Fruits	Count	206	39.26	214	41.16	126	36.01
	% within District	49.05		51.69		30.29	
Vegetables	Count	126	33.95	93	30.00	94	32.11
	% within District	30.00		22.46		22.60	
Animal husbandry	Count	49	14.10	49	11.28	99	12.87
	% within District	11.67		11.84		23.80	
Poultry	Count	0	1.84	0	0.47	1	0.47
	% within District	0.00		0.00		0.24	
Sericulture	Count	0	0.43	0	0.12	1	0.12
	% within District	0.00		0.00		0.24	
Dry farming	Count	1	0.65	0	0.35	0	0.00
	% within District	0.24		0.00		0.00	
Other	Count	2	5.31	4	9.07	1	2.24
	% within District	0.48		0.97		0.24	
Total	Count	420	-	414	-	416	-

*Percentages are calculated taking all responses to first, second, and third agricultural activities together as an overall measure of the importance of an activity.

Table D.38: Agricultural activity on presidential land

		District					
		Ghafurov		Konibodom		Yovon	
		First agricultural activity	Overall, agricultural activity in percent*	First agricultural activity	Overall, agricultural activity in percent*	First agricultural activity	Overall, agricultural activity in percent*
Not much	Count	16	42.55	64	20.25	36	20.34
	% within District	15.53		26.67		21.18	
Cotton	Count	0	1.06	2	0.63	0	0.00
	% within District	0.00		0.83		0.00	
Grain	Count	30	16.49	152	48.42	127	71.75
	% within District	29.13		63.33		74.71	
Fruits	Count	8	4.79	2	0.63	1	0.56
	% within District	7.77		0.83		0.59	
Vegetables	Count	17	11.70	1	0.63	2	1.69
	% within District	16.50		0.42		1.18	
Animal husbandry	Count	0	0.53	0	0.32	1	0.56
	% within District	0.00		0.00		0.59	
Dry farming	Count	4	2.66	0	0.32	0	0.00
	% within District	3.88		0.00		0.00	
Other	Count	28	20.21	19	28.80	3	5.08
	% within District	27.18		7.92		1.76	
Total	Count	103	-	240	-	170	-

*Percentages are calculated taking all responses to first, second, and third agricultural activities together as an overall measure of the importance of a category.

Table D.39: Livestock assets

		Dairy cows	Other cattle	Sheep and goats	Poultry	Other animals
Ghafurov	Mean	1.12	1.43	2.51	5.62	1.05
	N	110	143	84	86	40
	Median	1.00	1.00	2.00	4.00	1.00
Koni-bodom	Mean	1.07	1.27	2.58	5.63	1.00
	N	171	104	64	48	37
	Median	1.00	1.00	2.00	4.00	1.00
Yovon	Mean	1.35	1.83	5.26	5.88	1.08
	N	327	250	138	100	76
	Median	1.00	1.00	4.00	5.00	1.00
Total	Mean	1.23	1.60	3.85	5.73	1.05
	N	608	497	286	234	153
	Median	1.00	1.00	2.50	4.00	1.00
Household markets produce (%)		12.07	7.54	9.42	5.41	74.23

Table D.40: Division of labor on household plot/presidential land

	Men %	Women %	Both men and women %	Mostly men %	Mostly women %	Total count
a. Basic cotton worker	18.64	49.15	32.20			59
b. Basic gardener	44.57	12.94	42.29	0.10	0.10	1012
c. Taking care of livestock (basic)	3.12	13.52	83.09	0.26		769
d. Taking care of poultry (basic)	3.17	22.75	74.07			189
e. Taking care of sericulture (basic)	3.36	10.92	85.71			119
f. Other basic worker	5.92	7.96	85.92		0.20	980
g. General technician	37.70	8.20	54.10			61
h. Mirob	59.31	6.91	33.33	0.22	0.22	897
i. Tractor/machine operator	78.72	4.26	17.02			47
j. Animal technician	90.00				10.00	20
k. Sardar of Khajagi (basically head of household)	89.59	10.41				394
l. brigadier	100.00					33
m. Accountant	71.70	25.27	3.02			364
n. Engineer	85.71		14.29			14
o. Other	33.33	66.67				3

Table D.41: Division of labor on Khojagii Dihgonii Kollektivi, JSC, Kolkhoz/sovkhoz, or other joint farms

	Men	Women	Both men and women	Mostly men	Mostly women	Total
a. Basic cotton worker	17.12	39.64	43.24			222
b. Basic gardener	18.18	31.82	45.45		4.55	22
c. Taking care of livestock (basic)	16.67	11.11	61.11	11.11		18
d. Taking care of poultry (basic)	87.50			12.50		8
e. Taking care of sericulture (basic)	0.98	5.88	93.14			102
f. Other basic worker	10.07	7.19	82.73			139
g. General technician	94.64		5.36			112
h. Mirob	98.53	0.74	0.74			136
i. Tractor/machine operator	98.33	1.67				120
j. Animal technician	100.00					100
k. Sardar of Khajagi	95.90	1.64	0.82			120
l. brigadier	97.52	0.83	1.65			121
m. Accountant	90.76	1.68	7.56			119
n. Engineer	98.04	1.96				102
o. Other	95.83	4.17				24

GENDER

Table D.42: Women's wages lower than that of males

		Ghafurov	Konibodom	Yovon	Total
No, they are the same	Count	13	7	27	47
	% within District	10.0%	2.8%	12.6%	8.0%
Yes, women's wages are generally lower	Count	76	156	131	363
	% within District	58.5%	63.2%	61.2%	61.4%
Yes, but this is because men and women do different things	Count	41	84	56	181
	% within District	31.5%	34.0%	26.2%	30.6%
Total	Count	130	247	214	591

Table D.43: Do you think in the last ten years women have become poorer as compared to men in your village?

		Ghafurov	Konibodom	Yovon	Total
Yes, they have, since men have more options	Count	44	55	64	163
	% within District	10.6%	13.6%	15.3%	13.2%
Yes, to some extent	Count	31	15	38	84
	% within District	7.5%	3.7%	9.1%	6.8%
No, women and men in the same household are at the same level	Count	96	106	94	296
	% within District	23.2%	26.2%	22.4%	23.9%
Women have always done worse than men financially	Count	243	228	223	694
	% within District	58.7%	56.4%	53.2%	56.1%
Total		414	404	419	1237

*Percentages and counts are based on responses

Table D.44: Do you think women are often coerced to do very low paying work (such as picking cotton) on the farms?

		Ghafurov	Konibodom	Yovon	Total
Yes, it is often the case	Count	51	108	17	176
	% within District	12.5%	26.8%	4.1%	14.3%
Yes, but it is because they need to work	Count	165	129	102	396
	% within District	40.4%	32.0%	24.5%	32.3%
No, they are not coerced; their financial situation dictates that	Count	183	165	285	633
	% within District	44.9%	40.9%	68.5%	51.6%
No, never	Count	9	1	12	22
	% within District	2.2%	.2%	2.9%	1.8%
Total		408	403	416	1227

*Percentages and counts are based on responses

ACCESS TO WATER

Table D.45: Access to or use of various sources of water for house garden and home use

		District			
		Ghafurov	Konibodom	Yovon	Total
Canal/stream/river water	Count	288	414	372	1074
	% within District	67.8%	97.4%	87.5%	84.2%
Rain collection	Count	2	8	248	258
	% within District	0.5%	1.9%	58.4%	20.2%
Piped water	Count	227	139	127	493
	% within District	53.41	32.71	29.88	38.67
Individual well	Count	18	20	0	38
	% within District	4.24	4.71	0	2.98
Communal well	Count	27	31	20	78
	% within District	6.35	7.29	4.71	6.12
Spring water in village	Count	10	9	119	138
	% within District	2.35	2.12	28	10.82
Bottle/container	Count	1	1	1	3
	% within District	0.24	0.24	0.24	0.24

Table D.46: Main uses of various sources of water for house garden and home use

		Ghafurov		Konibodom		Yovon		Total	
		First use in %	Over-all use in %*	First use in %	Over-all use in %*	First use in %	Over-all use in %*	First use in %	Over-all use in %*
Canal/stream/river	Cultivating house plot	73.78	46.37	73.66	44.58	40.07	29.68	63.89	40.40
	Livestock breeding	0.35	3.14	0	6.46	1.05	4.32	0.41	4.88
	Poultry	0	0.50	0	0.22	0	0.14	0	0.27
	Sericulture	0	0.17	0	0.33	0	0	0	0.18
	Drinking	25.87	24.92	25.85	23.22	58.89	32.85	35.5	26.71
	Household Needs	0	24.59	0	24.75	0	33.00	0.2	27.29
	Other	0	0.33	0.49	0.44	0	0	0	0.27
	Total count (frequency)	286	-	410	-	287	-	983	-
Rain collection	Cultivating house plot	100	50.00	11.11	11.76	54.22	32.07	53.08	31.52
	Livestock breeding	0	50.00	0	0	0.4	2.74	0.38	3.03
	Poultry	0	0	0	0	0.4	0.84	0.38	0.81
	Sericulture	0	0	0	5.88	0	0	0	0.20
	Drinking	0	0	88.89	47.06	44.58	33.12	45.77	33.33
	Household Needs	0	0	0	35.29	0	31.01	0	30.91
	Other	0	0	0	0	0.4	0.21	0.38	0.20
	Total count (frequency)	2	-	9	-	249	-	260	-
Pipes (plumbing)	Cultivating house plot	21.97	11.70	0.79	0.78	2.42	5.92	11.18	7.55
	Livestock breeding	0.45	5.47	0	4.30	0.81	8.36	0.42	5.96
	Poultry	0	0.38	0	0.78	0	0.35	0.42	0.47
	Sericulture	0.9	0.57	0	0.39	0	0	0	0.37
	Drinking	76.23	41.89	98.43	49.61	96.77	42.86	87.55	43.99
	Household Needs	0.45	40.00	0.79	43.75	0	42.51	0.42	41.57
	Other	0	0	0	0.39	0	0	0	0.09
	Total count (frequency)	223	-	127	-	124	-	474	-
Communal well in village	Cultivating house plot	52.94	21.95	0	0	0	0	24.32	11.69
	Livestock breeding	0	4.88	0	0	00	0		2.60
	Drinking	47.06	36.59	100	55.56	0	0	75.68	45.45
	Household Needs	0	36.59	0	44.44	0	0	0	40.26
	Total count (frequency)	17	-	20	-	0	-	37	-
Individual well	Cultivating house plot	20.83	11.67	3.85	3.64	55	31.43	24.29	13.33
	Livestock breeding	0	3.33	0	3.64	10	11.43	2.86	5.33
	Drinking	79.17	43.33	76.92	38.18	35	28.57	65.71	38.00
	Household Needs	0	41.67	19.23	54.55	0	28.57	7.14	43.33
	Total count (frequency)	24	-	26	-	20	-	70	-
Spring in village	Cultivating house plot	22.22	15.00	0	0	5.93	4.76	6.62	5.30
	Livestock breeding	0	5.00	0	0	0	3.03	0	3.03
	Drinking	77.78	40.00	100	69.23	94.07	49.35	93.38	49.62
	Household Needs	0	40.00	0	30.77	0	42.86	0	42.05
	Total count (frequency)	9	-	9	-	118	-	136	-
Bottle /container	Drinking	100	50.00	0	0	100	50.00	100	50.00
	Household Needs	0	50.00	0	0	0	50.00	0	50.00
	Total count (frequency)	1	-	0	-	1	-	2	-

*Percentages are calculated taking all responses to first, second, and third responses together as an overall measure of the importance of a category.

Table D.47: Frequency of access to water for house garden and home use

			Every day	Every other day	Half of the week	Only some days during the month	It is not regular	Total
Canal/stream /river	Ghafurov	% within District	4.55	4.20	60.49	12.94	17.83	100.00
	Konibodom	% within District	3.41	6.08	28.47	25.55	36.50	100.00
	Yovon	% within District	0.70	2.09	2.79	24.04	70.38	100.00
	Total	Count	29	43	298	211	403	984
		% within District	2.95	4.37	30.28	21.44	40.96	100.00
Rain collection	Ghafurov	% within District	50.00	0.00	0.00	0.00	50.00	100.00
	Konibodom	% within District	80.00	20.00	0.00	0.00	0.00	100.00
	Yovon	% within District	3.06	0.00	0.00	6.55	90.39	100.00
	Total	Count	12	1	0	15	208	236
		% within District	5.08	0.42	0.00	6.36	88.14	100.00
Pipes (plumbing)	Ghafurov	% within District	50.67	9.78	7.56	5.33	26.67	100.00
	Konibodom	% within District	51.91	12.21	13.74	12.98	9.16	100.00
	Yovon	% within District	71.54	2.44	6.50	6.50	13.01	100.00
	Total	Count	270	41	43	37	88	479
		% within District	56.37	8.56	8.98	7.72	18.37	100.00
Communal well in village	Ghafurov	% within District	35.29	23.53	35.29	0.00	5.88	100.00
	Konibodom	% within District	95.00	0.00	0.00	5.00	0.00	100.00
	Total	Count	25	4	6	1	1	37
		% within District	67.57	10.81	16.22	2.70	2.70	100.00
Individual well	Ghafurov	% within District	66.67	0.00	7.41	3.70	22.22	100.00
	Konibodom	% within District	96.55	3.45	0.00	0.00	0.00	100.00
	Yovon	% within District	68.42	0.00	5.26	5.26	21.05	100.00
	Total	Count	59	1	3	2	10	75
		% within District	78.67	1.33	4.00	2.67	13.33	100.00
Spring in village	Ghafurov	% within District	40.00	30.00	10.00	0.00	20.00	100.00
	Konibodom	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Yovon	% within District	84.75	0.85	0.85	3.39	10.17	100.00
	Total	Count	113	4	2	4	14	137
		% within District	82.48	2.92	1.46	2.92	10.22	100.00
Bottle /container	Ghafurov	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Konibodom	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Yovon	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Total	Count	3	0	0	0	0	3
		% within District	100.00	0.00	0.00	0.00	0.00	100.00

Table D.48: Satisfaction with quality of water for house garden and home use

			High	Average	Low	Total
Canal/stream /river	Ghafurov	% within District	7.37	41.75	50.88	100.00
	Konibodom	% within District	0.00	33.33	66.67	100.00
	Yovon	% within District	1.05	15.38	83.57	100.00
	Total	Count	24	300	658	982
		% within District	2.44	30.55	67.01	100.00
Rain collection	Ghafurov	% within District	0.00	100.00	0.00	100.00
	Konibodom	% within District	66.67	16.67	16.67	100.00
	Yovon	% within District	1.69	8.90	89.41	100.00
	Total	Count	8	24	212	244
		% within District	3.28	9.84	86.89	100.00
Pipes (plumbing)	Ghafurov	% within District	24.44	57.33	18.22	100.00
	Konibodom	% within District	16.67	62.12	21.21	100.00
	Yovon	% within District	51.22	38.21	10.57	100.00
	Total	Count	140	258	82	480
		% within District	29.17	53.75	17.08	100.00
Communal well in village	Ghafurov	% within District	5.88	58.82	35.29	100.00
	Konibodom	% within District	50.00	30.00	20.00	100.00
	Total	Count	11	16	10	37
		% within District	29.73	43.24	27.03	100.00
Individual well	Ghafurov	% within District	11.11	77.78	11.11	100.00
	Konibodom	% within District	17.24	55.17	27.59	100.00
	Yovon	% within District	31.58	26.32	42.11	100.00
	Total	Count	14	42	19	75
		% within District	18.67	56.00	25.33	100.00
Spring in village	Ghafurov	% within District	10.00	50.00	40.00	100.00
	Konibodom	% within District	66.67	33.33	0.00	100.00
	Yovon	% within District	54.24	25.42	20.34	100.00
	Total	Count	71	38	28	137
		% within District	51.82	27.74	20.44	100.00
Bottle /container	Ghafurov	% within District	0.00	100.00	0.00	100.00
	Konibodom	% within District	0.00	0.00	100.00	100.00
	Yovon	% within District	0.00	100.00	0.00	100.00
	Total	Count	0	2	1	3
		% within District	0.00	66.67	33.33	100.00

Table D.49: Satisfaction with amount and reliability of water used for house garden and home use

			OK	To some extent satisfied	Not very satisfied	Not satisfied at all	Total
Canal/stream /river	Ghafurov	% within District	12.37	36.75	40.28	10.60	100.00
	Konibodom	% within District	2.68	17.56	61.22	18.54	100.00
	Yovon	% within District	0.00	3.87	28.17	67.96	100.00
	Total	Count	46	187	445	299	977
		% within District	4.71	19.14	45.55	30.60	100.00
Rain collection	Ghafurov	% within District	0.00	0.00	100.00	0.00	100.00
	Konibodom	% within District	100.00	0.00	0.00	0.00	100.00
	Yovon	% within District	9.52	1.59	15.87	73.02	100.00
	Total	Count	11	1	11	46	69
		% within District	15.94	1.45	15.94	66.67	100.00
Pipes (plumbing)	Ghafurov	% within District	26.67	39.56	29.78	4.00	100.00
	Konibodom	% within District	26.15	43.85	22.31	7.69	100.00
	Yovon	% within District	39.34	44.26	9.84	6.56	100.00
	Total	Count	142	200	108	27	477
		% within District	29.77	41.93	22.64	5.66	100.00
Communal well in village	Ghafurov	% within District	11.76	52.94	29.41	5.88	100.00
	Konibodom	% within District	75.00	20.00	5.00	0.00	100.00
	Total	Count	17	13	6	1	37
		% within District	45.95	35.14	16.22	2.70	100.00
Individual well	Ghafurov	% within District	19.23	61.54	19.23	0.00	100.00
	Konibodom	% within District	65.52	27.59	6.90	0.00	100.00
	Yovon	% within District	44.44	5.56	22.22	27.78	100.00
	Total	Count	32	25	11	5	73
		% within District	43.84	34.25	15.07	6.85	100.00
Spring in village	Ghafurov	% within District	20.00	30.00	50.00	0.00	100.00
	Konibodom	% within District	88.89	11.11	0.00	0.00	100.00
	Yovon	% within District	57.84	21.57	7.84	12.75	100.00
	Total	Count	69	26	13	13	121
		% within District	57.02	21.49	10.74	10.74	100.00
Bottle /container	Ghafurov	% within District	0.00	100.00	0.00	0.00	100.00
	Konibodom	% within District	0.00	0.00	0.00	100.00	100.00
	Total	Count	0.00	1	0.00	1	2
		% within District	0.00	50.00	0.00	50.00	100.00

Table D.50: Who provides the water for house garden/home use

			Kolkhoz/ Sovkhoz, JSC, etc.	Khajagii Dihqoni Kollektivi	Water users' association	Mahallah	Vodkhoz	Private	Other	Total
Canal/stream/river	Ghafurov	% within District	60.07	37.46	0.00	0.00	0.35	1.41	0.71	100.00
	Konibodom	% within District	24.88	71.95	0.24	0.49	0.24	0.00	2.20	100.00
	Yovon	% within District	2.14	79.36	11.03	3.20	2.14	0.00	2.14	100.00
	Total	Count	278	624	32	11	8	4	17	974
		% within District	28.54	64.07	3.29	1.13	0.82	0.41	1.75	100.00
Pipes (plumbing)	Ghafurov	% within District	66.67	18.67	0.00	3.11	7.56	0.00	4.00	100.00
	Konibodom	% within District	12.40	55.04	0.00	15.50	3.88	4.65	8.53	100.00
	Yovon	% within District	0.00	11.11	1.71	64.10	0.85	0.00	22.22	100.00
	Total	Count	166	126	2	102	23	6	46	471
		% within District	35.24	26.75	0.42	21.66	4.88	1.27	9.77	100.00
Communal well in village	Ghafurov	% within District	52.94	11.76	0.00	23.53	11.76	0.00	0.00	100.00
	Konibodom	% within District	0.00	25.00	0.00	35.00	0.00	10.00	30.00	100.00
	Total	Count	9	7	0.00	11	2	2	6	37
		% within District	24.32	18.92	0.00	29.73	5.41	5.41	16.22	100.00
Spring in village	Ghafurov	% within District	30.00	10.00	0.00	10.00	30.00	0.00	20.00	100.00
	Konibodom	% within District	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
	Yovon	% within District	2.17	4.35	0.00	52.17	0.00	0.00	41.30	100.00
	Total	Count	4	3	0.00	27	3	0.00	21	58
		% within District	6.90	5.17	0.00	46.55	5.17	0.00	36.21	100.00

Table D.51: Reasons for use of this source of water for house garden/home use

			One of few sources of water available to us	Cost is low	It is reliable	Easy access	Other	Total
Canal/stream /river	Ghafurov	% within District	96.10	0.71	1.42	1.77	0.00	100.00
	Konibodom	% within District	97.57	0.49	0.24	1.46	0.24	100.00
	Yovon	% within District	98.61	0.70	0.35	0.00	0.35	100.00
	Total	Count	955	6	6	11	2	980
		% within District	97.45	0.61	0.61	1.12	0.20	100.00
Rain collection	Ghafurov	% within District	50.00	0.00	50.00	0.00	0.00	100.00
	Konibodom	% within District	80.00	0.00	0.00	0.00	20.00	100.00
	Yovon	% within District	99.07	0.00	0.00	0.00	0.93	100.00
	Total	Count	218	0.00	1	0.00	3	222
		% within District	98.20	0.00	0.45	0.00	1.35	100.00
Pipes (plumbing)	Ghafurov	% within District	84.30	0.45	4.04	11.21	0.00	100.00
	Konibodom	% within District	65.87	4.76	0.00	26.19	3.17	100.00
	Yovon	% within District	97.54	0.82	0.82	0.00	0.82	100.00
	Total	Count	390	8	10	58	5	471
		% within District	82.80	1.70	2.12	12.31	1.06	100.00
Communal well in village	Ghafurov	% within District	87.50	6.25	6.25	0.00	0.00	100.00
	Konibodom	% within District	60.00	0.00	20.00	20.00	0.00	100.00
	Total	Count	26	1	5	4	0.00	36
		% within District	72.22	2.78	13.89	11.11	0.00	100.00
Individual well	Ghafurov	% within District	92.31	3.85	0.00	3.85	0.00	100.00
	Konibodom	% within District	51.72	0.00	0.00	48.28	0.00	100.00
	Yovon	% within District	78.95	0.00	0.00	21.05	0.00	100.00
	Total	Count	54	1	0.00	19	0.00	74
		% within District	72.97	1.35	0.00	25.68	0.00	100.00
Spring in village	Ghafurov	% within District	77.78	0.00	0.00	22.22	0.00	100.00
	Konibodom	% within District	62.50	0.00	25.00	12.50	0.00	100.00
	Yovon	% within District	91.23	2.63	4.39	0.88	0.88	100.00
	Total	Count	116	3	7	4	1	131
		% within District	88.55	2.29	5.34	3.05	0.76	100.00
Bottle /container	Ghafurov	% within District	0.00	100.00	0.00	0.00	0.00	100.00
	Konibodom	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Yovon	% within District	100.00	0.00	0.00	0.00	0.00	100.00
	Total	Count	2	1	0.00	0.00	0.00	3
		% within District	66.67	33.33	0.00	0.00	0.00	100.00

Table D.52: Storing water at home

		Storing water by these means			Importance of storing water this way			
		Not applicable	Yes	No	Total	Very important	Somewhat important	Not important
Hawz	Ghafurov	Count	90	280	425	89	37	1
		% within District	21.18	65.88	100.00	70.08	29.13	0.79
	Konibodom	Count	180	177	425	178	1	0
		% within District	42.35	41.65	100.00	99.44	0.56	0.00
	Yovon	Count	12	383	425	30	173	0
		% within District	2.82	90.12	100.00	14.78	85.22	0.00
Container	Total	Count	282	840	1275	297	211	1
		% within District	22.12	65.88	100.00	58.35	41.45	0.20
	Ghafurov	Count	47	251	425	89	37	1
		% within District	11.06	59.06	100.00	70.08	29.13	0.79
	Konibodom	Count	9	210	425	178	1	0
		% within District	2.12	49.41	100.00	99.44	0.56	0.00
	Yovon	Count	146	241	425	30	173	0
		% within District	34.35	56.71	100.00	14.78	85.22	0.00
	Total	Count	202	702	1275	297	211	1
		% within District	15.84	55.06	100.00	58.35	41.45	0.20

Table D.53: Access to water for presidential land, individual farm or multi-family small farm

		Ghafurov	Konibodom	Yovon	Total
Canal/stream/river	Count	89	207	93	389
	% within District	20.94	48.71	21.88	30.51
Rain collection	Count	0	0	75	75
	% within District	0.00	0.00	17.65	5.88
Water pipes	Count	1	0	1	2
	% within District	0.24	0.00	0.24	0.16
Individual well	Count	1	0	0	1
	% within District	0.24	0.00	0.00	0.08
Communal well	Count	1	1	0	2
	% within District	0.24	0.24	0.00	0.16
Have very little access to water for this type of land	Count	2	2	20	24
	% within District	0.47	0.47	4.71	1.88

Table D.54: Cost of water for presidential land, individual farm or multi-family small farm from canal/streams/river

		Cost in Somoni
Ghafurov	N	89
	Number of those citing zero	85
	Maximum	11
	Mean of those who pay some amount	4.5
Konibodom	N	207
	Number of those citing zero	206
	Maximum	3
	Mean of those who pay some amount	3
Yovon	N	93
	Number of those citing zero	48
	Maximum	50
	Mean of those who pay some amount	7
Total	N	389
	Number of those citing zero	339
	Maximum	50
	Mean of those who pay some amount	6.75

Table D.55: Satisfaction with water quality for presidential land, individual farm or multi-family small farm

			Ghafurov	Konibodom	Yovon	Total
Satisfaction with water from canal/stream/river	High	Count	8	1	0	9
		% within District	9.20	0.51	0	2.38
	Average	Count	58	67	30	155
		% within District	66.67	33.84	32.26	41.01
	Low	Count	21	130	63	214
		% within District	24.14	65.66	67.74	56.61
	Total	Count	87	198	93	378
		% within District	100	100	100	100
Satisfaction with water from rain collection	Average	Count	0	0	4	4
		% within District	0	0	5.88	5.88
	Low	Count	0	0	64	64
		% within District	0	0	94.12	94.12
	Total	Count	0	0	68	68
		% within District	0	0	100	100

Table D.56: Availability/frequency of water from canals, streams or rivers for presidential land, individual farm or multi-family small farm

		Ghafurov	Konibodom	Yovon	Total
Every day	Count	2	5	0	7
	% within District	2.30	2.51	0	1.85
Every other day	Count	3	11	5	19
	% within District	3.45	5.53	5.43	5.03
Half of the week	Count	73	57	14	144
	% within District	83.91	28.64	15.21	38.10
Only some days during the month	Count	4	50	27	81
	% within District	4.60	25.13	29.35	21.43
It is not regular	Count	5	76	46	127
	% within District	5.75	38.19	50	33.60
Total	Count	87	199	92	378
	% within District	100	100	100	100

Table D.57: Provider of water for presidential land, individual farm or multi-family small farm from canal, steams, or rivers

		Ghafurov	Konibodom	Yovon	Total
Kolkhoz/ Sovkhoz, JSC, etc.	Count	36	55	3	94
	% within District	41.38	27.64	3.37	25.07
Khajagii Dihqoni Kollektivi	Count	51	139	68	258
	% within District	58.62	69.85	76.40	68.80
Water users' association	Count	0	2	13	15
	% within District	0.00	1.01	14.61	4.00
Mahallah	Count	0	0	1	1
	% within District	0.00	0.00	1.12	0.27
Vodkhoz	Count	0	0	1	1
	% within District	0.00	0.00	1.12	0.27
Private	Count	0	1	0	1
	% within District	0.00	0.50	0.00	0.27
Other	Count	0	2	3	5
	% within District	0.00	1.01	3.37	1.33
Total	Count	87	199	89	375

Table D.58: Outcome of water going through a neighboring farm

		Not applicable or no response		Water goes through a neighboring farm first and they either give us very little water or give us water whenever they have extra	Water goes through a neighboring farm first and they give us bad quality water	Water goes through a neighboring farm first and they have or want to charge us a lot of money for the water	The water goes through a neighboring farm first and they are very cooperative with regards to providing us with water	Total
House garden and use	Ghafurov	Count	161	185	60	1	18	425
		% within District	37.88	43.53	14.12	0.24	4.24	100
	Konibodom	Count	37	113	265	0	10	425
		% within District	8.71	26.59	62.35	0.00	2.35	100
Yovon		Count	248	49	124	0	4	425
		% within District	58.35	11.53	29.18	0.00	0.94	100
	Total	Count	446	347	449	1	32	1275
		% within District	34.98	27.22	35.22	0.08	2.51	100
Presidential land	Ghafurov	Count	361	36	22	1	5	425
		% within District	84.94	8.47	5.18	0.24	1.18	100
	Konibodom	Count	234	57	132	0	2	425
		% within District	55.06	13.41	31.06	0.00	0.47	100
Yovon		Count	360	19	43	0	3	425
		% within District	84.71	4.47	10.12	0.00	0.71	100
	Total	Count	955	112	197	1	10	1275
		% within District	74.90	8.78	15.45	0.08	0.78	100
Small khoyagi	Ghafurov	Count	425	0	0	0	0	425
		% within District	100	0	0	0	0	100
	Konibodom	Count	424	0	1	0	0	425
		% within District	99.76	0.00	0.24	0	0.00	100
Yovon		Count	413	7	4	0	1	425
		% within District	97.18	1.65	0.94	0	0.24	100
	Total	Count	1262	7	5	0	1	1275
		% within District	98.98	0.55	0.39	0	0.08	100

Table D.59: Is there any water conflict in the village and if there is how is it solved?

		Ghafurov	Konibodom	Yovon	Total
Yes, community leaders/elders arbitrate	Count	10	10	39	59
	% within District	2.4%	2.4%	9.2%	4.7%
Yes, it is taken to the police or judiciary	Count	1	1	0	2
	% within District	.2%	.2%	.0%	.2%
Yes, officials arbitrate (jamoat or mahalla committee)	Count	21	45	7	73
	% within District	5.1%	10.8%	1.7%	5.8%
Yes, religious leader arbitrate	Count	1	3	1	5
	% within District	.2%	.7%	.2%	.4%
Yes, local mirobs arbitrate	Count	70	16	1	87
	% within District	16.9%	3.9%	.2%	6.9%
Yes, officials from WUAs or their mirobs arbitrate	Count	0	0	1	1
	% within District	.0%	.0%	.2%	.1%
Yes, and no one arbitrates	Count	119	122	267	508
	% within District	28.7%	29.4%	63.1%	40.5%
Yes, neighbors arbitrate	Count	47	97	18	162
	% within District	11.3%	23.4%	4.3%	12.9%
Yes, others arbitrate	Count	1	2	0	3
	% within District	.2%	.5%	.0%	.2%
Yes, but we usually reach an agreement ourselves	Count	115	110	88	313
	% within District	27.7%	26.5%	20.8%	25.0%
No, we have no conflicts over water	Count	30	9	1	40
	% within District	7.2%	2.2%	.2%	3.2%
Total		415	415	423	1253

Table D.60: Do you think in your village some people have more/less access to water?

		Ghafurov	Konibodom	Yovon	Total
No, every one has equal access	Count*	221	298	191	710
	% within District*	40.18	51.92	35.83	-
Yes, people who are poor have less access	Count*	18	5	12	35
	% within District*	3.27	0.87	2.25	-
Yes, influential people have better access	Count*	35	1	28	64
	% within District*	6.36	0.17	5.25	-
Yes, men have better access than women	Count*	3	0	0	3
	% within District*	0.55	0	0	-
Yes, those who are farther away from the main source have less access	Count*	273	270	302	845
	% within District*	49.64	47.04	56.66	-
Total count of responses		550	574	533	1657
Total count of all those responding in each district		421	421	424	1266

*Percentages and totals are based on responses.

Table D.61: Has the high level of water table caused illness in your village?

		Ghafurov	Konibodom	Yovon	Total
Not applicable	Count	317	229	290	836
	% within District	78.1%	57.1%	69.5%	68.3%
We have the problem of high level of water table, but it has caused little health problem	Count	42	123	75	240
	% within District	10.3%	30.7%	18.0%	19.6%
We have the problem of high level of water table and it has caused a lot of health problem among women who work in the fields	Count	27	38	26	91
	% within District	6.7%	9.5%	6.2%	7.4%
We have the problem of high level of water table, and it has caused a lot of health problems among both men and women	Count	20	11	26	57
	% within District	4.9%	2.7%	6.2%	4.7%
Total		406	401	417	1224

*Percentages and counts are based on responses

WATER USERS ASSOCIATIONS

Table 62: Impact of WUA

			District		Total
			Konibodom	Yovon	
Impact of WUA?	Not applicable	Count	412	261	1097
		% within District	96.9%	61.4%	86.0%
	We have better access to water	Count	1	4	5
		% within District	.2%	.9%	.4%
	Water quality has gotten better	Count	1	1	2
		% within District	.2%	.2%	.2%
	Water reliability has improved	Count	0	5	5
		% within District	.0%	1.2%	.4%
	Many things have improved	Count	1	0	1
		% within District	.2%	.0%	.1%
	No change	Count	10	128	139
		% within District	2.4%	30.1%	10.9%
	Overall, things have gotten worse	Count	0	26	26
		% within District	.0%	6.1%	2.0%
Total		Count	425	425	1275

Table D.63: Willingness to establish WUA

		District			Total
		Ghafurov	Konibodom	Yovon	
We already have a WUA	Count	7	11	177	195
	% within District	1.7%	2.6%	41.9%	15.5%
I do not know much about WUAs to say anything	Count	190	249	180	619
	% within District	45.1%	59.4%	42.7%	49.0%
No, we do not believe such organizations can help us	Count	12	14	7	33
	% within District	2.9%	3.3%	1.7%	2.6%
Yes, but we are not sure how such organizations can help us	Count	124	92	26	242
	% within District	29.5%	22.0%	6.2%	19.2%
Yes, I think such organizations can help us	Count	88	53	32	173
	% within District	20.9%	12.6%	7.6%	13.7%
Total	Count	421	419	422	1262

Table D.64: Representing family in WUA or member of WUA

		Ghafurov	Konibodom	Yovon	Total
Not applicable	Count	419	407	138	964
	% within District	99.1%	96.9%	32.6%	76.1%
We have WUA but our family is not directly represented	Count	3	8	278	289
	% within District	.7%	1.9%	65.7%	22.8%
Head of Family	Count	1	2	5	8
	% within District	.2%	.5%	1.2%	.6%
Other Male	Count	0	2	1	3
	% within District	.0%	.5%	.2%	.2%
Other Female	Count	0	0	1	1
	% within District	.0%	.0%	.2%	.1%
Whoever	Count	0	1	0	1
	% within District	.0%	.2%	.0%	.1%
Total	Count	423	420	423	1266

wb247868

N:\!!!!SDV Front Office\PUBLICATIONS & GRAPHICS\!!!! Social Analysis and Social Policy\Tajik Soc Asses\composite\Tajik Soc Assessment.doc

9/10/2009 3:48:00 PM