SFG1614

Ferghana Valley Water Resources Management PHASE-II Project

Social Assessment Report

The Ministry of Agriculture and Water resources of the Republic of Uzbekistan

The World Bank

June, 2015

Acknowledgements

TEMELSU International Engineering Services Inc. wishes to thank all the people and organizations that provided information necessary for the preparation of this report.

We are deeply grateful to the specialists of the Ministry of Agriculture and Water resources of the Republic of Uzbekistan, regional and district khokimiyats, Basin Authorities of Water Resources, WCAs, bodies of self-governance of citizens, farmers and dehkans of the subproject areas for the support in conducting the survey.

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Glossary

Dehkans	1) Peasants; 2) Owners of *dehkan plots*.
Dehkan farm / Dehkan plot	In Uzbekistan, a dehkan farm is a family-based small-scale enterprise that produces agricultural products using labor of family members on a garden plot (*tomorka*). Tomorka does not usually exceed 0.1Ha. Also about 10% of households have additional dehkan plots, usually outside, but close to, their villages. Families are using additional dehkan plots (0.15-0.2 Ha) for agricultural purposes and may also use this land for the construction of new housing. Dehkan plots (both tomorka and additional dehkan plots) are transferred to the head of family for lifelong inheritable ownership. Dehkan farm may be registered, or not registered, officially as a legal entity
Khashar	Unpaid activities for landscaping, construction, performance and implementing other types of work based on a voluntary citizens'/ community members initiative. It is a traditional and very common phenomenon in Uzbekistan.
Khokimiyat	Local authorities at regional, district and municipal levels
Makhalla	Territorial community of neighbors; self-governance body of citizens
Private farm	In the context of the Republic of Uzbekistan (and this report), is a leaseholder, a legal entity leading commercial agriculture production on long-term (up to 50 years) leased lands.
Private farmers survey	The sub-sample of the survey of households with a member – a leasehold private farmer. During the survey, the farmers provided information on both the household they lived and the farm they headed.
Project districts	Administrative districts of regions where the Project Area is located.
Rural Assembly of Citizens (RAC)	A body of local self-governance in rural areas. One RAC consists either of one or several *makhallas*.
Tomorka	Household garden plot
Tranche	Target financial resources allocated to private farmers who grow cotton and wheat under the state order. The tranche money spending is regulated in great detail; farmers can utilize it only for the purposes specified by the terms of the tranche (e.g. purchase of seeds, fuel, payments to workers and WCAs) etc. Banks execute control over farmers' spending.

Abbreviations

ADB	Asian Development Bank
AMC FV	Administration of the main canal systems of the Ferghana Valley with the Dispatch Center
AMC	Administrations of main canals
BISA	Basin Irrigation System Authority
CA	Central Asia
CAI	Complex of Agriculture technology issues
DAWR	Departments of Agriculture And Water Resources
DGAMC	Directorate of the Big Andijan main canal
DGFMC	Directorate of the Big Ferghana Main Canal
DSFMC	Directorate of the South Ferghana Main Canal
FA	Farmers Association
FFS	Field Farmers Schools
FGD	Focus group discussion
FL	Fuels and lubricants
FVWRMP	Ferghana Valley Water Resources Management Project
FVWRMP-II	Ferghana Valley Water Resources Management PHASE-II Project
GDP	Gross Domestic Product
GDWR	General Directorate of Water Resources
GoU	Government of Uzbekistan
GRP	Gross Regional Product
HGME	Hydro-geological and Melioration Expedition
IDS	Irrigation and drainage systems
IS	Implementation support
ISA	Irrigation system authority
M&E	Monitoring and evaluation
MAWR	Ministry of Agriculture and Water Resources
MDGs	Millennium Development Goals
NANGO Uz	National Association of non-governmental not-for-profit organizations
NGO	Nongovernmental not-for-profit organizations
O&M	Operation and maintenance
PEE	Pre-school educational establishments
PIU	Project implementation unit
PMU	Project management unit
PSD	Pump Stations Department
RAC	Rural Assembly of Citizens
RAP	Resettlement Action Plan
RESPII	Rural Enterprise Support Project, Phase II (WB)
RHC	Rural health center
RPF	Resettlement Policy Framework
SA	Social Assessment
SB	Small business
SDC	Swiss Agency for Development and Co-operation
SE	Small enterprises
SES	Sanitary Epidemiological Station

SIC	Scientific Information Center of Interstate Coordination Water Commission
SSVE	Secondary special vocational education
TA	Technical assistance
UNDP	United Nations Development Program
USD, $	United States dollar
UTS	Urban type settlement
WB	World Bank
WCA	Water Consumers Association
WRMSP	Water Resources Management Sector Project (ADB)
WUG	Water users groups

Currency exchange rate as of the period of the project
(1st December, 2014)

1USD = 2 401,09UZS
1 UZS = 0,0004165 USD

Units

ha	Hectare
kg	Kilogram
km²	Square kilometer
km³	Cubic kilometer
sotka	0.01 ha
centner	100 kg
t	Ton (1000 kg)

EXECUTIVE SUMMARY

The government of the Republic of Uzbekistan has received a loan from the World Bank for the realization of the Project "Ferghana Valley Water Resources Management, Phase-I» (FVWRMP-I). The part of the funds of the loan will be used to prepare Phase-II of the Project "Ferghana Valley Water Resources Management" (FVWRMP-II).

The main objective of the Ferghana Valley Water Resources Management Project, Phase-II is the implementation of a comprehensive set of measures on construction, rehabilitation and modernization of irrigation systems of the FV, in order to provide sustainable and reliable water supply, on the basis of conceptual approaches of integrated water resources management (IWRM).

Components of the project include:

1. A set of high-priority investment measures on the improvement of irrigation infrastructure (Component A), including:
    a. Rehabilitation of 283 km of Surface Irrigation System and 675 irrigation structures
    b. Rehabilitation of 12 existing pump stations and construction of one new pump station
    c. construction of 243 Irrigation Borewells
    d. the protection of 17.7 km canal/river banks and the reconstruction of the Kandiyon mud-flow storage reservoir
2. System Modernization (Component B), including:
    a. Pilot Studies/Activities including the introduction of the SCADA flow measurement technology and the installation of equipment to monitor consumption at all major GTS system.
    b. Institutional Strengthening and Training: study-tours, trainings of BISA, ISA, WCA personnel and farmers, strengthening WCA (by providing office equipment, metering equipment, vehicles)
    c. Enhancing on – farm water application efficiency (Creation of FFS and demo plots, including drip irrigation and volatile borewells with solar-powered irrigation pumps)
3. Project Management, Audit, Monitoring and Evaluation, and Technical Assistance (Component C), including
    a. Project Management
    b. Monitoring and Evaluation
    c. Audits - conducted annually
    d. Preparation of Investment Package for Phase III

The expected duration of the project is 8 years, including first 1.5 years - the detailed project preparation studies stage; 2-7 years – construction/physical interventions phase and Preparation of Investment Package for Phase-III; and, finally - the M&E and project completion.
This Social Assessment (SA) report is submitted to the PIU for Water Infrastructure, as a part of consulting services aimed at the assessment of the potential social impact of interventions proposed in the FVWRMP-II Feasibility Study Final Report, August 2014. As the part of the same TOR, along with the Social Assessment report, there was developed a set of documents including Environmental Assessment Report, Resettlement Policy Framework and Resettlement Action Plan for the first Subproject area “Podshaota-Chodak”.

Social Assessment (SA): objectives and methodology

The key goals of SA included: (i) identification of key social problems regarding the Project; (ii) the analysis of beneficiaries, stakeholders and institutions (iii) assessment of the potential social impact of the project and (iv) securing the achievement of the results in the sphere of social development.

In order to achieve the goal SA is expected to secure the following:

- The proposed project results in positive social benefits: once any negative social consequences arise, they should not affect low-income and vulnerable categories;
- The potential negative social impacts should be either minimized or eliminated;
- The project addresses to the high-priority needs of the population;
- All beneficiaries that are in charge of the implementation of the Project activities are determined to reach significant social results and are willing and enthusiastic about the implementation of the Project;
- In order to facilitate the effective implementation of the Project a set of institutional reforms are made;
- M&E activities are developed with the wide participation of stakeholders.

The SA was based on both quantitative and qualitative data collection methods in order to reflect the current socio-economic conditions, to define the problems of irrigation and agricultural production the key beneficiaries are facing, as well as to assess the existing institutional potential. The performed work is summarized below:

- collection and analysis of official statistics at both district and regional levels of the FV
- the survey of 494 households and 260 farms
- 15 FGDs with the participation of different categories of key stakeholders
- 52 in-depth interviews with key stakeholders
- 3 final consultancy seminars (one in each subproject area) with the participation of 153 representatives of all groups of key stakeholders to discuss Public Participation Plan and the findings of the Social Assessment.

Basic Information on the Project Area

In August 2014, the Final Feasibility Study (FS) of FVWRMP-II was developed; it includes three subprojects identified in three administrative regions of the Ferghana Valley. These three subprojects have high priority and importance in the context of increasing productivity of water use, maintaining agro-ecosystem services and improving the population's livelihood in the Ferghana Valley. The number of selected subprojects included:

1. The "Podshaota-Chodak" subproject area of 33.3 thousand ha, including 29.5 thousand ha of irrigated land, is located in the northeast of the Ferghana Valley. The subproject area consists of Yangikurgan district in its entirety and part of Chodak district of Namangan province;
2. The system of "Isfayram-Shakhimardan" subproject area of 63.3 thousand ha, including 55 thousand ha of irrigated lands, covers the southern part of the Valley and includes the entire Ferghana district, Ferghana city and Kuvasay district with

subordinate Rural Assemblies of Citizens (RACs), and parts of Kuva, Altyaryk and Tashlak districts;

3. The "Savay-Akburasay" subproject area of 23.4 thousand ha, including 19.4 thousand ha of irrigated lands, is located in the southeast of the Ferghana Valley and provides water to Kurgantepa, Jalalkuduk, Khodjaabad and Bulakbashi districts of Andijan province.

All three subproject irrigation systems depend on the streams that are the tributaries of the Syrdarya River which flow down from the mountains. The network of borewells for irrigation purposes supplies agriculture producers with groundwater. Seasonal reservoirs and waterways, through the accumulation and preservation of surface waters, guarantee against critical water shortages and thus, reduce crop losses. Water from drainage systems is characterized as additional water resources for irrigation, especially in time of severe water shortage.

The total population in the three subprojects is about 975 thousand people, or about 183 thousand households. The bulk of the population, mostly influenced by the Project, lives in the Isfayram-Shakhimardan area (almost 0.6 million people, or 61% of the total population in the Project Area). As many as 235 thousand people live in the area of Podshaota-Chodak (24% of the population), and in the area of Savay-Akburasay there are 146 thousand people (15%).

Approximately, 975 thousand people living in the 3 subproject areas (i.e. the beneficiaries of the Project) constitute 50% of 12 administrative districts' population, including:

- 62.1% of the total population of 2 administrative districts under the Podshaota-Chodak subproject
- 51.1% of total 6 administrative districts under the Isfayram-Shakhimardan subproject and
- 24.8% of the total number of 4 administrative districts under the Savay-Akburasay subproject.

According to official statistics, slightly more than 70% of the population in the three subproject areas lives in cities or towns. However, it is noticeable that the high proportion of the urban population resulted from the administrative reform of 2009 which re-classified almost a thousand of in the Republic's villages into urban settlements. However, the way of life in most of them is still predominantly rural; both revenues from farms and dehkan plots and employment in the agricultural sector are still of great importance.

The population density in the Ferghana Valley is the highest in the country and ranges from 337 people/km^2 in the subproject districts of the Namangan region to 802 people/km^2 in the subproject districts of the Ferghana region. High population growth rate is typical of the subproject areas (approx. 16 people per thousand annually).

The average household size in the three subproject areas is 5.4 persons; 46% of the households report 5-6 persons. Women make up nearly a half of the population in the Project Area. The average age of family members is 29. The working age population[1] constitutes the largest group among the residents. The proportion of children under 16 years old is 29 percent; the pension-age group of people makes up 9.1 percent of the population.

[1] Men aged 16 to 59 and women aged 16-54

The ethnic composition of the population is largely homogeneous in all the subproject areas - the majority of the population are Uzbeks. In rural areas the share of Uzbeks exceeds 90%. Most representatives of other ethnic groups are Kyrgyz and Tajiks. In terms of cultural traditions, these ethnic groups are very close to the Uzbeks. In the areas of compact residence, inhabitants use Tajik and Kyrgyz languages along with the Uzbek language.

Overall, education level of the population of the three subproject areas is rather high and identical to the Republic's average vocational and higher education indicators for adults (35% and 10.5% in the subproject areas compared with the national average 36% and 11% respectively). In the 25+ age group, twice as many people in urban settlements have higher education diplomas as in rural ones, at 58% and 40% respectively.

Employment and income

According to official statistics, the level of economic activity of the population in 2013 was 78.4% for the population of working age in the Andijan region, 63.6% - in the Namangan region, and 76.7% in the Ferghana region. The employed people make up 74.2% of the total working-age population in the Andijan region, 60.3% - in Namangan, and 72.9% in the Ferghana region.

Agricultural workers dominate in the structure of employees of all administrative districts of the Project Area. Employment in rural areas is characterized by overdependence on the agricultural sector: according to the data provided by khokimiyats, the proportion of workers directly engaged in agricultural activities exceeds 50%. Even in Kuvasay city more than 28% of employees work in agriculture. The survey findings confirm the official statistics for the subproject areas: as much as 41% of the working-age population is engaged in the agricultural sector. Whereas the majority of the employed population in both Podshaota-Chodak (52%) and Savay-Akburasay (41%) constitute agricultural workers, the corresponding figure for the Isfayram-Shakhimardan subproject area is much lower, at 29%. Nearly half (or 10.7% of the working-age population) of the agricultural workers of the areas are engaged in work on household garden plots.

According to the official statistics, the share of those employed in the non-manufacturing sector for the districts of the Project Area accounts for 32.6% of the employed population, including more than 20% of the employed in the fields of education, health and social protection.

The three FV regions, as is in case of the national figure, show very low levels of officially registered unemployment which does not reflect the real situation on the labor market. For example, in Kuvasay city, where almost 40 thousand people live, only 1 person is officially registered as unemployed. Moreover, in Khodjaabad area, where the number of economically active population reaches 50 thousand, the number of registered unemployed amounted to only 3 people. According to the survey, the unemployment rate is relatively high, at 7.7%. The share of the temporarily or seasonally employed (both in the agricultural and non-agricultural sectors) makes up 11 percent of the overall working-age population. Hidden unemployment along with underemployment is widespread among those who work on dehkan plots. Overall, unemployment rates (including hidden unemployment) reach a considerable 18.5% of the working-age population. Most of the agricultural workers engaged in work on dehkan plots consider themselves as "unemployed", since these plots are too small to provide full-time work for all family members.

Official statistics on income and expenditure of the population are not available. With regard to the official data on the level of wages In registered sector of economy, the data doesn't take into account the wages in the small business sector and agriculture (thus, greatly overstating the level of income received by the population). According to the official statistics as of the beginning of 2014, the average monthly salary in the subproject districts of the Andijan region was 1.5 mln. sums, 0.82 mln sums in the Namangan region, and 1.2 mln. sums in the Ferghana region. In all three regions the average monthly wage in subproject districts was lower than the regional average. In the subproject districts of the Andijan region, the average salary is 28% lower than that of a regional level, and in the subproject districts of the Ferghana region the corresponding figure is 24% smaller.

According to the study, as of November 2014, the average monthly income of households[2] in the subproject areas made up 1 million 70 thousand sums (USD 445), while the average per capita income was 199 thousand sums (USD 83). The figures for Savay-Akburasay equaled 1 million 109 thousand sums and 211 thousand sums respectively, whereas 982.5 thousand sums and 172 thousand sums for Podshaota-Chodak, and 1 million 116 thousand sums and 215 thousand sums for Isfayram-Shakhimardan were indicated respectively. The average monthly income of a farmer's households in the three subproject areas was as much as 2 million 329 thousand sums (USD 970), with the average per capita income reaching 395 thousand sums (USD 165).
43.7% of the surveyed households (which consists 47.4% of the Project Area population) are concentrated in the two bottom income quintiles. Some 65% of the population lives on less than 2 dollars a day[3]. According to the assessment results, 9.7% of the areas' households are low-income[4] families; another 21% of the households are at risk of getting low-income very likely.

The average per capita income of non-poor families is 1.5 as much as that of a low-income household (133 thousand sums). There are several factors that increase the risk of descending into poverty for families: a larger size of household, lack of vocational or higher education among household heads, and households' overdependence on garden plots or temporary agricultural works as the only way to generate income. On average, 35% of the surveyed households have a socially vulnerable member: disabled children under 18 (1.4%), the elderly and disabled people in need of permanent care (7.5%), single mothers with children under 18 years old (0.8%), mothers with 5 and more children (4.4%), elderly pensioners of 65+ age (10.9%), beneficiaries of makhalla allowances to low-income families (9.8%), beneficiaries of breadwinner's loss allowance or pension (0.6%), and the long-term unemployed looking for a job over 12 months and longer (12.7%).

Non-agricultural activities appear to be the most significant source of household income as the wages in the sector 1.5 -2 times higher than those of agriculture. As much as 52.4% of the households report generating cash incomes in the non-agricultural sector; according to them, the incomes account for a third of their families' earnings (34.4%). As for income generated in the agricultural sector, its share in households' earning is not of great importance; with the productivity of family garden plots being low, the yield is mostly consumed by the household

[2] The income figures given in this section exclude the value of crops and livestock produced and consumed by families.
[3] Current exchange rate without PPP corrections
[4] 1.5 Minimal wage per a household member a month as a threshold

members. Agriculture-related cash incomes account for 23.2% of the average household income in the three subproject areas.

Remittances make up a significant share (10%) in household incomes; yet, a small 8.5% of the surveyed families earn money this way. The proportion of social transfers is rather high in the income structure and amounts to 16% percent for families with old-age pensioners and beneficiaries of disability (Group I and II) pensions and allowances. As for other social transfers, including makhalla allowance to low-income families, they constitute a mere 2 percent in the structure of household incomes.

In spite of the low indicators of female employment, the contribution of women into the family economy is quite significant. The average income provided by women in the surveyed households amounts to 36 percent of the cumulative income of households as of November 2014. The share could be larger if women were equally paid in comparison with men. In the agricultural sector, the average income of women is equal to 65% of the average male income; as for non-agricultural sectors, women earn 83% of the average men's income. Moreover, women get smaller old-age pensions which results from low levels of income throughout employment periods.

As for household expenditure, by far the most money (35%) is spent on food; it is interesting that the percentage is not as high as was anticipated. The pattern can result from not only the consumption of own plots' yield, but also the prevalence of payments in kind: the majority of agricultural workers are paid wheat which is consumed by the workers' family members, and makes up an important share in the food structure. As for other spending patterns, it is footwear and clothing for both children and adults that also stand out at 16%. All of the three subproject areas' households show rather low spending on education (3.6%), sanitary-hygienic goods (3.1%) and bottled water (0.6%).

Access to communal services

Official indicators of access to centralized water supply in subproject areas of Andijan and Ferghana regions are quite high (84.4% and 90.8%, respectively) and exceed the average regional levels. The access to centralized water supply of the population in the Namangan subproject districts is much lower than in the whole region at 70.6%. An important remark is that the official statistics is far from reality, because it includes the number of households provided with piped water, i.e. all the houses which have running water from the pipeline or street standpipes. The official statistics take into consideration neither general water shortages, the disastrous condition of water supply systems, and constant interruptions of water supply resulted from the pipes being wear and tear, nor power cutoffs affecting the operation of pumps. Even though the survey showed that accessibility to water supply is quite high (14.3% of the households use water from the tap at home/yard and 51% from street standpipes), half of such households report frequent cutoffs in the supply, up to 3.5 hours a day. In summer such irregular supply occurs even more often. 16.7% of households, at least sometimes, have to use water for drinking and cooking purposes from the river or canal, and 3.2% - from a drainage collectors. Irrigation network is indicated is one of the main (sometimes the only) sources of water for domestic needs by 35.9% of households. When water is scarce in canals, the population is deprived even of these unsafe water sources.

According to official statistics, the level of access to centralized gas supply in the subproject area is lower than the regional average level, and accounts for 75-85%. This official statistics on access to gas, as is in case of water supply, does not take into account that most households are experiencing persistent problems due to low gas pressure in the system and planned daily gas cutoffs. According to the respondents, gas supply is an acute problem for the population especially in Savay-Akburasay and Podshaota-Chodak areas (66% and 57% of the households respectively don't have access to gas). By contrast, the situation with gas utilities is much better in Isfayram-Shakhimardan where only 16% of the households don't have access to the centralized gas supply.

Irregular electricity supply affects living standard of the population inevitably. 99.6% of the surveyed households have access to electricity supply. However, power cutoffs and voltage swings in the network are very common; some settlements report 6-8 hours of electric shutdowns every day.

Agriculture in the subproject areas

According to official statistics, agricultural production in the subproject areas is growing quite rapidly. According to the district khokimiyats data, in 2013 the annual growth rate of agricultural production was above 106% in all districts, except Bulakbashi (103.7%). In Dzhalalkuduk, Chartak, and Tashlak districts the growth of agricultural output exceeded 10%. Subproject areas contribute significantly to the gross agricultural product of the regions. The share of the agricultural sector in the subproject districts of the Andijan and Namangan regions was about 26%, whereas the share of subproject districts of the Ferghana region exceeded 37%. The main types of agricultural producers in the subproject areas, as well as in the whole region, are private and dehkan farms. In all districts, except for two districts in the Ferghana region, the farms produce over 98% of gross agricultural production.

An important part of the agricultural sector is livestock production, which contributes as much as 27.9% in the Andijan region, 38% in the Namangan region, and 36.2% in the Ferghana region to the gross agricultural product. By far the largest amount of livestock (96%) and poultry (80.5%) is concentrated on dehkan farms, where the better productivity and growth rates in the numbers of livestock/poultry are shown as well.

In general, the productivity of the agricultural sector in the regions is rather low – the amount of agricultural products per an agricultural worker in 2013 in the Andijan region was 6.9 mln. sums, in the Namangan and Ferghana regions it was higher, at 8.9 mln. sums and 6.9 mln. sums respectively. One of the main factors of low productivity of farms is the lack of irrigation water, along with low productivity of land resources, and the deterioration of agricultural land.

Dehkan farms profile and problems

Dehkan farms prove to be the most efficient form of land use in the subproject areas. They effectively use their small plots; reseeding is in general practice among dehkans which guarantees 2-3 yields a year. Even though dehkan farms occupy only 13.7% of cultivated land (on average in the three regions), they produce as much as 63% of agricultural GRP of three FV regions. There are 178 thousand dehkan farms operating in the territory of 20.2 thousand ha in subproject areas, with the average dehkan farm size at 0.11 ha. In terms of social assessment, it is the dehkan farms that are the top-priority stakeholders, as they produce the bulk of horticultural and livestock production of the regions by using only 16% of the total cultivated

land in the Project Area. According to the survey results, nearly every household even in the city has a land plot. One in four families has more than one land plot.

At minimum cost to the households, the average annual revenue from dehkan plots is over 1 million 300 thousand sums. Once the value of agricultural product consumed by the family members is included, the annual income generated on the dehkan plots reaches a considerable 2 million sums. It is noticeable that marketability of dehkan farms in the subproject areas is fairly low, as only 53% of such households sell their product at local markets (a lower percentage is reported for Savay-Akburasay, at 31%). Moreover, owners of garden dehkan plots in cities are less likely to trade their produce (only 36% of households), and the volume of the sales is smaller in comparison with that of rural areas.

Livestock production is of great importance to the subproject areas. A large 77% of households keep either cattle or poultry (the pattern is notably different for rural and urban areas, at 79% and 60% respectively). A good half of the households keeping cattle sell their production at local markets, with the average household income from the activity being at over 700,000 sums a year. If the volume of the cattle product consumed by household members is added, the sum tends to reach some 1 million sums a year.

According to the study, one of the obstacles in the way of productivity growth on dehkan plots is the poor condition of the irrigation system along with a shortage of irrigation water. A large 65% of dehkans in the three subproject areas are facing serious irrigation water shortages. Furthermore, 40% of the people stress the unsatisfactory condition of the irrigation system. 22% of the surveyed households point out that one of the major factors impeding productivity growth on their garden plots is the poor quality of land caused by water logging in the region. Other pressing problems for dehkans to be solved in the sphere of agriculture include: high forage prices (34.9%), cutoffs of electricity in the agricultural sector (pumps, etc.) – 29.8%, lack of pasture land (29.6%), small sizes of plots (31.2%), and lack of up-to-date information on agriculture (18.2%).

The profile of private farms in the Project Area

According to the survey, only 2% of households have a private farm land plot. In the three subproject areas that occupy the territory of 99.7 thousand ha, there are 3,044 private farms with an average area of 32.7 ha each. In comparison with 2008, in 2013 the number of private farms in the Project Ares decreased by 2.5 times on average as a result of the so-called optimization/consolidation of private farms in the FV; while the average amount of land per farm increased by 2.4 times, and the average number of employees in a farm grew by 2.2 times. The pace of optimization by the present moment is significantly lower than in the period between 2009-2012. In 2013, just 412 farms were dissolved in three subproject areas, i.e., the share of households optimized was 2% lower of the total number of private farms of the three regions. It should be noted that almost 38% of the dissolved farms are reported for the subproject areas. This indirectly indicates low agricultural productivity in the majority of the Project districts.

The surveyed private farms produce mainly cotton and wheat under the state order. The two crops occupy over 92% of cultivated land of the surveyed farmers in the Savay-Akburasay subproject area and 75% in the Isfayram-Shakhimardan subproject area. By contrast, the

farmers in the Podshaota-Chodak subproject area don't report growing cotton; whereas 49% of their land is under wheat, 34% is under gardens and vineyards. The average size of the surveyed horticultural farms is about 22ha.

Land productivity per hectare on private farms of the subproject areas is 20 times lower than that of family garden plots. In 2014 on average a farm's expenditure per hectare was 1.7 mln. sums, income per hectare – 2.5 mln. sums; the average annual income per farm was 90 mln. sums, and the average annual expenditure – 75.5 mln. sums. According to the survey, 18% of the private farms in the three subproject areas have remained unprofitable over the last 12 months.

Private farms do not exhibit high labor intensity. Whereas the average number of permanent workers on a farm is 12 people, the number per hectare is 3.8 workers.
It is the people who are sent by local authorities to farms to help with cotton-harvesting who make up almost half (49%) of the farm workers. The figure is even higher for the Savay-Akburasay and Isfayram-Shakhimardan subproject areas, at 58% and 56% respectively.
Whereas the labor input patterns of temporary seasonal workers accounts for 37% of total labor input for private farms of the three subproject areas, the corresponding indicator of permanent workers on farms is nearly two times higher, at a significant 63%.

The problems of agricultural production

According to official statistics, a constant 30% shortage of irrigation water is experienced by the Savay-Akburasay subproject area; the corresponding shortage patterns are even higher for the Isfayram-Shakhimardan and Podshaota-Chodak subproject areas, at 36% and 48% respectively. The farmers of all subproject areas point out, that the lack of water resources along with the dismal condition of the irrigation system and borewells is the most pressing problem of their region. The survey results corroborate the official data: a large 78% of private farmers face irrigation water shortages; the corresponding figure varies by subproject area: 78% - Podshaota-Chodak, 85% - Isfayram-Shakhimardan and 71% - Savay-Akburasay. It is the downstream farms of the subproject areas that experienced constant water shortages in 93%, 90% and 77% cases respectively, with farms in Isfayram-Shakhimardan and Podshaota-Chodak suffering the most.
The problem of irrigation water shortages grows so acute that 10.8% of the farmers have to use drainage water (for the Isfayram-Shakhimardan subproject area -24.7%), which inevitably results in the further worsening of the land quality.

During the survey, a considerable 35% of farmers also mention the poor condition of the irrigation system as one of the major problems affecting agricultural producers. According to 14% of those surveyed, it is the lack or poor condition of the drainage systems that results in low productivity.

In the three subproject areas, as much as 44% of the surveyed farms do not use pumps for irrigation (have gravity irrigation). The other 56 % use the pumps. The situation is aggravated by power cutoffs and worn-out pumping equipment that badly affects the performance of the irrigation and drainage infrastructure.

Another category of obstacles to productivity growth on the plots of private farms includes the limited access to such types of inputs as seeds, chemicals and fuels (12% of farmers point out

the lack of seeds, 70% - high prices and shortages of chemicals and fertilizers, over 50% - fuels as such obstacles). The lack of agricultural machinery along with high leasing fees causes serious problems for private farmers: only 39% have a tractor, 34% of them experience shortages of necessary equipment at machinery stations. Some of the private farms lack the very basic agricultural machinery.

Most farmers are facing difficulties with marketing and storage of their agricultural production. The need to sell the product immediately after the completion of harvest without processing results in low prices which frequently don't cover the production costs.

According to those farms surveyed, the rise in efficiency and productivity of their land plots is directly correlated with rehabilitation of the irrigation-drainage system: a good 53% of the farmers agree that rehabilitation and repairs of the irrigation system must be given the highest priority. Half of the respondents believe that primarily water supply must be increased to sustain agricultural production.

The low incomes of private farmers caused by significant water shortages result in vicious circle of problems: the lack of money and machinery makes it impossible to maintain on-farm IDS, which in its turn leads to the further reduction of irrigation water supply. 58% of private farmers say that their on-farm irrigation-drainage networks need repairing, rehabilitation or construction of new structures.

In 2014, the reconstruction of the irrigation system was done to some extent on 44.8% of private farms, whereas 18% of farmers reconstructed/cleaned their drainage system. However, the maintenance costs of irrigation and drainage per a farm account for only 3 million 433 thousand sums (5% of a farmer's annual income), and 1 million 662 thousand sums (2.4% of a farmer's annual income) respectively.

The consequences of irrigation water shortages on dehkan and private farms of the region inevitably result in remarkable reduction of incomes and living standards. 46.8% of the surveyed households in 2014 had no cash income from selling agricultural products grown on the dehkan plot, because the harvest was so low that it was not always enough even for family consumption. 7% of the sampled households didn't have the income from their plots (in terms of cash or consumption). 18% of farms in the Project Area have been unprofitable for the last 12 months. The lack of irrigation water in the Project Area results in the shortage of pastures, as well as the lack of necessary forage and high forage prices, which inevitably had a negative impact on the development of livestock production. Among households that had livestock in 2014, a good 50% didn't generate cash income from the sales of cattle; 28% did not consume their own cattle products. 27.6% of the surveyed households neither had cash income from cattle nor consumed their own cattle products.

Because of the problems with the maintenance of mud-flow storages and structures, especially those in the territory of Kyrgyzstan, more than 15% of respondents say that households in their communities suffer from the damaging effects of mud-flows to some extent (the response has a higher pattern among private farmers, at 23%). The residents of the Podshaota-Chodak subproject area face problems caused by mudflows more often than the people of the other subproject areas (the problem was noted by 28% of dehkans and 33% of farmers).

The lack of irrigation water brings out disputes and conflicts: 77% of farmers and 72% of dehkans are constantly facing such problems. The disputes and conflicts due to the lack of irrigation water occur quite often: only 23% of private farmers and 28% of dehkans have never faced the water conflicts. Such conflicts are more common for downstream farms, although the relevance of this problem is equally high for all farmers. In most cases, conflicts over water occur between farmers and WCAs (42% of the farmers were engaged in the conflicts; in the subproject area of Isfayram-Shakhimardan the proportion of farmers who participated in 2014 in such conflicts reaches 66%). The most frequent disputes are reported taking place between neighboring farmers (33%), and among upstream and downstream farms (22%). Given the shortage of irrigation water, disputes and conflicts between farmers and dehkans are also quite common (33%). 40% of dehkans and 17% of farmers surveyed, indicated that conflicts arise even between residents of different villages and makhallas. The share of farmers, who believe that in 2014 there were more such conflicts in comparison with 2013, accounts for 38%.

However, the population of the Project Area has much experience in joint solution of different problems and conflicts. 97% of respondents believe that the cooperation is very important and only together the people can solve their problems. The key issues that the population and farmers solve together include the distribution of irrigation water, as well as the cleaning and repairing of IDS, including the purchase and repair of pumps. In addition, both dehkans and farmers communicate with each other to resolve the problems of production and sale, along with the equipment and machinery sharing.

The Problems of WCAs

The major responsibility of WCAs is the distribution of water to private farmers. WCAs are expected also maintain the irrigation and drainage systems and to supply the machinery, and provide technical assistance to farmers. Despite the considerable efforts undertaken in the field of efficient water management at the WCA level, none of the organization manages to fulfill their duties satisfactorily because of the lack of both financial and administrative resources.

There are 48 WCAs in the Project Area, including 20 WCAs in Podshaota-Chodak (14 in Yangikurgan and 6 in Chartak district), 19 WCAs in the Isfayram-Shakhimardan subproject area and 9 in Savay-Akburasay.

In fact, the functioning of WCA heavily depends on farmers' fees which are rarely paid in a full and timely manner, though the fees are the only source of funding for the WCAs. Even though an increasing number of farmers pay membership fees every year, the money is insufficient to pay salaries to WCA staff. According to the survey, 90% of farmers pay some service fees to the WCA over the last year. The average annual size of the fee amounted to 1,434 thousand sums that comprised 2 percent of the average annual revenue of farmers. According to the findings of the SDC spring 2015 survey of 63 WCAs, acting in the project districts of the WB RESP-II Project, even the WCAs, which were highly supported methodically and technically by the Swiss project over the last 6 years, collected only 52.2% of the planned fees from water consumers in 2014.

The performance of WCAs in the Project Area was evaluated as not very satisfactory by the farmers. Almost half of the surveyed farmers were not entirely satisfied with the WCAs' performance, and only a third of farmers gave a positive assessment of the activities done by these organizations. By far the most positive mark was given to the planning of water use implemented by WCAs: 54% of the farmers believe that WCAs succeeded in performing this

activity. Farmers also appreciated the way the WCA distributed (50%) and scheduled the distribution of irrigation water (48%). Generally, the supply-related aspects of the performance of WCAs, including the volume, scheduling, and the metering of the water supplied to a farm, are rated the worse in comparison with other aspects; it is no surprising as WCAs has zero influence on the aspects. The WCAs' efforts to settle water conflicts, to reduce cases of illegal intake of water, and to advocate the interests of water consumers at administrative and ruling bodies, are estimated quite satisfactorily. The farmers marked the cleaning and repair work of the irrigation-drainage networks performed by WCAs as quite not satisfactory (only 35-40% are satisfied with the WCA activity).

The study shows that farmers feel the need to assist the strengthening of the capacity of WCAs. Farmers believe that the WCAs should be provided with vehicles (50%), and computers with software required (21%); besides, the associations should be helped with the installation of water metering and regulating structures (42%). The majority of farmers believe that it is essential to provide the WCAs with access to affordable loans. According to the farmers, it will enable the WCAs to do the highly expensive cleaning and construction/repair of off-farm IDS, as well as to buy machinery, and build in the necessary water metering and regulating structures/devices. The farmers express the idea that WCAs should design and develop sustainable mechanisms for collecting fees and attracting more water consumers into the associations, along with securing larger numbers of water consumers signing the contracts with WCAs.

The expected impact of the Project on socio-economic development of the Project Area

The survey has shown that 79% of dehkans and 88% of farmers acknowledge the *urgency* of rehabilitating of the irrigation systems. Only some 5 percent of the surveyed believe that the rehabilitation of the systems will make no difference to their lives. One of the major benefits associated with the Project includes increased agricultural productivity due to an improvement in water delivery and land quality along with resolving the high ground water table problems. In comparison with the other subproject areas, the households of Podshaota-Chodak express higher expectation of the Project, pointing out potential increases in incomes, employment, and living conditions. Some of the surveyed highlight the prevention of the destruction of their houses and improved health as the expected positive outcomes of the Project. On the whole, the population of the three regions expects that the Project will improve the environmental situation in their settlements.

A great many experts having participated in in-depth interviews and FGDs consider the current situation in subproject areas as a critical one. According to the participants, if the projected rehabilitation of the irrigation systems is any further delayed, the agricultural sector will inevitably end up in crisis affecting the population's well-being. It is therefore not surprising that the rehabilitation is a priority for local authorities that will welcome whatever support to ensure timely implementation of the Project.

The expected socio-economic impact of the Project is as follows:

- The Project will lead to a considerable increase in agricultural productivity of dehkan plots and private farms in the subproject areas. According to expert estimations, the improved supply of irrigation water will increase crop yields by 18-20% on average upon the Project completion.

- Without the Project the further deterioration of the current situation with a decline in main crop yields resulting from the limited volume of irrigation and poor ameliorative state of land will occur.
- Upon the completion of all stages of the Project, the anticipated reduction in water consumption will average out at 1,269 m^3/Ha (23%) in Podshaota-Chodak; 1,930 m^3/Ha (21.63%) in Isfayram-Shakhimardan; and 1,433 m^3/Ha (23.5%) in Savay-Akburasay; the amount of water sufficient for an average irrigation session.
- The project is bound to have a positive effect on the employment and incomes of low-income categories of the population, which will contribute to reaching the World Bank's goals of sustainably ending extreme poverty and boosting shared prosperity. Nowadays, it is the two bottom quintiles of families (i.e. 40% of families with the least income levels in the subproject areas) are facing the severest shortages of irrigation water for their garden plots (73% of such families in QI, and 60% - in QV). It is noticeable that the dependence on employment in the agricultural sector is nearly six times higher for families in Quintile I than that of families from Quintile V.
- In case of the Project implementation, the growth of land productivity will have a positive impact on marketability of dehkan farms, leading to increased family incomes. Moreover, the spillover effect of the increase in economic activity marked by rise in crop yields, employment, and incomes of small and medium-sized farms will trigger effective demand, hence rising the incomes of the most vulnerable persons engaged in the informal business such as small merchants, craftsmen, and the self-employed in service industries.
- The direct Project's impact on agricultural employment in the agricultural sector in the Project Area is expected to be moderate due to the low elasticity of demand on labor market in the agricultural sector. The increase in farms' productivity can provide the growth of 2 percent in on-farms employment. In small farms with a high percentage of manual labor, a 20 percent-growth of productivity can provide an increase of 4 percent in employment approximately. On average, hidden unemployment on dehkan plots is forecast to decrease by 6 percentage points. However, a significant increase in employment in allied sectors of the economy (processing, sales, and transportation) is expected as a result of increased crop yields and introduction of new crops in agricultural production. Also, a rise in employment is expected in the service sector working for agricultural producers, repairs and maintenance of farming machinery and irrigation/drainage systems (including jobs available at WCAs). A further boost in the population's income and employment is anticipated if the Project promotes both efficiency of technologies to be introduced and cooperation of small-scale producers in the context of storage, processing and sale of agricultural output.
- The Project is expected to have a profound effect not only on agricultural production, economic returns and well-being, but also on the living standards in the Project Area. One of the positive contributions of the Project will be the prevention of damage to houses and outbuildings, social infrastructure (healthcare and education establishments), and physical infrastructure (roads, water pipelines, etc.) via the implementation anti-mudflow measures. Moreover, the Project will allow the local authorities to cut down on repair costs in order to allocate their resources to resolving other social development issues.
- The Project implementation is bound to improve public health and reduce the rates of both physical and infectious illnesses due to the improvement of living conditions, and the end of widespread practice when drainage water can be used for domestic needs and livestock watering.

- The Project will facilitate institutional development and provide progressive local development by strengthening the existing capacity of the local communities. Within the framework of this Project, social capital of local communities will be strengthened via community mobilization and fostering the participation of the people both as WCA members and as active contributors to the Project implementation (including stakeholder consultations, social surveys, construction work conducted under the Project etc.).

Project Risks

According to specialists, in order to improve the current situation with water supply and living standards in the subproject areas, a comprehensive set of measures should be carried out in the short run, including:

1) Repairs, cleaning and rehabilitation of the existing irrigation systems including irrigation borewells
2) Construction of new borewells and (if needed) new sections of irrigation system
3) Providing the regions with water supply by management and rehabilitation of the existing large water reservoirs
4) Addressing issues with regard to water resources management in Ferghana Valley along with ensuring access to the sections of irrigation system located in the territory of Kyrgyzstan for Uzbek water management
5) Ensuring stable electricity supply to pumps on the system canals and borewells
6) Enhancing the capacity of water resources and agriculture management, WCAs, private farmers and dehkans; promotion of effective water management and water saving technologies at all levels
7) Ensuring effective monitoring of the situation

If these activities are not carried out simultaneously, the Project impact will dramatically decrease while a payback period on the investment will extend.

The results of the Social Assessment confirm that the projected rehabilitation of the irrigation system addresses the major challenges that the region is facing nowadays. It is evident that the project risks can be either fully prevented or minimized once a holistic approach to resolving the problems is adopted via consistent interaction with Project stakeholders and beneficiaries.

Nevertheless, there is a probability that the proposed comprehensive rehabilitation might involve objective and subjective obstacles in the way of effective implementation of the Project affecting its importance for social wellbeing. Such risks may include the following:

1. **The potential risk of damaging property and housing caused by construction and rehabilitation works.** To prevent or mitigate the category of risks, there were developed the Resettlement Policy Framework and Resettlement Action Plan for the Podshaota–Chodak subproject area, so that effective mechanisms enabling the minimization and compensation of such risks would be put into effect in accordance with World Bank OP 4.12. The relevant recommendations were made within the Environmental Assessment.
2. **Insufficient financing.** Throughout the past years, the operation and maintenance of the irrigation system were seriously underfunded. According to experts' opinion, the Project outcomes won't prove to be sustainable without substantial government support for irrigation systems, as was in case of the improvement of drainage systems.

3. **Inadequate capacity of WCAs and farmers** for the proper maintenance of the irrigation-drainage system. If incomes of the farmers and WCAs increase slower than expenses on maintenance of irrigation, there is a strong probability that neither the condition of on-farm irrigation-drainage networks and borewells nor the quality of land will improve.
4. **The existing system of scheduled electricity supply cut-offs ('limits').** The system of 'limits' on power consumption cause the malfunction of all irrigation-drainage networks of the region. Moreover, the frequent cutoffs and substantial idle time of pumps lead to their breakages, which inevitably results in extra repair expenditure.
5. **Ineffective management of the irrigation-drainage system.** Nowadays, several agencies (BISA, PSD, HHME, WCAs, and farmers) are responsible for the operation of irrigation-drainage systems. The lack of coordination of their performance leads to inefficient management of the system.
6. **The trans-border problems in the exploitation of the irrigation system**. A part of the subproject areas is located in the border area where a special permit regime is introduced. This factor has to be taken into account while planning repair and construction works and other activities within the framework of the Project.

Implications of Social Assessment findings for Project design

Social Assessment results clearly confirm the urgency and relevance of the Project by providing rehabilitation of the existing system of main and off-farm canals and new irrigation system construction, especially irrigation borewells. The main objective of the project is the reset of access to irrigation water for farmers and population of Ferghana Valley, which is a first priority for regional development and sustainable living standards. All categories of stakeholders who had the opportunity to express their views during SA consultations and surveys, stressed that without addressing the issues of water supply and water resources management, a critical situation in the Project area will arise. All the families will be at risk of getting poorer due to the continuing decline in agricultural production and the consequent loss of the main employment and income source in the region.

The reality states that it is impossible to resolve the accumulated number of problems in the water sector of the region without a comprehensive external assistance. Neither the state nor the WCA, farmers and dehkans are able to resolve large-scale infrastructure and institutional problems within appropriate time limits using only their own resources.

The current government policy implies maintenance and service of off-farm networks, and secures a gradual shift to financing the on-farm networks by non-state sources (primarily through the WCA by the expense of farmers). However, it would be improper to expect significant investment by private farmers in the project activities. The most that the farmers can do now is to partially participate in the maintenance of on-farm IDS. Dehkans, compounding 90% of the region population, are also ready to make any possible contribution in the form of traditional country *khashars*, but they are not able to co-finance the large-scale works.

The involvement of households/dehkans in managing, servicing and co-financing the irrigation infrastructure is important for the Project sustainability. Currently, dehkans are excluded from the processes: even though they are key water users and agricultural producers, their status in

the system' managing and financing is unclear, so water services cannot be 100% guaranteed. To this end, the Project activities have to envisage (i) models of managing IDS at the level of settlements/communities/dehkan farms, including demonstration models for dehkan plots; and (ii) involvement of dehkans in the activity of WCAs and formalizing the status of groups of dehkans in WCAs. The experience of the SDC in this area proves to be necessary for the dissemination in the FVWRMP-II territories.

The Project is bound to consider coping mechanisms in response to irregular power supply to pumps installed in the new and rehabilitated pump stations and borewells. Project proposals for the construction of borewells with solar-powered irrigation pumps, have caused a positive response from all stakeholders. Nevertheless, it is clear that large and medium pumps will not be able to function outside the rigid link to the existing centralized energy system.

To ensure the normal functioning of the irrigation systems, it is necessary to solve a number of problems connected with the servicing of structures located upstream in the territory of Kyrgyzstan. The change in volume flow of rivers and canals, and even river beds, poses one of the biggest challenges and risks of the Project due to insufficient and untimely service in the neighboring country. The access of Uzbek specialists to the structures in the territory of the Kyrgyz Republic for maintenance and monitoring purposes is also a critical issue.

The schedule of construction works requires coordination with BISAs, ISAs, khokimiyats, WCAs, farmers and dehkans. All works on irrigation networks should to be carried out under the condition that there is no irrigation or leaching in progress. Moreover, it is important to note that some farmers and almost all dehkans plant several times a year.

There should be carried out a complete inventory of irrigation structures and land plots prior to the project works. The new assessment of the land quality must be performed (as a priority - in areas where FFS will be organized) as the existing cadastral data may not include a realistic assessment of land ball-bonitet.

It is crucial to secure interaction and coordination of the Project plans and work with other projects/donors operating in the Ferghana Valley. In particular, this applies to the non-reimbursable contribution of the government of the Swiss Confederation for RESP-II and WRMSP projects, including the technical support to institutional and organizational strengthening of WCAs and BISAs/ISAs; investments in small WCA infrastructure; promotion of applied modern technologies of water management in demo-WCAs and Farmer Field Schools (FFS).

WCAs are currently incapable of securing the satisfactory service of agricultural producers as they experience acute need for the improvement of the staff and resources capacity along with institutional development. The Project activities may include (i) design of financial sustainability models for WCAs through improved fees collection from farmers and population (dehkans); (ii) assistance to WCAs with the improving of staff qualifications; (iii) assistance to WCAs with installation of irrigation water measurement structures; and (iv) provision WCAs with machinery and transport means.

Within the framework of SA, a wide range of proposals on the enhancing of participation of all stakeholders in the Project activities was developed; recommendations regarding M&E indicators that will be used to assess the Project activities and results were designed.

CHAPTER I. INTRODUCTION: OBJECTIVES AND METHODOLOGY OF SOCIAL ASSESSMENT

A. OBJECTIVES OF THE INVESTMENT PROJECT COVERED BY THE SOCIAL ASSESSMENT

The government of the Republic of Uzbekistan has received a loan from the World Bank for the realization of the Project "Ferghana Valley Water Resources Management, Phase-I» (FVWRMP-I). The part of the funds of the loan will be used to prepare Phase-II of the Project "Ferghana Valley Water Resources Management" (FVWRMP-II).

The main objective of the Ferghana Valley Water Resources Management Project, Phase-II is the implementation of a comprehensive set of measures on construction, rehabilitation and modernization of irrigation systems of the FV, in order to provide sustainable and reliable water supply, on the basis of conceptual approaches of integrated water resources management (IWRM).

Expected outcomes of the Project include the following:

(i) Physical rehabilitation and upgrading of irrigation infrastructure;

(ii) Introduction of and compliance with modernized and effective operational procedures;

(iii) Reformed and restructured institutions for improved and sustainable irrigation services;

(iv) Improved water management at all levels of the irrigation distribution network; and

(v) Capacity development to support management changes.

Components of the project include a set of priority investment activities for the Improved Irrigation Infrastructure (Part A), System Modernization (Part B) and Project Management, Audit, Monitoring and Evaluation, and Technical Assistance (Part C).

Table 1. The components of FVWRMP-II Project

Component	Subcomponent	Title and description
A	**Improved Irrigation Infrastructure:**	
	A-1	Rehabilitation of Surface Irrigation System;
	A-2	Rehabilitation and Construction of Pump Stations;
	A-3	Rehabilitation and construction of Irrigation Borewells
	A-4	Enhancing the Storage Capacity;
	A-5	Flood Control and Canal/River Banks Protection.
B	**System Modernization**	
	B-1	Pilot Studies/Activities including flow metering technology SCADA introduction and equipment installation to monitor consumption at all major GTS system.
	B-2	Capacity Building: study-tours, trainings of BISA, ISA, WCA personnel and farmers, strengthening WCA (by providing office equipment, metering equipment, vehicles)
	B-3	Enhancing On – farm Water Use Efficiency (Creation of FFS and demo plots, including drip irrigation and Solar-Powered Irrigation Pumps)
C	**Project Management, Audit, Monitoring and Evaluation, and Technical Assistance:**	
	C-1	Project Management;
	C-2	Monitoring and Evaluation;
	C-3	Audits;
	C-4	Preparation of Investment Package for Phase III.

In August 2014, the Final Feasibility Study (FS) of FVWRMP-II was developed; it includes three subprojects identified in three administrative regions of the Ferghana Valley. These three subprojects have high priority and importance in the context of increasing productivity of water use, maintaining agro-ecosystem services and improving the population's livelihood in the Ferghana Valley. The number of selected subprojects included:

1. The "Podshaota-Chodak" subproject area of 33.3 thousand ha, including 29.5 thousand ha of irrigated land, is located in the northeast of the Ferghana Valley. The subproject area consists of Yangikurgan district in its entirety and part of Chodak district of Namangan province;
2. The system of "Isfayram-Shakhimardan" subproject area of 63.3 thousand ha, including 55 thousand ha of irrigated lands, covers the southern part of the Valley and includes the entire Ferghana district, Ferghana city and Kuvasay district with subordinate Rural Assemblies of Citizens (RACs), and parts of Kuva, Altyaryk and Tashlak districts;
3. The "Savay-Akburasay" subproject area of 23.4 thousand ha, including 19.4 thousand ha of irrigated lands, is located in the southeast of the Ferghana Valley and provides water to Kurgantepa, Jalalkuduk, Khodjaabad and Bulakbashi districts of Andijan province.

Figure 1. Target regions of the FVWRMP-II on the administrative map of the Republic of Uzbekistan

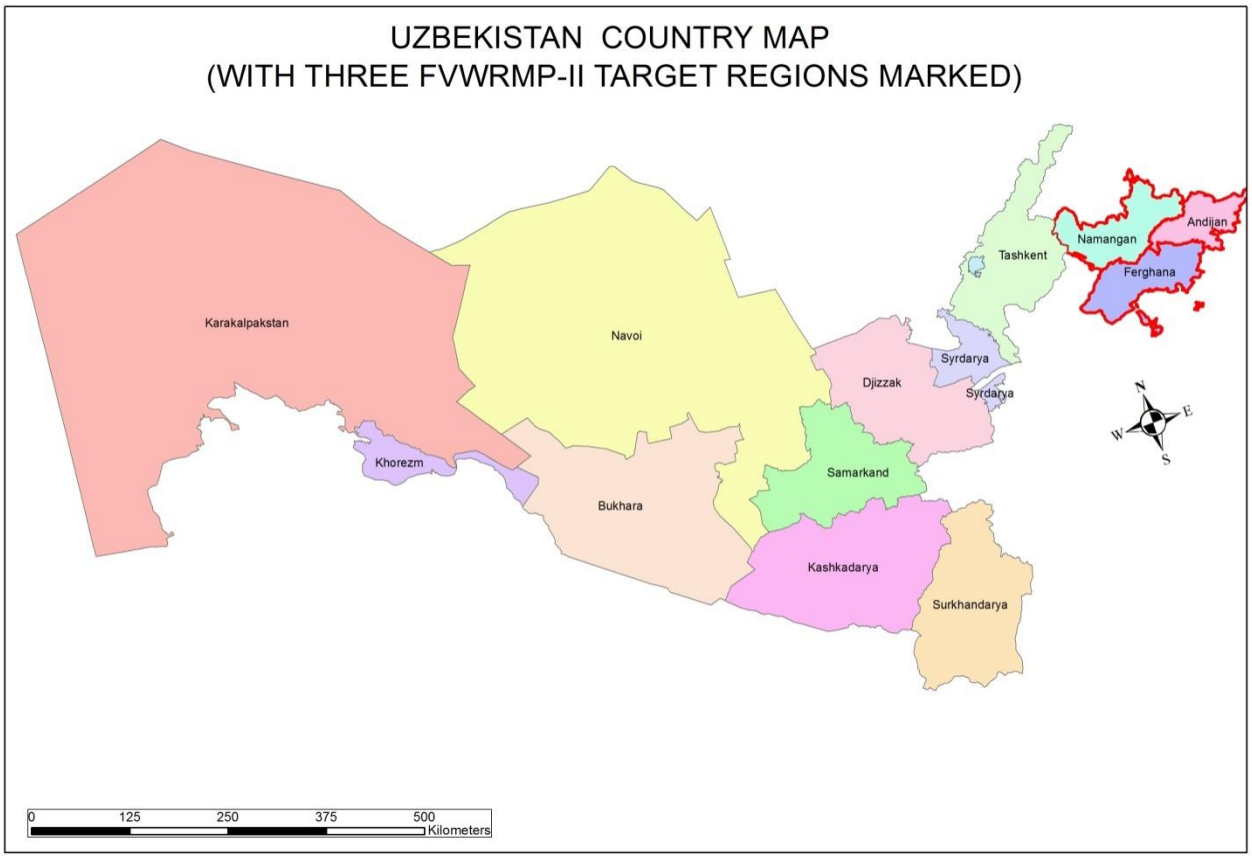


Table 2 shows the physical activities provided by the feasibility study.

Table 2. Project activities under Component A «Improving irrigation infrastructure"

	Activities	unit	unit	Project Area		
				Podshaota	Isfayram-Shakhimardan	Savay-Akburasay
Subcomponent A-1: Rehabilitation of Surface Irrigation System						
1	Rehabilitation of structures on mainline and off-farm canals	km	283.35	111.5	785	93.8
2	Rehabilitation of structures on on-farm canals	pcs	674	286	99	289
Subcomponent A-2: Rehabilitation and Construction of Pump Stations						
1	Rehabilitation of pump stations	pcs	12	9	1	2
2	Construction of new pump stations	pcs	1	0	1	0
Subcomponent A-3: Rehabilitation and construction of Irrigation Borewells						
1	Construction of new irrigation borewells	pcs	243	105	138	-
Subcomponent A-5: Flood Control and Bank Protection						
1	Canal/river banks strengthening	km	17.7	4.5	-	13.4
2	Reconstruction of mud-flow storage reservoir	km	3	3	-	-

The project covers a large number of strategic, political and institutional issues at all levels - from the central government to the local level. The Project Plan includes institutional measures which ensure capacity building of BISA, ISA, WCA staff and farmers, providing various trainings, study tours, demonstration of best land and water resources practices, and establishment of Farmers Field Schools (FFS).

Table 3. Estimated costs of the Project activities

	Estimated value (US$ Million)			% of Total Budget
	Local	Foreign	Total	
A. Rehabilitation of Irrigation Infrastructure				
1. Subproject – Podshaota-Chodak	39.6	17	56.6	28
2. Subproject – Isfayram-Shakhimardan	46.3	19.9	66.2	33
3. Subproject – Savay-Akburasay	28.2	12.1	40.3	20
Subtotal	114.2	48.9	163.1	82
B. System Modernization and Capacity Building				
1. System Modernization (SCADA + MAR)	0.3	1.1	1.3	1
2. Institutional Strengthening (Training & Study Tour)	1.6	1.6	3.2	2
3. Enhancing On-Farm Water Use Efficiency	3.4	1.7	5.1	3
Subtotal	5.3	4.3	9.6	5
C. Project Operation and Management				
1. Project Management Unit	4.9	0.1	5	2.5
2. Project Implementation Units	3.1	0.4	3.5	1.7
3. Project Management / Consultants	7	4.2	11.2	5.6
4.M&E Consultants	2.4	0	2.4	1.2

	Estimated value (US$ Million)			% of Total Budget
	Local	**Foreign**	**Total**	
5. Land Acquisition & RAP*	1.8	0	1.8	0.9
6. Environment Management Plan	0.9	0	0.9	0.5
7. Audit Services	0.2	0	0.2	0.1
8. Preparation of Phase III	2	0	2	1
Subtotal	22.4	4.7	27.1	13.5
Total BASELINE COSTS	141.8	58	199.8	100
Physical Contingencies	7.1	2.9	10	5
Price Contingencies	20.1	2.6	22.7	11
Total PROJECT COSTS	169	63.5	232.4	116
Interest During Implementation	-	5.4	5.4	3
Commitment Charges	-	1.7	1.7	1
Total Costs to be Financed	169	70.6	239.6	120

Source: Final Feasibility Study Report, SHELADIA Associates Inc., NBT, IKS, August 2014.
***Note**: Preliminary estimations, according to the FS report.

The expected duration of the project is 8 years, including first 1.5 years - the detailed project preparation studies stage; 2-7 years – construction/physical interventions phase and Preparation of Investment Package for Phase-III; and, finally - the M&E and project completion.

This Social Assessment (SA) report is submitted to the PIU for Water Infrastructure, as a part of consulting services aimed at the assessment of the potential social impact of interventions proposed in the FVWRMP-II Feasibility Study Final Report, August 2014. As the part of the same TOR, along with the Social Assessment report, there was developed a set of documents including Environmental Assessment Report, Resettlement Policy Framework and Resettlement Action Plan for the first Subproject area “Podshaota-Chodak”.

B. METHODOLOGY OF THE SOCIAL ASSESSMENT

1. Objectives of the Social Assessment

The Social Assessment (SA) aims to identify and address key social issues and potential social risks associated with the project, assess stakeholder interests and their likely effect on the proposed operation, evaluate potential social impacts on individuals and social groups, and identify desirable social development outcomes and the social and institutional arrangements to achieve them.

Thus, the SA must ensure that:

- the proposed Project as a whole has positive social benefits, and if there are any adverse social impacts, they do not fall disproportionately on the poor or vulnerable groups;
- where there are potential adverse social impacts, the project will include measures to avoid, minimize, or mitigate them to the extent feasible;
- the project is tailored to user needs as well as the social and institutional context;
- project preparation involves important actors who are responsible for implementing project activities aimed at achieving identified social outcomes, and have the

willingness, capacity, and incentives to do so; or alternatively, includes measures and resources to build ownership and capacity.

- In order to facilitate the effective implementation of the Project a set of institutional reforms are made;
- M&E activities are developed with the wide participation of stakeholders.

The specific SA objectives consist of the following:

- Identify social groups and stakeholders that would potentially benefit or are likely to be affected by the project as well as clarify the roles and interests of each group and any conflicts among them. Of particular importance is the identification of the most vulnerable / excluded groups (for example, pensioners, children, youth, women, downstream farmers).
- Establish baseline socioeconomic and farms conditions, including main sources of income, consumption levels, household size and structure, area of cultivable land, decision-making at the household and farm levels, land ownership, level of agricultural production, use of water, and payments for water and O&M for I&D systems.
- Characterize farmers' views on what they perceive as the main impediments to improving production and productivity. For example, do the farmers view the shortage of water as the principal constraint, or are they more concerned about inadequate drainage; lack of fertilizer, equipment, and finance; continued state control; or other factors. What type of training do the farmers think they need to improve production or income?
- Characterize farmers' views on existing institutions involved in the management of the water delivery system and O&M of I&D systems.
- Determine farmers' and other water users' willingness to contribute in cash or in-kind to cover the costs of water, O&M, and other costs needed to improve all aspects of on-farm and off-farm I&D in the Project Area.
- Understand the relationship between land tenure and the optimal institutional framework for irrigation and drainage management.
- Determine how water users' view their existing water delivery and drainage systems and identify their preferences for improving these systems through alternative institutional and technical arrangements.
- Establish an appropriate framework for the participation of various categories of farmers, the poor, and other key stakeholders in all the aspects of project design and implementation.
- Identify cultural or other social factors that should be taken into account in project design and implementation.
- Prepare Resettlement Policy Framework that provides the classification of all possible types of project impacts on the property and possession of land users and other groups; describe compensation procedures in accordance with the legislation of Uzbekistan and the WB OP 4.12;
- Determine the potential scale of land acquisition, damage to property and income that may be caused by Project works on the rehabilitation of existing and construction of new structures in the context of the WB OP 4.12 (results are included in RAP);
- Prepare, as a separate document, Resettlement Action Plan (RAP) for subproject 1 "Podshaota-Chodak" in Namangan province

- Discuss all the recommendations and findings of the SA at the final consultation workshops in each of the subproject areas, with participation of all stakeholders in accordance with the World Bank participatory project management approach;
- Identify appropriate social development indicators for project monitoring and evaluation done throughout project implementation

2. Methods and instruments used in social assessment

The SA incorporated both quantitative and qualitative data collection methods. The analysis was based on both background data on the Project Area (official statistics) and extensive data obtained via the survey of households and farmers, as well as in-depth interviews and focus group discussions. The performed work is summarized below.

- **Background study and official statistics analysis.** Several data sources were used for the SA. First, official statistics indicators at regional and district levels were gathered to describe the current situation, such as population, employment, economic activity, living standards, infrastructure, land use, etc. Second, to identify the groups and agencies that are most directly affected by the proposed investment, qualitative information was analyzed. Third, sociological data was used to determine the important social development issues that pertain to the project, and how specific stakeholders groups may facilitate or impede the participation of the poor and other vulnerable groups.

- **Survey of Households and Farms**

During the pre-field stage the questionnaire for the households/farms survey was developed and piloted (Appendix 3), the sampling parameters were adjusted; fieldwork staff (interviewers and supervisors) was trained to work with the toolkit and sample implementation.

During the quantitative survey, held between December 1 and December 24, 2014, as many as 260 farmers and 494 households were interviewed in three subproject areas of the Ferghana Valley (see. Table 4).

Table 4. The number of households and farms surveyed

Subproject areas	Number of households	Number of farmers	Total
Savay-Akburasay	164	88	**252**
Podshaota-Chodak	167	83	**250**
Isfayram-Shakhimardan	163	89	**252**
Total	**494**	**260**	**754**

The survey was conducted through face-to-face interviews at homes of the respondents by trained interviewers. Field supervisors of interviewers carried out the quality control, revisiting 7% of the households. The control visits did not identify any facts of non-attendance, violations of sampling procedures and other serious problems.

A special data input software program that ensures input quality control was developed. The final database was processed by the standard statistical software package SPSS and a specially developed software based on Delphi.

Household survey sampling design

For the household survey a two-stage random sampling was used so that all makhallas in the Project Area would be sampled with equal probability. At the 1st sampling stage, the full list of makhallas within cities and Rural Assemblies of Citizens (RAC) was used to select Primary Sampling Units (PSU). As for RACs which territories were not fully covered by the Project, only makhallas within the Project area boundaries were included into the list.

At the second stage, households were sampled. The equal probability random selection of households was done from the full households lists kept by makhalla committees. 12 households were selected and interviewed in each makhalla. Selection of households from the lists was carried out using the calculated interval/step, under the formula:

I = N / n, where
I – interval/step for sampling
N – total number of households in the makhalla
n – number of households to be interviewed in the makhalla

To ensure equal probability sampling, the first household to be interviewed from the list is defined by dividing the calculated interval by two (a fractional result was rounded up in accordance with mathematics). Once the household list ended, the procedure repeated again throughout the list; thus, no household was selected twice.

After the selection of households, the reserve list was formed using the same sampling step. The reserve list was used in case of the refusals/absence of respondents from the main list: the very first household from the reserve list was interviewed in such cases.

In accordance with the objectives of the study, it was decided not to use the random selection of respondent within the household. The head of the household was chosen as a respondent; in case of his/her absence - the most competent member of the household was interviewed instead.

The share of households having a member, who is a private farmer, is very small and does not exceed 2% of the total number of households. Therefore, for the private farmers survey, the separate list of farmers living in the selected makhallas was formed in order to enable the analogous sampling procedure based on the sampling step. It was the farmer who was the respondent providing information about both the household and his/her private farm.

- **In-depth/Key Informants Interviews**

To complement the quantitative surveys between 1st December, 2013 to 15th February 2015, as many as 52 in-depth interviews were conducted with the following groups of key stakeholders:
1. Employees of central and local governments/khokimiyats

2. IDS maintenance and repair establishments' workers
3. Employees of territorial divisions of MAWR
4. Employees of territorial divisions of PSDs
5. Employees of local self-governance bodies (makhallas)
6. WCAs' workers
7. Representatives of households, including those with the most vulnerable categories of pensioners, disabled people and makhalla social allowances recipients etc.
8. Private farmers (including female farmers)

Special attention was paid to ensuring the participation of women in in-depth interviews.

A number of guidelines were prepared to conduct in-depth interviews with various stakeholders (households, farmers, local authorities, water sector organizations, etc.).

- **Focus group discussions**

Prior to the beginning of households and farms survey, three adjusting/orientation FGDs were conducted to identify the actual design issues that may not have been previously defined, but may require further attention. The results of these discussions were used to clarify study target groups and the make-up of following FGDs. Besides, changes were made in the FGD guidelines.

Between December 10 and 25, 2014 twelve focus group discussions were held with the representatives of key stakeholder groups. The selection of farmers and dehkans for participation in FGDs was performed to represent opinion of various water users groups, including farms with different access to irrigation and drainage services, upstream and downstream location, and farm specialization. Apart from agricultural producers, different target groups took part in the FGDs, including specialists, the poor, young people, women, etc. A number of guidelines were prepared to conduct FGDs with different groups of stakeholders. In every subproject area there was a FGD conducted with only female participants.

Processing of qualitative information obtained during in-depth interviews and FGDs, was done by using advanced software of coding qualitative information (NVivo). The results of in-depth interviews and FGDs were incorporated into the SA report, including the quotations.

- **Social participation. Consultative workshops and dissemination of information.** During the preparation of SA, special efforts were made to ensure the participation of poor and vulnerable groups in identifying their needs and mechanisms of getting access to direct benefits from current and future Project investments. In this regard, information on disadvantaged families was thoroughly analyzed; also the impacts of water and land use systems on the living standards of disadvantaged and vulnerable groups were examined. The SA process included development of both data collection and communication strategies to ensure that recommendations/proposals from all beneficiaries, were developed.
- From 12 to 14 May, 2015 in addition to the consultations held by the SA group during the field visits, in accordance with the TOR and WB procedures, a Consulting Workshops was carried in each of three subproject areas. During the Workshops, the representatives of the main stakeholder groups discussed the interventions recommended by the FS as well as the results of the SA and EA (See Appendix 2. The program and list of participants of Consulting

Workshops). This SA report encompasses the recommendations of the workshops' participants.

Public Participation Plan, prepared as a part of SA activities, provides a common framework for public involvement in the further stages of preparation and implementation of the Project, including:
(i) Identification of the appropriate participation level for each group of beneficiaries;
(ii) Description of involvement levels of different groups of stakeholders and recommended methods of consultations;
(iii) Description of the monitoring and evaluation procedures on public participation.

Monitoring and evaluation (M&E) procedure is essential for the projects financed by the World Bank. It is the monitoring of the results and impacts of the project that is of great importance in the context of poverty reduction. Therefore, SA provided suggestions to the M&E section of the investment project, determining the social development indicators for monitoring the Project effectiveness during its implementation. In particular, the relevant section of this SA report proposed monitoring and evaluation indicators that facilitate the participation of low-income and other vulnerable social groups and also include indicators of specific measures achievement proposed in the Feasibility Study.

CHAPTER II. THE MAIN STAKEHOLDERS AND BENEFICIARIES OF THE PROJECT

There are two major categories of agricultural land users in the Project area who are the direct beneficiaries of the Project.

1. **A private farm –** in the context of the Republic of Uzbekistan (and this report), is a leaseholder, a legal entity leading commercial agriculture production on long-term (up to 50 years) leased lands. WCAs and local authorities (khokimiyats and departments of agriculture and water resources) are the organizations that assist farmers in the activities. In the three subproject areas that occupy the territory of 99.7 thousand ha, there are 3,044 private farms with an average area of 32.7 ha each.

2. **A dehkan farm –** a small family-based farm, producing and selling agricultural produce, on the plot(s) owned by the household head. A dehkan farm can be either registered or not registered as an entrepreneurial unit. Dehkan farms generate agricultural production on family garden plot (tomorka) and on additional plot(s) of land (of up to 0.35 ha on irrigated and 0.5 ha on rain-fed lands). Dehkan plots remain in the lifetime inheritable possession of citizens; the agricultural production can be used for family consumption needs and for sale. In the three subproject areas there are 178 thousands dehkan farms, that occupy the territory of 20.2 thousand ha, with an average area of 0.11 ha each.

Key stakeholders at the national level include:

1. State organizations of the Agriculture and Water Resources sector

3. **Ministry of Agriculture and Water Resources** (MAWR) is a governmental body regulating the operation of country's agriculture and water resource sector; subordinates to the Cabinet of Ministers. The main functions of the MAWR are: development of agriculture and water resource sector strategies; coordination of the sector works; water and land resources protection; ensuring operation of the main and off-farm canals, reservoirs, water storages, hydraulic structures, pump stations, borewells, power lines, transformer substations and other facilities owned by the MAWR; the development of water resources cadaster; assessment of irrigated lands quality; certification of I&D networks, etc. The MAWR is financed from the state budget and other sources, including the revenues of its subordinate enterprises.
The structure of MAWR includes the **Complex of Agriculture technology issues** (CAI) which controls regional Departments of Agriculture and Water Resources (DAWR); **the General Directorate of Water Resources** (GDWR) which controls Directorates of Main Canals (DMC), as well as Basin Irrigation System Authorities (BISA) and their subdivisions for the operation of large irrigation and drainage systems and reservoirs.

4. **Fund for Ameliorative Improvement of Irrigated lands** under the Ministry of Finance of the Republic of Uzbekistan was established by a special decree of the President. The Fund is a state body, accumulating financial resources, targeted for the improvement of ameliorative condition of irrigated lands. Management Department of the Fund acts as a steering authority. Fund accumulates of budgetary allocations and investments and monitors the efficiency of funds spending. The Fund is responsible for the development of medium- and long-term state programs to improve irrigated lands and rendering support to agricultural producers.

5. **Regional departments of agriculture and water resources** (DAWR) are responsible for the agricultural sector development at regional level. DAWRs implement the agrarian policy aimed at improving agricultural productivity, efficient use of water and irrigated land. DAWRs are structural departments of Complex of Agriculture technology issues (CAI) of the MAWR; DAWRs coordinate at the regional level the water management works of khokimiyats, DMC and its divisions, BISAs, ISAs and WCAs.

6. **Administration of the Main Canal Systems of the Ferghana Valley with the Dispatch Center (AMC FV)**. The jurisdiction of the AMC FV covers 3 Administrations of main canals: Administration of the South Ferghana Main Canal (ASFMC), Administration of the Big Ferghana Canal (ABFC) and Administration of the Big Andijan Canal (ABAC).

7. **Basin Irrigation System Authorities** (BISA). Ten BISAs were established in the republic on the hydrographic principle in accordance with the decree of Cabinet of Ministers in 2003. There are three BISAs in the Project Area: Syrdarya-Sokh (Ferghana), Naryn-Syrdarya (Namangan) and Naryn-Karadarya (Andijan). The main objectives of BISAs are:

- implementation of the unified policy on water resources management in the given basin;
- development of efficient water management;
- providing secure and stable irrigation water to consumers;
- ensuring reliable metering of water use.

One of the main functions of BISA is to develop proposals for investment projects and long-term development strategies, aimed at modernization, reconstruction and technical re-equipment of irrigation and drainage systems.

8. **Administration of the main canals** (AMC) and the **Irrigation system authority** (ISA) are the structural units of BISA and territorial authorities of GDWR. These Administrations are responsible for regulation and management of water resource in an irrigation system; AMCs and ISAs ensure the operation of irrigation systems at various levels. In particular, AMC is responsible for the water delivery to ISAs. In their turn, ISAs distribute water down the lower canals to WCAs level. ISAs have direct contractual obligations with WCAs. An ISA collects information from WCAs about the volumes needed for the irrigation and develops demand-based water delivery plan on the basis of which a BISA provides water for the ISA. This work is implemented by ISAES and BISAs in coordination with DAWRs. In the Project Area there are 13 ISAs and two AMCs: i) 4 ISAs are subordinate to BISA “Syrdarya-Sokh” (Ferghana); ii) 2 AMC and 4 ISA are subordinate to BISA “Naryn-Syrdarya” (Namangan), and iii) 5 ISAs are subordinate to BISA “Naryn-Karadarya” (Andijan).

9. **Hydro-geological and Melioration Expeditions** (HGME) are structural units of BISA. HGME maintain off-farm, trans-district and main collectors; control groundwater level; control soil salinization level and the chemical composition of drainage waters. The HGME also supervise farmers’ ameliorative works.

10. **Pump Stations Department** (PSD) performs operation, maintenance and repair of pumps on channels and borewells used for agricultural purposes.

11. **The Republic Water Inspectorate "Uzsuvnazorat"** ensures the efficiency of water use, the observance of water delivery schedule and volume from surface and underground sources.

12. **The Republic Association "Uzsuvtamirfoydalanish"** is responsible for the purchase of special machineries and equipment for water sector establishments.

13. **The National Committee on Irrigation and Drainage at the MAWR of Uzbekistan** is an inter-ministerial and inter-regional collective body, coordinating irrigation and drainage works in the Republic of Uzbekistan. Council members are heads of large water establishments, regional deputy khokims, who are in charge of water management and agriculture issues.

14. **Scientific Information Center of Interstate Coordination Water Commission** (SIC) – develops proposals and recommendations for the rational allocation of water resources between CA states.

15. **«SANIIRI» Irrigation Research Center** develops scientific and practical recommendations for the irrigation sector.

16. **Uzbek Scientific-Production Center of Agriculture (UzSPCA).** The main objectives of the Center are: organization of research on the major problems of agro-industrial complex and introduction of the results into agricultural production; development of scientific-methodical basis to increase productivity and use efficiency of lands and pastures; development and introduction of intensive technologies of crops cultivation, storage and processing, rational use of land and water resources; research in seed breeding and growing, livestock breeding, veterinary etc.

17. **Educational institutions under the MAWR** (Tashkent Agrarian University, Tashkent Institute of Irrigation and Mechanization, Samarkand and Andijan Agrarian institutes, vocational colleges and academic lyceums specializing in agriculture) prepare qualified human resources for work on water and agriculture sector establishments.

2. Governmental organizations in charge of land acquisition and compensations

18. **The Regional Commission for the land acquisition** created by the decision of a regional khokim (i) determines the location of buildings/structures to be constructed under the Project; (ii) selects a land plot for the construction, (iii) develops and approves the Act of land acquisition agreement; (iv) approves the Act on the right to use the land plot, with specification of the area of farmland to be acquired, legislature norms applied and the total value of agricultural production losses. The commission, in addition to the permanent members, also includes representatives of the companies and / or organizations that receive the right to use the land, and organizations whose lands are project-affected.

19. **Departments of the State Land Cadaster Committee (Goskomzemgeodezcadaster)** are the main executive authorities, which: (i) define land losses incurred by landowners and land users, as well as the loss in agricultural production; (ii) determine the extent and direction of land re-cultivation, including removal and temporary storage of topsoil; (iii) identify the need for protection areas around the structures/buildings to be constructed; (iv) prepare land-for-land proposals; (v) seek for replacement land and estimate the cost of cultivation of new lands (which were not used for agriculture earlier in case the project-affected land will never be used for agricultural production); (vi) approve of the Act on outlay of structures on

the ground with the Plan attached; (vii) make amendments into cadastral documentation about the changes that occurred in land ownership or land use resulted from project activities.

20. **The evaluation commission**, formed by district khokim, determines the losses of landowners/land users and the loss of agricultural production according to the set procedures. The losses caused by the acquisition of land for state and public needs are calculated on the basis of the initial data submitted by the Design Institute. The results of commission are conceptualized in the form of Act on the right to use the land plot indicating the farmland areas acquired, relevant documentation and the total cost of damage and losses in agricultural production.

21. **Territorial Environmental Protection Departments**: (i) conduct environmental assessment of the impact of commissioned facilities and introduced technologies; (ii) approve the location of objects that would affect the land condition; (iii) develop land protection measures; (iv) approve of the Act on land allocation

22. **The organizations of the state sanitary and fire inspection, water management authorities** approve of the Act on land allocation.

3. Other governmental organizations

23. **The Ministry of Economy and its regional departments** (Departments of Economy under regional, district and city khokimiyats) – is a key state authority, responsible for the planning and implementation of programs for socio-economic development, including development of the agriculture and water management sector, the involvement of international organizations in the implementation of projects.

24. **Khokimiyats of regions, districts and cities of the Project Area** are in charge of: managing the economic, social and cultural activities; ensuring the implementation of socio-economic development programs, including agricultural production sphere; mobilization of regional and inter-branch resources to foster productivity and solution of social problems; promoting international and inter-regional economic relations; control local budget spending; control of local public utilities; coordination of programs for low-income and vulnerable groups of population; control environmental protection actions etc. Most departments of khokimiyats has dual subordination (for example, departments of economy are under the supervision of the Ministry of Economy; departments of labor and social security – under the Ministry of Labor and Social Security, departments of agriculture and water resources - under the MAWR and etc.).

25. **The State Committee for Nature Protection (Goskomprirody)** provides control over observance of legislation in the field of environmental protection, developing and implementing environmental protection measures. In the context of the Project, it monitors the status of water and land resources, approves of and coordinates environmental activities.

26. **The Centre of Hydrometeorological Service under the Cabinet of Ministers (Uzhydromet)** – issues weather forecasts for agriculture, monitors the hydrological regime of

rivers, lakes and reservoirs, and is responsible for monitoring the water quality of rivers, lakes and reservoirs.

27. **The State Committee of Uzbekistan on Land Resources, Geodesy, Cartography and State Cadaster (Goskomzemgeodezkadaster).** The main tasks and activities of Goskomzemgeodezkadaster of Uzbekistan are:

• ensuring the implementation of the unified state policy on rational use and protection of land;
• exercising state control over rational use and protection of lands;
• development and implementation of governmental programs to improve soil fertility, rational use and protection of lands;
• management of geodesy and cartographic activities;
• coordination of cadastral works of state bodies and territorial cadastral departments;
• maintaining the State Land Cadaster, the State Cartography and Geodesy Cadaster, State Cadaster of Buildings and Structures, as well as the Unified system of state cadasters.

28. **Employment promotion centers** are the structural units of khokimiyats and the Ministry of Labor and Social Security. There are employment promotion centers in every region of the Republic of Uzbekistan. Employment promotion centers are engaged in rendering assistance in job placement, training, retraining the unemployed and job seekers, appointing and paying the unemployment benefit. The Centers organize the involvement of unemployed people in temporary paid public works, including the repair, rehabilitation and cleaning of irrigation and drainage systems.

A number of other ministries and institutions are in charge of the environmental protection measures implementation and supervision, namely: a) The Agency for Energy and Electrification which operates hydroelectric power plants and associated reservoirs; b) The State Committee for Geology and Mineral Resources which is responsible for the monitoring and controlling groundwater resources.

4. Self-financing enterprises - potential participants of design and construction works

Self-financing enterprises under the supervision of the MAWR

29. **State unitary enterprises of the system "Davlatsuvmakhsuspudrat".** Enterprises of this structure focus exclusively on the execution of works on improvement of the ameliorative condition of lands and other works on IDS.

30. **Specialized state leasing company "Uzmeliomashlizing"** ensures delivery of specialized modern machinery and equipment under lease to construction and maintenance water sector organizations. 15% of the leased machinery should be paid by the leaseholders, the rest 85% are covered by "Uzmeliomashlizing" from the funds provided to it on a loan basis by the Fund for ameliorative improvement of irrigated lands under the Ministry of Finance of the Republic of Uzbekistan.

31. **Association "Uzmakhsussuvdrenaj"** includes enterprises that implement the construction, repair, reconstruction and restoration of inter-district, off-farm and on-farm drainage systems and collectors. It carries out work at the request of an agricultural enterprise.

32. **Association "Uzirtamirkurilish" (Uzirremstroy)** - acts as a contractor for the construction and repairs of irrigation networks. The main commissioners of these works are regional HGMEs.

33. **Association "Suvmahsustamirkurilish" (Vodspetsremstroy)** - integrates self-financing enterprises, trusts and construction units, engaged in the construction and repairing of water intake structures, reservoirs, irrigation and drainage canals, pump stations and other hydro-technical structures and facilities.

34. **Republican Foreign Economic Enterprise "Uzsuvhorizhiykurilish" (Uzvodvneshstroy)** operates and constructs interstate hydro-economic structures, including those situated outside the country.

35. **Water Resources Industrial Enterprises Association «Suvinshootmash»** combines about 20 enterprises producing equipment and machinery for irrigation and drainage purposes, including pumps and motors. It commissions orders for equipment production at members and non-members enterprises of the Association.

36. **Association "Uzcuvloyiha" ("Vodoproekt-Giprovodkhoz")** combines design organizations engaged in the design of irrigation and drainage facilities. It monitors and expertise irrigation and ameliorative projects.

37. **Research Institute "Uzgipromeliovodkhoz"** combines design organizations engaged in the design of irrigation and drainage facilities. It monitors and expertise irrigation and ameliorative projects.

3.2 Other self-financing enterprises

38. **Joint-Stock Company "Uzsuvuskunabutlash"** combines companies engaged in the repair and maintenance of hydro-ameliorative equipment, including pump stations and shut-off devices.

39. **Association "Uzmeliosuvtrans"** provides construction and assembly trusts with transport means necessary for ameliorative works.

5. Non-governmental organizations, including those related to land and water use

40. **Rural Assemblies of Citizens (RACs) and makhallas** - self-governance bodies of citizens in rural and urban settlements. A RAC can include one or several makhallas located in rural areas. Urban-type settlements and cities may include one or several makhallas. RACs and city makhallas are the highest organ of self-governance that has the right to represent the interests of the population and to take decisions on its behalf in the territory, including:

- keeping records on the population number, informing the population on key public policy issues, working with women and youth, distributing targeted assistance (makhalla allowances to low-income families and families with children), crime prevention etc.
- along with khokimiyats participating in procedures of allocation of land for private and dehkan farms, construction of housing and business estates;

- organizing *khashars* to improve landscaping, social infrastructure, community irrigation and drainage systems etc.

41. **Farmers Council of Uzbekistan** - an organization created in 2012 on the basis of the former Association of Dehkan and Private Farms. The main objectives of the Council are: i) suggestion for further improvement of legislation on farming, strengthening the material and financial base of farms and ensuring protection of their property; ii) protection of the rights and legitimate interests of farmers, including relations with the state authorities and khokimiyats, procuring and service companies, and advocacy; iii) implementation of public control during creation and reorganization of farms, including land allocation; iv) introduction of modern information and communication technologies, promotion of diversified farming, introducing water-saving technologies, particularly drip irrigation; and v) promoting the creation of consulting centers in rural areas (to support farmers on legal, economic, financial, agro-technical and other issues), boosting cooperation of farms in production, purchasing, processing and marketing spheres.

42. **Water Consumers Association (WCA)** is a not-for-profit organization – an association of farms, other legal entities and individuals. WCAs provide paid services of water delivery and distribution to water consumers. WCAs also responsible for the O&M of off-farm irrigation and drainage systems. In the Project Area there are 48 WCAs, including 20 WCAs in the subproject area of Podshaota-Chodak (14 in Yangikurgan and 6 in Chartak district), 19 WCAs in the Isfayram-Shakhimardan subproject area and 9 in Savay-Akburasay subproject area.

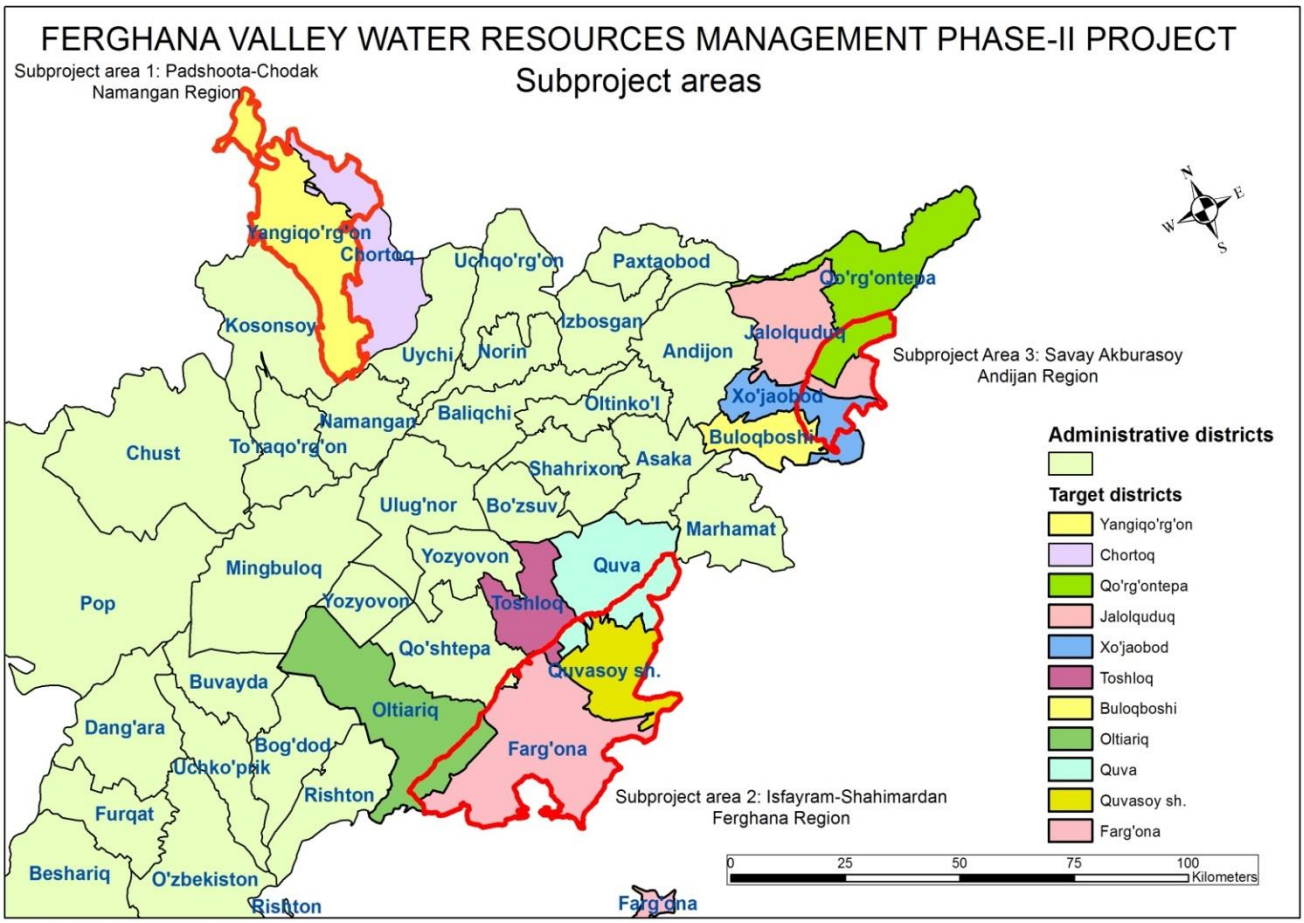
43. **Other NGOs** to cooperate with during the Project cycle include Republican Fund "ECOSAN", the Women's Committee of Uzbekistan, the National Association of non-governmental not-for-profit organizations (NANGO Uz).

CHAPTER III. BASIC INFORMATION ON DISTRICTS WITHIN THE SUBPROJECT AREAS

In the process of multilateral consultations and dialogue with the MAWR, the World Bank and the PIU, WMO and other stakeholders, there were identified three high-priority irrigation systems in terms of rehabilitation and modernization of irrigation infrastructure and services, namely:

1. The Podshaota-Chodak subproject area of 33.3 thousand ha, including 29.5 thousand ha of irrigated land, is located in the northeast of the Ferghana Valley. The subproject area consists of Yangikurgan district in its entirety and part of Chodak district of Namangan province;
2. The system of Isfayram-Shakhimardan area of 63.3 thousand ha, including 55 thousand ha of irrigated lands, covers the southern part of the valley and includes the entire Ferghana region, Ferghana city and Kuvasay district including Rural Assembly of Citizens (RAC), and parts of Kuva, Altyaryk and Tashlak districts;
3. The Savay-Akburasay subproject area of 23.4 thousand ha, including 19.4 thousand ha of irrigated lands, is located in the southeast of the Ferghana Valley and provides water to Kurgantepa, Jalalkuduk, and Khodjaabad and Bulakbashi districts of Andijan province.

Figure 2. The boundaries of three subproject areas by administrative districts



A. BRIEF DESCRIPTION OF SUBPROJECT TERRITORIES: CLIMATE, WATER RESOURCES, KEY ISSUES OF IRRIGATION AND DRAINAGE

All three subproject irrigation systems depend on the streams that are the tributaries of the Syrdarya River which flow down from the mountains. The network of borewells for irrigation purposes supplies agriculture producers using groundwater. Seasonal reservoirs and waterways, through the accumulation and preservation of surface waters, guarantee against critical water shortages and thus, reduce crop losses. Drainage is characterized as additional water resources for irrigation, especially in time of severe water shortage.

1. The Podshaota-Chodak subproject area

The climate in the region is sharply continental and dry in the summer, with an uneven distribution of precipitation over the seasons. Average summer temperatures there may vary within 22.9-25.4^{0}C. January temperature is negative, which is about -1.70^{0}C. The value of humidity generated from precipitation in the area is about 3 or 4 times less than its evaporating capacity. Precipitation falls unevenly throughout the year (as IX-IV months accumulate 84% of total precipitation flows).

The subproject area is located within the piedmont undulate-ridge plains. By its hydrogeological conditions the territory belongs to the area of secured groundwater outflow. Hydro-geological features provided the deep-hole groundwater occurrence in the main area, without any problems of land waterlogging and soil salinization (with rare exception).

The transboundary river Podshaotasoy along with its tributaries makes up the water system of the subproject area. Currently, as the entire flow is used for irrigation, the water doesn't reach the riverbed of the Syrdarya. According to the hydrological data, the average annual flow at the mouth of the river Tostu is 193 million m^3/year. The flow is also distributed unevenly throughout the year (75% of the flow accounts for the period from April to September) and can fluctuate significantly: the volume of the flow in different years can significantly vary up to 3 times.

In the basin of the river Podshaotasoy, there are water and mud-flow storages which provide irrigation water at the volume of about 65 million m^3 every year due to the winter and mud-flow water accumulation. To stabilize the water flow volume, significant amounts of water are pumped from the basin of the river Naryn (from the Big Namangan canal). Currently, the BNC provides irrigation for almost 50% of the land (or 9,095 ha) in Chartak district, and about 4% of irrigated land (4,100 ha) in Yangikurgan district, which accounts for 19.89 million m^3 annually used for the purpose (the data as of 2008-2012).

The network of vertical borewells is used to irrigate the agricultural lands. There are operated more than 150 borewells of over 100 meters depth only in Yangikurgan district. Typically, the borewells are used in the most intense period of the vegetation season. In dry years, water supply from borewells increases significantly.

The key issues of the irrigation system in the subproject area include:

Water resources scarcity. The comparison of the available water resources, water demand and actual water intake illustrates insufficient volume available for subcommand lands, especially in the period from July to September. In accordance with the limits, a BISA delivers only about 52% of the required volumes of water (2007-2011) for irrigation purposes, i.e. from the total

182.4 million m^3 actually needed throughout the years, there was supplied 94.1 million m^3 on average.

Irrigation infrastructure. At present, the subproject area is serviced by 30 off-farm canals and 739 hydro-technical structures. The total length of the off-farm network is 338.4 km (164.4 km of them do not have a concrete incrustation) and the length of on-farm irrigation system is 540.4 km (including only 0.5 km of concreted canals). One part of the lands (situated up to the Zarkent hydroelectric complex) is irrigated by small canals flowing directly from the river, whereas the lower territories of the Zarkent hydroelectric complex are provided with water from the Hadikent, Karan, Yon, Gaznon, Uzak irrigation canals and their branches. Many irrigation canals are in poor condition and require rehabilitation of the concrete incrustation, strengthening of banks or sediments removal.

Figure 3. Canals condition in the Podshaota-Chodak subproject area (photos)

Note: The Yon, Kichik and Karan Canals(from left to right).

Pump stations. There are 18 pump stations in Yangikurgan and 11 pump stations in Chartak districts for supplying water to the irrigation system of the upper-located land of 10,460 ha. After decades of operation and insufficient maintenance, the technical condition of canals' structures and pump stations is poor. The canals' efficiency is low, at 50-55%. The performance of pump stations is 45-55%. Most of the 150 borewells of 100 meters deep, also require reconstruction.

Mud-flow Reservoirs. The Kandiyon mud-flow reservoir, as well as five existing mud-flow canals, require reconstruction.

2. The Isfayram-Shakhimardan subproject area

The Isfayram-Shakhimardan system covers ridge-undulating plain foothills. The climate is sharply continental, as summers are hot and dry and winters are relatively mild. The average temperature in January, the coldest month of the year, is about -2.5^0C; the average July temperature is about $+27^0$C (absolute maximum is $+46^0$C). The long-lasting frost-free period of 220-230 days allows to grow many thermophile crops, but the shortage of natural moisture causes the need for crop irrigation.

Hydro-geological conditions are different depending on the landscape, but the predominant area is conditioned by the limited ground water inflows and outflows, which inevitably results in high soil salinity and waterlogging levels.

The soil consists of desert soil types (desert sand, gray-brown and *takyr*), lacking in nutrition content, as well as light and typical gray soils, which are the most valuable in agronomic terms.

The main source of water resources is the transboundary stock of the Isfayramsay river (647.41 million m^3/year) and Shakhimardan river (299.28 million m^3/year). To improve the water supply system, it is essential to transfer the water from other basins. Thus, 134.2 million m^3 of water from the SFC is pumped into the irrigation systems of Kuvasay, Kuva, Altyaryk, Tashlak and Ferghana districts (data for 2008-2012). In 2008-2012 the irrigation system required 59.4 million m^3 of groundwater from borewells. Collector-drainage flow is an additional water resource.

The key issues in the irrigation system of subproject area include:

Water resources scarcity. Due to the shortage of water resources, a BISA annually sets the limits on water distribution, taking into consideration annual water volume available from all water resources. On average, the BISA system allocates only 64% of the volume of water required (2007-2011), i.e. it distributed only 473.3 million m^3 of the actually required 737.1 million m^3 annually.

Irrigational infrastructure. The total length of the irrigation network served by a system of off-farm canals is 370.4 km, including 201.1 km of earth canals. The total length of the canals with a poor technical condition is 242.1 km, including 113.7 km of concreted canals, 29.31 km of precast concrete flumes, and 105 km of earth canals. Moreover, as the water intake structures of some canals are located in the territory of Kyrgyzstan, the use of the canals proves difficult.

The weakest link in the system of irrigation canals are off-farm canals, as they have both earth riverbeds, poorly equipped specialized fuel storages, the low performance of existing structures, and water losses caused by poor O&M, reaching 70% of the total amount of all losses. The low efficiency and performance of both the irrigation and drainage network may cause an increase in groundwater levels, affecting soil salinization. A quarter of irrigated land in Kuva district is salinized soil, while the ground water lies at the level of 2m below the surface at almost 50% of irrigated land. Taking into account the increasing scarcity of irrigation water, one of the main priorities of the Project is the rehabilitation of the irrigation system infrastructure.

Pump stations. There are 22 pump stations that provide water to a total irrigated area of 18,306 ha in the Isfayram-Shakhimardan subproject area. The biggest one is the Isfayram-Shakhimardan pump station that provides water to an irrigated area of 5,000 ha; its lifting height is 180 m. These pump stations were constructed between 1970-1994 years, and their equipment is obsolete and worn out; moreover, the functional reliability of the pumps and other equipment is very low. Currently, pump stations are not able to provide the amount of subcommand ground water required, which reduces the agricultural production and negatively affects employment and income.

Irrigation borewells. According to the ISA data, there are 303 borewells in poor condition which were constructed in the period of 1971 - 1991, including 222 borewells in Ferghana district, 67 borewells in Kuvasay district and 14 borewells in Altyaryk district.

Antimud-flow dams. Six mudflow reservoirs existing to protect against flooding and mudslides are partially destroyed under the influence of natural factors and human activities. To ensure the safety of the surrounding area and the irrigation network from mudflows there is a high need for rehabilitation of antimud-flow infrastructure.

3. The Savay-Akburasay subproject area

Climatic conditions of the Savay-Akburasay subproject area can be characterized as sharply continental / arid. The mean summer temperature varies from 22.9^0 C to 25.4^0 C. The coldest month is January, when the temperature is -1.7^0 C. The amount of rainfalls is 328 mm/year, which is less than the evaporating capacity about 3-4 times. Precipitation is uneven throughout the year; about 84% of the total precipitation falls in the autumn-winter-spring period.

The system covers the piedmont undulate-ridge plains. According to its hydrogeological conditions, the soil has a secured groundwater outflow with the depth of groundwater averaging at over 3m; also, some territories are characterized with the soft groundwater table at less than 2 m from the surface.

The subproject area is located in the gray soil area. Soils are mainly non-saline; somewhere there are low-saline and poorly-gypsum soils. Moreover, soils in separate areas are susceptive to the water and irrigation erosion processes.

The flow of the Savay canal along with the Akburasay and Aravansay rivers forms the basis of the Savay-Akburasay irrigation system, and originates in the mountains located in the north of Kyrgyzstan.

The annual flow of the river Akbura is 675 million m^3 at its 50% discharge, at 90% - 543 million m^3. The Akbura river is regulated by the Papan irrigation reservoir, which is in the Osh region of Kyrgyzstan. The reservoir was built in 1980 (the total volume is 260 million m^3, the useful volume is 240 million m^3) for long-term regulation of river flow for the development of irrigated agriculture in Kyrgyzstan and Uzbekistan, and the water supply of the Osh city. Unused Akburasay river flow is dumped into the Shakhrikhansay canal, passing under the dive culvert of the Savay and SFC. The river of Aravansay is usually considered together with the river Abshirsay, as irrigation systems of those rivers are intertwined and rolled over. The annual flow at 50% is 447 million m^3, and at 90% - 354 million m^3. The runoff is dumped into the Shakhrikhansay canal. The total length of the Savay Canal is 55.9 km, and it is located on the left bank of the Karadarya River through Kurgantepa and Khodjaabad district of the Andijan region and through the Osh region of Kyrgyzstan. The Canal originates from the Andijan reservoir that was built in 1930 by *khashar* method manually. In 2001, small-scale repair works were conducted in the Canal.

In order to cover the shortage of water in the Savay-Akburasay subproject area, water is transferred from other basins, in particular from the Andijan reservoir (through the South Ferghana Canal – SFC) by using the pumps. For this purpose, several pump stations and their cascades were constructed, which lifts water from the SFC and deliver it for irrigation Kurgantepa, Jalalkuduk, Khodjaabad, Bulakbashi, and Marhamat districts of the Andijan region. For the irrigation of lands in these districts, an average for 2008-2012 of 41.55 mln m^3 of water from the SFC is used.

The key issues of irrigation in the subproject area include:

Lack of water resources. Due to the shortage of water resources, the BISA sets annual water limits, depending on the capacity of water sources which makes up 70% of the required volume of water for the Savay-Akburasay system (2007-2011g.g.), i.e., the system distributed 254.3 million m^3 from 363.8 million m^3 on average during this period.

Irrigational infrastructure. The concrete coverage of the Savay Canal is severely damaged; the earth canal section is also in poor condition as they are deformed and silted. The main current problem of the Savay Canal is its coastal erosion. About 16 or 17 taps of the Savay Canal in the Dzhalalkuduk district cannot take water, and therefore, water irrigators cover the bottom of the Canal with soil in order to raise the level up. Coastal erosion appears when there is a high flow rate. The problem of coastal erosion also concerns the Akburasay, the bottom of which is blurred and deepened by mudflows.

Figure 4. The earth section of the Savay Canal (photo)

Pump stations. As a result of long-term operation and insufficient technical maintenance, the characteristics of pump stations Savay, Orom (Istiklol) etc., built in 1970-1975., are in poor condition; thus, the stations cannot supply farmers with the required amount of water.

B. THE POPULATION IN THE SUBPROJECT AREAS

The boundaries of the three subproject areas were defined by technicians of the Project based on hydrographic conditions and therefore, in some cases, they do not coincide with the administrative boundaries of the areas or with the boundaries of smaller administrative units - Rural Assembly of Citizens (RAC). The area, covered by the social assessment, is about 5% larger than the actual subproject area, which results from the fact that the household survey sample was constructed in terms of the administrative-territorial units (RACs, towns and semi-urban settlements), the boundaries of which do not coincide with the hydrological and agricultural units that are covered by the technical part of the Project. However, the population of RAC, the territory of which was a part of the Project area, was included in the sample. Furthermore, the population in a number of districts covered by the Project includes partially the population of Rural Assemblies of Citizens and Urban type settlements located out, but very close to the border of subproject areas.

The total population in the three subprojects is about 975 thousand people, or about 183 thousand households. The bulk of the population, mostly influenced by the Project, lives in the Isfayram-Shakhimardan subproject area (almost 0.6 million people, or 61% of the total population in the Project Area). As many as 235 thousand people live in Podshaota-Chodak (24% of the population), and in Savay-Akburasay - 146 thousand people (15%).

Table 5. The population in the three subproject areas

	Podshaota-Chodak	Isfayram-Shakhimardan	Savay-Akburasay	Total by subprojects
The population in the subproject area, people.	235,139	594,139	146,526	**975,804**
Urban population, people	160,538	449,148	75,593	**685,279**
The rural population, people	74,601	145,991	70,933	**291,525**
Urban population, %	68.3	75.6	51.6	**70.2**
Rural population, %	31.7	24.4	48.4	**29.8**
Male, people	119,260	296,295	74,099	**489,654**
Female, people	115,879	297,844	72,427	**486,150**
Male %	50.7	49.9	50.6	**50.2**
Female %	49.3	50.1	49.4	**49.8**
Number of households (estimated)	41,100	114,250	27,850	**183,200**

Sources: Data provided by regional statistic offices on population by RACs and urban makhallas. The gender composition of subproject areas is estimated by using statistical data on gender composition at the districts level.

Overall, slightly more than 70% of the population in the three subproject areas lives in cities or towns. It's important, that the direct impact of the Project will prove greater for the rural settlements, rather than large cities. For example, Ferghana city makes up a significant share in the population of the Isfayram-Shakhimardan subproject area, which, together with the population of urban-type community Kirguli, reaches 268 thousand people (i.e. 45% of the population within the boundaries of this subproject). It's clear that inhabitants of the large industrial center will experience less effect from the Project realization in comparison with rural population.

Another important fact is that the high proportion of the urban population in the Project Area resulted from the administrative reform of 2009 which re-classified the Republic's 965 villages into urban settlements. However, the way of life in most of them is still predominantly rural; both revenues from garden plots and employment in the agricultural sector are still of great importance.

The maps, provided below in this section, indicate the administrative-territorial division of the subproject areas. The red line shows the hydrological boundaries of the subprojects.

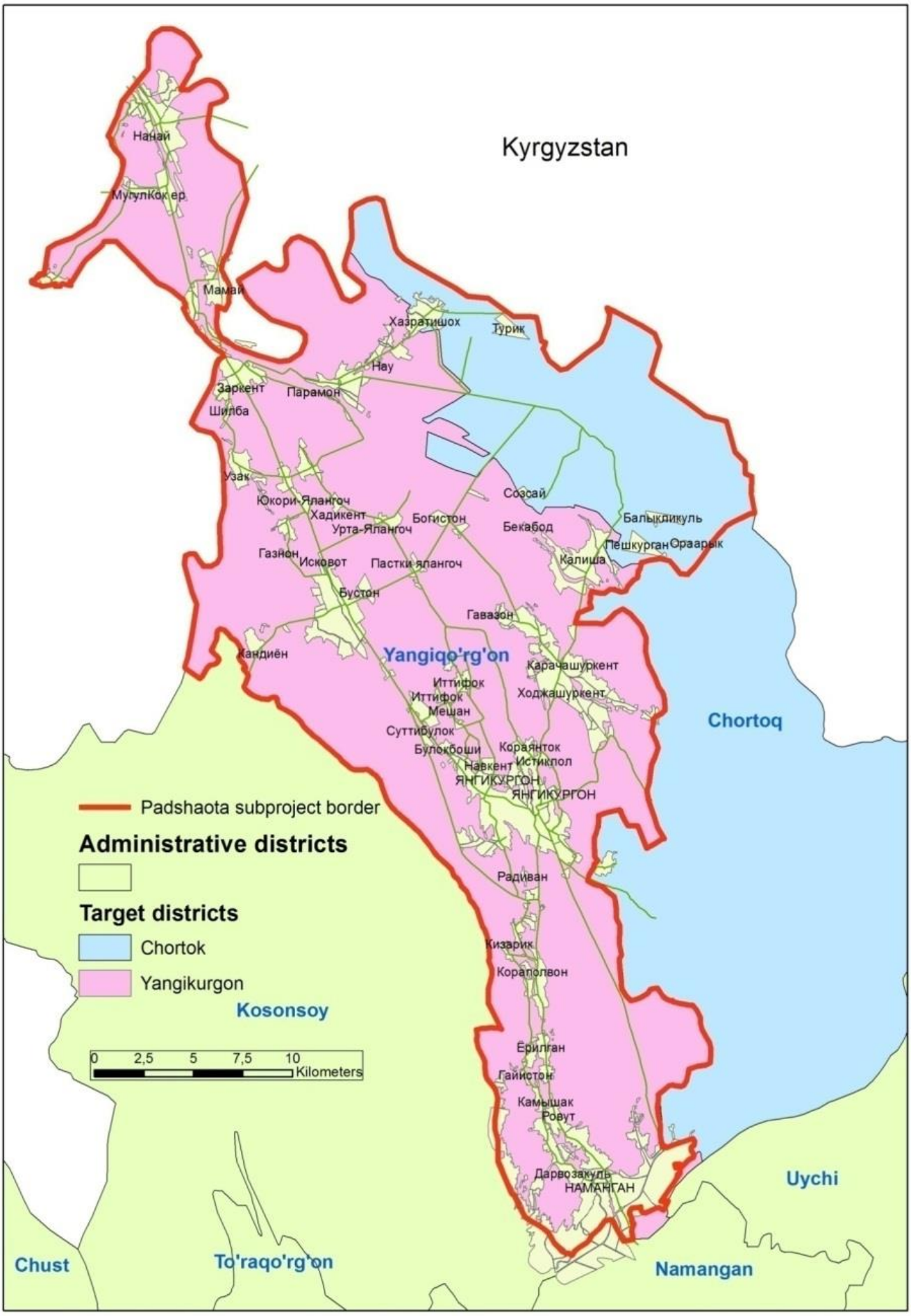
1. The population of the Podshaota-Chodak subproject area

The Podshaota-Chodak subproject area includes Yangikurgan district of Namangan region and a northern part of Chartak district, including 3 out of 9 RACs (Bogustan, Peshkurgan and Hazratishoh). The population of the subproject area is 235 thousand people, 68% of the which are residents of small towns and semi-urban type settlements.

Table 6. The population of the Podshaota-Chodak subproject area (by districts)

	Yangikurgan	**Chartak (partially)**	**Total**
Settlements / RACs in the subproject area	19 semi-urban type settlements and 11 RACs	5 semi-urban type settlements and 3 RACs	24 semi-urban type settlements and 14 RACs
The population in the subproject area, people.	199,683	35,456	235,139
Urban population, people	137,123	23,415	160,538
Rural population, people	62,560	12,041	74,601
Urban population, %	68.7	34	68.3
Rural population, %	31.3	66	31.7
Male, people	101,553	17,707	119,260
Female, people	98,130	17,749	115,879
Male, %	50.9	49.9	50.7
Female, %	49.1	50.1	49.3
The total population of the area, '000	199,7	178,9	378,6
The population of the subproject area, % of the total population of administrative district	100	19.8	62.1

Figure 5. The map of the Podshaota-Chodak subproject area



2. The population of the Isfayram-Shakhimardan subproject area

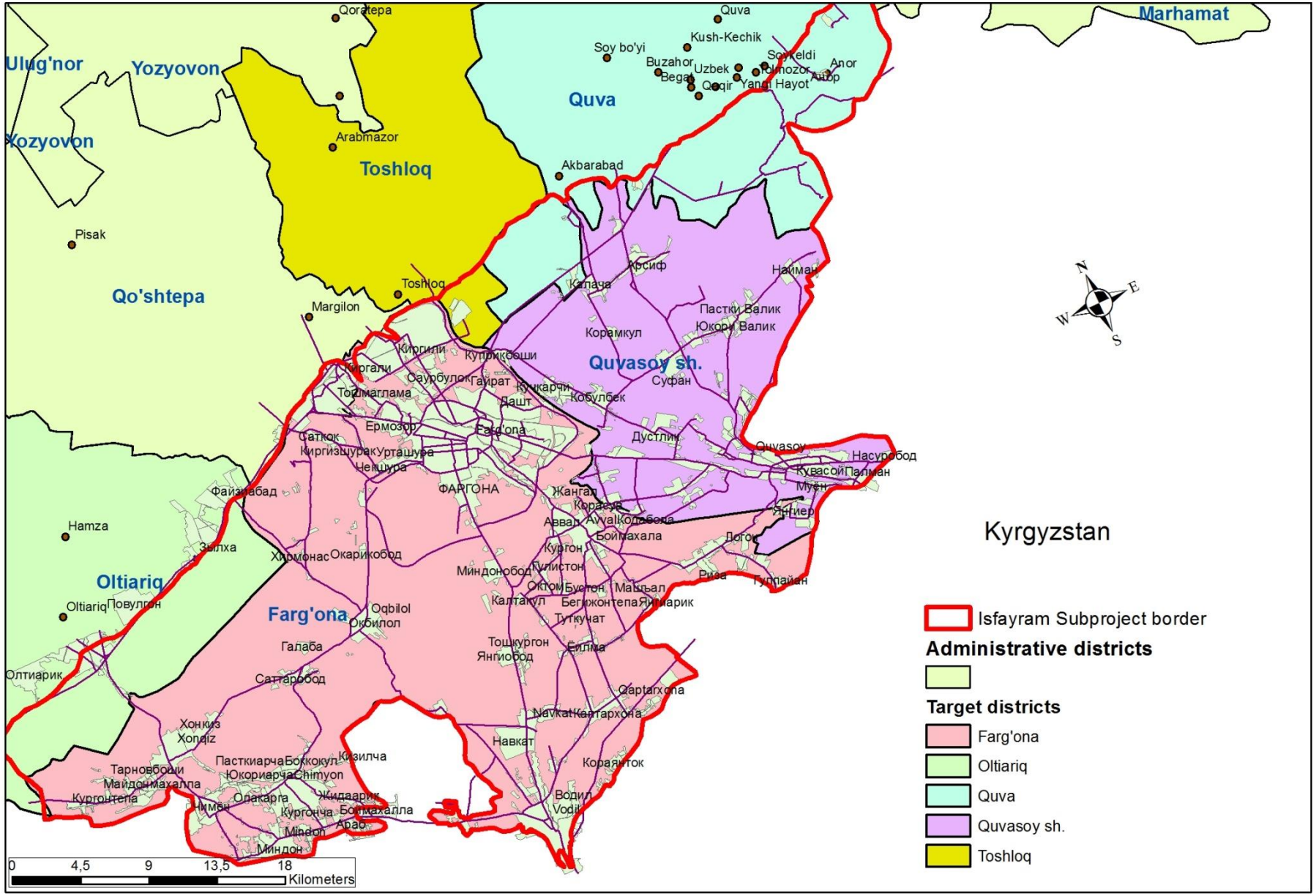
In the west, south and east, the Isfayram-Shakhimardan subproject area borders Kyrgyzstan and coincides with the administrative boundaries of the districts. The northern border of the area goes along the South Ferghana Canal. The Isfayram-Shakhimardan subproject area consists of entirely the Ferghana district of Ferghana region (except for the Shakhimardan exclave) along with the cities of Ferghana and Kuvasay with subordinated RACs. The subproject covers a south-eastern part of the Kuva district, including 2 out of 11 RACs (Bakhor and Namuna) and semi-urban type settlement Turk. There are no settlements in the southern part of Tashlak district and eastern part of Altyaryk district, which are a part of the subproject area. However, on the border of subproject area there are several villages, inhabitants of which have plots on the subproject territory.

594 thousand people live in the subproject area, almost 76% of the population are the residents of cities and towns.

Table 7. The population of the Isfayram-Shakhimardan subproject area (by districts)

	Ferghana city	**Kuvasay city and subordinate RACs**	**Ferghana district (without Shakhi-mardan enclave)**	**Kuva district (partially)**	**Altyaryk district (partially)**	**Tashlak district (partially)**	**Total**
Settlements / RACs in the subproject area	1 city and a semi-urban type settlement of Kirguli (67 thousand people) (total: 70 makhallas)	1 city, 1 semi-urban type settlement, 6 RACs. (30 villages and 30 makhallas)	21 semi-urban type settlements 15 RACs (out of which - 28 villages and 55 makhallas)	1 semi-urban type set-tlement 2 RACs (including 15 mak-hallas)	No settlements in the subproject area. 4 RACs and Altyaryk city partially depend on agricultural activity on the subproject area	No settlements in the subproject area. 2 villages out of 2 RACs partially depend on agricultural activity on the subproject area	
The population in the subproject area, people	268,070	84,500	190,400	25,459	19,210	6,500	**594,139**
Urban population, people	268,070	47,600	119,700	4,478	9,300	0	**449,148**
Rural population, people	0	36,900	71,700	20,981	9,910	6,500	**145,991**
Urban population,%	100	56.3	62.3	17.6	48.4	0	**75.6**
Rural population,%	0	43.7	37.7	82.4	51.6	100	**24.4**
Male, people	131,951	42,080	96,200	12,839	9,910	3,315	**296,295**
Female, people	136,119	42,420	94,200	12,620	9,300	3,185	**297,844**
Male%	49.2	49.8	50.5	50.4	51.6	51	**49.9**
Female%	50.8	50.2	49.5	49.6	48.4	49	**50.1**
The total population of the area, '000	268,1	84,5	196,4	235,8	194,9	182,9	**1162,6**
The population of the subproject area, % of the total population of administrative district	100	100	96.9	10.8	9.9	3.6	**51.1**

Figure 6. The map of the Isfayram-Shakhimardan subproject area



3. The population of the Savay-Akburasay subproject area

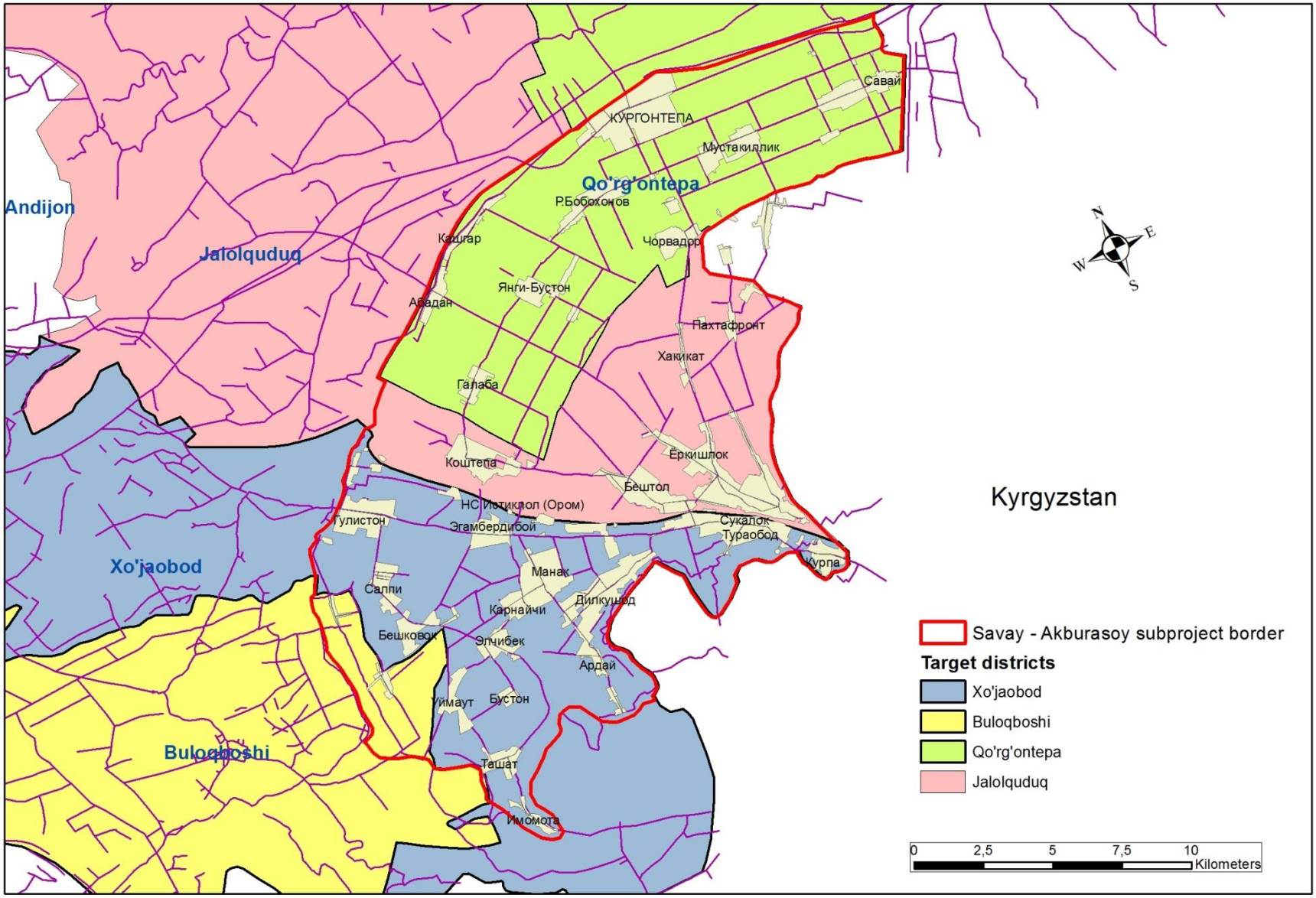
In the east and south, the Savay-Akburasay subproject area borders on Kyrgyzstan. In the north and west, as was in the case of the subproject area of Isfayram-Shakhimardan, the area's borders go along the South Ferghana Canal. The Savay-Akburasay subproject area includes eastern parts of Bulakbashi and Khodjaabad districts and southern parts of the Dzhalalkuduk and Kurgantepa districts of Andijan region.

The population of subproject area is 146.5 thousand people, and almost 51% of the population is residents of small towns where on average 6-7 thousand people live in. Kurgantepa city is considered to be relatively bigger settlement with a population of is 46.2 thousand.

Table 8. The population of the Savay-Akburasay subproject area (by districts)

	Kurgantepa district (partially)	**Bulakbashi district (partially)**	**Dzhalalkuduk district (partially)**	**Khodjaabad district (partially)**	**Total**
Settlements / RACs in the subproject area	1 city and 1 RAC	4 villages	3 semi-urban type settlement and 1 RAC	2 semi-urban type settlement, 2 RACs	
The population in the subproject area, people.	65,089	6,154	27,625	47,658	**146,526**
Urban population, people	46,231	0	19,240	10,122	**75,593**
Rural population, people	18,858	6,154	8,385	37,536	**70,933**
Urban population,%	71	0	69.6	21.2	**51.6**
Rural population,%	29	100	30.4	78.8	**48.4**
Male, people	32,911	3,063	13,867	24,258	**74,099**
Female, people	32,178	3,091	13,758	23,400	**72,427**
Male, %	50.6	49.8	50.2	50.9	**50.6**
Female, %	49.4	50.2	49.8	49.1	**49.4**
The total population of the area, '000	193.2	130.4	167.8	98.7	**590.1**
The population of the subproject area, % of the total population of administrative district	33.7	4.7	16.5	48.3	**24.8**

Figure 7. The map of the Savay-Akburasay subproject area



C. KEY INDICATORS OF SOCIO-ECONOMIC DEVELOPMENT IN THE SUBPROJECT AREAS (ACCORDING TO OFFICIAL STATISTICS)

As was estimated, 975 thousand people living in the 3 subproject areas (i.e. the beneficiaries of the Project), constitute approximately 50% of 12 administrative districts where the Project activities will be carried out, including:

- 62.1% of the total population of 2 administrative districts of the Podshaota-Chodak subproject area
- 51.1% of total population of 6 administrative districts of the Isfayram-Shakhimardan subproject area and
- 24.8% of the total population of 4 administrative districts of the Savay-Akburasay subproject area.

The current section of the report provides information by administrative districts as, is it impossible to disaggregate the data by subproject areas from the available official statistics.

1. The demographic situation in the Project administrative districts

At the beginning of 2014, the total population of three regions of the Ferghana Valley was 8 mln. 696.1 thousand people or 28.5% of the total population of the republic[5], including the population of Andijan region – 2 mln 805.5 thousand people, Namangan – 2 mln 504.1 thousand people, Ferghana – 3 mln 386.5 thousand people.

At the beginning of 2014, the total population of four administrative districts of the Savay-Akburasay subproject area, accounted for 590 thousand people (16.8% of the total population of the Andijan region); the population of two districts of the Podshaota-Chodak area, was 379 thousand people (15.1% of the population of the Namangan region); and the population of six districts of the Isfayram-Shakhimardan subproject area made up 1,162 thousand people (33.8% of the population of the Ferghana region).

The population density in the Ferghana Valley is the highest in the country. In administrative districts of three subproject areas, the population density is also considerably high, although in subproject administrative districts of the Andijan region it is below the average regional level. In the Bulakbashi and Tashlak districts, the population density exceeds 700 people / km^2.

Rural population dominates in most districts of the subproject areas; for instance, in Tashlak district it exceeds 76%. As was mentioned before, the subprojects population is mostly urban; however, the vast majority of the population lives in urban-type settlements rather than in large cities. At the same time, a significant number of the inhabitants of these settlements depend on agricultural activities and, thus, may be included in the number of direct or indirect beneficiaries of the Project.

Although the high population growth rate is observed in the subprojects administrative districts (approx. 16 people per thousand, annually), the average growth rate in all the districts is below the regional averages (except Chartak district). The relatively low population growth in the

[5] State Statistics Committee of the Republic of Uzbekistan

subproject districts of the Ferghana region results from the fact that in the Ferghana city the population growth reaches only 11.3 per 1,000 people, while the average regional level is 16.8.

Table 9. The population of the project districts as of 01.01.2014 (by regions)

Indicators	**Project districts of Andijan region**	**Project districts of Namangan region**	**Project districts of Ferghana region**
Total population, thousand people	590	379	1162
Urban population, thousand people	44.4	70.5	53.1*
The population of project districts as percentage of total population of the region	16.8	15.1	33.8
Population growth, per 1000 people	17.2	17.5	15.7
Birth rate, per 1000 people	22.4	22	20.4
Net migration per 1,000 people.	-2.2	1.3	-0.25
Population density, persons / km^2	498.9	336.6	802.4

* Except for the population of the Ferghana city

Source: Calculations are based on regional administrative data

According to official statistics, the Project districts have low migration rate. The highest level of migration is observed in cities of Ferghana and Kuvasay, as well as in the Ferghana region (10.7, 4.1 and 4.8 per 1,000 residents, respectively). Net migration in the Project districts does not exceed 2 persons per 1,000 people (in Ferghana region this indicator reaches 3.9 per 1,000). This situation is typical for all regions of the country. Half of the districts have a negative net migration indicator.

The ethnic composition of the population is largely homogeneous in all the subproject areas - the majority of the population are Uzbeks. In rural areas the share of Uzbeks exceeds 90%. Most representatives of other ethnic groups are Kyrgyz and Tajiks. In terms of cultural traditions, these ethnic groups are very close to the Uzbeks. In the areas of compact residence, inhabitants use Tajik and Kyrgyz languages along with the Uzbek language.

Ferghana and Kuvasay cities differ ethnically from all the other districts. In Ferghana city, the share of Uzbeks in the population is only 70%, while Russians constitute 11%, Tajiks - 3%, the Kyrgyz make up 2%, and almost 14% are the representatives of other ethnic groups (Tatars, Ukrainians, Koreans, and others). Kuvasay City along with subordinate RACs is one of the few administrative districts where the proportion of Uzbeks is only 45% of the total population; 33% of the population are Tajiks and 15% - the Kyrgyz.

2. Employment and income

21% of the working age population of the Andijan region is concentrated in the Project districts; the corresponding figures for the Namangan and Ferghana regions are 15% and 35% respectively. According to official statistics, the level of economic activity of the population in 2013 was 78.4% for the population of working age in the Andijan region, 63.6% - in the Namangan region, and 76.7% in the Ferghana region. The low level of economic activity of the population in the Namangan region is caused by the relatively low economic activity of women.

The average level of economic activity in the project districts of the Andijan region is 81.7%, in Namangan - 61.7%, in Ferghana - 76.3% (Table 10).

The employed people make up 74.2% of the total working-age population in the Andijan region, 60.3% - in Namangan, and 72.9% in the Ferghana region. Whereas employment rates in Project districts of Andijan region exceeds the average regional rate by 3 percentage points, the Project districts of the Namangan and Ferghana regions show the employment rate at below the regional averages.

Table 10. Indicators of economic activity and employment in the districts of the Project Area in 2013

Subproject area	Districts	Population, thousand people, 1/01/2014	Working-age population, thousand people	Economically-active population, thousand people	Number of the employed, thousand people	Number of unemployed, people	Officially registered as unemployed, people
Savay-Akburasay	Bulakbashi	130.4	74.5	56.8	53.8	3,020	86
	Dzhalalkuduk	167.8	98	80.9	76.8	4,112	38
	Kurgantepa	193.2	112.3	93.1	87.7	5,363	19
	Khodjaabad	98.7	57.6	49	46.3	2,705	3
Pod-shaota-Chodak	Chartak	178.9	107.1	69.8	66	3,800	30
	Yangikurgan	199.7	119.5	69.6	66	3,600	10
Isfayram-Shakhimardan	Ferghana city	268.1	178.2	132.3	127	5,262	
	Kuvasay city	84.5	52.9	39.7	37.9	1,790	1
	Altyaryk	194.9	110.3	84	79.5	4,508	23
	Tashlak	182.9	97.4	75	71.1	3,920	3
	Ferghana	196.4	114.7	88.4	83.9	4,478	
	Kuva	235.8	124.5	97.6	93.3	4,343	3

Source: regional khokimiyats

Agricultural workers dominate in the structure of employees of all administrative districts of the Project Area. Employment in rural areas is characterized by overdependence on the agricultural sector: according to the data provided by khokimiyats, the proportion of workers directly engaged in agricultural activities exceeds 50%[6]. Even in Kuvasay city more than 28% of employees work in agriculture.

According to the official statistics, the share of those employed in the non-manufacturing sector for the districts of the Project Area accounts for 32.6% of the employed population, including more than 20% of the employed in the fields of education, health and social protection.

The three FV regions, as is in case of the national figure, show very low levels of officially registered unemployment which does not reflect the real situation on the labor market. For example, in Kuvasay city, where almost 40 thousand people live, only 1 person is officially registered as unemployed. Moreover, in Khodjaabad area, where the number of economically

[6] including those engaged in household gardens

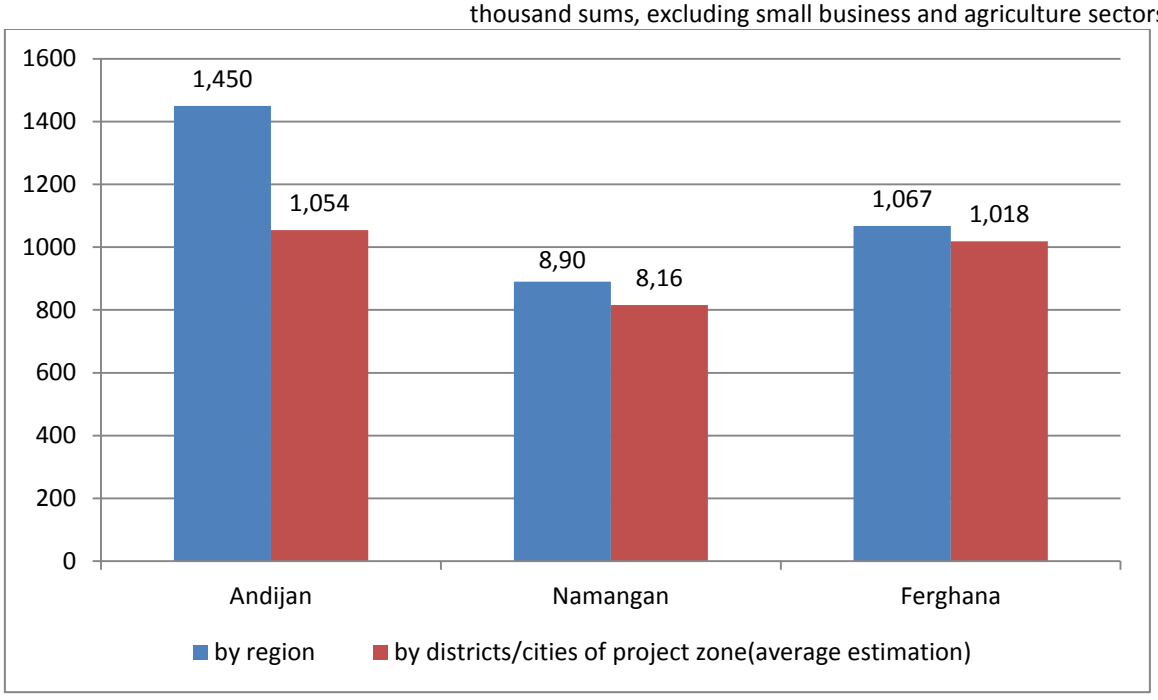
active population reaches 50 thousand, the number of registered unemployed amounted to only 3 people.

A more realistic observation of the FV regions' labor market can be formed on the basis of employment monitoring surveys, carried out quarterly by the Ministry of Labor and Social Security departments in each settlement of the country. According to the results of the study, during 2013, the share of the unemployed within the economically active population of Project districts was the following: in Andijan region - 5.4%, in Namangan region - 5.3%, and in Ferghana region - 4.8% on average. By the level of unemployment, Kurgantepa and Khodjaabad districts of the Andijan region slightly differ from the others, as the indicator was 5.8% and 5.5%, respectively.

Official statistics on income and expenditure of the population are not available. With regard to the official data on the level of wages In registered sector of economy, the data doesn't take into account the wages in the small business sector and agriculture (thus, greatly overstating the level of income received by the population). According to the official statistics as of the beginning of 2014, the average monthly salary in the subproject districts of the Andijan region was 1.5 mln. sums, 0.82 mln sums in the Namangan region, and 1.2 mln. sums in the Ferghana region. In all three regions the average monthly wage in the subproject districts was lower than the regional average. In the subproject districts of the Andijan region, the average salary is 28% lower than that of a regional level, and in the subproject districts of the Ferghana region the corresponding figure is 24% smaller.

Figure 8. The average official wage in the regions and Project districts in 2013

thousand sums, excluding small business and agriculture sectors



Source: regional khokimiyats

Table 11. The average official wage by Project districts in 2013

thousand sum, excluding small business and agriculture sectors

Area	Average wage, thousand sums	Region	Average wage, thousand sums
Andijan region	**1,450**	**Ferghana region**	**1,067**
on average, in the Project districts	**1,054**	**on average, in the Project districts/cities**	**1,018**
Bulakbashi	1,068	Ferghana city	1,487
Dzhalalkuduk	1,052	Kuvasay city with its RACs	1,365
Kurgantepa	982	Altyaryk	804
Khodjaabad	1,112	Tashlak	854
Namangan region	**890**	Ferghana	816
on average, in the Project districts	**816**	Kuva	781
Chartak	793		
Yangikurgan	839		

Source: regional khokimiyats

There are not officially defined poverty line and the minimum consumer basket cost in Uzbekistan. For the MDGs' monitoring achievement purposes, the poverty line based on the cost of a food basket that guarantees a minimum calorie intake of 2,100 kilocalories per person a day was used[7]. This poverty threshold was initially used by the World Bank for the "Living Standards Assessment" studies carried out in Uzbekistan in 2003 and 2007 as well as for the governmental Welfare Improvement Strategy for 2008-2010 (WIS-I) and for 2013-2015 (WIS-II) – the documents which are the analogue of the PRSP country papers.

According to the latest officially published data[8], the poverty rate in Uzbekistan reduced 1.9 times from 27.5% in 2001 to 14.1% in 2013. According to estimations, the poverty rate will further decrease to 13.7% in 2015. The poverty rate in rural areas decreased from 30.5% in 2001 to 17.3% in 2013. In urban areas, the rate decreased from 22.5% in 2001 to 10.6% in 2013.

The latest published data on the issue by regions is available up to 2012. The most significant reduction of poverty, 3.8-fold was registered in Tashkent city. In Andijan, Namangan, Samarkand, Tashkent and Khorezm regions, the poverty rate decreased by more than 2 times. In all the remaining regions, the rate reduced by 1.4–1.8 times. The poverty rate in 2012 was higher than the national average in eight regions, including the Namangan region. In 2012 the rate was at 9.6% for the Ferghana region and 11.5% for the Andijan region.

[7] The cost of the minimum consumer basket including the main food stuff recalculated in current prices; the estimations consider the consumption of agricultural produce from household plots and in-kind incomes.
[8] MDGs Report. Uzbekistan, April 2015

Table 12. Poverty level in the regions of Uzbekistan, 2004-2012

	2004	2005	2008	2009	2010	2011	2012	2013
Uzbekistan	**26.1**	**25.8**	**21.8**	**19.5**	**17.7**	**16**	**15**	**14.1**
Karakalpakstan	44.7	44	39.2	37	34.3	33.2	32.5	No data
Andizhan	23.5	23.1	20.1	17	16.3	13.3	**11.5**	
Bukhara	21	20.8	17.7	16.1	14.4	13.4	12.2	
Dzhizak	29.7	29.6	25.6	23.1	22.6	21.3	18.7	
Kashkadarya	41.5	41	34.9	32.5	28.9	26.8	24.9	
Navoi	26.4	26.3	23.1	20.1	19.6	18.2	16.6	
Namangan	33.8	33.4	28.3	25.4	23.1	20.1	**17.4**	
Samarkand	24.2	23.9	19.8	16.6	14.9	13.3	12.9	
Surkhandarya	34.8	34.6	29.7	27.8	25.2	23.5	22.6	
Syrdarya	33.1	32.6	28.6	26.1	23.6	22.1	20.3	
Tashkent	21.3	20.4	16.7	14.2	12.5	11.2	10.3	
Fergana	16	15.8	13.2	10.8	10.2	9.7	**9.6**	
Khorezm	31.5	31	25.8	23.3	20.6	19.1	17.2	
Tashkent City	7	6.7	4.5	3.1	2.6	2.3	2.1	

Source: MDGs Report. Uzbekistan, April 2015

According to preliminary WB estimations based on CALISS-2013 survey data, 42% of the two bottom quintiles of the country's population live in the three regions of the Ferghana Valley while the FV population makes up 30% of the country's population. The population of FV accounts for 52% of the two bottom quintiles of the country's urban population, while the FV urban population makes up 38.7% of the country's urban population. For the rural poorest population the corresponding figures are at 32.3% and 22.3%. However, the estimations and the data might raise questions: for example, according to the same data, 53.8% of all country's population from two bottom quintiles live in urban areas, with the urban population making up 47% of the population of Uzbekistan.

3. Access to public utilities

According to official statistics, almost all households of the subproject areas have their own house. For example, in the Project districts of the Andijan region 1 inhabitant has, on average, about 10 square meters of housing (average regional rate - 9.8 sq.m), in Namangan - 12.1 sq.m (15.6 sq.m), in Ferghana - 16 sq.m (14.4 sq.m). It is noticeable, that the corresponding figure is particularly high in the major cities - Ferghana and Kuvasay (18.6 and 17.9 sq.m respectively).

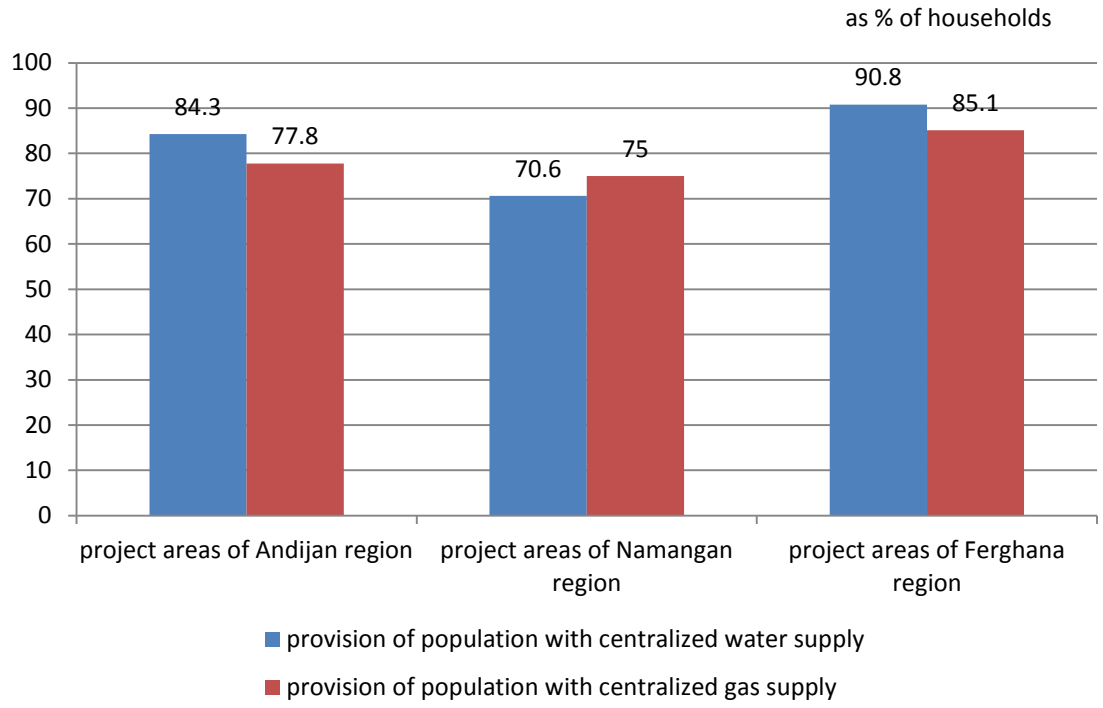
Official indicators of access to centralized water supply in subproject areas of Andijan and Ferghana regions are quite high (84.4% and 90.8%, respectively) and exceed the average regional levels. The access to centralized water supply of the population in the Namangan subproject districts is much lower than in the whole region at 70.6%. An important remark is that the official statistics is far from reality, because it includes the number of households provided with piped water, i.e. all the houses which have running water from the pipeline or street standpipes. The official statistics take into consideration neither general water shortages, the disastrous condition of water supply systems, and constant interruptions of water supply

resulted from the pipes being wear and tear, nor power cutoffs affecting the operation of pumps.

The share of households with access to centralized gas supply in the Project districts of Andijan and Namangan regions is lower than the regional averages, and constitutes 77.8% and 76% respectively. 85.1% of households of subproject districts of the Ferghana region have access to gas; this figure exceeds the average regional one by almost 4%; it's noticeable that the corresponding figures of Tashlak and Ferghana districts do not reach the average regional level. This official statistics on access to gas supply, as is in case of water supply, does not take into account that most households are experiencing persistent problems due to low gas pressure in the system and planned daily gas cutoffs.

During 2013 in subproject districts in the Andijan region 46 km of water networks and about 17 km of gas networks were put into operation; in the Namangan region these indicators were 41.5 km and 8 km respectively, in the Ferghana region - 96.8 km and 32 km.

Figure 9. Access of households to centralized water and gas supply



Source: regional khokimiyats of the Ferghana valley, 2013

4. Health and education indicators

The morbidity in the subproject districts of the Namangan region is significantly lower than the average level for the region. It may be caused by the fact that the access to healthcare services in these districts is significantly below the average regional level, which can reduce the number of officially registered cases (Table 13).

Table 13. Health indicators in the districts of the subproject area of the Namangan region in 2013.

	Namangan region	Chartak district	Yangikurgan district
The morbidity per 100 thousand people	50,481	16,309	20,439
The number of hospital beds per 10 thousand people	50.3	43.8	33.5
The capacity of outpatient clinics, the number of patients visits per a shift for 10 thousand people	118.5	114.5	88.6
The number of doctors per 10 thousand people	20.1	13.8	12.2
The number of nurses per 10 thousand people	103.3	116.1	78.4

While the morbidity in the subproject districts of the Andijan region differs slightly from the regional average, in the subproject districts of the Ferghana region the rate is lower than the regional average. The number of hospital beds per 10 thousand of the population of Ferghana subproject districts is more than 10% lower than the regional average (Table 14).

Table 14. Healthcare indicators in subproject districts of Andijan and Ferghana regions in 2013

Indicators	Andijan region, total	Subproject area districts	Ferghana region, total	Subproject area districts
The morbidity per 100 thousand people	45,543	46,962	64,003	59,096
Disability, per 1000 people	0.8	0.9	0.7	0.8
The number of hospital beds per 10 thousand people	40.3	27.2	38.2	27.6
The capacity of outpatient clinics, the number of patients visits per shift per 10 thousand people	138.2	139.9	129.4	140.1
The number of doctors per 10 thousand people	22.2	14.9	21.2	19.1
The number of nurses per 10 thousand people	90.5	93.1	121.9	105.4

Source: districts khokimiyats, regional statistics offices

By far the worst situation with the number of medical personnel is observed in Dzhalalkuduk district of the Andijan region, Yangikurgan district of the Namangan region, and Ferghana and Altyaryk districts in the Ferghana region. In 2013, new hospital beds were created only in Dzhalalkuduk (145 beds), Yangikurgan (265 beds) and Ferghana districts (195 beds).

There is a wide range of educational establishments functioning in the districts of the Project Area. In 2013, there were 400 kindergartens (41.5 thousand children), 616 secondary schools (291.7 thousand students), and 93 vocational colleges (106.9 thousand students) in the subproject districts.

In recent years, the capacity of pre-school education institutions has not changed significantly; very few children of pre-school age attend such institutions (in the rural areas less than 30% of children go to kindergartens).

The transition to a nine-year educational system in secondary schools resulted in larger numbers of school children attending their schools at the first shift in all regions. For example, in the schools of the Andijan region, this indicator increased by 5.2% in 2013 compared with 2010.

In accordance with the National Personnel Training Program, in recent years, the number of secondary vocational schools has increased rapidly. As a result, at the beginning of 2014 each Project district had at least 5 vocational colleges.

Table 15. Performance of the educational system in the subproject districts in 2013

Educational institutions	Subproject districts of the Andijan region	Subproject districts of the Namangan region	Subproject districts of the Ferghana region
Pre-school educational establishments			
Number of PEE, units	105	67	228
Number of children in PEE, '000	9.8	5.8	25.8
Secondary schools			
Number of schools, units	179	119	318
Number of students, '000	80.5	54.2	157
Repaired/reconstructed schools, units.	3	3	-
The number of seats in the reconstructed schools, '000	2,034	1,140	-
Vocational colleges			
The number of educational institutions, units.	23	18	52
Number of students, '000	28	19.1	59.9
Repaired/reconstructed colleges, units.	2	3	-
The number of seats in the reconstructed colleges, '000	750	1,250	-

Source: Regional statistics offices, 2013

Every year extensive repair and reconstruction work is conducted in all types of educational institutions over the regions. The repair and reconstruction are performed within the framework of the National Investment Program which provides the sufficient and timely funding for the implementation of such works. In 2013, 6 secondary schools and 5 vocational colleges were fully repaired in the subproject areas.

5. Macroeconomic indicators

The FV regions play an important role in the economy of Uzbekistan; their total share of the country's GDP in 2013 was 17.5%, in industrial production - 23.9%, in consumer goods - 35.4%, in retail trade - 22.8%, in paid services - 24.6%, and in the gross agricultural production - 26.1%.

In recent years, the main macroeconomic indicators of regions have grown rapidly. At the end of 2013, the GRP growth and industrial production in the Andijan and Namangan regions exceeded 10%. In the Ferghana region, GRP growth was 9.4%, including industry growth at the level of 7.8%. The service sector showed the most rapid growth: at the end of 2013 its growth

rate amounted to 115.2% in the Andijan region, and the Namangan and Ferghana regions service sector growth reached 119.3%. The growth rate of retail trade in the Andijan, Namangan and Ferghana regions were at 115.9%, 117.1% and 113.5% respectively.

Although agriculture still dominates in the structure of GRP, its share is gradually decreasing. The share of industry in GRP increased in the Andijan region in 2013 reached 22.7% (+ 3.4% compared with 2012), in the Namangan region - 10.8% (+ 0.9%), in the Ferghana region - 17.8% (+ 1.2%). However, it should be noted that none of FV regions reaches average republic level (24.2%).

The economic potential of rural districts of subproject areas hardly can be considered as high. The share of industrial production in 4 districts of the subproject area in the Andijan region is only 3.1%, in 2 districts of the subproject area of the Namangan region - 3.8%, in 4 rural districts of the subproject area of Ferghana region (Ferghana city is not included) - 12.4%. The contribution of Bulakbashi district of the Andijan region, and Altyaryk and Ferghana districts of the Ferghana region into the industrial production of the regions is lower than 1%. The situation is similar with the production of consumer goods. As a result, none of the Project Area districts (except for Ferghana city) reaches the average regional level of industrial production and consumer goods per capita.

Average per capita figures of retail trade and paid services also indicate a low level of socio-economic development of the subproject areas. In 7 out of 10 rural districts of the subproject areas these indicators are below regional averages.

The revenues of district budgets of subproject areas tend to grow steadily. However, all districts, except Ferghana and Kuvasay cities, use subventions from the center to secure sustainable performance; it's noticeable that the reliance of the districts on the subventions is steadily decreasing. The share of subventions is particularly high in the local budget of districts in the Namangan region. None of the regions receives subsidies from the central budget.

The contribution of Project districts to the revenues of regional budgets is largely insignificant. The share of one district of the subproject area in the Andijan region averages out at 2.8% of the total revenues of the regional budget; for the Namangan and Ferghana regions (Ferghana city is not included) the figure reaches 5.2% and 3.7% respectively.

In the Andijan region, as much as 15% of regional budget spending is done on the districts of the subproject area; in the Namangan and Ferghana regions, the spending pattern is at 10.5% and 22% respectively.

Table 16. Main indicators of economic development of districts of the subproject areas in 2013

	Andijan region	Districts of the subproject area	Namangan region	Districts of the subproject area	Ferghana region	Districts of the subproject area
Budget revenue of the districts as a % of the region's revenue	100	11.3	100	10.6	100	22.4
Expenditure on the districts as a % of the region's budget expenditure	100	15.3	100	10.5	100	22.4
Industrial production, billion sums	8,297	260	1,630	61.7	4,649	3,087
Industrial production of the districts as a % of the region's industrial production	100	3.1	100	3.8	100	66.4
Gross agricultural output, billion sums	3,056	1,342	2,429	644	2,573	956
Agricultural production of the districts as a % of the region's agricultural production	100	43.9	100	26.5	100	37.1
The number of active small business enterprises (SBE), units	19,966	2,850	12,292	1,113	20,210	6,469
Non-functioning SBE, % of total SBEs	6.4	7.7	14.9	7.6	8.3	6.4
Employees of SBEs, thousand people	1,008	207	723	91	1,108	337
Small business contribution, as a % of GRP	57.5	x	79.2	x	61.1	x
Small business production as a % of the total industrial output	11.7	62.4	48.8	75.9	21.1	42.4
Small business production as a % of the total agricultural output *	99.9	99.9	99.2	99.5	96.7	96.8
Small business as a % of the total retail trade turnover	44	42	45.5	56.4	42.1	46

Source: Calculations based on data provided by khokimiyats

Note: * including private and dehkan farm households

It is noticeable that small businesses are rapidly developing in the studied regions. The share of small business in the Andijan region's GRP in 2013 was 57.5%, in Namangan and Ferghana its share in GRP reached 79.2% and 61.1% respectively. In 2013, there were 2,850 small businesses operating in the subproject areas of the Andijan region, in Namangan – 1,113 units, in Ferghana – 6,469 units. In 2013 more than 78% of the total employed population in the subproject areas worked in small business, the corresponding figure for Namangan and Ferghana regions was about 68%.

The development of the small businesses proves to be of great importance for the economies of the areas. Moreover, according to Table 16, the growth rates of small businesses in the

industrial sector of the subproject areas are higher than the average regional rates. In general, this is an indicator of weak industrial development in the regions.

The sustainability of small businesses is a serious problem for all the regions. All subproject areas have a high share of inactive small business enterprises; this share exceeds 10% of the total number of registered entities in 4 of 12 districts of the Project area. The problem proves to be pressing as the situation has been observed for a long period of time. Moreover, in some districts, including the districts of the subproject area of the Namangan region, the number of liquidated small businesses in 2013 exceeded the number of generated ones for the given period.

6. Agriculture in the subproject areas

Over the years, in all three regions the agricultural sector produced by far the largest share of the GRP. In the Namangan region, the share of this sector in 2013 amounted to 36.8%, in the Andijan region - 27.3%, and in the Ferghana region - 19.3%.

According to official statistics, agricultural production in the subproject areas is growing quite rapidly. According to the district khokimiyats data, in 2013 the annual growth rate of agricultural production was above 106% in all districts, except Bulakbashi (103.7%). In Dzhalalkuduk, Chartak, and Tashlak districts the growth of agricultural output exceeded 10%.

Subproject areas contribute significantly to the gross agricultural product of the regions. The share of the agricultural sector in the subproject districts of the Andijan and Namangan regions was about 26%, whereas the share of subproject districts of the Ferghana region exceeded 37% (Table 17).

Table 17. The share of subproject districts as % of the gross regional agricultural product

Regions	**Subproject districts, as % in the gross agricultural product of regions**	**Agricultural production annual growth, %**	**Subproject districts, as % of cultivated land in the region**
Andijan region	-	107.5	-
Bulakbashi	4.7	103.7	3.7
Dzhalalkuduk	9.2	110.2	8.8
Kurgantepa	7.9	107.2	10.6
Khodjaabad	4.9	106.4	3.2
Subproject area only	**26.7**	**106.9**	**26.3**
Namangan region	-	108.1	-
Chartak	8.4	110.3	5.5
Yangikurgan	18.1	109.4	6.2
Subproject area only	**26.5**	**109.9**	**11.8**
Ferghana region	-	107.8	-
Ferghana city	4.1	106.4	0.8
Kuvasay city	4.8	106.7	2.7
Altyaryk	8.4	109.7	7.1
Tashlak	5.7	111	5.6
Ferghana	7.1	107.2	7
Kuva	7.1	106.9	6.7
Subproject area only	**37.1**	**108**	**30**

Source: Regional statistics offices, 2013

Subproject areas possess significant land resources. The total area of subcommand lands, which constitute the bulk of agricultural land, exceeds 163,000 ha. Almost all cultivated lands in the subproject areas are irrigated.

The main crops in the area studied are wheat and cotton which account for more than 65% of the acreage in the Andijan region, in the Namangan and Ferghana regions their share reaches 78%.

Table 18. Cropping patterns in FV regions in 2013, as a % of the cultivated area

Crop	Andijan	Namangan	Ferghana
wheat	30.2	40	43.3
cotton	35.2	37.4	34.4
vegetables and potatoes	10.8	9.4	9.7
rice	1.4	0.66	0.1
melons	0.8	0.9	1
forage crops	5.2	0	10.3
fruits and grapes	16.4	11.64	1.2

Source: regional statistics offices, 2013

The main types of agricultural producers in the subproject areas, as well as in the whole region, are private and dehkan farms. In all districts, except for two districts in the Ferghana region, the farms produce over 98% of gross agricultural production.

In comparison with 2008, in 2013 the number of private farms in the Project Ares decreased by 2.5 times on average as a result of the so-called optimization/consolidation of private farms in the FV; while the average amount of land per farm increased by 2.4 times, and the average number of employees in a farm grew by 2.2 times. The changes took place as a result of the implementation of the optimization/consolidation of farmland policies under the Decree of the President of the Republic of Uzbekistan 'On optimization of arable farmland and increasing the production of food crops' dated October 20, 2008. According to the Decree, each region of Uzbekistan would establish a special committee, the role of which was to develop proposals for optimizing the land use. The committee consisted of representatives from more than 30 organizations – khokimiyats, ministries, banks and others. Every district subcommittee developed detailed proposals on specific farms taking into consideration various criteria including a farm's size, income, availability of machinery, advances in execution of contracts, education of farmers and others. The final stage of the Committee's work was to provide recommendations to farmers regarding the consolidation their farms with larger and more successful neighboring farmers. The process of consolidation was conducted on the basis of applications submitted by farmers. As a result of the optimization process, while the number of private farms decreased significantly, the sustainability and competitiveness of newly established farms increased. The optimization of farmland still continues in all regions; unprofitable farms are been reorganized. The pace of optimization by the present moment is significantly lower than in the period between 2009 and 2012. In 2013, just 412 farms were dissolved in three subproject areas, i.e., the share of households optimized was 2% lower of the total number of private farms of the three regions. It should be noted that almost 38% of the dissolved farms are reported for the subproject areas. This indirectly indicates low agricultural productivity in the majority of the Project districts.

Table 19. Main indicators of farms' performance in FV regions and in the subproject areas in 2013

	Andijan region	Subproject area	Namangan region	Subproject area	Ferghana region	Subproject area
The number of private farms, units	7,175	2,180	5,793	1,334	8,478	3,061
The area of land allotted to private farms, thousand ha	256.2	67,5	264.6	37.1	339	107
The average size of a private farm, ha	35.7	31	45.7	27.8	40	35
Private farms' production, as % of gross regional agricultural product	45.8	42.4	20.8	15.5	34.4	34
The number of the employed on private farms, thousand people	127.2	34	83	18.8	211	70
The average number of employees on a private farm, people	18	16	14	14	25	23
The number of liquidated private farms in 2013, units	60	31	83	26	269	98
The number of dehkan farms/plots, units	481,972	117,907	454,876	71,418	580,318	188,171
The area of land allotted to dehkan farms, thousand ha	48.6	13	48.8	8.4	71.5	23.4
The average size of a dehkan farm, ha	0.10	0.11	0.11	0.12	0.12	0.12
Dehkan farms' production, as a% of gross regional agricultural product	53.6	57.2	78.4	84	63.9	64.7

Source: Regional khokimiyats, 2013

Dehkan farms are the most numerous and productive category of agricultural producers (Table 20). They actively use their small plots, widely practicing re-seeding and collecting 2-3 harvests per year, which allows them to provide an average of more than 63% of the gross agricultural product of the regions, by using 13.7% of the agricultural lands (an average of three regions).

Dehkan farms report the highest crop yields in almost all types of crops. The bulk of cereals (except wheat), oilseeds, fodder crops, grapes, potato and vegetables are produced precisely in households/dehkan farms. However, the sector of dehkan farms is working with maximum efficiency and almost reached the limits of its growth under the current conditions.

Table 20. Yields of agricultural crops on private and dehkan farms in 2013

centner / ha

Crops	Andijan		Namangan		Ferghana	
	Private farms	Dehkan farms	Private farms	Dehkan farms	Private farms	Dehkan farms
Wheat	70	78	49	64	58	73
Potato	510	343	154	201	202	239
Other vegetables	596	511	190	279	246	291
Fruits	87	246	50	109	98	186
Grapes	121	206	65	129	141	190
Melons	439	397	183	245	193	181
Rice	66	115	53	57	-	62
Grain corn	206,7	231,9	27	67	51	63
Feed corn	235	310	-	-	269	375

Source: Regional Statistics Offices, 2013

An important part of the agricultural sector is livestock production, which contributes as much as 27.9% in the Andijan region, 38% in the Namangan region, and 36.2% in the Ferghana region to the gross agricultural product. By far the largest amount of livestock (96%) and poultry (80.5%) is concentrated on dehkan farms, where the better productivity and growth rates in the numbers of livestock/poultry are shown as well (Table 21).

Table 21. Livestock and poultry production in regions of the Ferghana Valley, in 2013

	Andijan		Namangan		Ferghana	
	Private farms	Dehkan farms	Private farms	Dehkan farms	Private farms	Dehkan farms
Cattle, thousand heads	37	861	22	542	40	834
Sheep and goats, thousand heads	48	1135	20	639	39	704
Poultry, thousand heads	412	4865	744	1457	497	2380
Meat production in live weight, tons	3293	107485	2550	96527	4563	112911
Milk production, tons	23545	684451	12444	485150	31054	715502
The average milk yield of a cow, kg	1682	2208	1333	2331	1681	2029
Wool production, tons	77	2055	40	1407	61	1093
The average amount of wool from a sheep, kg	1,6	1,8	1,6	1,9	1,4	1,5
The production of eggs, million	24	272	67158	88754	34	169

Source: Regional khokimiyats, 2013

The productivity of the livestock sector in the FV regions is higher than in other regions of the country, especially on dehkan farms; currently, whereas the sector can supply the population of the FV with dairy products, meat and eggs production volumes are insufficient for the purpose. Despite the fact that fodder crops occupy a very small area, in 2013 in the Andijan and Ferghana regions[9], the production of forage reached almost 1 million tons. However, the

[9] No data for the Namangan region available

amount of the crops produced locally is still insufficient to satisfy the requirements on the forage for the livestock production of the regions fully.

In general, the productivity of the agricultural sector in the regions is rather low – the amount of agricultural products per an agricultural worker in 2013 in the Andijan region was 6.9 mln. sums, in the Namangan and Ferghana regions it was higher, at 8.9 mln. sums and 6.9 mln. sums respectively. One of the main factors of low productivity of farms is the lack of irrigation water, along with low productivity of land resources, and the deterioration of agricultural land.

CHAPTER IV. FINDINGS OF SOCIAL ASSESSMENT

A. BASIC CHARACTERISTICS OF PROJECT BENEFICIARIES

1. Demographic Profile of Households

Whereas the majority (89%) of the surveyed households is located in either rural areas or in small urban-type settlements, the residents of large cities Ferghana and Kuvasay make up 11% of the sampling. The average household size in the three subproject areas is 5.4 persons; 46% of the households report 5-6 persons. Women make up nearly a half of the population in the Project Area. The average age of family members is 29. The working age population[10] constitutes the largest group among the residents. The proportion of children under 16 years old is 29 percent; the pension-age group of people makes up 9.1 percent of the population. The factual number of old-age pension beneficiaries is smaller[11] (Table 22).

Table 22. Household size and composition in the subproject areas

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Average family size	**5.4**	5.3	5.7	5.2
Rural households, %	**88.5**	100	89.3	76
Females, %	**48**	47.7	46.4	49.6
Children under 16, %	**29.1**	29.8	30.8	2.9
Pensioners, %	**9.1**	10	8.3	9
The disabled, %	**1.1**	1	1.4	0.9
Households headed by females, %	**15.5**	12.5	18.9	15

Source: Household survey, 2014

The ethnic composition of the population is rather homogeneous: 90.1 percent of households are Uzbeks (for instance, in the Podshaota-Chodak subproject area, Uzbeks make up almost 100 percent of the surveyed)[12]. Tajiks prevail among other ethnic groups (6.6 percent) and reside mostly in rural settlements in the Isfayram-Shakhimardan area where they account for 18.1% of the population. Households belonging to different ethnic groups do not provide any significant differences according to demographic indicators.

2. Education and Employment

Overall, education level of the population of the three subproject areas is rather high and identical to the Republic's average vocational and higher education indicators for adults (35% and 10.5% in the subproject areas compared with the national average 36% and 11% respectively). Although the education level of women over 25 years old is slightly lower than

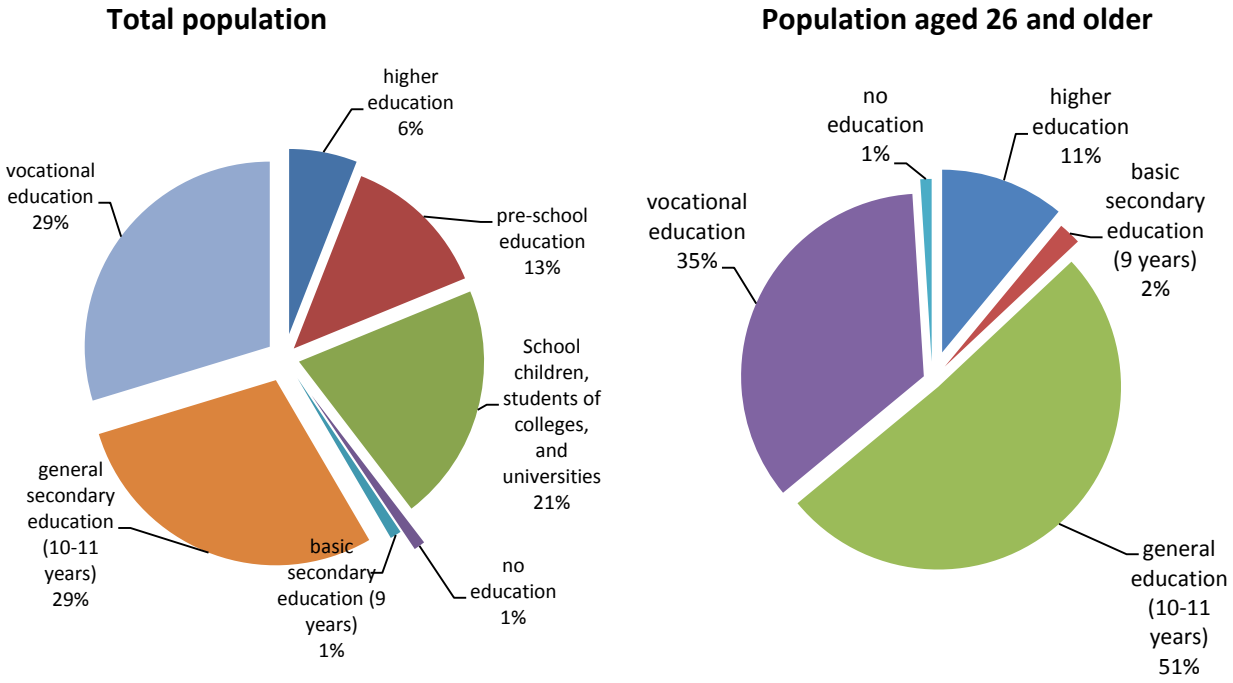
[10] Men aged 16 to 59 and women aged 16-54

[11] The amount of old-age pension beneficiaries is decreasing annually, which accounts for the rise observed in the past 25 years in the employment rates of the informal and unregistered sectors of the economy. After the introduction of new requirements on the claiming of pension procedure in 2010 and 2013, a significant number of people reaching retirement age fail to confirm their employment record to get a maximum pension. Some of the retirement-age people have no employment record confirmed, even the minimum employment period needed to get a pension.

[12] Official statistics on the ethnic composition of the population are either non-existent or unreliable, as the latest census of the population of Uzbekistan was conducted in 1998, i.e. before the breakdown of the former USSR and the following waves of out-migration.

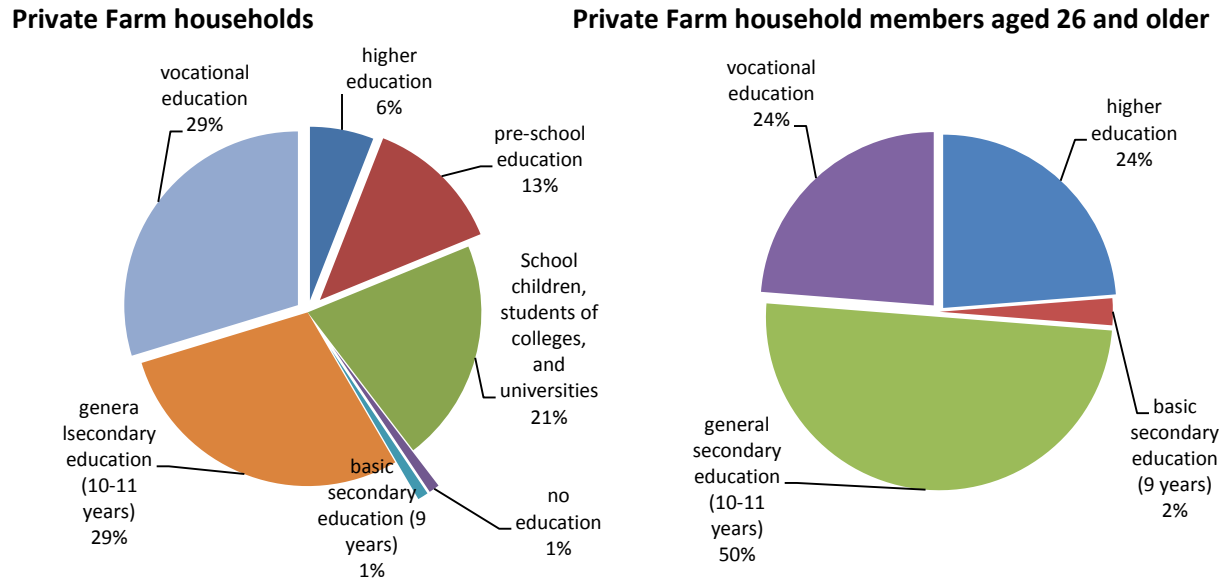
that of men, gender differences are insignificant. The education level of household members aged 25+ differs considerably in the project districts. By far the highest educational indicators are shown for Savay-Akburasay (52.5% have either a vocational or higher education qualification), whereas the lowest figures are indicated for Podshaota-Chodak at 35.4%. In the 25+ age group, twice as many people in urban settlements have higher education diplomas as in rural ones, at 58% and 40% respectively (Figure 10).

Figure 10. Education level of surveyed household members



Source: Household Survey, 2014

By far the largest secondary vocational education patterns are shown for the farmers at the age of 25 and older, in comparison with the population in total.



Source: Household Survey, 2014

As the survey was conducted at the end of November and the beginning of December 2014, the agricultural season was actually completed in the area. Therefore, the economic activity and employment figures are rather low for households whose incomes are mainly generated on households' garden plots or private farms' plots. Nearly half of the economically inactive household members constitute people who neither have nor look for a job (47%). The unemployment figures for the surveyed households are relatively high, at 8%. By far the largest proportion (56.1%) of the employed household members work in the non-agricultural sector; nearly a quarter of such workers have a job at a budgetary establishment. The entrepreneurial activity of the population is negligible, as a mere 7.5 percent of the local working-age population or 12.4% of the employed run their own business (including unregistered businesses). By far the largest percentages of entrepreneurs are observed for self-employed (59%), unregistered (25%) and patented (12%) businesses; only 4% of entrepreneurs report having an officially registered business.

In all subproject areas employment structure doesn't seem to be optimal. The share of the temporarily or seasonally employed (both in the agricultural and non-agricultural sectors) makes up 11 percent of the overall working-age population. Hidden unemployment along with underemployment is widespread among those who work on dehkan plots. Overall, unemployment rates (including hidden unemployment) reach a considerable 18.5% of the working-age population. Most of the agricultural workers engaged in work on dehkan plots consider themselves as "unemployed", since these plots are too small to provide full-time work for all family members. By far the lowest employment rates, at 53.6%, are indicated for Podshaota-Chodak; besides, unemployment and so-called hidden unemployment stand high at 9.1% and 16% respectively in the subproject area (Table 23).

Table 23. Economic activity and employment in the surveyed households, % of the working-age population

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
ECONOMICALLY ACTIVE	**64.4**	**68.9**	**62.7**	**61.6**
The employed	**56.7**	**59.9**	**53.6**	**56.6**
Engaged in non-agricultural sectors	**31.8**	**32.1**	**24.6**	**39**
Employees, officially registered	22.1	24.4	14.8	27.7
Entrepreneurs	7	4	8.2	8.5
Temporary and seasonal workers	2.7	3.7	1.6	2.8
Engaged in the agricultural sector	**22**	**22.7**	**26.6**	**16.3**
Employees, officially registered	7.3	13.3	4	4.7
Private farmers	0.5	0.6	0.3	0.6
Temporary and seasonal workers	3.5	4	6	0.3
Engaged on family dehkan plots	10.7	4.8	16.3	10.7
Consider themselves as unemployed,%	*2.5*	*2.9*	*2.7*	*1.9*
Labor migrants	**2.9**	**5.1**	**2.4**	**13**
THE UNEMPLOYED	**7.7**	**9**	**9.1**	**5**
ECONOMICALLY INACTIVE	**35.6**	**31.1**	**37.3**	**38.4**
Neither work nor seek jobs	12.7	6.3	15.4	16.5
Pensioners and the disabled	14.3	14.6	14.5	13.4
Pupils/students	8.6	10.2	7.4	8.5

Source: Household Survey, 2014

According to the table, incomes of almost a quarter of working-age household members in the three subproject areas are generated via agricultural activities; as much as 41% of the working-

age population is engaged in the agricultural sector. There are noticeable differences in the employment patterns of the working-age population revealed for the three areas. Whereas the majority of the employed population in both Podshaota-Chodak (52%) and Savay-Akburasay (41%) constitute agricultural workers, the corresponding figure for the Isfayram-Shakhimardan subproject area is much lower, at 29%. Nearly half (or 10.7% of the working-age population) of the agricultural workers of the areas are engaged in work on household garden plots. However, there is a marked difference in the figure by subproject area (21% in Savay-Akburasay, 61% in Podshaota-Chodak and 66% in Isfayram-Shakhimardan). Working pensioners and disabled people account for a considerable 14% of the surveyed household members; both employed and non-working pensioners make up 9% of household members. It is noticeable that the number of the labor pension beneficiaries, especially those entitled to a maximum-size pension, decreases annually following the national trend. It results from the fact that a growing number of people, even those who worked in the official sector, find it very problematic to confirm their labor record.

'Claiming a pension has become a big issue for private farms' workers. A great many workers who can receive pensions cannot do so. It turns out that the "tranche" didn't cover pension contributions. For years on, we paid income tax for our workers and no one told us about the pension fund contributions. As a result, our workers' labor records were not officially confirmed, and they got a minimum pension.' A farmer, the Isfayram-Shakhimardan subproject area.

Economic activity rates for low-income and non-poor households differ with each other insignificantly. However, income levels appear to greatly influence the patterns of economically inactive members of the surveyed households. While there are more students in non-poor households, in low-income ones there are more unemployed people who are not looking for a job. Besides, non-poor households report having more their members engaged in the non-agricultural sector (especially budgetary establishments) than low-income households. As entrepreneurial activity is concentrated mostly in the informal sector, it does not guarantee people against poverty. In fact, it is the informal small business along with temporary work sector that constitutes the residual employment where the excess workforce is found.

3. Households Incomes and Expenditure. Identification of Poor Households.

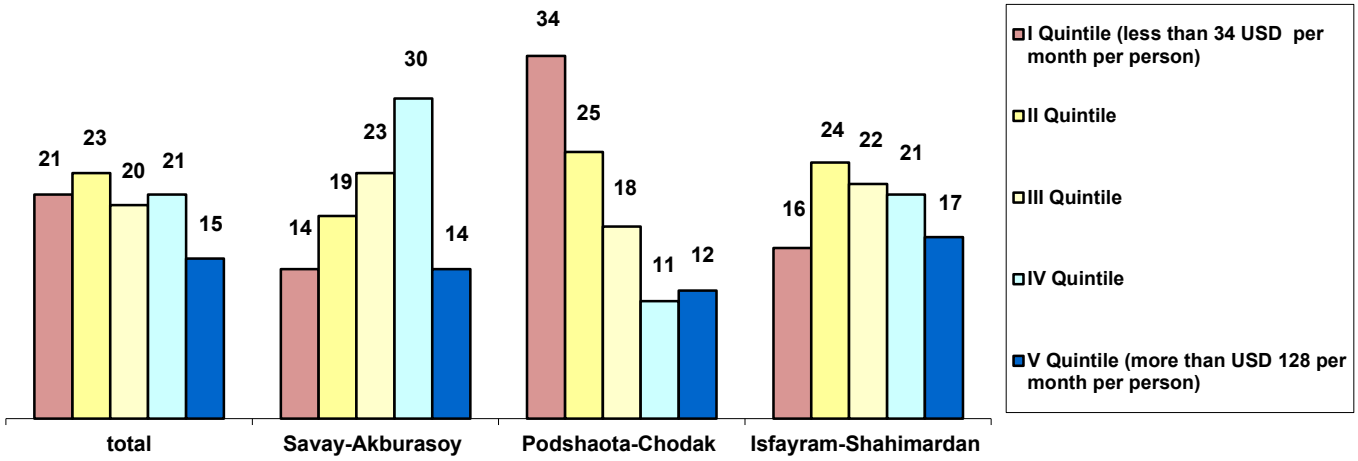
According to the study, as of November 2014, the average monthly income of households[13] in the subproject areas made up 1 million 70 thousand sums (USD 445), while the average per capita income was 199 thousand sums (USD 83). The figures for Savay-Akburasay equaled 1 million 109 thousand sums and 211 thousand sums respectively, whereas 982.5 thousand sums and 172 thousand sums for Podshaota-Chodak, and 1 million 116 thousand sums and 215 thousand sums for Isfayram-Shakhimardan were indicated respectively.

It is noticeable that the average income of farmers' households differs greatly from that of the total population. The average monthly income of a farmer's households in the three subproject areas was as much as 2 million 329 thousand sums (USD 970), with the average per capita income reaching 395 thousand sums (USD 165). The figures for Savay-Akburasay equaled 3 million 572 thousand sums and 615 thousand sums respectively, whereas 2 million 186 thousand sums and 359 thousand sums for Podshaota-Chodak, and 1 million 354 thousand sums and 238 thousand sums for Isfayram-Shakhimardan were observed respectively.

[13] The cash income figures given in this section exclude the value of crops and livestock produced on dehkan plots and consumed by families.

43.7% of the surveyed households (which consists 47.4% of the Project Area population) are concentrated in the two bottom income quintiles. Some 65% of the population lives on less than 2 dollars a day[14]. From 33% up to 59% of the households across the subproject areas reported the average per capita income under 110 thousand sums a month. Whereas Isfayram-Shakhimardan households show average income levels, by far the highest household incomes are shown for Savay-Akburasay, and the lowest incomes are observed in Podshaota-Chodak households. The average per capita income of families is illustrated in Figure 11.

Figure 11. Quintile distribution of households by the average per capita income in November 2014, USD



Source: Household Survey, 2014

In 2012, Uzbekistan developed a methodology for identification of poor families to be used by makhallas for the distribution of allowances for low-income families. This methodology is defined in the regulation "On the procedure of appointment and payment of social allowances and material aid to low-income families"[15]. The minimum threshold of income, which gives the right to an allowance, is established by the regulation and defined as 1.5 times the minimum wage per family member per month. Besides, additional factors are also taken into account, including availability of land, employment status of family members, and presence of persons in need of care. Given the lack of other official poverty criteria, the above-mentioned methodology was used for the purposes of the SA for the calculation of poverty level in the subproject areas.

According to the household survey results, across the three subproject areas the share of families who receive allowances for low-income families via makhalla support system made up 9.7%, as of November, 2014. Moreover, the above-mentioned methodology revealed that by November, 2014 another 21% of the households were at high risk of getting low-income status as both income and employment indicators for the surveyed households made them theoretically eligible for the makhalla support. It is noticeable that such families were supposed to confirm such a low income over three months before the application; however, it proved to be virtually impossible for such families as it is September and October when the families gain the main part of the annual agricultural income.

[14] Current exchange rate without PPP corrections
[15] Decree of the Cabinet of Ministers №44 dated 15 February, 2013

The average per capita income of non-poor families is 1.5 as much as that of a low-income household (133 thousand sums). The income indicators correlate significantly with both household size and spending: the larger a household is, the smaller per capita income and expenditure patterns are.

There are several factors that increase the risk of descending into poverty for families:

- a larger size of household
- lack of vocational or high education of the head of household
- household members' overdependence on garden plots or temporary agricultural works as the only way to generate income.

The survey explored the respondents' perception of their family's income level. The wellbeing self-assessment results largely correlate with the data on household income level. Over half of the households surveyed (56%) believe that their income covers only the bare necessities including food, clothing and utilities payments. Another 21% report that their income is enough only to purchase food; it is noticeable that such a response is given by 10 % of relatively better-off families from quintiles 4-5. Only 4.6% of respondents find their income inadequate even to buy food. Few respondents say that can afford anything they might need due to their income levels. It is noticeable that positive perception of one's income is much more frequent in the Isfayram-Shakhimardan subproject area in comparison with the other two areas (Table 24).

Table 24. Respondents' perception of their household income

as % of households

	Insufficient to buy food	Sufficient only to buy food	Sufficient to afford basic necessities	Sufficient to afford food, clothing and other purchases	Sufficient to afford everything
Total	**4.6**	**21.2**	**56.3**	**15.7**	**2.2**
Savay-Akburasay	8.9	17.3	54.8	16.7	2.4
Podshaota-Chodak	4.1	36.7	43.2	13.6	2.4
Isfayram-Shakhimardan	0.6	9.6	71.3	16.8	1.8
Male heads of households	4	20.9	57.5	15.5	2.1
Female heads of households	7.7	23.1	50	16.7	2.6
Quintile I	11.3	34	50	2.8	1.9
Quintile II	5.3	23.7	55.3	14.9	0.9
Quintile III	3.8	25.5	61.3	8.5	0.9
Quintile IV	1	10.5	61.9	21.9	4.8
Quintile V	0	8.2	52.1	37	2.7

Source: Household Survey, 2014

Non-agricultural activities appear to be the most significant source of household income as the wages in the sector 1.5 -2 times higher than those of agriculture. As much as 52.4% of the households report generating cash incomes in the non-agricultural sector; according to them, the incomes account for a third of their families' earnings (34.4%).

As for income generated in the agricultural sector, its share in households' earning is not of great importance; with the productivity of family garden plots being low, the yield is mostly consumed by the household members.

Agriculture-related cash incomes account for 23.2% of the average household income in the three subproject areas; in Podshaota-Chodak the figure reaches a considerable 32.1% (Table 25).

In both Podshaota-Chodak and Isfayram-Shakhimardan areas, the major sources for generating income in the agricultural sector are dehkan farms. As for Savay-Akburasay, it is also the earnings of hired agricultural workers that contribute to family's income, because the productivity of the area's dehkan plots is relatively low.

Remittances make up a significant share (10%) in household incomes; yet, a small 8.5% of the surveyed families earn money this way. The proportion of social transfers is rather high in the income structure and amounts to 16% percent for families with old-age pensioners and beneficiaries of disability (Disability Groups I and II) pensions and allowances. As for other social transfers, including makhalla allowance to low-income families, they constitute a mere 2 percent in the structure of household incomes.

Table 25. The structure of per capita family income in November 2014

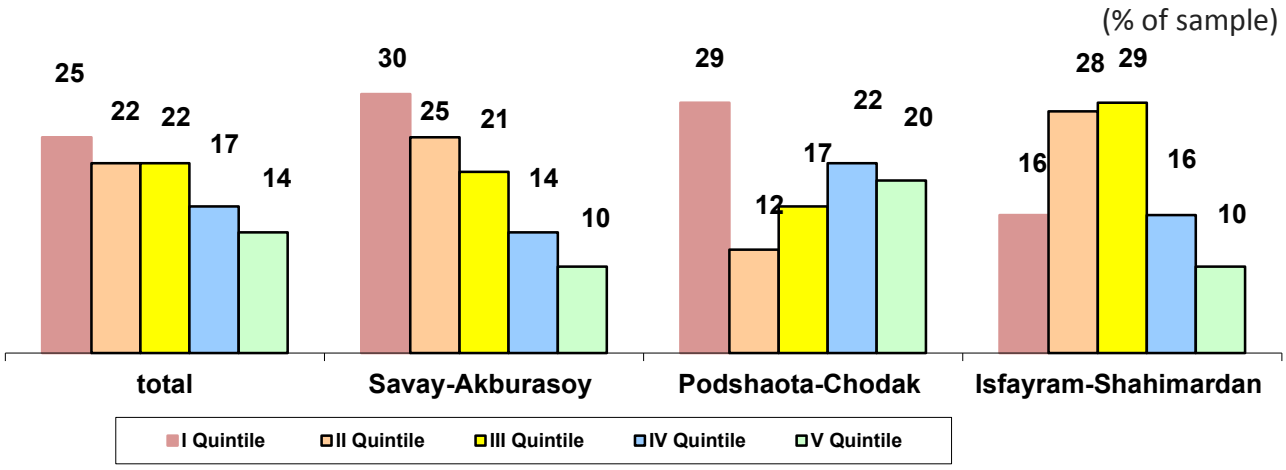
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
The proportion of households generating income by:				
Sale of agricultural product grown on family dehkan plots	31.5	20.8	36.7	37.1
Sale of agricultural product grown on private farm plots	1.4	1.8	1.2	1.2
Employment in agriculture	12.5	27.4	5.9	4.2
Employment in non-agricultural sectors	52.4	67.9	38.5	50.9
Non-agricultural entrepreneurial activity	20.8	9.5	23.1	29.9
Labor migration	8.5	12.5	5.3	7.8
Old-age, breadwinner's loss and disability pensions	38.7	37.5	43.8	34.7
Allowances to low-income families	11	5.4	25.5	1.8
other	2.6	3	3	1.8
Income generated by : % of average household income				
Sale of agricultural product grown on family dehkan plots	15.3	7.4	25.2	14.3
Sale of agricultural product grown on private farm plots	3	3.7	3.5	1.9
Employment in agriculture	4.9	8.6	3.4	2.3
Employment in non-agricultural sectors	34.4	42.3	24.1	35.8
Non-agricultural entrepreneurial activity	13.4	8	15	17.9
Labor migration	10.2	11.7	8.8	9.9
Old-age, breadwinner's loss and disability pensions	15.8	16.5	14.7	16.2
Allowances to low-income families	1.9	1.1	4.4	0.3
other	1	0.7	1	1.4
Average per capita income, UZS '000				
Sale of agricultural product grown on family dehkan plots	89	75	112	74
Sale of agricultural product grown on private farm plots	466	462	656	283
Employment in agriculture	69	64	77	93

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Employment in non-agricultural sectors	133	134	109	151
Non-agricultural entrepreneurial activity	125	170	111	122
Labor migration	254	194	274	335
Old-age, breadwinner's loss and disability pensions	185	202	121	235
Allowances to low-income families	139	139	86	25
other	81	62	54	156

Source: Household Survey, 2014

As of November 2014, the average monthly household expenditure was 1 million 139 thousand sums (USD 476). The monthly per capita spending averaged out at 211 thousand sums (USD 88). The indicator for Savay-Akburasay was 176 thousand sums; Podshaota-Chodak reported 270 thousand sums, and the spending per capita in Isfayram-Shakhimardan was 187 thousand sums a month. By far the lowest per capita expenditure was indicated in Savay-Akburasay where an impressive 55% of household are found in the two quintiles with the smallest expenditure patterns (Figure 12).

Figure 12. Quintile distribution of per capita household expenditure in November 2014.



Source: Household Survey, 2014

As of November 2014, the average cash expenses of farm households equaled 1 million 947 thousand sums (USD 814) a month, whereas the average per capita expenditure was 330 thousand sums (USD 138). The indicator for farmers in Savay-Akburasay was 309 thousand sums; Podshaota-Chodak's farms reported 446 thousand sums, and the spending per capita in Isfayram-Shakhimardan was 242 thousand sums a month. Spending patterns of low-income and non-poor families are neither differ a lot (204 thousand sums compared to 212 thousand sums), nor depend on living standards of the farms.

Table 26 illustrates the average spending patterns per capita of the surveyed families. According to the data, by far the most money (35%) is spent on food; it is interesting that the percentage is not as high as was anticipated. The pattern can result from not only the consumption of own plots' yield, but also the prevalence of payments in kind: the majority of agricultural workers are paid grain which is consumed by the workers' family members, and makes up an important share in the food structure. As for other spending patterns, it is footwear and clothing for both children and adults that also stand out at 16%. All of the three subproject areas' households show rather low spending on education (3.6%), sanitary-hygienic

goods (3.1%) and bottled water purchase (0.6%). The maintenance costs at the surveyed dehkan households are low at 4% of the total expenditure which can account for the end of the agricultural season when the survey was done.

Table 26. The structure of average household expenditure in November 2014

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Families reporting the expenditure on, %				
food	**100**	100	100	100
potable water	**51.4**	48.8	49.1	56.3
clothing and footwear	**64.5**	66.1	75.1	52.1
detergents, hygienic goods	**92.3**	90.5	95.3	91
electricity	**82.7**	60.1	94.1	94
other utilities (excluding electricity)	**43.5**	25.6	32.5	72.5
transport fares	**91.7**	86.3	92.9	95.8
education	**52**	41.7	59.2	55.1
medication and doctors	**59.7**	41.7	69.8	67.7
Repair/ construction of a house	**6.9**	12.5	5.9	2.4
Operating costs of a dehkan farm	**31.2**	31.5	42	19.8
other	**50.6**	47	61.5	43.1
Expenditure on, %				
food	**34.5**	40.9	24.6	42.9
potable water	**0.6**	0.5	0.4	0.8
clothing and footwear	**15.6**	13.9	19.5	11.6
detergents, hygienic goods	**3.1**	3.1	2.2	4.3
electricity	**3**	2.8	2.2	4.4
other utilities (excluding electricity)	**3.7**	1	2.9	7.5
transport fares	**7.6**	8.9	4.4	11
education	**3.6**	4.8	2	4.6
medication and doctors	**5.5**	2.2	7.2	6.1
Repair/ construction of a house	**7.8**	3.8	15	1.1
Operating costs of a dehkan farm	**4**	4.1	5.4	2
other	**10.9**	13.9	14	3.6
Average per capita expenditure, '000 UZS				
food	**72.3**	71.3	65.9	79.8
potable water	**2.3**	1.8	2.4	2.6
clothing and footwear	**50.7**	36.7	69.3	41.5
detergents, hygienic goods	**7**	5.9	6.3	8.7
electricity	**7.6**	8.1	6.3	8.7
other utilities (excluding electricity)	**17.9**	7.1	23.5	19.2
transport fares	**17.4**	18	12.7	21.4
education	**14.4**	20.1	9.2	15.7
medication and doctors	**19.4**	9.3	27.8	16.9
repair/ construction of a house	**235.6**	52.4	679.1	88.3
operating costs of a dehkan farm	**27.1**	22.5	34.7	18.4
other	**45.2**	51.4	61	15.5

Source: Household Survey, 2014

4. Vulnerable groups in the subproject areas

On average, 35% of the surveyed households have a socially vulnerable member. By contrast, families with vulnerable members make up 62% in the Podshaota-Chodak subproject area. It is also noticeable that households with a female household head are more likely to have socially vulnerable family members. As much as 100% of families receiving makhalla allowance report having people from vulnerable categories.

Table 27. Households with a socially vulnerable member

	% of HHs
Total	**34.9**
Project area:	
Savay-Akburasay	32.1
Podshaota-Chodak	61.5
Isfayram-Shakhimardan	10.8
Households with vulnerable member :	
Headed by men	32.4
Headed by women	48.7
Households with vulnerable member :	
Low-incomes	100
Better-offs	27.9

Source: Household Survey, 2014

By far the largest vulnerable category proves to be the long-term unemployed, i.e. people of the working age who have been seeking a job for over 12 months without success. 11 percent of families have elderly members over 65 years of age. A smaller group (7.5%) represents families having the elderly and disabled in need of permanent assistance. A considerable 10 percent of households receive various types of makhalla allowances. Families with under 18-year-old disabled children who are registered with local social protection agencies make up 1.4 percent of the surveyed households in total.

Table 28. Households with socially vulnerable members, by vulnerable groups

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Disabled children under 18, registered with social protection agencies	**1.4**	0.7	3.1	0.6
The elderly and disabled people in need of permanent care who are registered/unregistered with social protection agencies	**7.5**	2.4	16	4.2
Single mothers with children under 18 years old	**0.8**	1.2	0.6	0.6
Mothers with many children (5 and more)	**4.4**	1.2	10.7	1.2
Elderly pensioners (65+)	**10.9**	11.3	14.8	6.6
Beneficiaries of makhalla allowances to low-income families	**0.4**	0.7	0.4	0.2
Beneficiaries of makhalla allowances to families with children aged 2-14т	**3.8**	2	9.2	1
Beneficiaries of makhalla childcare allowances to families with children under 2 years old	**5.6**	3.6	11.2	1.8
Beneficiaries of breadwinner's loss allowance or pension	**0.6**	0.6	0.6	0.6
The long-term unemployed (working-age population who have been looking for a job over 12 months and longer)	**12.7**	14.9	13.1	9.2

Source: Household Survey, 2014

5. Access to public utilities. The shortage of irrigation and potable water.

Almost all surveyed families (97.2 percent) live in private one-storey houses. Only 1.2% of urban households reside in multy-storey buildings/cottages. The households of the subproject areas have limited access to such basic public utilities as gas or water supply and sanitation. There is no sewerage in almost all (97.4%) of the surveyed settlements. According to the respondents, gas supply is an acute problem for the population especially in Savay-Akburasay and Podshaota-Chodak areas (66% and 57% of the households respectively don't have access to gas). By contrast, the situation with gas utilities is much better in Isfayram-Shakhimardan where only 16% of the households don't have access to the centralized gas supply. The gas pipelines either out of order or the low pressure of gas in the network prevents the normal supply, namely in winters. Thus, people have to burn dried cotton stems (*guzapaya*), which were prepared in autumn, for cooking and heating purposes. In many rural settlements trees are cut down; it is virtually impossible to buy some coal. Moreover, irregular electricity supply affects living standard of the population inevitably. 99.6% of the surveyed households have access to electricity supply. However, power cutoffs and voltage swings in the network are very common; some settlements report 6-8 hours of electric shutdowns every day. As a result, rural population tends to have very few electric home appliances. Lack of a fridge at home, for example, leads to limited consumption of certain food and worsening nutrition for family members. According to experts, most breakages occurring in pumps of irrigation/drainage networks or water supply mains are directly caused by electric shutdowns and voltage swings on the power mains (Table 29).

Table 29. Households' access to utilities

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Centralized gas supply				
Available and operable	**21**	16.7	1.8	44.9
Operates irregularly	**32.7**	17.9	41.4	38.9
Available but not functioning	**23.8**	41.1	23.1	7.2
Not available	**22.4**	24.4	33.7	9
Sewerage system				
Available and operable	**1.4**	0	0	4.2
Operates but with frequent irregularities	**1.2**	0	0	3.6
Available but not functioning	**1**	0	0	3
Not available	**96.4**	100	100	89.2
Centralized water supply				
Available and operable	**6.5**	0.6	1.2	18
Operates irregularly	**12.7**	26.2	3.6	8.4
Available but not functioning	**6.7**	13.7	4.1	2.4
Not available	**74**	59.5	91.1	71.3
Electricity supply system				
Available and operable	**8.3**	3	0	22.2
Operates irregularly	**91.3**	96.4	99.4	77.8
Available but not functioning	**0.2**	0	0.6	0
Not available	**0.2**	0.6	0	0

Source: Household Survey, 2014

All subproject areas experience pressing problems in the sphere of drinking water supply. Even though the survey showed that accessibility to water supply is quite high (14.3% of the households use water from the tap at home/yard and 51% from street standpipes), half of such

households report frequent cutoffs in the supply, up to 3.5 hours a day. In summer such irregular supply occurs even more often. Due to the shortage of potable water along with irregular and troublesome supply of water, the households are forced to store water. Practically all of the households store water as a reserve. For such purposes people use various tanks including canisters, flasks, cans and buckets. On average, such water reserve is about 40-50 liters, or 4-5 full buckets of water for a family. In 70 percent of cases, it is women and children who are responsible for fetching water regularly. They have to fetch water several times a day; the distance to the nearest water standpipe can be hundreds of meters. The farther the source of water is located, the more likely women tend to fetch as much water as possible which inevitably affects their health. The majority of the surveyed households have to provide themselves with water from outer sources on a daily basis.

Irregular and inadequate water supply, supply cutoffs and low pipeline pressure along with other water-related issues have become increasingly common in recent years. As a rule, the limited supply hours are caused by repeated breakdowns of the water network elements (pumps, pipes), power cutoffs, etc.

Table 30. Access of households to piped water during a week before the survey (December 2014)

	Total	**Savay-Akburasay**	**Podshaota-Chodak**	**Isfayram-Shakhimardan**
Do not have centralized water supply	**85.7**	**75**	**95.3**	**86.8**
% of households with centralized water supply				
Regular water supply (15-24 hours 7 days a week)	13.4	2.2	25	22.7
7 - 15 hours a day 7 days a week	14.4	22.2	0	9.1
6 or less hours a day 7 days a week	72.2	75.6	75	68.2

Source: Household Survey, 2014

Unfortunately, none of the corresponding organizations has information on which element of the water supply network is or is not fully operational. Over the past 7-10 years the water supply network has collapsed in many settlements; a great many water tube-borewells stand idle due to failures of pumps. Even in settlements where running water is formally provided, the residents are forced to use water from open water bodies, including the drainage canals due to irregular supply (Table 31). A worrisome 41.4 percent of families in the Podshaota-Chodak area take water for domestic needs from irrigation networks; in Isfayram-Shakhimardan 9.6% of people use water from drainage collectors whereas 3.4% take water from public water reservoirs (khauzes). These khauzes are rarely equipped with caps and seldomly cleaned. Even if these khauzes are filled with tap water or water delivered from a certified water reservoir, the water rapidly deteriorates and acquires an unpleasant smell, color and taste. Moreover, a great number of the households use water (for domestic purposes, for example) either from hand pumps, which lift polluted water from shallow aquifers, or from other poor-quality water sources including rainwater. Bottled water is used very rarely for drinking.

Table 31. Sources of water for drinking and domestic uses

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Sources of water for domestic uses				
Water supply pipelines in the house or in the yard	**14.3**	25	4.7	13.2
Street water standpipes, standpipes at neighbors'	**50**	80.4	45	24.6
Hand water pumps	**3.8**	0	1.8	9.6
Borewells with electric pumps	**12.5**	10.7	5.3	21.6
Borewells self-infiltrated with ground water	**2.4**	0.6	0	6.6
Water vendors	**1.8**	0	5.3	0
Water reservoirs, pump stations	**0.8**	0	2.4	0
Public water reservoir (khauz)	**3.4**	0.6	9.5	0
Rivers, canals, aryks, lakes	**35.9**	35.1	41.4	31.1
springs	**6.2**	8.3	10.1	0
Drainage collectors	**3.2**	0	0	9.6
Rainwater	**0.8**	2.4	0	0
Sources of water for cooking and drinking purposes				
Water supply pipelines in the house or in the yard	**14.3**	25	4.7	13.2
Street water standpipes, standpipes at neighbors' yards	**51.2**	77.4	47.9	28.1
Hand water pumps	**3.4**	0	0.6	9.6
Borewells with electric pumps	**15.1**	11.9	11.8	21.6
borewells, self-infiltrated with ground water	**2.8**	1.2	0	7.2
Water vendors	**2.8**	0	8.3	0
Water reservoirs, pump stations	**2.8**	0	8.3	0
Public water reservoir (khauz)	**1.6**	0	4.7	0
Rivers, canals, aryks, lakes	**16.7**	8.9	27.2	13.8
springs	**6.3**	7.1	11.8	0
Drainage collectors	**3.2**	0	0	9.6
Rainwater	**0.4**	0.6	0.6	0
Bottled water	**0.6**	1.8	0	0

Note: the sum of answers exceeds 100 percent, since residents can use several sources of water supply
Source: Household Survey, 2014

The limited access to safe drinking water is indicated, almost in equal proportions, for households with different income levels. Thus, it is evident that the majority of households in the subproject areas consume unsafe water from non-drinking water sources regularly.

16.7% of households, at least sometimes, have to use water for drinking and cooking purposes from the river or canal, and 3.2% - from a drainage collectors. Irrigation network is indicated is one of the main (sometimes the only) sources of water for domestic needs by 35.9% of households. When water is scarce in canals, the population is deprived even of these unsafe water sources.

'Canals provide us not only with irrigation water but also drinking water for both people and livestock. That's why it is the people who suffer most of all when there is no water in the canals. People have to walk 5-6 kilometers to fetch water for themselves and domestic animals'. A dehkan, Podshaota-Chodak

The poor quality of drinking water is a big issue, especially for settlements without water supply where people also suffer from frequent cutoffs in gas and power supply. Since low pressure in gas supply systems, power cutoffs, and drops in voltage in the power network stop being uncommon, most families drink unsafe water without boiling regularly. It is children who drink water from unsafe sources at high risk to themselves. The consumption of water from non-drinking sources proves to pose a risk to the public health and epidemiological situation in the areas.

6. Gender issues

It is noticeable that in all subproject areas women's economic activity is much lower than that of men (49% and 79% of the working-age gender cohort respectively). Whereas females are obviously second to men in respect of employment (only 41% of working-age women are employed), rates of open unemployment for women (8.6%) and men differ slightly from each other (Table 32).

Gender-related factors are of great importance for agricultural production in the subproject areas. Women make up 36% of the employed in total and 37% of those engaged in the agricultural sector. According to a WB 2015 study, when many male dehkans or farmers have migrated, their wives who are left behind have to take care of irrigation and land[16]. According to the SA data, 40% of women in the Project Area are employed in the agricultural sector where they work either as hired agricultural workers, day laborers (mardikors) or work on their own dehkan plots. A considerable 55% of the women work on their household garden plots. A third of the women consider themselves as 'unemployed', which indicates low effectiveness of the employment.
In comparison with men, women rarely work as hired agricultural workers. The share of temporary and seasonal female workers both in agricultural and non-agricultural sectors is not very large either.

As much as 54% of working-age women are employed in the non-agricultural sectors. The majority of them work at budgetary establishments (education and healthcare in most cases), where they are more likely to occupy low-paid positions in comparison with men.

A mere 6 percent of employed women work as entrepreneurs whereas the corresponding figure for male entrepreneurs reaches 16 percent. Women account for only 3% of farmers in the subject areas. Not only is the entrepreneurial activity of women low, but also it tends to take place in the informal sector.

[16] "Exploratory assessment of factors that influence quality of local irrigation governance in Uzbekistan." (the World Bank, 2015, forthcoming)

Table 32. Economic activity and employment of men and women

% of the working-age population

	Total	Men	Women
ECONOMICALLY ACTIVE	**64.4**	**78.9**	**49.3**
THE EMPLOYED	**56.7**	**72**	**40.7**
Engaged in non-agricultural sectors	**31.8**	**39.2**	**24**
Employees, officially registered	22.1	22.7	21.5
entrepreneurs	7	11.4	2.3
Temporary and seasonal agricultural workers	2.7	5.1	0.2
Engaged in agriculture	**22**	**27.6**	**16.2**
Employees, officially registered	7.3	10	4.4
farmers	0.5	1	0
Temporary and seasonal agricultural workers	3.5	4.1	2.9
Engaged in dehkan family plots	10.7	12.5	8.9
Consider themselves unemployed	*2.5*	*2.4*	*2.6*
Labor migrants	**2.9**	**5.2**	**0.5**
THE UNEMPLOYED	**7.7**	**6.9**	**8.6**
ECONOMICALLY INACTIVE	**35.6**	**21.1**	**50.7**
Neither have nor seek a job	12.7	1.6	24.4
pensioners and the disabled	14.3	10.8	17.8
Pupils/students	8.6	8.7	8.5

Source: Household Survey, 2014

The share of working-age women who neither work nor look for jobs is rather considerable in all subproject areas. However, it never indicates that their household doesn't need any additional earning: it is the members of low-income households who are not trying to find a job. The 'desperate unemployed' phenomenon appears to affect the people who are no longer hopeful that they will find a paid job. Overall, employment rates are much higher for men, except for the formal non-agricultural employment patterns in all subproject areas. Whereas rates of open unemployment for women and men differ only marginally, the hidden unemployment rate for women is twice as high as for men.

In spite of the low indicators of female employment, the contribution of women into the family economy is quite significant. The average income provided by women in the surveyed households amounts to 36 percent of the cumulative income of households as of November 2014. The share could be larger if women were equally paid in comparison with men. In the agricultural sector, the average income of women is equal to 65% of the average male income; as for non-agricultural sectors, women earn 83% of the average men's income. Moreover, women get smaller old-age pensions which results from low levels of income throughout employment periods (Table 33).

Table 33. Incomes of men and women from non-family based activities (November 2014)

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Wages in the agricultural sector				
Families, with earnings from men employment, %	10.5	22	5.3	4.2
Families, with earnings from women employment, %	3.2	7.1	0.6	1.8
Male earnings in family income,%	4.1	4.1	3.2	1.7
Female earnings in family income,%	0.8	1.5	0.2	0.6
An average income of men,'000 sums	378	336	546	386
An average income of women,'000 sums	248	225	320	317
Wages in the non-agricultural sector				
Families, with earnings from men employment, %	39.3	48.8	29	40.1
Families, with earnings from women employment, %	28.2	38.1	16.6	29.9
Male earnings in family income,%	21.6	26.9	16.4	21
Female earnings in family income,%	12.8	15.5	7.7	14.8
An average income of men,'000 sums	537	575	519	505
An average income of women,'000 sums	443	425	424	479
Old-age and long-service pensions				
Families, with earnings from men employment, %	17.5	21.4	14.2	16.8
Families, with earnings from women employment, %	29.2	26.2	34.3	26.9
Male earnings in family income,%	5.9	6.9	4.4	6.1
Female earnings in family income,%	8.6	8.2	8.3	9.3
An average pension of men,'000 sums	327	338	285	349
An average pension of women,'000 sums	287	325	223	334
Disability pensions				
Families, with earnings from men employment, %	2.6	2.4	4.1	1.2
Families, with earnings from women employment, %	3	3	3.6	2.4
Male earnings in family income,%	0.6	0.5	1	0.3
Female earnings in family income,%	0.7	0.8	0.9	0.4
An average pension of men,'000 sums	218	201	221	240
An average pension of women,'000 sums	235	293	228	171
Labor migrants' income				
Families, with earnings from men employment, %	7.9	10.7	5.3	7.8
Families, with earnings from women employment, %	0.6	1.8	0	0
Male earnings in family income,%	9.7	10.2	8.8	9.9
Female earnings in family income,%	0.6	1.5	0	0
An average income of men,'000 sums	1,188	991	1,519	1,232
An average income of women,'000 sums	900	900	0	0

Source: Household Survey, 2014

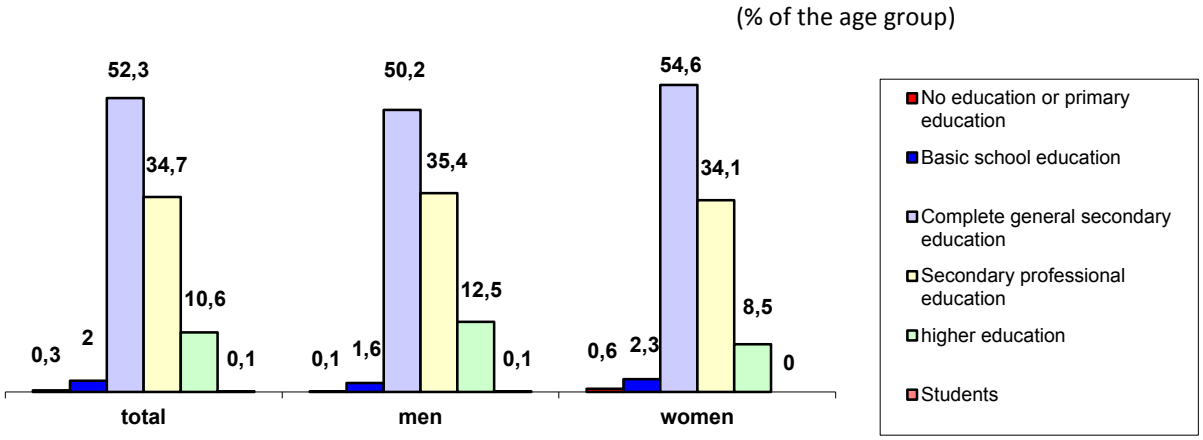
No way does the assertion that women work less intensively explain away the gender disparity in pay. Inefficient employment along with consequent low wages for women has a negative effect on the socioeconomic status of women.

It is evident that cultural factors result in the low economic activity of women as well. Women with young children are rarely seen as a workforce category because in Uzbekistan, according to a World Bank study, having another under 5 year-old child reduces mother's chance to get employed by 7%[17].

[17] Living Standards Assessment (LSA), the World Bank, 2003.

Lack of vocational training proves to be a serious obstacle to adequate and efficient employment of a woman. Overall, female education rates are slightly lower: there are more women without basic secondary education as well as women without secondary vocational education (Figure 13).

Figure 13. Education levels of men and women aged 25+



Source: Household Survey, 2014

The subproject areas see a growing tendency towards gender equality in education. According to the findings of the assessment, numbers of female students of vocational training are almost analogous to those of men, which provides a chance for further reducing the gap between education levels of women and men. Nevertheless, girls tend to choose future professions that seem useful for a family life, including kindergarten teaching, nursing, sawing, etc. As a result, such women either struggle to find a job on a highly competitive 'female' labor market, or have to perform unqualified, low-paid and irregular work in the informal sector.

Thus, it is the low-paid positions concentrated in the budgetary sphere (healthcare, education) that a woman can get even if she manages to find a job in accordance with her diploma/qualification.

B. AGRICULTURAL ACTIVITY OF HOUSEHOLDS IN THE SUBPROJECT AREAS

1. The number of private and dehkan farms in the subproject areas: Access to land.

According to official statistics, as of the beginning of 2015 there were 178 thousand dehkan farms and 3,044 private farms in the three subproject areas. In terms of social assessment, it is dehkan farms that must be given the highest priority as major stakeholders, because in comparison with the other agricultural producers, dehkans produce the most crop and livestock production on 16% of the cultivated land in the subproject areas.

Table 34. The number and size of private and dehkan plots in the subproject areas, according to official data

	Measurements	Farming type		Total
		Private farms	Dehkan farms	
Podshaota-Chodak				
Total command area	ha	26,853	6,418	33,271
	%	80.7	19.3	100
Farms	units	782	46,638	47,420
	%	1.7	98.3	100
Average farm size	ha	34.34	0.14	0.7
Total cropped area	ha	23,872	5,634	29,506
	%	80.9	19.1	100
Cropping intensity	%	88.9	87.8	88.7
Isfayram-Shakhimardan				
Total command area	ha	52,958	10,322	63,280
	%	83.7	16.3	100
Farms	units	1 ,647	99,622	101.269
	%	1.63	98.3	100
Average farm size	ha	32.2	0.10	0.62
Total cropped area	ha	46,390	7,995	54,385
	%	85.3	14.7	100
Cropping intensity	%	87.6	77.5	85.9
Savay-Akburasay				
Total command area	ha	19,913	3,498	23,411
	%	85.1	14.9	100
Farms	units	615	31.672	32,287
	%	1.90	98.1	100
Average farm size	ha	32.4	0.11	0.73
Total cropped area	ha	16,580	3,160	19,740
	%	84	16	100
Cropping intensity	%	83.3	90.3	84.3
Total				
Total command area	ha	99, 724	20,238	119,962
	%	83.1	16.9	100
Farms	units	3,044	177,932	180,976
	%	1.7	98.3	100
Average farm size	ha	32.8	0.11	0.66
Total cropped area	ha	86,842	16,789	103,631
	%	83.8	16.2	100

Source: estimations done on the basis of data provided by khokimiyats and BISAs of the subproject areas.

According to the study results, almost all of the surveyed households own land plots. One in four households has more than one land plot. The most common type of land use proves to be household garden plots (tomorka), as 99% of the households have such plots. The size of a tomorka averages out at 08-0.1ha. A very small 2.2% of the total households use plots planned for construction of a new building for agricultural production. In size, such plots are comparable with other additional land plots that dehkans have.

6.7% of the households (13% in the Podshaota-Chodak subproject area) cultivate additional dehkan plots[18] allocated in accordance with Decree of the President. A size of these plots exceeds that of garden plots by 5-10 times; in Podshaota-Chodak the average size of additional dehkan plots is fairly similar to that of private horticultural farms. In 2014, the average annual household income generated on additional dehkan plots averages out at 3 million 568 thousand sums, whereas the output from such plots consumed by household members leveled at 972 thousand sums.

Another common type of land use is plots sub-leased from private farmers (unofficially, as in-kind payment for labor input). A considerable 17 per cent of families have this kind of plots. The average size of the plots is about 0.80ha. In 2014, the average annual income generated on sub-leased plots averages out at 3 million 199 thousand sums, whereas the output from such plots consumed by household members leveled at 1 million 448 thousand sums.

It is private farms that own the largest land plots (44.8 ha on average of total households); also, it is noticeable that only 2 per cent of those surveyed have such plots. Moreover, in the past 5 years, the so-called ‘optimization’ (consolidation) of farms has substantially reduced the number of farming households having such large plots (Table 35).

[18] There are no legal differences between the garden plots and dehkan plots: a garden plot (tomorka) is a plot where the house of the resident is situated in, and a dehkan plot is often outside of the settlement except for plots for construction of a new house for family members, especially for sons. Hence, 95 percent of dehkan plots are garden plots situated within the settlements

Table 35. The type and size of plots in the surveyed households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
The percentage of households with				
Private farm plot	**2**	2.4	1.2	2.4
Garden plot	**99.6**	99.4	100	99.4
Additional dehkan plot	**6.7**	2.4	13	4.8
Plot for construction	**2.2**	1.2	2.4	3
Sub-leased plot	**17.1**	13.1	26	12
The average plot size, ha				
Private farm plot	**44.8**	61.8	42.6	30.2
Garden plot	**09**	08	08	0.11
Plot for construction	**0.7**	0.4	0.8	0.6
Plot for construction	**0.3**	0.6	0.1	0.3
Sub-leased plot	**0.8**	1	0.7	1
The average annual income generated on the plots (including the value of output consumed by the household members), as of 2014, '000 UZS				
Private farm plot	**90,028**	170,836	49,941	44,535
Garden plot	**2,185**	1,817	1,778	2,840
Additional dehkan plot	**4,539**	4,050	5,375	2,821
Plot for construction	**1,975**	3,500	1,308	1,700
Sub-leased plot	**4,646**	6,128	3,391	5,200

Source: Household survey, 2014
Source: Private farmers survey, 2014

2. Dehkan farms: the profile and major issues in the sphere of crop and livestock production

Dehkan farms prove to be the most efficient form of land use in the subproject areas. They effectively use their small plots; reseeding is in general practice among dehkans which guarantees 2-3 yields a year. Even though dehkan farms occupy only 13.7% of cultivated land (on average in the three regions), they produce as much as 63% of agricultural GRP of three FV regions. There are 178 thousand dehkan farms operating in the territory of 20.2 thousand ha in subproject areas, with the average dehkan farm size at 0.11 ha. In terms of social assessment, it is the dehkan farms that are the top-priority stakeholders, as they produce the bulk of horticultural and livestock production of the regions by using only 16% of the total cultivated land in the Project Area. According to the survey results, nearly every household even in the city has a land plot. One in four families has more than one land plot.

At minimum cost to the households, the average annual revenue from dehkan plots is over 1 million 300 thousand sums. Once the value of agricultural product consumed by the family members is included, the annual income generated on the dehkan plots reaches a considerable 2 million sums. It is noticeable that marketability of dehkan farms in the subproject areas is fairly low, as only 53% of such households sell their product at local markets (a lower percentage is reported for Savay-Akburasay, at 31%). Moreover, owners of garden dehkan plots in cities are less likely to trade their produce (only 36% of households), and the volume of the sales is smaller in comparison with that of rural areas. By far the highest productivity and marketability of dehkan farms are shown for the Isfayram-Shakhimardan subproject area (Table 36).

Table 36. The average annual cash income and consumption of agricultural product generated on garden plots, 2014.

	Households having income from sales,%	Annual income from sales, '000 UZS	Households consuming their produce,%	Average volume of consumed output annually, '000 UZS
Total	**53.2**	**1,367**	**92.6**	**818**
Savay-Akburasay	30.5	1,253	85.6	564
Podshaota-Chodak	59.8	1,033	98.2	745
Isfayram-Shakhimardan	69.3	1,712	94	1,128

Source: Household survey, 2014

Livestock production is of great importance to the subproject areas. A large 77% of households keep either cattle or poultry (the pattern is notably different for rural and urban areas, at 79% and 60% respectively).

Table 37. Livestock/poultry production and consumption of households, over 12 months in 2014

% of households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Households having livestock/poultry,%	**76.6**	82.7	76.9	70.1
Households generating incomes from sales and consumption of own produce, %	**64.5**	72.6	68	52.7
The percentage of households with Income/ Consumption Patterns at:				
Under 500 thousand sums	**83.4**	81.1	85.2	84.1
From 501 up to 1,000 thousand sums	**12**	9.8	12.2	14.8
From 1,000 to 2,000 thousand sums	**3.7**	6.6	2.6	1.1
Over 2,000 thousand sums	**0.9**	2.5	0	0

Source: Household survey, 2014

A good 55% of the households keep cattle both for milk and offspring production on a permanent basis and for fattening and resale on a seasonal basis (from spring to autumn). As prices on domestic animals are increasing steadily, a considerable part of the population uses livestock as an effective means for savings for the family. Apart from cattle, 22% of the households keep sheep, and a considerable 42% have poultry. It is the Savay-Akburasay subproject area where livestock production is developed the most: on average, the total number of livestock for a household is 2 cows, 4-5 sheep, and 10-15 heads of poultry (Table 38).

Table 38. Livestock and poultry owned by households in 2014

	A percentage of households keeping livestock/poultry				**The average livestock number per household/poultry**			
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	**Total**	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Cattle	**55.4**	62.5	52.1	51.5	**2**	2	2	2
Sheep	**22**	29.2	24.3	12.6	**5**	6	4	4
Other livestock	**6.7**	7.7	8.9	3.6	**2**	2	2	2
Poultry	**41.9**	44	42.6	38.9	**13**	18	10	9

Source: Household survey, 2014

Although both incomes and consumption patterns for the livestock sector are considerably lower than those of the horticultural sector, livestock production proves to play an important role in generating household incomes in the subproject areas.

The incomes generated by keeping cattle, at 84% of the household cash income from livestock and poultry sales, are of prime importance. Besides, by far the largest consumption pattern (88.8%) is also shown for livestock consumed by household members (Table 39).

Table 39. Structure of livestock and poultry-related incomes/consumption of households in 2014

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Incomes from sales				
cattle	87.4	90.1	80.9	90.4
sheep	12	9.4	18.5	8.7
poultry	0.7	0.5	0.6	0.9
Incomes from consumption				
cattle	88.8	84.6	84.7	94.1
sheep	5.2	4.7	9.3	2
poultry	6	10.7	6	3.9

Source: Household survey, 2014

A good half of the households keeping cattle sell their production at local markets, with the average household income from the activity being at over 700,000 sums a year. If the volume of the cattle product consumed by household members is added, the sum tends to reach some 1 million sums a year. By far the highest cattle productivity rates are indicated for the Savay-Akburasay subproject area, where the incomes generated in the cattle keeping sector are higher in comparison with the corresponding incomes in the two other subproject areas.

Table 40. Livestock and poultry-related incomes/consumption of households, 12 months of 2014.

	Households generating incomes from sales and consumption of own production, %				**The average income/consumption,** ‘000 sums per livestock/poultry head			
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	**Total**	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Incomes from sales								
Cattle	**27.6**	29.2	27.8	25.7	**775**	1,003	643	658
Sheep	**11.9**	16.1	14.2	5.4	**246**	190	288	304
Poultry	**8.7**	10.1	8.9	7.2	**16**	11	14	23
Incomes from consumption								
Cattle	**39.9**	36.3	42	41.3	**317**	199	313	427
Sheep	**6**	7.7	7.1	3	**125**	52	206	125
Poultry	**33.3**	38.7	37.9	23.4	**26**	24	24	31

Source: Household survey, 2014

According to the study, one of the obstacles in the way of productivity growth on dehkan plots is the poor condition of the irrigation system along with a shortage of irrigation water. A large 65% of dehkans in the three subproject areas are facing serious irrigation water shortages. Furthermore, 40% of the people stress the unsatisfactory condition of the irrigation system. (Table 41). The situation is aggravated by power cutoffs and worn-out pumping equipment that adversely affect operation of the irrigation and drainage infrastructure. The worst situation with irrigation is observed in Podshaota-Chodak, where the land productivity is also the lowest as compared to other districts.

22% of the surveyed households point out that one of the major factors impeding productivity growth on their garden plots is the poor quality of land caused by water logging in the region.

Other pressing problems for dehkans to be solved in the sphere of agriculture include: high forage prices (34.9%), cutoffs of electricity in the agricultural sector (pumps, etc.) – 29.8%, lack of pasture land (29.6%), small sizes of plots (31.2%), and lack of up-to-date information on agriculture (18.2%).

Table 41. Major obstacles to productivity growth on dehkan plots

% of households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Irrigation water shortages	**65.3**	63.7	63.3	68.9
Poor condition of the irrigation system	**40.9**	36.9	50.3	35.3
High forage prices	**34.9**	38.7	42	24
Cutoffs of electricity in the agricultural sector (pumps, etc.)	**29.8**	25.6	45.6	18
Lack of pasture land	**29.6**	25	43.2	20.4
Small sizes of plots	**31.2**	39.9	30.8	22.8
Poor ameliorative quality of land	**21.8**	7.1	36.7	21.6
Shortages of necessary forage	**11.5**	11.3	11.8	11.4
Shortages of seeds along with their poor quality (including seedlings)	**10.5**	8.3	16	7.2
Lack of information on new technologies, markets, better kinds of seeds and insecticides, etc.	**11.5**	13.7	10.1	10.8
Lack of knowledge and experience	**6.7**	8.9	1.8	9.6

Source: Household survey, 2014

'It is the shortage of water rather than poor quality of land and water that affects the population's income so badly. Because of the lack of water people stop gardening on their plots. Nowadays, it is more economical to buy potato from Surkhandarya and apples from Kyrgyzstan (Chinese apples, in fact) along with other foodstuffs we used to grow ourselves in the past. Even greens we buy from other regions. So, people's incomes are decreasing.' A makhalla chairperson, Podshaota-Chodak.

'Mostly, our people plant vegetables and do the gardening on their garden plots. On my tomorka I grow cherries and peaches.35 households out of 830 have greenhouses where lemons, cucumbers, tomatoes and greens grow. The main source of irrigation water is the Isfayram-Shakhimardan canal. The population pays for the water to the WCA on time. People help with repairs and cleaning of the canals. The RAC also signs a contract for the supply of irrigation water with the WCA. Some 'Mirabs' (water managers) are appointed to raise the money for water, the population pays us 300 sums per 0.1ha. There is no specified day for makhalla households to get the water: the water that is supplied for private farms is used by the makhalla households. Some of the farmers have borewells; some households use the water from the borewells. The population seems to be willing to pay more for the water if the service is improved and sufficient water is supplied on time. The situation with irrigation water shortage has worsen since 2009.' A RAC chairperson, Isfayram-Shakhimardan

3. Specialization and incomes of the surveyed private farms.

The surveyed private farms produce mainly cotton and wheat under the state order. The two crops occupy over 92% of cultivated land of the surveyed farmers in the Savay-Akburasay subproject area and 75% in the Isfayram-Shakhimardan subproject area. By contrast, the

farmers in the Podshaota-Chodak subproject area don't report growing cotton; whereas 49% of their land is under wheat, 34% is under gardens and vineyards. The average size of the surveyed horticultural farms is about 22 ha. It is noticeable that very few of those surveyed grow melons, pulses, oilseeds, and industrial crops. The most diversified cropping patterns are shown for the Podshaota-Chodak subproject, where a large number of private farmers cultivate fruits, vegetables, pulses, feed and other crops; the area under the crops in Podshaota-Chodak is bigger in comparison with the other subproject areas (Table 42).

Table 42. Cropping patterns of the surveyed private farms in 2014

	The percentage of private farmers growing:				**The crop,** % of total area under crops			
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	**Total**	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Cotton	**45.8**	77.4	0	57.6	**28.8**	47.4	0	29.2
Wheat	**72.7**	48.6	66.7	72.9	**46.7**	45	48.6	46.1
Rice	**1.2**	0	0	1.2	**0.1**	0	0	0.2
Corn	**28.1**	19	51.9	15.3	**1.9**	0.5	3.8	2.3
Potato	**29.2**	25	60.5	4.7	**2.1**	0.8	5.1	0.3
Other vegetables	**26.5**	15.5	53.1	12.9	**1.7**	0.3	4.6	0.7
Lucerne	**6.2**	2.4	14.8	2.4	**0.4**	0	0.8	0.7
Other feed crops	**8.8**	4.8	12.3	9.4	**0.4**	0.1	0.7	0.7
Melons	**5**	3.6	9.9	1.2	**0.3**	0.1	0.6	0
Grapes	**13.5**	14.3	24.7	2.4	**4**	0.6	12.5	0.2
Fruits	**49.2**	28.6	63	56.5	**12.8**	4.8	21.7	19.2
Other crops	**8.1**	4.8	16	2.4	**0.8**	0.4	1.6	0.4

Source: Private farmers survey, 2014

Whereas the majority (62%) of the private farms grows crops, a large 36% specialize in horticulture, and only 1.6% of them are livestock farmers. The irrigated land accounts for as much as 96% of the farms' plots.

Table 43. The profile of the surveyed private farms

% of households

	Total	**Savay-Akburasay**	**Podshaota-Chodak**	**Isfayram-Shakhimardan**
The average area under crops	**44.8**	61.8	42.6	30.2
The average irrigated area	**42.8**	61	38.7	29
Farm specialization				
Plant-gowing	**62.4**	77.4	49.4	60
Horticulture	**36**	22.6	45.7	40
Livestock production	**1.6**	0	4.9	0

Source: Private farmers survey, 2014

Land productivity per hectare on private farms of the subproject areas is 20 times lower than that of family garden plots. For farmers in the Savay-Akburasay subproject area, costs of crop production per hectare are twice as much as those of the other areas. The average revenue generated over the 12 months before the survey makes up around 25% of the GRP. By far the highest production costs are shown for private farmers of the Savay-Akburasay subproject area, and the lowest-for Isfayram-Shakhimardan. It is noticeable that namely in Savay-Akburasay there is a significant differentiation of farm household incomes; in the other subproject areas the incomes don't vary so markedly. In 2014 on average a farm's expenditure per hectare was 1.7 mln. sums, income per hectare – 2.5 mln. sums; the average annual income per farm was 90

mln. sums, and the average annual expenditure – 75.5 mln. sums. According to the survey, 18% of the private farms in the three subproject areas have remained unprofitable over the last 12 months. (Table 44).

Table 44. The financial performance of private farms in 2014

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
The average farm income,'000UZS	**90,028**	170,836	49,941	44,535
The average income per hectare,'000UZS	**2,458**	3,649	1,809	1,840
The average farm expenditure, '000UZS	**75,546**	148,704	38,330	35,616
The average farm expenditure per hectare,'000 UZS	**1,697**	2,757	1,034	1,229
The average farm income on the balance sheet, '000UZS	**22,941**	33,936	20,571	14,005
The average income per hectare on the balance sheet, '000UZS	**1,034**	1,218	1,024	858
The average losses on the balance sheet, '000UZS	**17,377**	21,913	20,232	11,094
The average losses per hectare on the balance sheet, '000UZS	**352**	335	366	358
Unprofitable farms,%	**18.1**	19.3	14.8	20

Source: Household survey, 2014

4. Employment on private farms. The mechanization of cotton harvesting.

Private farms do not exhibit high labor intensity. Whereas the average number of permanent workers on a farm is 12 people, the number per hectare is 3.8 workers. The indicators vary greatly by subproject area: 16 and 4 in Savay-Akburasay, 11 and 3.9 in Podshaota-Chodak, and 9 and 3.4 people in Isfayram-Shakhimardan respectively.

As cotton is not cultivated in the Podshaota-Chodak subproject area, the majority of farm workers accounts for workers hired during the harvesting season and permanent workers.

Table 45. Agricultural workers on private farms in 2014

	The percentage of farms hiring:				The average number of workers			
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	**Total**	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Permanent workers	**100***	100	100	100	**11.9**	15.6	11	8.9
Seasonal workers hired for harvesting only (hired by farmers)	**81.6**	79.8	91.4	74.1	**19.7**	27.9	15,.5	15.9
Seasonal workers hired for harvesting only (people sent to a farm by local authorities to help with the harvesting)	**44.8**	75	1.2	56.5	**80.8**	99.6	30	57.1
Other seasonal workers (excluding harvesters):day-laborers, part-time workers for weeding, planting, etc.	**64.8**	57.1	86.4	51.8	**15.7**	27.9	11.5	9.3

Source: Private farmers survey, 2014
***Note:** 100% of private farms had at least one permanent worker

It is the people who are sent by local authorities to farms to help with cotton-harvesting who make up almost half (49%) of the farm workers. The figure is even higher for the Savay-Akburasay and Isfayram-Shakhimardan subproject areas, at 58% and 56% respectively. A considerable 87% of farmers in Savay-Akburasay and 61% of farmers in the Isfayram-Shakhimardan subproject areas believe that the assistance of local authorities with the hiring of temporary seasonal workers is necessary. Their statement mostly accounts for the fact that such workers are paid less than workers hired by the farmers themselves. Moreover, the majority of the farmers emphasize that it is impossible to gather the harvest without the assistance, as all cotton is picked up manually.

In the past, under the kolkhoz system, cotton was picked up with mechanical cotton harvesters in the subproject areas. Nowadays, a great many farmers want to return to mechanization practices in cotton production. According to them, the major advantages of such mechanization will be lower costs of production due to reduced expenditure, higher incomes along with the reduction in harvesting time and workload, etc.

Yet, almost all farmers argue that **it is impossible to restart mechanization practices unless the current situation with irrigation improves significantly.** Machinery is efficient on the cotton fields under a set of conditions including the standard height of cotton plants, as well as timely weeding and planting. However, mechanical cotton harvesters cannot be used as the cotton plant doesn't grow to the required height because of the lack of watering. Moreover, a farmer cannot afford such expensive machinery as a cotton harvester. The farmers think that, for example, local leasing stations (MTPs) should be provided with such machinery in a centralized way. Most farmers think positively of leasing of cotton harvesters and are ready to pay for it.

'One of our inventive farmers made up a cotton harvester. He demonstrated it last year. The yield losses were about 5%.This year he modified the machine. Costs are much lower when a mechanical cotton harvester is used. For example, if one kilogram of cotton is manually picked, 210 sums is paid, whereas a ton of cotton picked up with machinery will cost only 50,000 sums. Besides, a lot of organization questions should be solved: food for cotton pickers, transport, accommodation, etc. The most important thing about cotton picking machinery is that it saves time greatly.' A khokimiyat employee, the Savay-Akburasay subproject area

'We've heard that in Tashkent the production of cotton harvesters is restarted. The machines are designed for a 90-centimeter distance between rows. But we grow cotton on a 60-centimeter distance planting scheme. Under mechanical cotton harvesting the quality of cotton is lower. A farmer cannot afford a cotton harvester, it is too expensive. Leasing is unprofitable. Those who had some machinery by leasing say that it would be better to take out a loan from a bank to buy the machinery. But the farmers cannot do so as they don't have property to be pledged as a security against the loan. It seems more feasible to provide the MTPs with the necessary picking machinery, in a centralized way so that the stations will be able to serve the needs of the farmers for money.' A farmer, the Savay-Akburasay subproject area

'Manual labor is very intensive. The cotton pickers should be paid cash for their work. At the beginning of the harvest season it is not a problem as the banks provide us with the needed cash on time. But by the end of the season cash becomes a serious issue. That's why the pickers are losing all interest in the work. Besides, we have to solve the problem with the food for the pickers and pay transport for them.' A farmer, the Savay-Akburasay subproject area

'Manual labor is ineffective. Yet, if nothing is done about the lack of irrigation water on the fields, mechanical picking still will be impossible. As the cotton fields receive half as much irrigation water as it is required, the plants don't develop normally. A mechanical harvester doesn't operate when the plants are too short.' A WCA chairperson, the Isfayram-Shakhimardan subproject area.

'Costs of cotton production are bound to reduce due to mechanical cotton picking; so, the farmers will gain larger profit. At the moment a picker is paid 235,000 sums, i.e. 250,000 sums when tax is added, for a ton of gathered cotton. With mechanical picking the pay will not top 40,000-50,000 sums per ton. But mechanical picking results in a lower quality of the cotton. After the picking some cotton is left in the cotton bolls. The losses will be large. The biggest problem with the mechanization is that cotton plants should be of the same height, and the no weeds should be left on the field. Today's cotton plant cannot develop fully because of the lack of irrigation water. Under the kolkhoz system we had several cotton harvesters at each kolkhoz. Nowadays, neither WCAs nor MTPs can afford such machinery. Neither do farmers, of course. If mechanical cotton picking is introduced, specialized crews should be organized (like those we have at grain harvest), or alternative MTPs should be made up.' A farmer, the Isfayram-Shakhimardan subproject area.

The study also thoroughly examined the labor input on the farms over the year. Whereas the labor input patterns of temporary seasonal workers accounts for 37% of total labor input for private farms of the three subproject areas, the corresponding indicator of permanent workers on farms is nearly two times higher, at a significant 63% (Table 46).

Table 46. Labor input on private farms by category of workers in 2014

	Workers, as a % of farm staff				Labor input, as a % of total labor input on farms			
	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	**Total**	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Permanent workers	**16**	12	31	15	**63**	60	68	65
Seasonal workers hired for harvesting only (hired by farmers)	**22**	17	40	20	**10**	5	22	14
Seasonal workers hired for harvesting only (people sent to a farm by local authorities to help with the harvesting)	**49**	58	1	56	**21**	29	0	14
Other seasonal workers (excluding harvesters):day-laborers, part-time workers for weeding, planting, etc.	**14**	12	28	8	**6**	5	9	7

Source: Private farmers survey, 2014

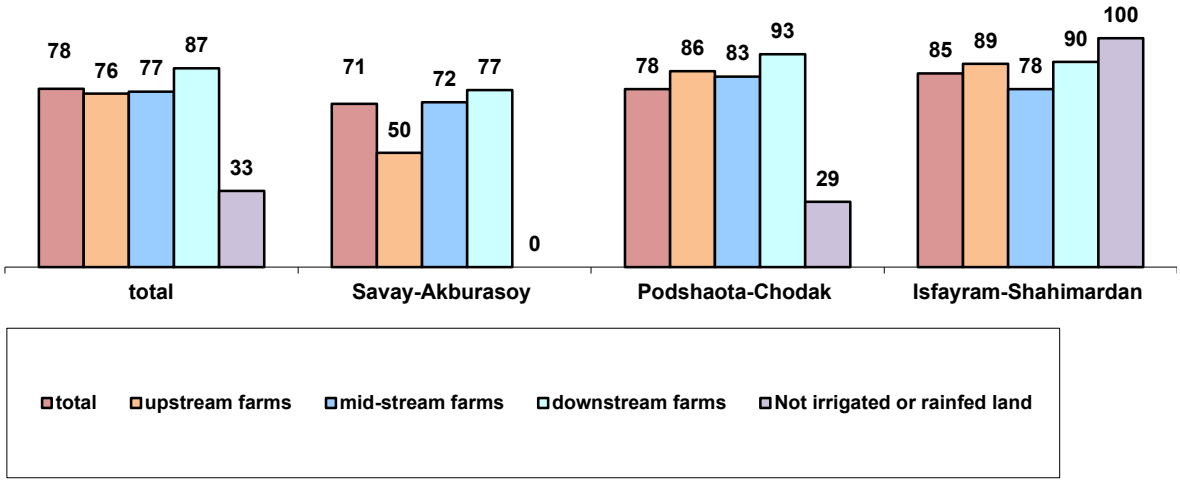
5. The shortage of irrigation water, the quality of agricultural land, and factors affecting the land quality

The vast majority of the farms are dependent on irrigation. A small 6% of farmers report not watering their plots with the water from the irrigation system (the corresponding indicator is higher for the Podshaota-Chodak subproject area, at 17.3%).

According to official statistics, a constant 30% shortage of irrigation water is experienced by the Savay-Akburasay subproject area; the corresponding shortage patterns are even higher for the Isfayram-Shakhimardan and Podshaota-Chodak subproject areas, at 36% and 48% respectively. The farmers of all subproject areas point out, that the lack of water resources along with the dismal condition of the irrigation system and borewells is the most pressing problem of their region.

The survey results corroborate the official data: a large 78% of private farmers face irrigation water shortages; the corresponding figure varies by subproject area: 78% - Podshaota-Chodak, 85% - Isfayram-Shakhimardan and 71% - Savay-Akburasay. It is the downstream farms of the subproject areas that experienced constant water shortages in 93%, 90% and 77% cases respectively, with farms in Isfayram-Shakhimardan and Podshaota-Chodak suffering the most. (Figure 14).

Figure 14. Private farms experiencing irrigation water shortages, %



Source: Private farmers survey, 2014

'The irrigation system in our district has been in service for ages. In the middle of the last century some new canals were built. The main water sources are the Andijan water reservoir, the three main canals- 'Savay', 'Shahrihansay', and the right bank of' Kampirabad' (the canal belongs to Kyrgyzstan), along with the spillway of the mountain river Karadarya. The 10 ha of stony land are irrigated from borewells. The borewells are used mostly by downstream farms.' A ISA employee, the Savay-Akburasay subproject area

'it is the 'Iskovot obihayet', 'Bekobod cashmasi', 'Hadikent', and 'Poromon' WCAs that are affected very badly by the water shortage. It is because even in a depth of 200 meters there is no water. While 'Okhunbabayev','Turkiston' WCAs have better conditions; it is needed to build more borewells in their territories to distribute the spare water to other WCAs. The hydrogeological agency is preparing its recommendations on the question right now. A new map of ground water is made up.' A AMC employee, the Podshaota-Chodak subproject area

'My farm specializes in livestock and grain production. In 2010, 26ha of dried vineyard was allocated to me. I chose to grow grain instead of grapes. In 2010 I had no problems with irrigation water. I had watered the wheat 3 times during the season. The productivity was 60-70 centner/ha. That was the end: the water ran out. Nowadays, we water the grain once, either in autumn or in spring. In 2011 we were promised to have a well built. We are still waiting. Our plot is situated out of the settlement, at the end of the irrigation network. So, we are left almost no water in the system. The new well was approved by specialists. Beside me, there are another four farms with the same problem, which also were promised new borewells.' A farmer, the Podshaota-Chodak subproject area

Table 47. The upstream/downstream location of private farm plots

% of private farms

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Private farm plot is located				
Upstream	**13.2**	11.9	17.3	10.6
Midstream	**41.2**	51.2	29.6	42.4
Downstream	**39.6**	36.9	35.8	45.9
The plot is watered not from the river/canal (or rain-fed land)	**6**	0	17.3	1.2

Source: Private farmers survey, 2014

The majority of private farmers water their plots with the water from the irrigation canals. It is the Isfayram-Shakhimardan subproject area that stands out, as only 47% of private farmers take out water from the canals; instead, they use irrigation borewells and, in case of shortages, drainage water. By contrast, in the Savay-Akburasay area 98% of private farmers use water from irrigation canals (Table 48).

Table 48. The sources of irrigation water for private farm plots

% of private farms

	Irrigation canals	Drainage canals	Rivers, lakes, etc.	Irrigation borewells
Total	**70**	**10.8**	**10**	**17.2**
Savay-Akburasay	97.6	0	3.6	0
Podshaota-Chodak	65.4	7.4	8.6	29.6
Isfayram-Shakhimardan	47.1	24.7	17.6	22.4
Private farm plot is located				
Upstream	66.7	3	15.2	27.3
Midstream	75.7	10.7	9.7	7.8
Downstream	75.8	14.1	9.1	12.1
The plot is watered not from the river/canal (or rain-fed land)	0	6.7	6.7	93.3

Source: Private farmers survey, 2014
***Note:** the sum of answers exceeds 100 percent, as farmers can use a few sources of water supply

The problem of irrigation water shortages grows so acute that 10.8% of the farmers have to use drainage water (for the Isfayram-Shakhimardan subproject area -24.7%), which inevitably results in the further worsening of the land quality.

'Some of our farmers raised artificial dams to collect drainage water. With a pump they use the secondary irrigation water. As a result, the water-table level grew even higher in the area. Drainage water is harmful to plants and trees. Although the kind of watering is no good, some farmers do so because they feel hopeless: they just don't want to lose the plants and yield.' A farmer, the Podshaota-Chodak subproject area

'This year, we have had no water in the main canals for months. As a result, the dry canals were polluted with garbage. When the water supply was restarted, the garbage stuck in the pipes.' A WCA chairperson, the Isfayram-Shakhimardan subproject area

'Although the irrigation water is supplied on time, the amounts are not always sufficient, because there is a shortage of water. In most cases we use the water from the mountains; the irrigation situation can change several times a day. For example, in the morning there is enough water in the canal, but by 11-12 o'clock it runs thin. Once a farmer manages to take out the needed water, he feels good, because if he is late, nothing can be done. A new water reservoir is needed to guarantee the steady and sufficient supply of water to the canals. The question of the construction water collection and storage establishments has been raised several times. In 1989, the construction a new distribution pool of 2 million m^3 was started. But the project badly affected the water-table levels in the settlements: even a question of resettlement was discussed. The pool was situated in the border with Kyrgyzstan. After the breakdown of the Soviet Union, the project was frozen. It is necessary to build such a pool in the territory of Zarkent. We are working on the estimations for the project.' A ISA employee, the Podshaota-Chodak subproject area

'According to the rules, drainage water can be used for irrigation purposes only after mineralization tests are done by a state laboratory. However, on some plots, drainage water is used even if the

mineralization levels twice as high as the norm should be.' A farmer, the Isfayram-Shakhimardan subproject area

'Either we water the plots with drainage water or we lose the yield. I have to use drainage water, and lose as much as a third of my yields a year.' A farmer, the Isfayram-Shakhimardan subproject area

'The land is stony on my plot. As the plot is located downstream, all of the territory is watered by pumps. The water doesn't reach my plot, so I have to use drainage water. Another 20-30 farmers are facing serious shortages of irrigation water. Because of the problem, we have failed to complete the state order. We need new borewells to resolve the irrigation problem.' A farmer, the Isfayram-Shakhimardan subproject area

In the three subproject areas, as much as 44% of the surveyed farms do not use pumps for irrigation (have gravity irrigation). The other 56 % use the pumps: by far the largest percentage is observed in the Isfayram-Shakhimardan subproject area, at 74%. Most pumps supplying farm plots with irrigation water are on the balance sheet of PSD and WCAs (Table 49).

Table 49. Pumps used on private farm plots

	Private farms using pumps for irrigation, %	**% of private farmers having:**		
		Pumps on the balance sheet of the farm	Pumps on the balance sheet of the WCA	Pumps on the balance sheet of the PSD
Total	**56**	5.7	56.4	37.9
Savay-Akburasay	**45.2**	2.6	97.4	0
Podshaota-Chodak	**48.1**	7.7	41	51.3
Isfayram-Shakhimardan	**74.1**	6.3	41.3	52.4
Private farm plot is located:				
Upstream	**60.6**	10	45	45
Midstream	**45.6**	2.1	55.3	42.6
Downstream	**60.6**	6.7	65	28.3
The plot is watered not from the river/canal (or rain-fed land)	**86.7**	7.7	38.5	53.8

Source: Private farmers survey, 2014

'Because of the regular electricity cutoffs the pumps often break down; money and time are wasted on repairs. Electricity bills are huge. Even if a pump is on the balance sheet of a WCA, it is the farmers who have to pay for the repair of the pump as the WCA doesn't have money. A farmer, the Savay-Akburasay subproject area

'Our pumps are on the balance sheet of the PSD. Both electricity and repair costs are covered from the budget. We are regularly provided with the spare parts for the pumps. The other day we finished routine repairs of all pump stations.' A PSD employee, the Savay-Akburasay subproject area

'Most farms irrigate the plots with the use of pumps. Grain farmers use pumps for irrigation most of all.' A HHME employee, the Podshaota-Chodak subproject area

'The pumps on the main and off-farms canals are on the balance sheet of PSD, whereas the pumps in the territory of a WCA are on the balance sheet of the WCA. The farms which are located along the main irrigation canals don't have to pay for the electricity consumed by the pumps as it is the state that pays the bill, so the farmers economize a lot. The other farmers sign a contract with a local electricity supply network. The technical condition of the pumps is maintained by the WCAs. If farmers repair the pumps

by themselves, the WCA compensate the costs, mainly by writing down the farmers's debts to the WCA. A PSD employee, the Podshaota-Chodak subproject area

'If there are electrical pumps on the balance sheet of a WCA, it is the farmers who sign a contract with the electricity grid as they use the pumps.' A WCA chairperson, the Isfayram-Shakhimardan subproject area

'The majority of private farm plots of our WCA are watered by gravity irrigation. But I have pump irrigation on my field. The water is supplied through the 100mm pipes. The irrigation of 10 ha takes ten days. The best solution will be to construct irrigation borewells. It will alleviate the problems and stop the conflicts.' A farmer, the Isfayram-Shakhimardan subproject area

The main factor impeding productivity growth on the plots of private farms, as was in case of dehkan farms, proves to be the lack of irrigation water. The farmers of all subproject areas are facing serious shortages of water in the irrigation system. A considerable 35% of farmers also mention the poor condition of the irrigation system as one of the major problems affecting agricultural producers. According to 14% of those surveyed, it is the lack or poor condition of the drainage systems that results in low productivity (the corresponding indicator for the Isfayram-Shakhimardan subproject area reaches 24%) (Table 50). The situation is aggravated by power cutoffs and worn-out pumping equipment that badly affects the performance of the irrigation and drainage infrastructure. Both private and dehkan farm households suffer from the irrigation-related problems. By far the worst situation with irrigation is observed in the Isfayram-Shakhimardan subproject area, where the productivity rates on private farm plots are the lowest.

Table 50. Major factors impeding productivity growth on private farm plots

% of households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
IRRIGATION				
Irrigation water shortages	60.4	59.5	58	63.5
Poor condition of the irrigation system	35.2	31	43.2	31.8
Electricity cutoffs in the agricultural sector (pumps, etc.)	35.2	16.7	35.8	52.9
Poor performance of WCAs regarding the distribution of water	31.2	39.3	33.3	21.2
No precise metering of the supplied amounts of water	30.4	20.2	34.6	36.5
LAND				
Lack of pastures	31.6	42.9	29.6	22.4
Poor ameliorative quality of land	19.6	7.1	27.2	24.7
Small sizes of plots	19.6	26.2	7.4	24.7
Poor condition/lack of the drainage system	14	1.2	17.3	23.5
FUEL,FORAGE,SEEDS,CHEMICALS AND FERTILIZERS				
High prices for fertilizers at Agrochemistry	48.4	47.6	66.7	31.8
Shortages of key fertilizers at Agrochemistry	14	22.6	9.9	9.4
High prices for chemicals at Agrochemistry	42	46.4	54.3	25.9
Shortages of key chemicals at Agrochemistry	10	8.3	7.4	14.1
High transportation costs	30.8	32.1	40.7	20
A shortage of fuel at specialized storages	21.6	22.6	33.3	9.4
High forage prices	28	31	29.6	23.5
Shortages of the key forage	16.4	14.3	18.5	16.5

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Shortages of seeds along with their poor quality (including seedlings)	12	4.8	16	15.3
EDUCATION				
Lack of information on new technologies, markets, better kinds of seeds and insecticides, etc.	18	19	9.9	24.7
I am lacking in knowledge and experience	4	6	0	5.9
MACHINERY				
Shortages of necessary machinery at MTPs (not available when needed)	34	34.5	27.2	40
High lease payments on the agricultural machinery at MTPs	25.2	32.1	28.4	15.3
Lack of affordable leasing schemes	4.4	3.6	3.7	5.9
TRANCHES UTILIZATION, PAYMENT AND PRICES				
Low prices for grain and cotton under the state order	32.8	46.4	24.7	27.1
Untimely transaction of money on the 'tranches'	20	21.4	18.5	20
Difficulties with the utilization of 'tranches' received under the state order	17.6	26.2	13.6	12.9
Overdue payment of the products ordered by the state	16.8	10.7	24.7	15.3
Bans on planting other crops instead of cotton	6.8	11.9	0	8.2
OTHER PROBLEMS				
High tax rates	40.4	57.1	42	22.4
Lack of financial resources	15.6	22.6	8.6	15.3
Bans on export-import operations	10	13.1	6.2	10.6
Lack or poor performance of local storage units and processing enterprises	10.4	7.1	16	8.2
Lack of storage space for the product	8.8	11.9	8.6	5.9
High unofficial payments to the officials	4	9.5	1.2	1.2
Nothing impedes productivity growth on the plots of private farms	**1.6**	**0**	**4.9**	**0**

Source: Private farmers survey, 2014

"When there is enough water in the canals, we can define the timing and volume of water needed for irrigation correctly. In 2014 from 10th of August up to 20th of September, there was no water in our canal. The water reservoir was shut down, as we were told, by a Ministry order. It was the height of the vegetation season. Many vegetable-growing farmers took out loans from banks to buy potato seeds. None of them managed to get harvest they had planned. Cotton-growers failed to fulfill the plan under the state order. The soil here is gypsum; without irrigation it hardens badly." A farmer, the Savay-Akburasay subproject area

"The quality of our land is very good, and we have all fertilizers we need: if the irrigation problem is solved, productivity will rise by 50-60%." A horticultural farmer, the Savay-Akburasay subproject area

"For some of the farmers here gardening is the main source of generating incomes. If the garden gets dry, the farmer won't pay attention to cotton fields. Recently in the territory of Ferghana district 150 ha of gardens dried because of the total lack of water." A farmer, the Isfayram-Shakhimardan subproject area

"The main irrigation canals are 40 years old; most of them need repairing. The canals' efficiency is at 60%. Water losses rates are high. If the canals are repaired, a lot of water will be saved. Most intra-farm

canals are not concreted. Only 14% are concreted, in fact. The culvert system has served its time as well." A BISA employee, the Podshaota-Chodak subproject area

"We have no problems with drainage as most plots don't need any drainage. In the district there are two types of drainage: open and close. Up to 2008 the local melioration department was in charge of the drainage system. Nowadays, the cleaning and repair work is done in accordance with the state program. In 2012 in 'Dakhan' massive, the open drainage, which is 11.24km long, was reconstructed into a close type. As a result, 4.5 ha was added to a farmer's plot, productivity rose, and the water-table level reduced by 3 meters." A HHME employee, the Savay-Akburasay subproject area

Another category of obstacles to productivity growth on the plots of private farms includes the limited access to such types of inputs as seeds, chemicals and fuels (12% of farmers point out the lack of seeds, 70% - high prices and shortages of chemicals and fertilizers, over 50% - fuels as such obstacles). The lack of agricultural machinery along with high leasing fees causes serious problems for private farmers: only 39% have a tractor, 34% of them experience shortages of necessary equipment at machinery stations. Some of the private farms lack the very basic agricultural machinery (Table 51).

Table 51. Agricultural equipment and machinery in private and dehkan farms

% of households

	Dehkan farms	**Private farms**	by subproject area		
			Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Tractors	2.4	39.6	55.7	24.1	38.2
Combine harvesters	0	0.8	1.1	0	1.1
Plows, seeding machines, cultivators, thrashers	0.6	23.1	50	10.8	7.9
Mills, rice mills, milk separators	1.8	4.2	10.2	0	2.2
Trucks	1	4.6	5.7	4.8	3.4
Cars	21.4	54.2	54.5	49.4	58.4
Minivan	6.2	6.2	12.5	2.4	3.4
Water pump for irrigation purposes	0.4	8.5	3.4	14.5	7.9
Green houses	1.6	2.3	1.1	3.6	2.2

Source: Private farmers survey, 2014
Source: Household survey, 2014

Most farmers are facing difficulties with marketing and storage of their agricultural production. The need to sell the product immediately after the completion of harvest without processing results in low prices which frequently don't cover the production costs.

According to those farms surveyed, the rise in efficiency and productivity of their land plots is directly correlated with rehabilitation of the irrigation-drainage system: a good 53% of the farmers agree that rehabilitation and repairs of the irrigation system must be given the highest priority. Half of the respondents believe that primarily water supply must be increased to sustain agricultural production (Table 52). Dehkans and farms share the same opinion on the question.

Table 52. Farmers' opinion about the measures to be taken to improve efficiency and productivity of farm plots

% of private farms

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Irrigation systems need to be put in order	**52.8**	45.2	61.7	51.8
There should be more irrigation water	**49.6**	45.2	58	45.9
Higher purchase prices for agricultural products produced under the state order should be set	**26.4**	23.8	27.2	28.2
Crops, which give a better harvest on our land, should to be cultivated	**25.2**	16.7	33.3	25.9
Additional privileges should be given to agricultural producers	**21.2**	31	16	16.5
Opportunities of receiving credits/loans should be provided for agricultural producers	**20.8**	25	18.5	18.8
Drainage systems need to be put in order	**19.2**	3.6	19.8	34.1
Land plots of larger area should be allocated	**17.2**	9.5	23.5	18.8
Conditions of storing and processing agricultural products should be ensured	**15.6**	25	6.2	15.3
Opportunities of selling agricultural products should be ensured for agricultural producers	**12.8**	22.6	8.6	7.1

Source: Private Farmers survey, 2014

The bulk of grain and 100% of cotton produced by private farmers are sold at a fixed price; the structure and volume of costs are regulated by the state via the tranches scheme. Yet, the prices for industrial inputs for farmers such as fuel, agricultural machinery, fertilizers, power are growing faster than the prices for agricultural produce. Only a small 6.8% of the surveyed farmers find the practice of working under the state order burdensome; however, 26% of them think that the fixed purchase prices are lowered. A great many farmers point out that the plan on the state order is developed without taking into consideration the actual quality of land (either no such assessment is done or soil bonitet is marked too high). The higher the soil bonitet is, the more produce a farmer has to hand over to the state. Moreover, the plan on the state order is designed months before the harvest starts, so hardly can it be guaranteed that a framer will be provided with the estimated amounts of irrigation water.

'2-3 years ago we had a large-scale optimization of private farms conducted. Low-profit farms were consolidated with profitable ones. The negative attitude of the ex-owners to the soil resulted in poor land quality. The new owners wonder why their land is marked as satisfactory, and the plan to complete is set on the basis of the given soil bonitet. The soil bonitet didn't correspond to the actual quality of land on our farmers' plots even before the consolidation of farms. Whole the quality of land is decreasing year after year, the soil bonitet doesn't change. According to the soil bonitet in our documents, productivity is expected at 35-40 centner/ha; the actual figure doesn't reach 25 centners.' A Rayagroprom employee, the Isfayram-Shakhimardan subproject area

'Most farms get soil bonitet which doesn't correspond to the facts. For example, the land of our farmers is mostly detritus. But the soil bonitet is marked at 78 points. One of the farms got 80 points, though the soil on the plot is gypsum; some farmers get their plots marked at 40-45 points even though the quality of land on their farms is much higher in fact.' A WCA chairperson, the Podshaota-Chodak subproject

'Our farm plots are bordering on Chartak district. In the district, the state order volume for private farmers is set at 15-17 centners from a hectare. There is an asphalt road between our farm and our neighbors plot. Yet, our plan is set at 28 centners from a hectare. The quality of land on the farms is the same. The system of setting the plan is questionable.' A WCA chairperson, the Podshaota-Chodak subproject area

'Five years ago specialists from the Tashkent Scientific Research Institute visited us to study and mark the quality of land. My land was marked 45 points. The soil bonitet doesn't reflect the current situation with land quality which is affected by total lack or shortages of irrigation water. The land is overfed with mineral fertilizers (nitrogen-based) to compensate the lack of irrigation. As a result, the quality of land gest worsened. Manuring has become very expensive. A trailer of manure costs 200-250 thousand sums. Very few famers can afford such expenses. 5-6 years ago manure made up 7-8% of soil components at least, nowadays-no higher than 2%.' A farmer, the Podshaota-Chodak subproject area

'Rarely does a farm household have one single plot. Usually there are several plots (cards) on the balance sheet of a farm with plot sizes of 10-15 ha on average. The land quality on the cards can vary. For example, one of my cards the soil bonitet is 45, another card is marked 30, etc. But the nuances are never taken into consideration when the plan is developed. The constant use of chemical fertilizers along with water shortages worsened the quality of the land so badly that at least a couple of tons of manure are needed to restore the quality. Crop rotation is very rarely used. The introduction of crop rotation could improve the quality of land.' A farmer, the Savay-Akburasay subproject area

'The actual surveying of the quality of our land took place in 1996-1997.The work was done by specialists from the Andijan Institute of Geodesy. My plot was marked 72 that time. The next land0surveying was conducted in 2008, but the examination was done off-hand. The specialists used maps that had already been made up; the people just walked around the plots, and took some soil samples. But in 1996, the surveyors used special equipment.' A farmer, the Isfayram-Shakhimardan subproject area

'My plot's bonitet was always at 60 points. But the latest land-surveying changed it to 71 even though the quality of the land didn't improve at all. As the given points have nothing to do with reality, I decided to have my land re-examined. But I was told that they wouldn't send an expedition to survey one farmer's plot. If one's plot bonitet is under 45, the state should subsidize the farm. Maybe that's why our soil bonitets are raised too high.' A farmer, the Savay-Akburasay subproject area

The irrigation water shortage also makes it impossible for farmers to perform necessary agricultural activities regularly. 10.4% of the private farmers didn't conduct land leaching on the plots over the past two years; 4.8% of farmers didn't do leveling events though they believed it was necessary (Table 53). The percentages of such farmers are especially large in the Podshaota-Chodak subproject area (18.5% and 8.6% respectively). The situation in which land leaching is not done results primarily from the shortage of irrigation water for the work, and lack of financial sources and machinery.

Table 53. Leaching and leveling on private farm plots, 2012-2014

% of private farms

	Farms where the activity was conducted	Farms where the activity was not conducted though it was needed	Farms where the activity was unnecessary
Leaching			
Total	**4.8**	**10.4**	**84.8**
Savay-Akburasay	8.3	3.6	88.1
Podshaota-Chodak	3.7	18.5	77.8
Isfayram-Shakhimardan	2.4	9.4	88.2
Leveling			
Total	**51.6**	**4.8**	**43.6**
Savay-Akburasay	46.4	3.6	50
Podshaota-Chodak	35.8	8.6	55.6
Isfayram-Shakhimardan	71.8	2.4	25.9

Source: Private farmers survey, 2014

20% of the surveyed private farmers point out that the ameliorative condition of their lands is very poor. As was in case of dehkan farms, only 15% of private farmers believe that the poor land condition results from high ground water tables (the corresponding figure for the Podshaota-Chodak area is higher, at 21%). The percentages of private farmers having lands with high ground water tables in the Savay-Akburasay and Isfayram-Shakhimardan areas are almost similar, at 12% and 13% respectively (Table 54).

Table 54. Groundwater and soil salinization on private farm plots

% of private farms

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Farms having neither soil salinization nor high groundwater table on their plots	**84.8**	**88.1**	**79**	**87.1**
Farms having high groundwater table on their plots, %	9.6	9.5	11.1	8.2
The average size of plots with high groundwater table, ha	5	2	5	15
Farms not cultivating some land due to high groundwater table , %	10.4	11.9	14.8	4.7
The average size of land plots unused due to high groundwater table, ha	3	1	9	2

Source: Private farmers survey, 2014

'The quality of land is degrading. Crop rotation isn't performed. Crops should be rotated at least every three years. We don't use local fertilizers; land loosening is poorly done. Even though private farming has been developing for many years, the land, to my mind, doesn't have its master. Recently the optimization of farms has been conducted. Those who failed to run the business effectively were deprived of land. Maybe, in future, the land quality will improve. If it is possible, another optimization should be done.' A WCA chairperson, the Podshaota-Chodak subproject area

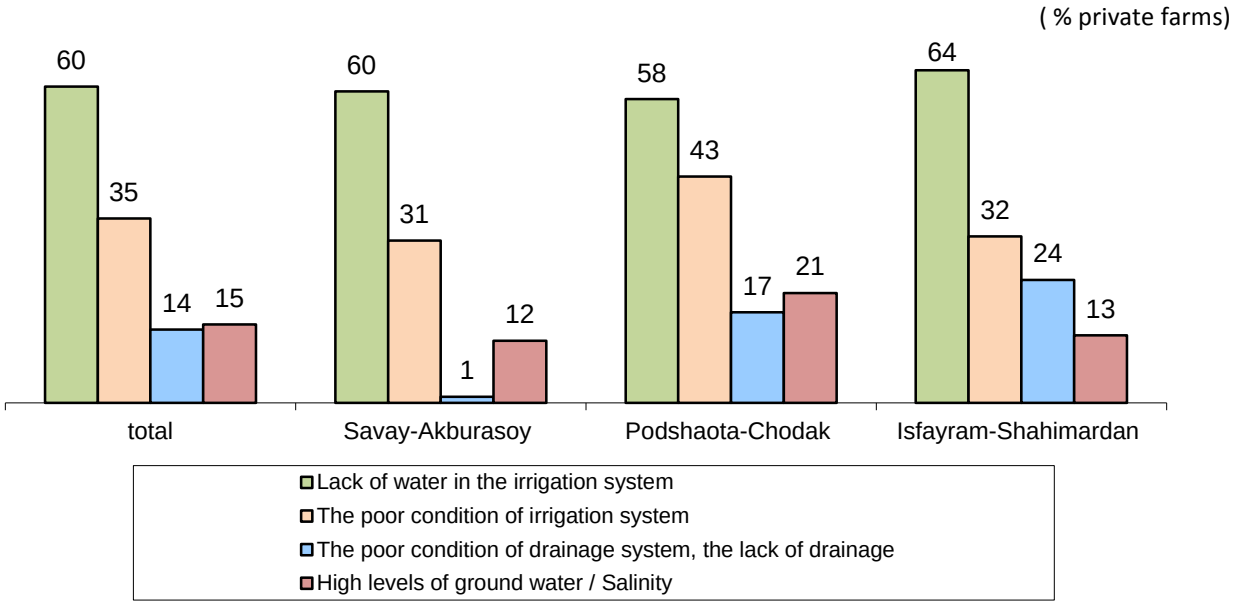
'To understand better how the land quality is worsening, one should have a look at the cotton yields over the time. In 1980-1087 there were cotton-raising brigades which got 55-60 centners of cotton per hectare. Nowadays, the farmers pick up 25 centners per hectare at most on the very same fields.' A WCA chairperson, the Isfayram-Shakhimardan subproject area

'The changes of land quality depend heavily on the dehkan and private farms' performance as well. If agricultural and ameliorative activities are done regularly, the land quality should not degrade. But it also depends on irrigation water. For example, if we added chemical fertilizers to soil, and there is no water for irrigation at the moment, the fertilizing is useless. Apart from chemicals, a local fertilizer (manure) should be used to make the quality of land better. But not every farmer uses it, as it is very expensive. Besides, there is little manure available. In the past there worked huge livestock kolkhoz farms; their workers gave away the manure free of charge.' A BISA employee, the Isfayram-Shakhimardan subproject area

'If irrigation water is supplied in necessary amounts, the quality of land will improve. My farm was established 3 years ago. The ex-owners were unable to preserve the land quality because of the lack of irrigation water. I am facing the very same problem now. I am thinking about returning the land back.' A farmer, the Savay-Akburasay subproject area

Thus, it is evident that the major causes of the unsatisfactory condition of both dehkan and private farms are the shortage of irrigation water along with the poor condition of the irrigation-drainage system (Figure 15).

Figure 15. The major causes of the poor condition of private farmland



Source: Private farmers survey, 2014

'Up to 1962 Yangikurgan district needed no drainage system as agriculture was not developed in the hilly territories. In 1970-1080 the land was developed. Because of the irrigation in the upper territory, the lower parts became water-logged. The first drainage collectors were built in 1965. As the amount of logged and salinized land grew, the more needed the drainage system became. The state pays specific attention to the improvement of the ameliorative condition of land. The Decree of the President of the Republic of Uzbekistan dated October 27, 2007 was aimed at the solution of the problem. Under the decree, a two-phase national program was designed (Phase I: 2008-2013, Phase-II: 2014-2017) in order to improve the land quality. In the end, we have sufficient funding: we have managed to clean 225 km of drainage network over the last 5 years. In 2014 we put in order 45 km of the drainage.' PSD, the Podshaota-Chodak subproject area

'In fact, we have almost no problems with soil salinization and high ground water table. But 2-3 years ago, in the lower territories the level of groundwater table rose to a critical point. At regional level all necessary measures were taken to minimize the impact of the logging. All machinery was used to help people to deal with the situation in the settlements. Fruit trees dried, farm houses and outbuilding were damaged.' An irrigation expert, the Isfayram-Shakhimardan subproject area

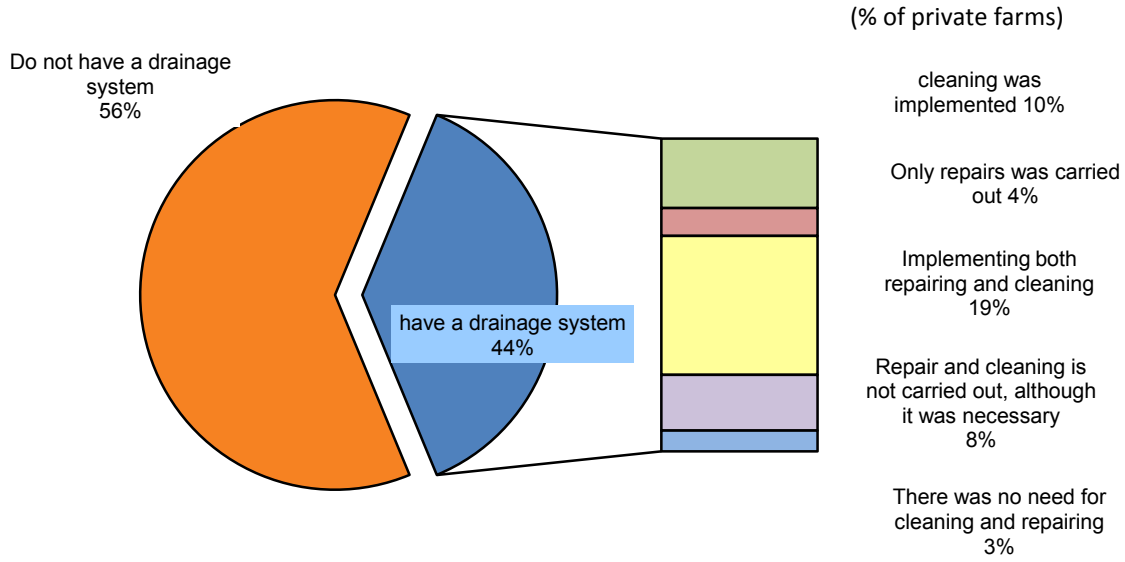
'The settlements in the lower territories suffer from high ground water table. The level is especially high in our settlement. Some time ago, all fruit trees died, mud-brick fences collapsed. The population got together to dig a drainage canal. Now the situation is stabilized.' A farmer, the Isfayram-Shakhimardan subproject area

'In our district most land is developed. There is an artificial water reservoir nearby. Private farms' plots are situated lower than the reservoir. The farmers irrigate their fields with groundwater. As a result, the soil is salinized. Crop rotation is done only on farms where there is pumping irrigation.' A WCA chairperson, the Podshaota-Chodak subproject area

In 2014, 11% of the private farmers were unable to perform the cleaning and repairs of the irrigation canals (by subproject area: Podshaota-Chodak-9%, Isfayram-Shakhimardan-13%, and Savay-Akburasay-11%).

A large 56% of the surveyed farm households don't have drainage systems on their plots (by subproject area: Isfayram-Shakhimardan-25%, Podshaota-Chodak-68%, and Savay-Akburasay-76%). In 2014, three quarters of farmers who have drainage network on their plots conducted the necessary cleaning and/or repairs of the drainage. Only 7% of the surveyed farmers say that such work didn't need to be done. 18% of the farms with drainage systems were unable to clean and repair the drainage even though, according to them, the work should have been done. 74% of the farmers state the situation results from a lack of financial resources, whereas 38% of them mention the shortage of necessary machinery as the underlying cause of the incomplete work (Figure 16).

Figure 16. The cleaning and repairs of the drainage system on the plots of private farms.



Source: Private farmers survey, 2014

'In accordance with the Decree of the President, we have made up two programs on the cleaning of the drainage system. However, unless the water reservoir and the 'Shahrihansay' canal are reconstructed, the cleaning proves to be useless. At the moment, the level of ground water table is rising by 1.5-2 m. The banks of the 'Savay' canal should be aligned. Some of the farms cannot get the distributed amount of irrigation water at all; the bottom of the canal is raised because of the garbage stuck in the canal, which results in large water losses as water surface tops the banks of the canal. A program aimed at cleaning and repairs of the irrigation system needs to be developed and implemented as well.' A HHME employee, the Savay-Akburasay subproject area

'Open-type drainage needs cleaning 3 times a year, whereas close-type can be cleaned once in ten years: even in winter, close drainage functions well. Close drainage is washed out with special solutions; the cleaning of open drainage is done by using much workforce and machinery. That's why the close type is the more effective drainage. After the introduction of close-type drainage the area under crops is expanded.' A HHME employee, the Savay-Akburasay subproject area

'More attention should be paid to the alienation areas around the irrigation and drainage networks. According to the resolution №174 of the Cabinet of Ministers (19992), the alienation area for drainage collectors of the 50-100 m^3 capacity is defined at 200 meters. Nowadays, we see catering and recreational establishments appear on the banks of irrigation canals. I wonder why the buildings are constructed there, how come the Ecology Department gives away the permission on construction to the owners. The establishments prevent our specialists from doing their job.' A BISA employee, the Savay-Akburasay subproject area

'Some people illegally plant trees and build houses near the drainage network. WCAs along with makhalla committees resolve the problem. If it is needed, they get the ecology and water management

departments involved. There was a case when the public prosecutor's office had to settle the question. While making decisions on such question, we act in accordance with the resolution of the Cabinet of Ministers regarding the use of irrigation canal banks. Under the resolution, there is an alienation/protection area. Usually, only particular plants can be cultivated on the banks of irrigation canals: these are plants and trees that will be cut down, like melons, pumpkins, and willows.' A ISA employee, the Podshaota-Chodak subproject area

The low incomes of private farmers caused by significant water shortages result in vicious circle of problems: the lack of money and machinery makes it impossible to maintain on-farm IDS, which in its turn leads to the further reduction of irrigation water supply. 58% of private farmers say that their on-farm irrigation-drainage networks need repairing, rehabilitation or construction of new structures. 42% of private farmers say that their on-farm irrigation-drainage networks don't need repairing, rehabilitation or construction. The percentage varies greatly by subproject area: 17% in Podshaota-Chodak, 28% in Isfayram-Shakhimardan, and a considerable 77.1% in Savay-Akburasay. Overall, almost half of the private farmers find the implementation of rehabilitation/construction work of the irrigation-drainage system absolutely necessary.

Table 55. The farmers' views on the necessity for rehabilitation of the on-farm IDS

% of private farms

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Reconstruction/repair of the irrigation network and borewells				
Farms where the work needs to be done, %	**33.2**	20.2	33.3	45.9
The average area of land where the work is to be done, ha	**21**	43	20	12
The average area of land where the work is to be done, as % of the total area of a private farm requiring rehabilitation of the irrigation/drainage system	**41.2**	41.7	47.9	36.2
Construction of new irrigation networks and borewells				
Farms where the work needs to be done, %	**30**	8.3	48.1	34.1
The average area of land where the work is to be done, ha	**24**	42	29	13
The average area of land where the work is to be done, as % of the total area of a private farm requiring rehabilitation of the irrigation/drainage system	**52.5**	60.3	59.7	41.5
Reconstruction/repair of the drainage network				
Farms where the work needs to be done, %	**9.6**	3.6	7.4	17.6
The average area of land where the work is to be done, ha	**17**	1	18	20
The average area of land where the work is to be done, as % of the total area of a private farm requiring rehabilitation of the irrigation/drainage system	**38.7**	2	45.2	43.8
Construction of new drainage networks				
Farms where the work needs to be done, %	**19.2**	0	28.4	29.4
The average area of land where the work is to be done, ha	**22**	0	26	17
The average area of land where the work is to be done, as % of the total area of a private farm requiring rehabilitation of the irrigation/drainage system	**51.7**	0	54.9	48.9

Source: Private farmers survey, 2014

The situation with the irrigation-drainage varies greatly in the three subproject areas. Whereas it is rehabilitation/construction of the irrigation system that is top priority for private farmers in the Savay-Akburasay subproject area, in the Isfayram-Shakhimardan subproject area, the necessity for rehabilitation/construction of the drainage system stands as high as that of the

irrigation system. The construction of a new drainage system is of great importance for the Podshaota-Chodak subproject area (Table 56).

Table 56. The area of farmland where IDS rehabilitation is needed

as % of the total area of private farms requiring the rehabilitation of the IDSs

	All subproject areas	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Reconstruction/repair of the irrigation network and borewells	**34.8**	71.2	22.5	29.6
Construction of new irrigation networks and borewells	**36.3**	28.6	47.6	24.3
Reconstruction/repair of the drainage network	**8.1**	0.2	4.4	18.9
Construction of new drainage networks	**20.6**	0	25.3	27.2
Total	**100**	100	100	100

Source: Private farmers survey, 2014

'Farmers themselves repaired 15 km of the canal, from 'Shakhimardan' up to 'Eski kaptarkhona'. They raised money, rented machinery. ISA helped with the machinery. But we are lacking in money to concrete the canal banks. Maybe the work can be done if it is funded from the budget. The WCA anyway will never have the needed sum.' A farmer, the Isfayram-Shakhimardan subproject area

In 2014, the reconstruction of the irrigation system was done to some extent on 44.8% of private farms, whereas 18% of farmers cleaned/repaired their drainage system. However, the maintenance costs of irrigation and drainage per a farm account for only 3 million 433 thousand sums (5% of a farmer's annual income), and 1 million 662 thousand sums (2.4% of a farmer's annual income) respectively. By far the lowest reconstruction costs are reported for the Podshaota-Chodak subproject area (Table 57).

Table 57. Cleaning and repairing of the irrigation-drainage systems on private farms in 2014

	Irrigation system and borewells		**Drainage system**	
	Farmers that did the work,%	The average costs of the works, '000 UZS	Farmers that did the work,%	The average costs of the works, '000 UZS
Total	**44.8**	**3,433**	**18**	**1,662**
Savay-Akburasay	41.7	3,151	27.4	2,374
Podshaota-Chodak	54.3	3,091	3.7	623
Isfayram-Shakhimardan	38.8	4,188	22.4	963

Source: Private farmers survey, 2014

A WB 2015 study of WCAs in Uzbekistan shows that the relatively low profitability of the state mandated crops undermines farmers' ability to sufficiently contribute to adequate maintenance of the local irrigation and drainage systems[19].

However, the low levels of expenditure on the rehabilitation and construction of the irrigation–drainage systems cannot be solely explained by the low payment capacity of the private farmers. Many farmers are unwilling to invest money in the construction of new irrigation or drainage networks, even if they can afford it, for the following reasons:

[19] "Exploratory assessment of factors that influence quality of local irrigation governance in Uzbekistan." (The World Bank, 2015, forthcoming).

- administrative restrictions on the utilization of the farm's banking account; the spending structure, which is strictly regulated by the state, doesn't provide expenditure on irrigation/drainage;
- the construction of new irrigation-drainage systems results in the reduction of area under crops: the private farmers find it almost impossible to register the changes to proportionally reduce the plan on cotton and wheat produced under the state order;
- the irrigation system, even if it is in a good condition, keeps breaking down as it stands idle because of shortages of water

6. Socio-economic consequences of the lack of irrigation water and the poor condition of IDS

The extensive use of land and water, under-funding of the water resources sector, along with natural factors affecting water resources, led to the rise in the number of problems associated with a lack of irrigation water, poor IDS state and the deterioration of land. The problems negatively affect agricultural production, which is the economic foundation of the welfare of the subproject areas. The consequences of irrigation water shortages on dehkan and private farms of the region inevitably result in remarkable reduction of incomes and living standards.

About 80% of farmers in all three subproject areas noted that they have been constantly facing water shortages. Consequently, almost all households and farmers of the Project Area lose their income. 46.8% of the surveyed households in 2014 had no cash income from selling agricultural products grown on the dehkan plot, because the harvest was so low that it was not always enough even for family consumption. 7% of the sampled households didn't have the income from their plots (in terms of cash or consumption). 18% of farms in the Project Area have been unprofitable for the last 12 months. The profit obtained by other farmers is so low that it allows farmers neither to maintain on-farm IDS, acquire equipment nor to expand production normally.

Table 58. The effect of water shortage on the income of dehkans and private farmers in 2014

	The share of families that did not have income from the their garden plots, %	The share of families that did not consume the produce from their garden plots	The share of farmers who did not have income, %
Total	**46.8**	**7.4**	**18.1**
Savay-Akburasay	69.5	14.4	19.3
Podshaota-Chodak	40.2	1.8	14.8
Isfayram-Shakhimardan	30.7	6	20

Source: Household Survey, 2014
Source: Private farmers survey, 2014

«15 years ago, farmers in our area provided the whole country with potatoes and apples. Famous Namangan apples were grown in the territory of our region. There was even opened a special store selling fruits and vegetables in Moscow in the 70th, where only our products were sold. All the products were grown in the territory of the collective farm (today's territory of Nanay village). Now this territory looks like a desert because of the lack of water. Currently, we, on the contrary, began to import vegetables from Surkhandarya region though our region specializes in vegetables. After harvesting the grain we cannot do the re-seeding, as there is no water. In the past, it was Pap district that had the worst situation regarding the irrigation and land quality in the Namangan region. Because of the fact that

cotton is not grown in our district, we helped farmers in Pap district to pick up cotton during the autumn harvest: we were surprised to see that during the re-planting, the farmers in Pap use more irrigation water than we do for our main planting ', A farmer, the Podshaota-Chodak subproject area

«Almost every household has fruit trees; people plant potatoes, tomatoes. We irrigate our land mostly at nights: thus, the children are left unsupervised; normally, children don't sleep while adults have to wait for the water. There was no water this year in June, August and September. Some of the trees have dried up. Instead of them, we have planted new saplings. Year after year, the situation is getting worse with irrigation, and the incomes are reducing». A mother of many children, the Savay-Akburasay subproject area.

«Because of the shortage of water in 2014, most of the gardens have just dried up. Each farmer receives only 30% of the required volume of water». A WCA chairperson, the Podshaota-Chodak subproject area.

«Under the irrigation requirements, cotton should be watered at least 6-7 times. Due to the lack of irrigation water, our farmers do only 2-3 watering sessions. We cannot provide farmers with the needed water; the water is physically not available. Farmers are losing the harvest». A WCA chairperson, the Isfayram Shakhimardan subproject area.

«The limit on water use is set on the basis of how much is the cultivated area on a farm. The farmers' applications for water are collected by WCAs before the start of the season. But the timing and volume of water in recent years depend on neither WCAs nor farmers. Farmers suffer from huge losses due to the lack of water». A farmer, the Isfayram Shakhimardan subproject area.

«The situation with water supply is extremely complicated. Almost all the farmers and dehkans are experiencing severe water shortages. The trees and crops are dying. There are farmers who could not water their plots in 2014. Irrigation problems are very relevant for us; they are much more relevant than the drainage problems». A farmer, the Savay-Akburasay subproject area.

The disadvantageous hydro-ameliorative situation causes serious damage to livestock production, although on a smaller scale than to crop farmers. Among households that had livestock in 2014, a good 50% didn't generate cash income from the sales of cattle; 28% did not consume their own cattle products. 27.6% of the surveyed households neither had cash income from cattle nor consumed their own cattle products.

Table 59. The effect of water shortage on livestock productivity

	Families keeping cattle, % of households	Families having no cash income from cattle products, % of households keeping cattle	Families not consuming their cattle products, % of households keeping cattle
Total	**55.4**	**50**	**28**
Savay-Akburasay	62.5	46.7	41.9
Podshaota-Chodak	52.1	53.4	19.3
Isfayram-Shakhimardan	51.5	50	19.8

Source: Household Survey, 2014
Source: Private farmers survey, 2014

«Because of the water shortages, many households have sold their cattle. Now we have to water the garden, but there is no water in the irrigation ditch; I do not know from where to take water for irrigation, there is no water in the Savay.» A resident, the Savay-Akburasay subproject area

Table 60. The effect of water shortage on livestock sector

(% of households)

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Reduction of pasture areas caused by water shortage	29.6	25	43.2	20.4
High forage prices caused by water shortage	34.9	38.7	42	24
The lack of the necessary forage for livestock caused by water shortage	11.5	11.3	11.8	11.4

Source: Household Survey, 2014

The lack of irrigation water in the Project Area results in the shortage of pastures, as well as the lack of necessary forage and high forage prices, which inevitably had a negative impact on the development of livestock production.

20% of the respondents, keeping livestock and poultry, are facing the negative consequences of high groundwater table levels and waterlogging, such as damage to outbuildings where the livestock is kept, reduction of grazing and watering places, a rise in morbidity in livestock, etc. (Table 61).

Table 61. The effect of high groundwater table level on livestock sector

% of households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Livestock gets infected/gets parasites on the waterlogged fields	2.3	0.7	3.1	3.4
The poor quality of water for livestock	10.1	9.4	15.4	5.1
Forage crops are reducing because of poor drainage and land degradation	7.3	2.2	10	10.3
No problems with salinization and high groundwater table levels affecting the keeping of livestock and poultry	***80.3***	***87.7***	***71.5***	***81.2***

Source: Household Survey, 2014

41% of households and 35% of farmers stress the poor state of the irrigation system. 14% of private farmers mention either the poor condition or lack of drainage systems as the main factors that impede productivity growth on farms (in Isfayram-Shakhimardan: 24% of farmers). The situation with irrigation water supply is aggravated by power cutoffs and degradation of pumping equipment which causes poor performance of the irrigation-drainage systems. Both dehkans and farmers suffer badly from the unsatisfactory work of the irrigation system. By far the worst situation with IDS performance is observed in the Isfayram-Shakhimardan subproject area, where the lowest farmland productivity is reported as well.

«The state of the canals is poor, so the losses of water are significant. If I am distributed 500 m^3 of water, in fact, I receive only 200 m^3. Water flumes are in poor condition. In some places, the water flumes are absolutely unusable. We have a water reservoir. The whole winter we are collecting water, but during the irrigation season, there is still not enough water. The reservoir is not concreted. There cannot be more than 4000 m^3 of water collected (although the size of it makes it possible to collect 10,000 m^3), because there are settlements on the lower bank of the reservoir. The problem with the lack of irrigation water is worsening year by year. From the 20th of March to the 12th of June 2014 there was not any irrigation water in the canals. Without spring irrigation, we managed to harvest wheat. It was during the period of cotton irrigation, notably, from the 5th of August to the 10th of October, when there was no water again. How can we fulfill the plan? Farmers' incomes are falling». A female farmer, the Isfayram-Shakhimardan subproject area

Perennials are particularly affected by water shortages, salinization and high groundwater table levels. The area gardens and vineyards has been decreasing in the subproject areas in recent years, especially in the Podshaota-Chodak subproject area. Some farms are forced to either completely abandon traditional crops, or replace them with others, less profitable ones (Table 62).

Table 62. The effect of high groundwater table level on agricultural production in the subproject areas

(% of households)

	No lands with a high groundwater table level	Crop yields are reducing	having to abandon the cultivation of certain crops	Dying trees and other perennials	Reduction of the pasture areas
Dehkan farms					
Total	**86.5**	**11.4**	**6.8**	**9.4**	
Savay-Akburasay	**97**	3	3	1.2	
Podshaota-Chodak	**70.4**	24.9	12.4	20.7	
Isfayram-Shakhimardan	**92.2**	6	4.8	6	
Private farms					
Total	**84.8**	14.4	8.4	4.8	0.8
Savay-Akburasay	**88.1**	10.7	9.5	2.4	0
Podshaota-Chodak	79	21	11.1	8.6	2.5
Isfayram-Shakhimardan	**87.1**	11.8	4.7	3.5	0

Source: Household Survey, 2014

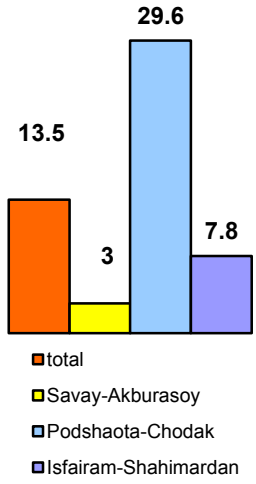
«There is salinized lands in the area of my plot. On this land of 2 ha, I grow grapes. Together with neighboring farmers, we grow the grapes «Toyfi». Neighbors sold grapes for 1500 - 2500 sums per kg, but I could not sell for 1000 sum because the quality of my grapes is falling down. I have to give up growing grapes. I will specialize in quince, since quince is resistant to salinity. Now the program for the intensive gardening is being developed in the area. I also applied for the purchase of seedlings». A farmer, the Podshaota-Chodak subproject area

«According to the ISA, the area of land with high groundwater table and salinization Yangikurgan district is 105 ha. I think that this figure is incorrect. In fact, this area of such land is much larger. There are farms, where salinized lands take 100% of the area, for example, on the farm «Shokh Jakhon Abu Bakir» On the two mulberry-growing farms all trees dried dead». A farmer, the Podshaota-Chodak subproject area

Despite the fact that 85% of dehkan and farmer plots do not have particular problems with high groundwater table, the groundwater-related losses, that the remaining 15% of households and farmers suffer, are significant. The average income of dehkan farms with high groundwater table, is reduced by 53.4% (in the Savay-Akburasay subproject area – by 32%, in the Podshaota-Chodak subproject area – by 58%, in the Isfayram-Shakhimardan subproject area – by 45%). The average income of private farmers who have problems with high groundwater levels is reduced by 40%. Since there are more private farms affected by the problem of high groundwater table in the subproject area of Podshaota-Chodak, the area's farmers incur the largest losses in comparison with farmers from the other subproject areas. Whereas In the subproject area of Savay-Akburasay farmers' incomes decreased by 17%, in the subproject areas of Podshaota-Chodak and Isfayram-Shakhimardan the income of the farmers declined by 55% and 35% respectively.

Figure 17. Households that had problems with high groundwater table in 2014

(% of households)



Source: Household Survey, 2014

Figure 18. Reduction of dehkan household incomes that was caused by high groundwater table, in the subproject areas, 2014

(% of households having problems with salinity and high water table)

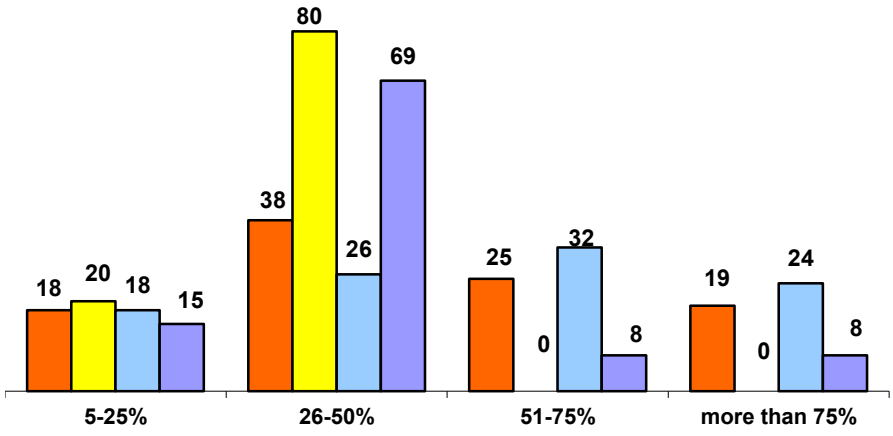
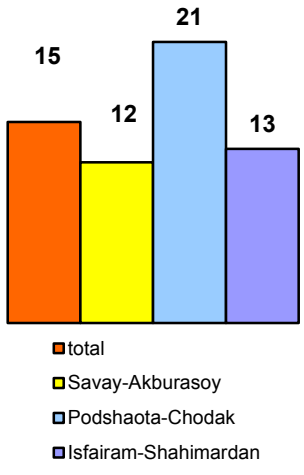


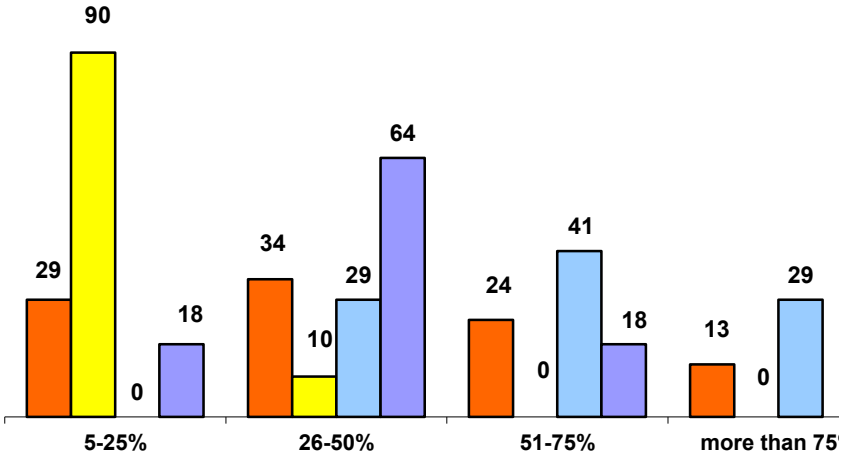
Figure 19. Private farmers that had problems with high groundwater table in 2014

(% of private farms)



Source: Private farmers survey, 2014

Figure 20. Reduction of farmers' incomes that was caused by high groundwater table, in the subproject areas, 2014



(% of households having problems with salinity and high water table)

However, the rising groundwater table and soil salinization results not only in a decrease in agricultural revenues. For example, in the Podshaota-Chodak subproject area, groundwater and salinization problems lead to the destruction of house foundations and walls, a higher morbidity of dampness-related illnesses, which poses a threat to public health, especially affecting children, the elderly, and people with chronic diseases. Over 35% of respondents in the Podshaota-Chodak subproject area say that people in their community suffer from the damaging effects of high groundwater table and soil salinization (Table 63).

Table 63. The effect of mud-flows and high groundwater table on the residential and commercial buildings in 2014

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Destruction / damage to houses and other buildings because of the high groundwater level	**6.7**	0	20.1	0
Destruction / damage caused by mud-flows	**15.5**	16.1	27.8	2.4
Destruction / damage caused by collapsing of canal, river, reservoir banks	**8.1**	14.9	8.3	1.2
No problems	***75***	***70.2***	***58***	***97***

Source: Household Survey, 2014

High levels of groundwater cause damage not only to residential buildings, but also to establishments of social infrastructure, such as hospitals, kindergartens, schools, and colleges.

The rising groundwater table negatively affects the state of the water supply network. The service life of pipelines is reduced, which increases repair costs. The poor performance of water supply systems makes residents use irrigation or drainage water for drinking and household needs, which negatively affects public health, causing the growth in gastrointestinal and renal diseases.

«People use drainage water not only for irrigation and domestic use, but also for drinking. Due to the use of drainage water we have seen infectious diseases spread». A village resident, the Isfayram-Shakhimardan subproject area

Because of the problems with the maintenance of mud-flow storages and structures, especially those in the territory of Kyrgyzstan, more than 15% of respondents say that households in their communities suffer from the damaging effects of mud-flows to some extent (the response has a higher pattern among private farmers, at 23%). The residents of the Podshaota-Chodak subproject area face problems caused by mudflows more often than the people of the other subproject areas (the problem was noted by 28% of dehkans and 33% of farmers). Even though mud-flows occur every year, massive destructions are very rare. The anti-mudflow headquarters are founded in each khokimiyat. Every year, by the decision of khokims, working committees are organized within the headquarters. The chairpersons of makhalla committees and WCAs of the regions where a natural disaster may occur more likely, are always included in the working committees. It is the working committees that define territories where the risk of mud-flows is especially high. All ditches and canals are properly cleaned to secure the flow of water; anti-mudflow structures are built.

«The mudflows occur in spring. The Savay canal starts in Kyrgyzstan. Water comes to the canal from the river Tentaksay. When mudflows happen, mud and grave get into the canal, so it needs to be cleaned in a timely manner. But our machinery is not allowed across the border in time it can help with the cleaning. While the documents are prepared and agreements are made, the time is lost, and the mudflows affect the main vegetation season. Farmers build anti- mudflow structures each year in August, but in the spring mud waters erode again these facilities. While mudflows happen every year, massive destruction are very rare. The last time was in 2011, when we had serious negative consequences. Cotton growers were forced to sow cotton iteratively. Despite the fact that they had a contract with the insurance company, none had received appropriate compensation. The insurance companies found thousands of reasons not to pay. And mudflows causing the destruction of settlements, also occurred, although a long time ago, in the 1990s». A farmer, the Savay-Akburasay subproject area

«No one can say when a mudflow occurs. This is a natural disaster. They occur every year, but the population almost does not suffer». An HGME worker, the Podshaota-Chodak subproject area

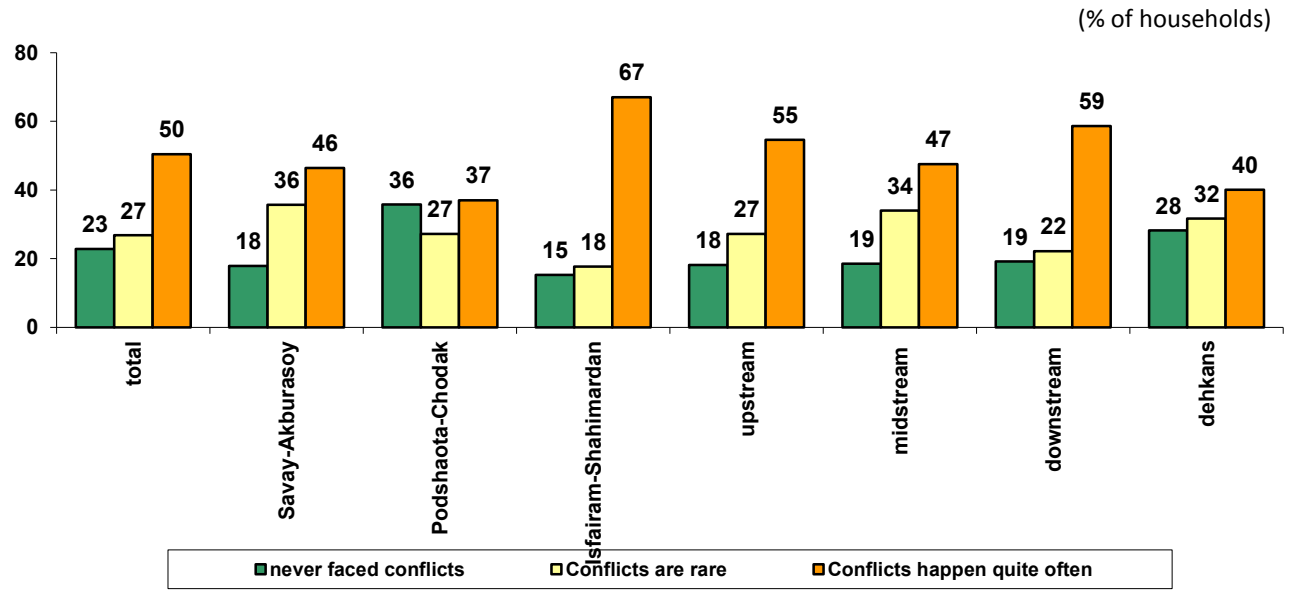
«We have mudflows almost every year. 6 years ago a large number of people were affected by mudflows. The government allocated another plots of land and compensation for the worst affected families. A working committee for the prevention of mudflows was developed by khokimiyats. The mudflow reservoir was built. Last year, there was a strong mudflow after the rain. Dams could not resist, the water overflown the banks. Part of the crop was destroyed». A farmer, the Podshaota-Chodak subproject area

«3 years ago, my plot of 8 ha was destroyed by mudflows. There was cotton planted; we even did not make its weeding then. Mudflow also washed away roads; the population was also affected. Of course, I could not get a harvest from the land where mudflows occurred. Another 4-5 of farmers suffered». A female farmer, the Isfayram-Shakhimardan subproject area.

7. Conflict and cooperation in the field of water consumption. Strategies for coping

The lack of irrigation water brings out disputes and conflicts: 77% of farmers and 72% of dehkans are constantly facing such problems. The conflicts occur more often in the Isfayram-Shakhimardan subproject area than in the other subproject areas. Such conflicts are more common for downstream farms, although the relevance of this problem is equally high for all farmers.

Figure 21. Frequency of conflicts due to the lack of irrigation water

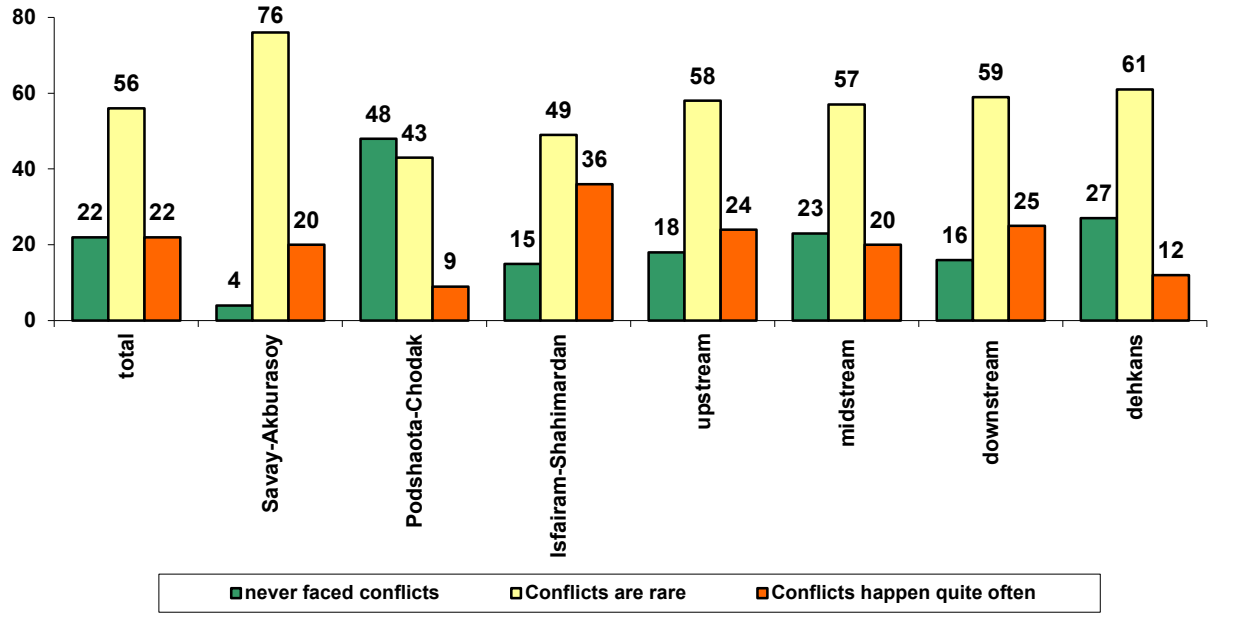


Source: Household Survey, 2014
Source: Private farmers survey, 2014

Despite the seriousness of the problem, the disputes and conflicts over the poor maintenance of irrigation and drainage systems do not occur as often as it would be expected: 56% of farmers and 61% of dehkans noted a rare number of such conflicts, and 22% and 27% respectively have never faced such conflicts. In the Isfayram-Shakhimardan subproject area, the conflicts occur more often than in the other subproject areas. Conflicts over irrigation and drainage systems issues are more common for farms located downstream of the canals, where these problems are the most relevant.

Figure 22. The incidence of conflicts over inadequate maintenance of the IDS

(% of households)



Source: Household Survey, 2014
Source: Private farmers survey, 2014

«Many farmers say that under the collective-farm system, there was enough irrigation water for all, but now is not enough. It must be noted that both at the collective farm system and shirkat system the areas were larger, there were not so many flumes on the canals, as there are now. For example, the places, where in the past there was just one flume, now there are at least 5-6 flumes, according to the number of farms located downstream. Everyone is trying to extricate himself from a difficult situation, someone is building artificial dams, others are stealing the water at night. Farmers do this out of hopelessness. The state plan is set, it must be performed». An HGME employee, the Savay-Akburasay subproject area

«When water is scarce, it is necessary to schedule irrigation in districts. One farm is irrigated for 5 days, after which another farm's turn – for 5 days, whereas the other farms do not get water for irrigation. This leads to conflicts and we have to carry out the explanatory work. When the water is given in turns, the ditches that were left without water continue to dry up, and when the turn comes and the water goes there, the earth rapidly absorbs water, and thus, there are large losses». A BISA employee, Savay-Akburasay subproject area

In most cases, conflicts over water occur between farmers and WCAs (42% of the farmers were engaged in the conflicts; in the subproject area of Isfayram-Shakhimardan the proportion of farmers who participated in 2014 in such conflicts reaches 66%). Conflicts with the government agencies do not happen often in all subproject areas. The most frequent disputes are reported taking place between neighboring farmers (33%), and among upstream and downstream farms (22%). Given the shortage of irrigation water, disputes and conflicts between farmers and

dehkans are also quite common (33%). 40% of dehkans and 17% of farmers surveyed, indicated that conflicts arise even between residents of different villages and makhallas (Table 64). The less water is available, the more conflicts arise, and the greater is the number of participants involved in them.

Table 64. The conflicts over irrigation water shortages and inadequate maintenance of IDS

(% of households)

	Dehkans	**Farmers**			
		Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Between ISA officials and farmers	**4.8**	**9.2**	9.5	12.3	5.9
Between WCA and ISA officials	**6.3**	**12.4**	13.1	12.3	11.8
Between officials and village residents	**6.7**	**5.2**	2.4	4.9	8.2
Between WCAs and farmers	**9.5**	**42**	27.4	32.1	65.9
Between WCAs and dehkans	**9.3**	**8.4**	4.8	9.9	10.6
Between upstream and downstream farmers	**13.3**	**21.6**	36.9	8.6	18.8
Between neighboring	**14.3**	**32.8**	41.7	8.6	47.1
Between farmers and dehkans	**38.3**	**32.8**	38.1	25.9	34.1
Between villages / makhallas	**40.3**	**16.8**	11.9	28.4	10.6

Source: Household Survey, 2014
Source: Private farmers survey, 2014

Unfortunately, the number of such conflicts is rising year after year, especially in the Isfayram-Shakhimardan subproject area. The share of farmers, who believe that in 2014 there were more such conflicts in comparison with 2013, accounts for 38%. Besides, the increase in conflicts is more frequently pointed out by midstream and downstream farmers.

Table 65. The rise of water conflicts in 2014, in comparison with 2013

(% of households)

	The share of those who reported an increase in the number of conflicts
Private farmers	
total	**38**
Savay-Akburasay	34.5
Podshaota-Chodak	30.9
Isfayram-Shakhimardan	48.2
Location of a farm	
upstream	27.3
midstream	45.6
downstream	38.4
dehkans	**35.3**

Source: Household Survey, 2014
Source: Private farmers survey, 2014

However, the population of the Project Area has much experience in joint solution of different problems and conflicts. 97% of respondents believe that the cooperation is very important and

only together the people can solve their problems. The key issues that the population and farmers solve together include the distribution of irrigation water, as well as the cleaning and repairing of IDS, including the purchase and repair of pumps. In addition, both dehkans and farmers communicate with each other to resolve the problems of production and sale, along with the equipment and machinery sharing (Table 66).

Table 66. The percentage of households united with neighbors for joint problem solving

(% of households)

	Dehkans	Farmers			
		Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Cleaning and repair of the drainage system	**4.4**	**12**	4.8	14.8	16.5
Cleaning and repair of irrigation canals	**72.8**	**71.6**	71.4	72.8	70.6
Purchase / repair of a pump	**18.7**	**18.8**	1.2	22.2	32.9
Cattle grazing	**17.9**	**13.6**	17.9	9.9	12.9
Purchase of seeds, fertilizers, fuels	**4.4**	**14.8**	10.7	6.2	27.1
Selling agricultural products	**13.1**	**18**	22.6	13.6	17.6
Sharing agricultural machinery	**9.1**	**26**	16.7	34.6	27.1
Distribution of irrigation water between plots, scheduling water supply	**26.4**	**31.6**	40.5	40.7	14.1
Never got united to solve common problems	**3.2**	**0.8**	0	2.5	0

Source: Household Survey, 2014
Source: Private farmers survey, 2014

Only a small number of respondents consider the situation of the poor condition of IDS to be irreparable and do not see any way to improve the situation. The study showed that most of the residents believe that the situation can be stabilized. Therefore, in many Makhallas, especially where the situation is critical, the people are actively involved in the construction works, the cleaning of IDS, raising money on fuel, and organizing the catering for the construction workers.

The organizers of such activities are usually local self-governance representatives (RACs and makhallas). As people cannot always perform the cleaning and construction themselves, another common strategy of overcoming the problem is to contact the district administration and other organizations with the requirements to normalize the situation.

«Makhalla committees organize khashars of cleaning irrigation canals in the settlements. Those who have family garden plots, are involved in the cleaning of irrigation networks, organized by the WCA». An HGME employee, the Savay-Akburasay subproject area

«In the territory of every makhalla, khashars are organized in order to clean canals and irrigation ditches. Apart from the population, the employees of schools, dispensaries, other organizations and enterprises that use irrigation water also participate in these actions». A farmer, the Isfayram-Shakhimardan subproject area

«People participate in khashar aimed at canals' and reservoirs' cleaning; but not all the work can be done manually. People help with the maintenance of machinery, buy diesel fuel, parts for minor repairs. Still, using all population resources, it is impossible to make a large amount of work». A farmer, the Podshaota-Chodak subproject area

The majority of respondents believe that the agricultural productivity can be increased under the primary condition that the water shortage and poor condition of IDS problems are resolved. Being unable to actively change the current situation with water shortages as well as the state of IDS, many owners of dehkan plots either refuse to grow conventional crops, replacing them with others, or stop planting crops. However, the possibilities of replacing crops in dehkan households are limited by small sizes of the plots. For most farmers, such strategies are generally unacceptable, because the local authorities do not allow farmers to abandon the cultivation of cotton and grain. According to a WB study, farmers who grow secondary crops after the harvest of wheat under the state order is complete, use water more cautiously and look for options to save water or irrigate their fields more efficiently[20].

C. INSTITUTIONAL FRAMEWORK

1. The Role of the State

The vast majority of respondents are unanimous in the opinion that the government should take the responsibility for investment in irrigation and drainage, as well as IDS maintenance. The respondents associate actions on reconstruction of irrigation and drainage systems with the actions of the Government and its representatives rather than their own active actions. Taking into consideration the low level of farmers' incomes, this fact does not seem to be surprising.

At the same time, the majority of farmers believe that they must be responsible for the condition of irrigation and drainage network on their plots. However, the farmers consider it to be unfair to take full responsibility for the IDS while their agricultural activity is regulated by the government; this view arises from the conducted interviews and focus group discussions.

2. The role of the WCA

The major responsibility of WCAs is the distribution of water to private farmers. WCAs are expected also maintain the irrigation and drainage systems and to supply the machinery, and provide technical assistance to farmers.

According to law №240 (December 25, 2009) of the Republic of Uzbekistan ‘On the introduction of amendments and changes to regulations of the Republic of Uzbekistan in order to enhance the reforms in agriculture and water management’, a wide range of comprehensive amendments was tabled to the Law of the Republic of Uzbekistan ‘On water and water use’. In the new edition of the Law, the term ‘water user’ and the term ‘water consumer’ were defined; under the new definitions, the former Water Users Associations were re-named into Water Consumers Associations. According to chapters 2 and 18 of the new edition of the law, the status of WCAs was changed from a commercial establishment to an NGO. The transfer period took a long time, 2-3 years, as both basic principles of the function of WCAs and charters of the WCA were to be developed and approved; the re-named establishments were also to get registered with the judicial authorities, etc. Whereas WUAs were headed by directors and WUA councils, today’s WCAs operate under the rule of WCA Boards headed by WCA chairpersons. The WCA members make joint decisions regarding the introduction of gradual changes aimed at the attraction of new members to WCAs apart from farmers, for example, so-called Groups

[20] “Exploratory assessment of factors that influence quality of local irrigation governance in Uzbekistan.” (The World Bank, 2015, forthcoming).

of Water Consumers representing dehkan households, and other water consumers (private enterprises, organizations which use the water in the territory of a WCA). Despite the considerable efforts undertaken in the field of efficient water management at the WCA level, none of the organization manages to fulfill their duties satisfactorily because of the lack of both financial and administrative resources. The old and end-of-life machinery that the WUAs were provided after the dissolution of shirkats in the 2000s, proves to be of little use for the maintenance of the irrigation-drainage systems, as the machinery itself needs repairing all the time. The reorganization of WCAs into NGOs, which took place in 2010-2011, led to the situation in which the newly organized entities inherited the WUAs debts, which seriously undermines the potential of the WCAs as the NGOs.

In fact, the functioning of the WCA heavily depends on farmers' fees which are rarely paid in a full and timely manner, though the fees are the only source of funding for the WCAs. Even though an increasing number of farmers pay membership fees every year, the money is insufficient to pay salaries to WCA staff. According to the survey, 90% of farmers pay some service fees to the WCA over the last year. The average annual size of the fee amounted to 1,434 thousand sums that comprised 2 percent of the average annual revenue of farmers.

The fact that 90% of the farmers paid some service fees to WCAs doesn't mean that the payments were made in full and timely manner in accordance with the WCA-Farmer contracts. Each and every WCA chairpersons made it absolutely clear during the in-depth interviews that almost all farmers run debts to WCAs, and the collected fees account for as low as 50% of the sum defined by the contracts.

The findings of the SDC spring 2015 survey[21] of 63 WCAs, acting in the project districts of the WB RESP-II Project, fully comply with the results of the FVWRMP-II in-depth interviews. In particular despite the substantial positive changes in 2014 resulted from the Swiss support to WCAs in the RESP-II Project Area, in comparison with 2011, the WCAs reported the following:

- Actual revenues for 2014 at the time of the 2014 survey (February-March 2015) for all WCAs averaged out at only 52.2 % of the revenues planned for the year. Only 2 of 63 WCAs did not have accounts receivable in 2014. The water consumers' actual arrearages to WCAs at the time of survey averaged out at 49 mln. sums;
- 61 % of the RESP-II farmers have arrearages to WCAs. The average size of the farmers' arrearages accounted for829 thousand sums;
- The major factor preventing farmers from paying for WCA services is a lack of money on their accounts. By the time of the survey (February-March 2015), many farmers had not received full payments for their produce. Another factor closely related to the first one is that the government tranches do not provide sufficient funds for the payment of WCA services. This problem is especially characteristic of the farmers growing cotton and wheat under the state order[22].
- Only 1 of 63 WCAs does not have any debt obligations to its staff and tax bodies. The average size of such arrearages makes up 30 mln sums. Salary pays (46%) and debts related to taxes (49.3%, with the most share related to wage fund taxes) are by far the largest in the structure of WCAs' arrearages.

[21] Preliminary report of the survey "The assessment of farmers' satisfaction with the performance of WCAs and FFSs in 2014", SDC/Shelladia/TAHLIL, 2015.
[22] Information on problems resulting in farmers' debts to WCAs is provided in in subchapter below.

"On-farm canals are on the balance sheet of the WCA. Because of the lack of material and technical resources, the WCA cannot cope with the maintenance work, required for the normal performance of the irrigation network. The loss of water in the canals is increasing year by year. Thus, there must be developed a state program for the reconstruction of all canals. It is necessary to concrete canals and to build a flume system where it is necessary. It is essential to increase the efficiency of the canal". An MIS employee, the Savay-Akburasay subproject area.

"Not all of the WCAs have poor material-technical base. When shirkats were reorganized, some WCAs received high-quality buildings and machinery. There are also WCAs, which serve other WCA's members. The main problem with the WCA is collecting money for already rendered services. WCAs must be integrated into the state system. Then the funding will be allocated from the budget and the WCA will not have high staff turnover, and the attitudes to the duties will be different. The farmers grow production under the state order. WCAs should also be supported by the state", A WCA chairperson, the Savay-Akburasay subproject area.

"The WCA does not have enough equipment. The existing obsolete machinery can be rightfully discarded for scrap. Leasing is expensive. The WCA "Sh..." leased a «Samsung» excavator a few years ago. But due to the financial instability, the WCA had to sell this excavator. The Vodkhoz provides its machinery to WCAs on the conditions that fuel is purchased by the WCAs. The state should allocate at least 1 unit of specialized equipment to 3-4 WCAs. Now, private owners of heavy machinery also serve the needs of farmers and WCAs; the average cost of such services is 90-100 thousand sums per hour", An agronomist, Podshaota-Chodak subproject area

"We need to increase the WCA authority, strengthen their material and technical base. Farmers do not take us seriously, as our physical infrastructure is worse than that of some farms. Yes, there are several pumps on our balance sheet, but they constantly need repairing, and the repairs require money which we do not have. Therefore, when we need to repair something, we have to ask for money (for spare parts, for diesel fuel) from farmers", A WCA chairperson, Podshaota-Chodak subproject area

"Compared to the old system, the present system of WCAs is more stable. The work is being done by the involvement of all water consumers. Each WCA has its Board and the Audit Commission. On the basis of contracts, the WCA provides services to water consumers. The WCA is funded by their membership fees", An BISA employee, Savay-Akburasay subproject area

"When our WCA was formed in 2006, we visited a seminar where we were explained how many and which staff positions we could gain. So, I hired the staff, including 7-mirabs(irrigators). But due to the inability to pay them a salary, we had to dismiss all mirabs. During the vegetation season, we attract either mirabs from other WCAs or farmers. If we had enough financial resources, we would also employ both an agronomist and a lawyer", A WCA chairperson, Savay-Akburasay subproject area

"The tranche provided a small amount of money for membership fees to the WCA, about 200 - 300 thousand sums, while our annual fee is 1.5-2 mln sums, according to the contract. Our debt to the WCA is growing year by year". A farmer, the Savay-Akburasay subproject area

"Now some of the chairmen of WCAs are summoned to the court for non-payment of their employees' salaries, the same way WCA has the right to sue the member-farmers for not paying off the debts", A WCA chairperson, the Podshaota-Chodak subproject area

The performance of WCAs in the Project Area was evaluated as not very satisfactory by the farmers. Almost half of the surveyed farmers were not entirely satisfied with the WCAs' performance, and only a third of farmers gave a positive assessment of the activities done by these organizations (Table 67).

Table 67. Private farmers' views on the performance of the WCAs, 2014

% households

	Completely satisfied with the performance	Not very satisfied with the performance	Not satisfied with the performance
Total	32	48.4	19.7
Savay-Akburasay	32.5	45	22.5
Podshaota-Chodak	31.6	51.9	16.5
Isfayram-Shakhimardan	31.8	48.2	20
The location of farms			
Upstream	27.3	51.5	21.2
Midstream	36.3	49	14.7
Downstream	21.3	53.2	25.5
Irrigated not from irrigation systems or rain-fed lands	80	6.7	13.3

Source: Private farmers survey, 2014

A WB study aimed at assessment of the performance of WCAs in Uzbekistan corroborates the findings of the SA: despite claims from WCA officials that the land of farmers at the tail-end of the interfarm canals are irrigated first, these downstream farmers tend to receive less water than others[23].

"The main problem of WCAs is the lack of material and technical base. Most of the WCAs do not have its buildings, almost none has necessary equipment. When shirkats were dissolved, the buildings, equipment moved to the MTPs. Now WCAs are located in buildings belonging to RACs, MTPs and other organizations. The financial situation of the WCA also requires special attention. Due to inability to pay the staff, WCAs have to sack a part of their employees. According to the Charter, a WCA is a non-profit organization; therefore, we do not have the right to receive any profit. Within this formulation, the chairmen are no interested in the prosperity of the organizations", A WCA chairperson, the Isfayram-Shakhimardan subproject area

"In 2007-2009, farmers used to receive some money, in the form of lax credits on their accounts, to pay for the WCA's service. In the period, we, at least, owed no money to our own employees. Then, because of some banking reforms, we started to get funding on a residual basis. Now all WCAs have large debts to the tax authorities. The farms do not have money namely to pay off WCA's services. They pay, in a timely manner to fuel storages, to Agrochemistry, and to the power-supply mains. We know that we serve the farmers badly, but

[23] "Exploratory assessment of factors that influence quality of local irrigation governance in Uzbekistan." (The World Bank, 2015, forthcoming).

what we have to do if our capacity is limited? And once we do not provide services as it is required, the farmers will not pay us. Therefore, we work in a vicious circle. I cannot find workers, because there is no way to pay them a salary. We have neither machinery nor a building here, we hold our meetings in the building of the *RAC*", A WCA Chairperson, the Savay-Akburasay subproject area

"It is also necessary to change the attitude of farmers to irrigation water. Some farmers have a leading-strings mentality. They have the opinion that the WCA is obliged to provide them with water, though they do not pay for the rendered services. The WCA has the status of an NGO, that is, it cannot make a profit, cannot develop itself further. When farmers make up a business plan, there is not a single line about the WCA in the plan. Maybe, it is necessary to start with this?", A WCA chairperson, the Savay-Akburasay subproject area

"The government allocates lax credits to agricultural producers, under the state order. The share for WCAs in this loan is 0.8%. This proportion must be set within 3-4%. When a farmer puts some money earned by the sale of the produce in his account, first of all, the bank takes a loan with its interest, the tax agency automatically takes taxes, then Agrochemistry, etc., and ,finally, there is no money left for the WCA. As a result, the debt of the WCA to the employees and tax agencies increases, and the material-technical base cannot be developed. The result is that we cannot fulfill our obligations to the farmers", A WCA chairperson , the Podshaota-Chodak subproject area

The study examined the way the farmers assessed the performance of WCAs by various aspects of the activities done by the organizations. By far the most positive mark was given to the planning of water use implemented by WCAs: 54% of the farmers believe that WCAs succeeded in performing this activity. Farmers also appreciated the way the WCA distributed (50%) and scheduled the distribution of irrigation water (48%). Generally, the supply-related aspects of the performance of WCAs, including the volume, scheduling, and the metering of the water supplied to a farm, are rated the worse in comparison with other aspects; it is no surprising as WCAs has zero influence on the aspects.

The WCAs' efforts to settle water conflicts, to reduce cases of illegal intake of water, and to advocate the interests of water consumers at administrative and ruling bodies, are estimated quite satisfactorily. The farmers marked the cleaning and repair work of the irrigation-drainage networks performed by WCAs as quite not satisfactory (only 35-40% are satisfied with the WCA activity) (Table 68).

Table 68. Private farmers' views on the performance of the WCAs, by activities

farmers finding the performance of the following duty satisfactory, as %

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Planning of water use / preparation of the plan	**53.7**	55	43	62.4
Distribution of water among farmers	**50.4**	43.8	50.6	56.5
The observation of agreed turns in irrigation sessions	**47.5**	35	46.8	60
The supply of agreed amounts of water	**36.5**	35	24.1	49.4
The fair control over the amounts of supplied water	**40.6**	36.3	30.4	54.1
Timing of the supply of water	**28.7**	21.3	26.6	37.6
Control over the timing of the water supply	**41**	31.3	41.8	49.4
Repair and cleaning of irrigation canals	**41.4**	27.5	44.3	51.8
Repair and cleaning of drainage canals	**35.2**	21.3	31.6	51.8

Promoting of water users' interests at governmental and administrative bodies	**47.5**	46.3	44.3	51.8
Countering the theft of water	**48.8**	41.3	46.8	57.6
Resolving conflicts between consumers	**46.3**	42.5	41.8	54.1

Source: Private farmers survey, 2014

Estimates of farmers are both objective and well-grounded. The majority of the structures on the balance sheets of WCAs in the subproject areas need repairing; both the amount and quality of such work, as well as hydro-ameliorative work, are rarely considered as satisfactory.

The survey of farmers indicates that this category of water consumers has a low level of access to decision-making as regards with the performance of WCAs, and, especially, financial issues. Such aspects as the distribution of water between plots and scheduling turns in irrigation sessions were discussed at the WCA meetings by only about 40% of farmers; only 31-32% of the farmers were involved in the discussion on WCA plans and terms of agreements with the WCA. Only 23% of farmers had the opportunity to take part in the discussion of the results of WCA activities. The problems of financing are often resolved when the majority of farmers are absent from the meetings: only 20% of farmers were present at the discussion of spending of the WCA, and 21% took part in the discussion of the approval of tariffs and fees for WCA services (Table 69).

Table 69. Participation of farmers in discussing the issues at the meetings of the WCA, 2014

the share of farmers who took part in the discussions at meetings, %

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
The approval of the Articles of WCA Charter	**29.1**	23.8	35.4	28.2
The approval of the staff and salary net of the Association	**21.7**	11.3	24.1	29.4
Discussing the work plans of the WCA	**30.7**	20	27.8	43.5
Discussing the results/performance of work done by the WCA	**23.4**	18.8	24.1	27.1
Discussing the spending patterns of the WCA	**20.1**	10	16.5	32.9
Discussing the terms of contract signed by water users and the WCA	**31.6**	12.5	49.4	32.9
The distribution of water among the users	**35.2**	37.5	36.7	31.8
The schedule/ order of priorities of the irrigation sessions	**46.3**	56.3	35.4	47.1
The approval of tariff and pricing policy of the WCA	**20.5**	26.3	12.7	22.4

Source: Private farmers survey, 2014

Despite the fact that not all farmers are involved in making major decisions concerning the activities of the WCA, they see the Association as an organization that protects the interests of all water users, farmers and dehkans; 46% of respondents share the opinion. Another 19% of respondents believe that the WCA can protect only the interests of farmers. Only 5% of farmers believe that the WCA protects just the interests of the state and 12% believe that the WCA protects only its own interests. At the same time, most farmers believe that WCA is an influential organization that is able to promote the interests of water users, and only 16% of respondents hold the opposite opinion (Table 70).

Table 70. Private farmers' view on whose interests are advocated by the WCAs

% of households

	The interests of all water users - farmers and dehkans	Only the interests of farmers	Only the interests of dehkans	Interests of the state	Only their own interests	WCAs are no influential and cannot promote one's interests	D/K
Total	**45.9**	**19.3**	**1.2**	**5.3**	**11.5**	**16**	**0.8**
Savay Akburasay	52.5	8.8	0	11.3	17.5	10	0
Podshaota-Chodak	48.1	17.7	1.3	0	7.6	22.8	2.5
Isfayram-Shakhimardan	37.6	30.6	2.4	4.7	9.4	15.3	0

Source: Private farmers survey, 2014

The study shows that farmers feel the need to assist the strengthening of the capacity of WCAs. Farmers believe that the WCAs should be provided with vehicles (50%), and computers with software required (21%); besides, the associations should be helped with the installation of water metering and regulating structures (42%). The majority of farmers believe that it is essential to provide the WCAs with access to affordable loans. According to the farmers, it will enable the WCAs to do the highly expensive cleaning and construction/repair of inter-farm IDS, as well as to buy machinery, and build in the necessary water metering and regulating structures/devices. The farmers express the idea that WCAs should design and develop sustainable mechanisms for collecting fees and attracting more water consumers into the associations, along with securing larger numbers of water consumers signing the contracts with WCAs. Nowadays, the WCAs need to be assisted in terms of methodology of working with farmers, dehkans, groups of water consumers, as well as with other organizations and establishments operating in the territories of the WCAs. Moreover, there is a need for a comprehensive set of mechanisms on both the setting of prices for the services provided to different groups of water consumers and money collection/debt recovery.

"WCA members can be private and dehkan farms, private gardens, organizations and enterprises irrespective of their ownership, if they have a need for irrigation water. We currently provide services for the general public, but we do not require the payment from them as the mechanism has not been developed properly yet. The population participates only in the work of irrigation network cleaning", A WCA chairperson, the Podshaota-Chodak subproject area

WCAs require assistance with regards to the organization of vocational training for their employees, and getting legal advice. Legal assistance is necessary for 17% of farmers working with WCAs. According to 15% of the surveyed farmers, it is the WCAs that should take responsibility for the widespreading water saving technologies among farmers, which is of great importance when irrigation water is scarce.

"We need agronomists, lawyers, but due to financial insolvency we cannot hire such specialists. When farmers did not fulfill the plan of the state order, some farmers were having conflicts with insurance companies. Insurance companies did not want to pay damages. Then one farmer contacted a lawyer. The lawyer substantiated the legitimacy of the claims of farmers to the insurance company. Then, conversations between farmers and WCAs were held in order to hire a lawyer on a permanent basis. But due to the financial situation that issue has not been still resolved", *A WCA chairperson*, the Isfayram-Shakhimardan subproject area

23% of farmers believe that WCAs need to be help with the involvement of different groups of water users into water management and control over the activities of associations.

Table 71. Farmers' views on immediate measures to strengthen the capacity of WCAs and farms

% households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Providing WCAs with machinery, on credit, for hydro-ameliorative works	**52**	40	75	41
Providing WCAs with transportation means	**50**	46	47	55
Setting water meters and regulating equipment in the territory of the WCA	**42**	41	37	47
Offering credits to WCAs on immediate cleaning/construction of off-farm irrigation/drainage networks	**42**	28	48	49
Offering credits to farmers on establishing water meters and regulating equipment	**30**	24	24	41
involving farmers, dehkans and other water users in water management and activities control of the WCA	**23**	29	22	18
Providing WCAs with computers and software	**21**	19	24	21
Vocational training provided to WCAs' staff	**20**	19	15	25
The training of farmers on agro-technology including water saving technologies	**15**	14	8	24
Legal aid provided to WCAs	**13**	9	8	21
Legal aid provided to farmers working with WCAs	**17**	26	14	12
Involving more people into the association to cover all water consumers	**13**	15	14	9
Creating of the mechanism of charging dehkans and other water consumers for the service	**11**	13	13	8
Funding from the budget (on salaries for WCA staff, and the purchase of machinery and equipment)	**3**	8	1	0

Source: Private farmers survey, 2014

Although many farmers are willing to pay the WCA's service, most of them have no money before the annual allocation of state target trances (loans) designed to cover the costs of production under the state order. A farmer is not in charge of the tranche actually, as it is the state that regulates the spending patterns and controls the funds via the bank. The major problem with the regulated expenditure is that no spending is provided on the construction/repair of IDS, and a very small amount (0.8% of the tranche) can be spent on WCA fees. The banks, despite the regulation of the Cabinet of Ministers, refuse to transfer money to the WCAs from farmers' accounts. As a result, farmers can pay the WCAs basically only from the money they earn by selling whatever is left after the fulfillment of the state order. As the bulk of farmers' revenues is generated by cotton and wheat production under the state order, farmers fail to pay WCAs even if there is sufficient money, received in the form of trances, in their accounts. At best, farmers pay WCAs' services only after the yield is passed on to the state, and some surplus is left. As the state procurement agencies not always pay for the yields in time and in full, many farmers fail to pay membership fees to WCAs even at the end of the agricultural season. There are no effective regulatory mechanisms to recover the debts; moreover, the WCAs cannot stop the water supply for the debtors, as the step will be considered by local authorities as sabotage of the state order on agricultural production.

"Debt of our farmers to the WCA is 27 mln. sums. And we owe 20 mln sums to our employees. Our debt to the tax agency is 70 mln sums including fines and penalties. During the vegetation, we are required to distribute water to farmers regardless of whether they have any debt or not (this applies to grain growers).As for gardens, due to the lack of water most of the gardens just dried up. Each farm receives maximum 30% of the volume of water it must have", A WCA chairperson , the Podshaota-Chodak subproject area

"I think there is no WCA which is paid by farmers on time and in full. From September to March, during the growing season, we have to supply the water. Farmers are well aware of it, and neglect us. When we have to irrigate secondary crops, we have the right to refuse to serve them because of the debt. Only then will they pay some of their debt. But the problem here is that because of the lack of water not all farmers do the re-seeding. Sometimes, farmers pay us with their production. We distribute these products among our employees instead of wages ", A WCA chairperson , the Podshaota-Chodak subproject area

"It is no secret that the majority of the chairmen of WCAs have their own farms. They know why farmers cannot meet their obligations to the WCA. The authority of the chairman is at such a low level that no one wants to work in this position. But without WCAs it is difficult to work, because farmers are always arguing with each other. Now, farmers often quarrel over the water, but without the WCA the frequency of conflicts will greatly increase». A farmer, the Isfayram-Shakhimardan subproject area

One of the reasons why the farmers refuse to pay WCA fees is the unresolved issue of tariffs for WCA services in general and tariffs for water supply services in particular. It is believed that the WCAs charge farms for the delivery of irrigation water to farmers' plots. Those farmers, who use the drainage water for irrigation, are not willing to pay the WCA for irrigation water they did not receive. Furthermore, the disputes over the cost of water supply carried out with or without the use of electric pumps arise between farmers and WCAs. Irrigation costs for farms with pumped supply of water are much higher than those of farms with gravity irrigation; however, the cotton and wheat prices under the state order are similar for all types of farms.

According to the survey of farmers and WCAs conducted in the spring, 2015 in the RESP-II area for the SDC project, the WCA tariffs on irrigation supply services for different categories of water consumers varied greatly. On average, the farmers working under the state order paid 26 thousand sums per hectare, wheras other farmers and dehkan water consumers groups paid 36 thousand sums/ha in 2014 to Wcas for the irrigation services. The smallest and largest fees for the 7 RESP-II Project districts were at 19,000 sum/ha and 33,000 sum/ha for farmers working under the state order, while for the horticultural farmers the correspondent figures made up 23,000 sum/ha and 53,000 sum/ha. It is noticeable that the frequent conflicts over the problem made all WCAs of one of the Project districts set the single fee size for all water consumers at 23,000 sum/ha. Both farmers and WCAs highlighted the idea that it is the actual amount of water supplied is to be used as a basis for the fee size estimations rather than the type of the crops produced.

"Each WCA has its tariffs on water supply. In our WCA the price is established by the Board of directors. The Board consists of 7 farmers and the Chairman. The business plan is being developed. Based on the costs and revenues, we set fees for the service. We set the price of 26,000 sums per 1 hectare to all farmers, irrespective of the crops. Last year, prices were different. Grain growers paid 10, 000 sums less. After the conflicts between farmers, we decided to install the same price for all farmers", A farmer, Podshaota-Chodak subproject area

"When WCAs began to form, experts on irrigation gave them their recommendations on the establishment of fees for the services. The price is the same for farmers who grow grain and cotton, but for gardeners and vegetable growers it is usually 5-6 times higher, since they use more water. There are debts of farmers to each WCA, but none of them are incurable debtors. Farmers are trying to pay off services over the next season", An irrigation specialist, the Isfayram-Shakhimardan subproject area

'To determine the cost of WCA' service, the total amount of money spent on salaries of WCA's staff, plus incidental expenses, is divided by the number of ha the WCA is supplying with water. Once the sum per hectare is determined, we, farmers pay it.' A farmer, the Savay-Akburasay subproject area.
"Because of the situation with irrigation water, many farmers have no desire to continue agriculture production; especially the farmers specialized in the cultivation of cotton and grain. Most of WCA chairmen are also forced to work, the khokimiyats ask them to do their job. After the reorganization, I personally took part in several round tables and seminars that raised the issue of the financial situation of the WCA; every time we were talking about how we have to transfer to budgetary financing. If this continues, soon there will not be anyone to work", A WCA chairperson, the Isfayram-Shakhimardan subproject area

"The farmers whose plots are pump-irrigated, bear high electricity costs. The costs of production of cotton and grain in this case are much higher, but purchasing prices are the same. " A WCA chairperson, the Isfayram-Shakhimardan subproject area

It is essential to underline the idea that despite the insufficient resources of WCAs, their activities are of great importance to many farmers who give credit for the work done by WCAs. Some of the WCAs are gradually involving dehkan households in the associations' work; the dehkans become rightful water consumers and pay adequately for the water supply. On the whole, farmers along with representatives of authorities have become more aware of the fact that sustainability of agricultural production greatly depends on the effective performance of WCAs.

"Without a WCA, farmers and the public cannot establish normal relations with one another, as there will be conflicts all the time. It is impossible to work without WCAs, as people living upstream will have advantages over the rest water consumers. Without a competent distribution of irrigation water it will be impossible to organize the irrigation", A farmer, the Podshaota-Chodak subproject area.

"According to the Charter, the members of the WCA, including private farms, can be water users on a voluntary basis. Our WCA has dehkan-members. In addition, the WCA has the right to have contracts with companies and organizations that use irrigation water", A farmer, the Isfayram-Shakhimardan subproject area

In general, the majority of respondents fully or partially agree that the WCA gain credibility both among authorities and farmers, as the association significantly reduce the level of conflicts and prove to be accountable to their members.

The WB study of performance of WCAs in Uzbekistan points out that the key characteristics of well-functioning local water management institutions include as follows: water is allocated in a timely and fair manner; operation and maintenance is well planned; cooperation between the state irrigation management system and WCAs is good; WCA stuff is capable of preventing and resolving conflicts; conflicts among WCA members are resolved internally; farmers are involved in decision-making processes; farmers trust each other; every water consumer bears equal responsibility for the irrigation system; and the WCA has a financial buffer to deal with emergency maintenance and repairs. In its turn, the performance of a WCA depends on the three conditions. First, the proportion of the WCA area that depends on electrical pumps should be low, especially if electricity supply is unreliable. Second, growing conditions should be suitable for the crops the WCA farmers grow under the state. If this is not the case, yields will remain low, which results in low profits and limited resources for local WCAs, along with low incentives for improving local water management. Third, leadership skills of a WCA chairperson should be high enough to build trust between users and the WCA, between farmers, dehkans and officials, as well as to strengthen social capital within the communities[24].

As far as the owners of family garden and dehkan plots are concerned, under current conditions it is impossible to charge them for the water supply. As terms for the participation of such households in WCAs are not defined, the fees, they would pay for the water supply, are not set either. As a result, irrigation of dehkan and household garden plots depends heavily on the decisions made by the heads of WCAs and ISAs rather than on guaranteed rights. Even though the supply of irrigation water on the plots is still carried out (as a rule, the plots are at the bottom of the irrigation sessions timetable), no credible and sustainable mechanisms were developed in order to consolidate dehkans and makhallas into groups of water consumers, which, in its turn, will lead to the charging of the users for the provided service. The households remain on the sidelines, instead of becoming rightful water users, who will bear necessary financial and physical costs related with the maintenance of IDS. Moreover, according to farmers and WCA employees, the most cases of conflicts over irrigation have had to do with tomorkas in recent two years. Whereas cases of unauthorized irrigation of farms are rather rare, the theft of water for tomorka's irrigation is a pressing problem.

[24] "Exploratory assessment of factors that influence quality of local irrigation governance in Uzbekistan." (The World Bank, 2015, forthcoming).

CHAPTER V. SOCIO-ECONOMIC IMPACTS, BENEFITS AND RISKS OF THE PROJECT

A. STAKEHOLDER AWARENESS

One of the SA survey's objectives was to identify the level of public awareness of the preparation of Ferghana Valley Water Resources Management Phase-II Project. The majority (73%) of those surveyed were not informed that their region was preparing for the implementation of the Project. Overall, the population of the Savay-Akburasay and Isfayram-Shakhimardan subproject areas are better informed about the project than that of Podshaota-Chodak subproject area. It is noticeable that the level of awareness of men is higher compared to women's.

According to the study results, the population has great hopes for the implied rehabilitation of the irrigation system. Only some 5 percent of the surveyed believe that the rehabilitation of the systems will make no difference to their lives. One of the major benefits associated with the Project includes increased agricultural productivity due to an improvement in water delivery and land quality along with resolving the high ground water table problems. In comparison with the other subproject areas, the households of Podshaota-Chodak express higher expectation of the Project, pointing out potential increases in incomes, employment, and living conditions. Some of the surveyed highlight the prevention of the destruction of their houses and improved health as the expected positive outcomes of the Project. On the whole, the population of the three regions expects that the Project will improve the environmental situation in their settlements. (Table 72).

Table 72. Project expected benefits according to respondents

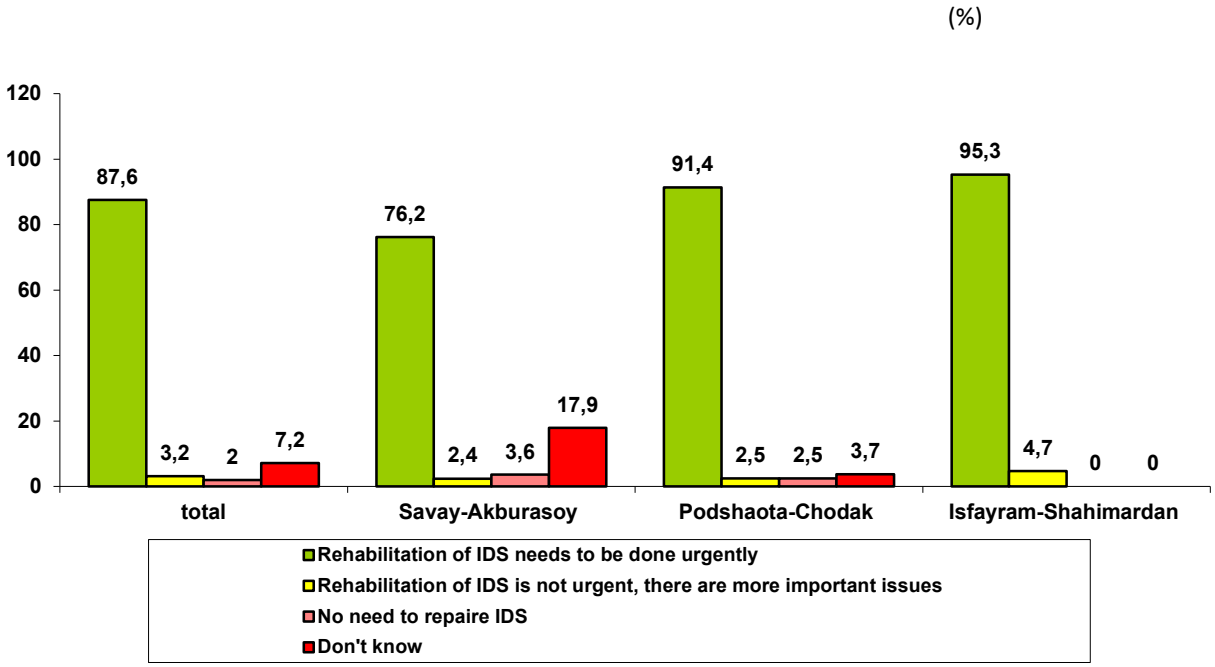
(% households)

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	
Improved living conditions	**49.8**	45.8	66.9	36.5	Impact on poverty
Increased incomes of private farmers and dehkans	**44.4**	47	52.7	33.5	
An increase in numbers of jobs	**21**	26.2	23.1	13.8	
A decrease in out-migration from the district	**7.7**	5.4	13.6	4.2	
An Increase in crop yields	**67.3**	60.1	82.2	59.3	Impact on agriculture
Improved land productivity	**43.3**	32.7	53.3	43.7	
A decrease in the livestock diseases	**9.3**	10.1	10.1	7.8	
A decrease in soil salinity	**9.3**	3	18.9	6	Effect on the environment
A lower groundwater table	**4**	3	5.3	3.6	
The improved environment	**23.2**	22.6	20.1	26.9	
Reduced numbers of mosquitoes and other parasites	**4.8**	6	5.9	2.4	
Reduction in destruction of houses	**4.2**	3.6	4.7	4.2	Impact on infrastructure
Improved public health	**13.1**	5.4	21.3	12.6	

Source: Household survey, 2014

The survey has shown that 79% of dehkans and 88% of farmers acknowledge the *urgency* of rehabilitating of the irrigation systems. On this question there is a minor difference in responses given in the subproject areas. For instance, there are more people finding it difficult to assess the necessity of the rehabilitation works on the irrigation-drainage system in Savay-Akburasay than in the other two subproject areas. Only a few respondents state that the system needs no repairing; some 3 percent believe that there are more pressing problems in their district to resolve than the implied repairs of the irrigation-drainage system (Figure 23).

Figure 23. Opinions of households and private farmers regarding the need for rehabilitation of IDS



Source: Households and Private Farmers survey, 2014

An analysis of the households' willingness to participate in the discussion of the projected work stresses that the system's rehabilitation has special importance to the population. Respondents believe that the government and the World Bank should encourage public participation in the Project. The majority of the surveyed emphasized the importance of participatory financial audit, which will be done with participation of dehkans, farmers and WCAs. A great number of the respondents suggest using the mass media in the discussion of the Project in order to foster public awareness. Nearly half of the people propose to conduct regular public opinion polls to monitor Project achievements and problems (Table 73).

Table 73. Population expectations of Government steps to ensure and enhance public participation in the Project

(% households)

Suggested measures	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan	
Ensuring of transparent control over the Project financial resources	**21.8**	10.7	25.4	29.3	Audit and participation
Participation of dehkans, private farmer and, WCAs in auditing activity	**30.2**	23.8	29.6	37.1	
Publication of Project information in local newspapers	**25**	34.5	17.2	23.4	Information dissemination
Public awareness regarding the completed Project components	**20**	18.5	25.4	16.2	
Organization of round tables on the local TV	**43.8**	54.2	38.5	38.9	
Conducting the public opinion polls	**45.4**	49.4	56.8	29.9	Feedback from beneficiaries

Source: Household survey, 2014

It is noticeable that a small number of dehkan and farm households are concerned that they might be asked either to volunteer in the projected reconstruction of the irrigation-drainage system, or to pay into the implementation of the work. Mostly, the people believe they will agree to such requests under condition that they are informed about the money allocation and officials responsible for ensuring efficiency of the Project.

B. PROJECT IMPACTS ON THE LIVING STANDARDS

As was noted earlier in the chapter, the living standard of the population of the subproject areas depends largely and directly on the engagement of household members in agriculture. The share of direct and indirect income generated in the agricultural sector (income from employment along with the consumption of production from family plots) accounts for 22% of total household incomes (Savay-Akburasay at 22.7%, Podshaota-Chodak at 26.6%, and Isfayram-Shakhimardan at 16.3%).Moreover, it is the agricultural sector that provides as much as 41% of jobs for the working-age population (Podshaota-Chodak at 52%, Savay-Akburasay at 41%, and Isfayram-Shakhimardan at 29%). The Project is bound to become of great importance for low-income categories of the population, who are employed on farms or working on their own plots, as well as for women who generate income from employment in the agricultural sector (40% of the employed women work in agriculture).

The project is bound to have a positive effect on the employment and incomes of low-income categories of the population, which will contribute to reaching the World Bank's goals of sustainably ending extreme poverty and boosting shared prosperity. Nowadays, it is the two bottom quintiles of families (i.e. 40% of families with the least income levels in the subproject areas) are facing the severest shortages of irrigation water for their garden plots (73% of such families in QI, and 60% - in QV) (Table 74).

Table 74. Irrigation water shortages on household garden plots, by income quintiles

% of households

	Households, total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Households facing water shortage for the irrigation of tomorka	**67**	**65**	**60**	**76**
Quintile I (the lowest income per capita)	73	86	60	92
Quintile II	71	67	69	75
Quintile III	63	65	57	66
Quintile IV	61	56	37	80
Quintile V	60	60	40	67

Source: Household survey, 2014

It is noticeable that the dependence on employment in the agricultural sector is nearly six times higher for families in Quintile I than that of families from Quintile V (Table 75). Thus, the improvements in irrigation water supply will have an immediate positive effect on the families from the two bottom quintiles.

Table 75. Employment in the agricultural sector, by income quintiles

% of a household's members

	Employed officially in a private farm	Engaged in work on tomorka	Engaged in work on tomorka, but consider themselves unemployed	Employed unofficially in a farm including day-laborers	Total
Total	5.2	5.9	1.8	2.5	12.7
Quintile I	6.9	13.9	2.4	4	24.3
Quintile II	4.8	5.3	2.3	3.5	14.6
Quintile III	4.7	3.1	1.7	2.1	9
Quintile IV	4.9	2.4	0.9	0.9	5.1
Quintile V	3.8	2.2	0.9	0.6	4.3

Source: Household survey, 2014

It is impossible to overestimate the significance of the Project for the subproject area, as namely shortages of irrigation water along with the poor overall condition of the irrigation-drainage system is the root of the reduction in agricultural productivity and households' and farms' income. The expected socio-economic impact of the Project is as follows:

- The Project will lead to a considerable increase in agricultural productivity of dehkan plots and private farms in the subproject areas. According to expert estimations, the improved supply of irrigation water will increase crop yields by 18-20% on average upon the Project completion.

Table 76. Expected yields if the Project is implemented

	Crops	Current yields, ton/Ha		Expected yields, ton/Ha	
		Private farm plots	Dehkan plots	Private farm plots	Dehkan plots
Podshaota-Chodak	Cotton	3	-	3.5	-
	Wheat	4.7	6.2	5.5	7.3
	Potato	14.3	26.7	16.9	31.5
	Vegetables	19.2	33.3	22.7	39.3
	Grapes	7.7	10.9	9.1	12.9
	Fruit	4.9	10.1	5.8	11.9
Isfayram-Shakhimardan	Cotton	2	-	2.4	-
	Wheat	5.7	5.8	6.7	6.8
	Potato	1.,3	22.7	21.6	26.8
	Vegetables	23.8	29.7	28,1	35
	Grapes	10.3	18	12.2	21.2
	Fruit	7.7	1.,3	9.1	15.7
Savay-Akburasay	Cotton	3	-	3.5	-
	Wheat	6.5	7.3	7.7	8.6
	Potato	19.3	21	22.8	24.8
	Vegetables	19.3	33.3	22.8	39.3
	Grapes	11.2	16.1	13.2	19
	Fruit	7.2	14.4	8.5	17

Source: Data provided by the BISA, EA team specialists estimations

- Without the Project the further deterioration of the current situation with a decline in main crop yields resulting from the limited volume of irrigation and poor ameliorative state of land will occur.

Table 77. Expected improvements of soil fertility and quality (ball-bonitet grades)

		Current situation	within 3 years	within 5 years	within 8 years
Podshaota-Chodak	**Without the Project**	55.4	54.2	53.4	52.2
	With the Project	55.4	56	58	61
Isfayram-Shakhimardan	**Without the Project**	51	48.6	47	44.6
	With the Project	51	52	53	57
Savay-Akburasay	**Without the Project**	58.5	57	56	54.5
	With the Project	58.5	60	62	65

Source: Data provided by the BISA, EA team specialists estimations

Table 78. Expected shortfall in yields without the Project, ton/ha

	Crops	Within 3 years	Within 5 years	Within 8 years
Podshaota-Chodak	Cotton	0.48	0.8	1.28
	Winter wheat	0.72	1.2	1.92
Isfayram-Shakhimardan	Cotton	0.96	1.6	2.56
	Winter wheat	1.44	2.4	3.84
Savay-Akburasay	Cotton	0.6	1	1.6
	Winter wheat	0.9	1.5	2.4

Source: Data provided by the BISA, EA team specialists estimations

- Upon the completion of all stages of the Project, the anticipated reduction in water consumption will average out at 1,269 m^3/Ha (23%) in Podshaota-Chodak; 1,930 m^3/Ha (21.63%) in Isfayram-Shakhimardan; and 1,433 m^3/Ha (23.5%) in Savay-Akburasay; the amount of water sufficient for an average irrigation session.

Table 79. Expected reduction in water consumption, m^3/Ha

Subproject area	Project implemented	Project not implemented
Podshaota-Chodak	5,560	4,291
Isfayram-Shakhimardan	8,913	6,983
Savay-Akburasay	6,100	4,667

Source: Data provided by the BISA, EA team specialists estimations

- In case of the Project implementation, the growth of land productivity will have a positive impact on marketability of dehkan farms, leading to increased family incomes. Moreover, the spillover effect of the increase in economic activity marked by rise in crop yields, employment, and incomes of small and medium-sized farms will trigger effective demand, hence rising the incomes of the most vulnerable persons engaged in the informal business such as small merchants, craftsmen, and the self-employed in service industries. Yet, there is also a risk of price elasticity of demand, which causes the price of the crops to drop at local markets due to higher output but limited demand. Therefore, it is essential to establish a marketing mechanism for agricultural output of private farms and dehkan farms to avoid the limited demand trap. Currently agriculture producers not only lack the capacity to store, process and transport the produce to other regions but also lack access to stocks. Consequently, agricultural specialists and economists involved into SA survey noted that establishing agricultural sales co-operatives on the basis of local communities (Makhallas) will not only stabilize incomes of agricultural producers but also facilitate efficient employment of population in the Project Area.
- The Project's direct impact on agricultural employment in the Project Area is expected to be moderate due to the low elasticity of demand on labor market in the agricultural sector. According to estimates carried out by the Ministry of Labor and Social Protection and the MAWR, a 10% increase in cotton yield in the large farms results in the rise of 1 percent in employment. Thus, the increase in farms' productivity can provide the growth of 2 percent in employment. In small farms with a high percentage of manual labor, a 20 percent-growth of productivity can provide an increase of 4 percent in employment approximately. On average, hidden unemployment on dehkan plots is forecast to decrease by 6 percentage points. However, a significant increase in

employment in the allied sectors of the economy (processing, sales, and transportation) is expected as a result of increased crop yields and introduction of new crops in agricultural production. Also, a rise in employment is expected in the service sector working for agricultural producers, repairs and maintenance of farming machinery and irrigation/drainage systems (including jobs available at WCAs). A further boost in the population's income and employment is anticipated if the Project promotes both efficiency of technologies to be introduced and cooperation of small-scale producers in the context of storage, processing and sale of agricultural output.

- The expected rise in productivity and income levels of households will result in a reduction in unpaid labor of female household members. The project is bound to raise socio-economic status of women.
- The rise in the income of households will ensure greater access of agricultural producers to resources, at least to resources which are not centrally distributed (agricultural machinery and fuel, for example), which will reduce producers' dependence on state loans. Farmers and other agricultural producers will be able to purchase more agricultural inputs on free market to invest their funds to land reclamation and to install pumps for improving water supply. Establishing a free market economy whereby the suppliers serve the agriculture sector with competitive products and services will further decrease total expenditure of agricultural producers, leading to efficiency of the market and economic sustainability of households in the agricultural sector.
- The Project is expected to have a profound effect not only on agricultural production, economic returns and well-being, but also on the living standards in the Project Area. One of the positive contributions of the Project will be the prevention of damage to houses and outbuildings, social infrastructure (healthcare and education establishments), and physical infrastructure (roads, water pipelines, etc.) via the implementation anti-mudflow measures. Moreover, the Project will allow the local authorities to cut down on repair costs in order to allocate their resources to resolving other social development issues.
- The Project implementation is bound to improve public health and reduce the rates of both physical and infectious illnesses due to the improvement of living conditions, and the end of widespread practice when drainage water can be used for domestic needs and livestock watering.
- As a growing number of private farmers in the subproject areas volunteer to take responsibility and support the social infrastructure in rural settlements on a wide array of issues (school and road repairs, rehabilitation of water supply systems), the growth of their incomes will enable them to invest more funds into social causes.
- The Project will facilitate institutional development and provide progressive local development by strengthening the existing capacity of the local communities. Within the framework of this Project, social capital of local communities will be strengthened via community mobilization and fostering the participation of the people both as WCA members and as active contributors to the Project implementation (including stakeholder consultations, social surveys, construction work conducted under the Project etc.).

One of the issues discussed with experts during the qualitative assessment phase, was the time frame regarding the immediate positive effect of the project implementation, as well as the expected returns from the Project. The participants were unanimous in stating that immediate

benefits of the rehabilitation of the irrigation-drainage system could be enjoyed as early as within the very first year of project implementation. As for agricultural production, it is expected that getting tangible results such as restoration of land quality will take much longer, from five to eight years, since it is directly linked to shortages of water and the consequent deterioration of land quality. However, a great many experts having participated in in-depth interviews and FGDs consider the current situation in subproject areas as a critical one. According to the participants, if the projected rehabilitation of the irrigation systems is any further delayed, the agricultural sector will inevitably end up in crisis affecting the population's well-being. It is therefore not surprising that the rehabilitation is a priority for local authorities that will welcome whatever support to ensure timely implementation of the Project.

C. PROJECT RISKS

According to specialists, in order to improve the current situation with water supply and living standards in the subproject areas, a comprehensive set of measures should be carried out in the short run, including:

1) Repairs, cleaning and rehabilitation of the existing irrigation systems including irrigation borewells
2) Construction of new borewells and (if needed) new sections of irrigation system
3) Providing the regions with water supply by management and rehabilitation of the existing large water reservoirs
4) Addressing issues with regard to water resources management in Fergana Valley along with ensuring access to the sections of irrigation system located in the territory of Kyrgyzstan for Uzbek water management
5) Ensuring stable electricity supply to pumps on the system canals and borewells
6) Enhancing the capacity of water resources and agriculture management, WCAs, private farmers and dehkans; promotion of effective water management and water saving technologies at all levels
7) Ensuring effective monitoring of the situation

If these activities are not carried out simultaneously, the Project impact will dramatically decrease while a payback period on the investment will extend.

The results of the Social Assessment confirm that the projected rehabilitation of the irrigation system addresses the major challenges that the region is facing nowadays. It is evident that the project risks can be either fully prevented or minimized once a holistic approach to resolving the problems is adopted via consistent interaction with Project stakeholders and beneficiaries.

Nevertheless, there is a probability that the proposed comprehensive rehabilitation might involve objective and subjective obstacles in the way of effective implementation of the Project affecting its importance for social wellbeing.

Such risks may include the following:

1. The potential risk of damaging property and housing caused by construction and rehabilitation works.

The construction and rehabilitation work can be hampered by the lay-out and location of communications, residential houses and social establishments. Thus, the proposed work will result in additional expenditure on the reconstruction of the infrastructure along with compensation to be paid for the damage to property. A considerable 25.6% admitted being rather apprehensive about the extent of damage the repair-rehabilitation work can inflict on their households. The majority of such feelings (especially in the Isfayram-Shakhimardan subproject area) have to do with the potential risk of destroying residential houses and outbuildings during of the Project implementation.

Figure 24. The Kuyukmazar canal, Savay-Akburasay subproject area. The rehabilitation of the canal can damage the house (photo)

Some of the families are more concerned with either the potential damage to land quality and communications (roads, water supply and sewerage mains), or the potential reduction of their land plot size.

Another reason for concern is the damage to perennial plantations that can be done during the project; the risk is of great importance for Savay-Akburasay where people generate the bulk of their income from gardens and vineyards (Table 80).

Table 80. Expected damage caused by the rehabilitation of irrigation-drainage system

% of households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Damage to houses and outbuildings is possible	**10.9**	12.5	5.3	15
Trees and vineyards can perish	**2.6**	3.6	2.4	1.8
Deterioration of land quality is possible	**6**	7.1	8.9	1.8
Damage to communications (roads, pipelines)is possible	**12.5**	13.7	9.5	14.4
Possible reductions in size of land plot with inability of increased yields to compensate for land losses	**4**	4.2	2.4	5.4
The construction work will impede planting/harvesting	**2.6**	6.5	0.6	0.6
Farmers land plots might be reduced, but the demand of the State for certain output (plan) might remain the same	**0.8**	1.8	0.6	0
The population will be forced to work free of charge and/or be expected to contribute money to construction	**3.2**	3.6	3.6	2.4
Rehabilitation work will cause NO damage	***74.4***	***71.4***	***75.1***	***76.6***

Source: Private Farmers survey, 2014

Figure 25. The Isfayram-Shakhimardan subproject area. The construction of an 11-kilometre pipeline for the new pump station may pose a risk of damaging the perennial plants (photo)

Almost a third (28.4%) of the surveyed private farmers point out that the proposed work can do damage to their farms. Most of the negative expectations cited by farmers have to do with likelihood that they won't be able to claim a proportional reduction in 'plan' volumes even if their farm plots are downsized (Table 81).

Table 81. Damage that farmers expect to deal with during the rehabilitation of irrigation-drainage systems

% of farm households

	Total	Savay-Akburasay	Podshaota-Chodak	Isfayram-Shakhimardan
Damage to houses and outbuildings is possible	**3.6**	9.5	0.1	1.2
Trees and vineyards can perish	**4.8**	8.3	6.2	0
Deterioration of land quality is possible	**7.2**	13.1	7.4	1.2
Damage to communications (roads, pipelines)is possible	**6.4**	9.5	7.4	2.4
Possible reductions in size of land plot with inability of increased yields to compensate for land losses	**4.4**	4.8	3.7	4.7
The construction work will impede planting/harvesting	**7.6**	13.1	7.4	2.4
Farmers land plots might be reduced, but the demand of the State for certain output (plan) might remain the same	**12.8**	13.1	7.4	17.6
The population will be forced to work free of charge and/or be expected to contribute money to construction	**8.4**	16.7	6.2	2.4
Rehabilitation work will cause NO damage	***71.6***	***65.5***	***74.1***	***75.3***

Source: Private Farmers survey, 2014

To prevent or mitigate the category of risks, there were developed the Resettlement Policy Framework and Resettlement Action Plan for the Podshaota–Chodak subproject area, so that effective mechanisms enabling the minimization and compensation of such risks would be put into effect in accordance with World Bank OP 4.12. The relevant recommendations were made within the Environmental Assessment.

2. Insufficient financing. Throughout the past years, the operation and maintenance of the irrigation system were seriously underfunded. According to the respondents, the situation was aggravated when the central budget delegated the functions on financing the irrigation-drainage systems to the local budgets.

'The allocated money covers electricity payments and minor repairs of canals. It is really important to consider real needs of irrigation-drainage system while estimating and planning the budget. At the moment we operate on the basis of how little money we have to be spent most efficiently'. A BISA employee, Savay-Akburasay

'We don't have enough sources to maintain the irrigation system properly. As a rule, after a few years of exploitation, pumps turn unserviceable; it is no use trying to repair them. They should be replaced. While our pumps are out of order, we are not provided with new ones'. A PSD employee, Isfayram-Shakhimardan

According to experts' opinion, the Project outcomes won't prove to be sustainable without substantial government support for irrigation systems, as was in case of the improvement of drainage systems.

3. Inadequate capacity of WCAs and farmers for the proper maintenance of the irrigation-drainage system. If incomes of the farmers and WCAs increase slower than expenses on

maintenance of irrigation, there is a strong probability that neither the condition of on-farm irrigation-drainage networks and borewells nor the quality of land will improve.

'WCAs have poor facilities; hardly can they be responsible for the situation in irrigation/drainage as they have no money to pay wages to their employees. Farmers' incomes are not any better. Many farmers believe that it is the state that should support the irrigation-drainage system financially; each WCA should be provided with at least one unit of machinery by the state. At the moment, WCAs are simply unable to do the normal maintenance of the system, even if they want to do so. The cleaning of the canals is being done manually-wherever it is possible. The population does take part in the activities, but many types of work need to be funded, and I don't know where we can get the money?' A farmer, Isfayram-Shakhimardan

4. The existing system of scheduled electricity supply cut-offs (*'limits'*). The system of 'limits' on power consumption cause the malfunction of all irrigation-drainage networks of the region. Moreover, the frequent cutoffs and substantial idle time of pumps lead to their breakages, which inevitably results in extra repair expenditure.

'A lot of farmers water their plots with electric pumps. Gravity irrigation is not that widespread. The pumps are old and need repairing all the time. Some 300,000 sums may be needed to pay for a daily consumption of power. It is extremely expensive for grain producers and gardeners. The on-farm pumps are on the balance sheet of WCAs. Electricity supply is arranged in a contract between power supply utilities and the farmer. In summer, we may have water in the canals but no electricity, or vice versa: normal electricity supply and no water in the canals. We appealed to local authorities for the construction of vertical irrigation borewells. The off-farm pumps on the big canals are on the balance sheet of PSD. In this case the state pays for the electricity. Some of the farmers have their own pumps. Pump prices can vary from 300 thousand sums to 2 million sums. Besides, one has to buy a pipe, and sign a contract with the district electricity utilities company. The company requires all equipment to meet the state standard. How are we supposed to afford it with our earnings?' A female farmer, Podshaota-Chodak.

'Some of the farms have irrigation by gravity. In the upstream area, farmers use pumps for irrigation. The pumps are on the balance sheet of PSD. Because of unstable power supply our irrigation system is planned to be connected to another network.' An AMC employee, Isfayram-Shakhimardan

5. Ineffective management of the irrigation-drainage system. Nowadays, several agencies (BISA, PSD, HHME, WCAs, and farmers) are responsible for the operation of irrigation-drainage systems. The lack of coordination of their performance leads to inefficient management of the system.

6. The trans-border problems in the exploitation of the irrigation system. A part of the subproject areas is located in the border area where a special permit regime is introduced. This factor has to be taken into account while planning repair and construction works and other activities within the framework of the Project.

'Problems with the irrigation system started to amount in the mid-90s, when a part of the system was left on the Kyrgyzstani side. Six years ago a mudflow displaced the canal banks. So far the Kyrgyzstani part of the canal has not been reconstructed. As the canal is on our balance sheet, the Kyrgyzstanis refuse to maintain the canal. We could do the work by ourselves, but they don't let our specialists over the border. The situation on the border prevents us from doing prophylactic work. It is 15 years since the problem started. The Araptepa canal starts in Kyrgyzstan, and then flows into our territory to go on in Kyrgyzstan, and back to Uzbekistan again. How are we supposed to do our job when the attitude of Kyrgyzstan is like this? The problem must be resolved at the national level. It is needed to involve international organizations and diplomats. A khokim himself cannot solve the problem.' An AMC employee, Isfayram-Shakhimardan

'The worst thing is the Kyrgyzstani do whatever they want on their side. The canal banks are sold to individuals. They use excavators and bulldozers to destroy the bottom and widen the embankments of the canal'. An AMC employee, Isfayram-Shakhimardan

'It is the border problem that needs resolving first of all. The problem should be addressed at the national level. The pump stations are on the balance sheet of PSD. Some of the stations are located in the territory of Kyrgyzstan; all of them are out of order. Our specialists cannot do the proper repairing as the border guards ban the passage of machinery and required spare parts. It is the Kyrgyzstani side that doesn't allow the residents of Ferghana Valley across the border. The border fee is USD 50. Most of PSD, BISA specialists are from Ferghana, some of them from other districts. I used to talk with a Kyrgyzstani specialist. He told me that their country enacted the Code on water management. Under the Code, they can give us water only after the full satisfaction of their needs. If the Project is to be implemented, it is essential to get involved diplomats and international organization employees to solve the problem. The rehabilitation should be done not only on our side but also on the Kyrgyzstani side'. A BISA employee, Isfayram-Shakhimardan

'In the border area, the fate of our harvest depends on Kyrgyzstanis. If they distribute the water on time, we shall have harvest. But in most cases they stop the supply of water namely in the middle of vegetation period. Sometimes our population raises money that will be handed over the border to pay Kyrgyzstanis for water. But sometimes it turned out to be a fraud: the money had gone, and we had no water'. A farmer, Podshaota-Chodak

'The neighboring Kyrgyzstan makes rather peculiar water management measures, which affects our plots badly. When they have mudflows, they let the water into our irrigation canals; when the vegetation period starts, the water supply is cut off'. A BISA employee, Podshaota-Chodak

'The irrigation network is in a very bad condition. Most of our farmers on our territory use irrigation water from the Savay canal. The canal originates in Kyrgyzstan where no cleaning work is done and the canal banks are not concreted. Because of the collapsed banks the canal changes its watercourse. The canal is overgrown with reed. The border guards don't let us fix it (to remove the reed, clean and level the banks), but Kyrgyzstanis don't want to do the work. The condition of the irrigation is worsening year after year'. A farmer, Savay-Akburasay

'The local authorities fail to reach an agreement with the Kyrgyzstani side. We are ready to everything by ourselves on their part of the canal. But border guards never let us across the border. For example, the left bank ('Birlashgan' massive, Uzbekistan) is concreted, and the right bank isn't. The bank go on collapsing, and the canal changes its watercourse: as a result, we have no water reaching our irrigation system. The question must be resolved at the national level'. A farmer, Savay-Akburasay

'Some of the farms 'drainage canals are found in the territory of Kyrgyzstan. To regulate the volume of flow, they have to cross the border which is no easy'. A farmer, Savay-Akburasay

CHAPTER VI. SUMMARY AND IMPLICATIONS OF SOCIAL ASSESSMENT FINDINGS FOR PROJECT DESIGN

A. The urgency and relevance of the Project

Social Assessment results clearly confirm the urgency and relevance of the Project by providing rehabilitation of the existing system of main and inter-farm canals and new irrigation system construction, especially irrigation borewells. The main objective of the project is the reset of access to irrigation water for farmers and population of Fergana Valley, which is a first priority for regional development and sustainable living standards. All categories of stakeholders who had the opportunity to express their views during SA consultations and surveys, stressed that without addressing the issues of water supply and water resources management, a critical situation in the Project area will arise. All the families will be at risk of getting poorer due to the continuing decline in agricultural production and the consequent loss of the main employment and income source in the region.

The reality states that it is impossible to resolve the accumulated number of problems in the water sector of the region without a comprehensive external assistance. Neither the state nor the WCA, farmers and dehkans are able to resolve large-scale infrastructure and institutional problems within appropriate time limits using only their own resources.

The idea of the Project is supported by all stakeholders: Government, professionals, large and small farmers that suffer from the consequences of water scarcity, the absolute majority of households, whose income is directly or indirectly depends on the situation in the agricultural sector. The primary objective of the Project is to accumulate the will of the stakeholders and beneficiaries to solve problems and create the conditions for overcoming poverty cycle in the region when a chronic shortage of water creates low incomes that lead to the reduction of investment in the IDS maintenance.

Special social resonance of the Project can be expected due to the fact that the increase in water supply in the region, including through the reconstruction of old borewells and construction of new ones in the subproject areas, will automatically improve the access of households not only to irrigation water, but also to water for domestic use, since the widespread use of drainage water for domestic purposes is now a very important social problem in the region.

B. Sustainability of the Project

The Social Assessment shows that agricultural producers are unable to cover construction and rehabilitation of the irrigation and drainage infrastructure at their own expense. The government policy implies maintenance and service of inter-farm networks, and secures a gradual shift to financing the on-farm networks by non-state sources (primarily through the WCA by the expense of farmers). However, most of the less than 2% of households that possess 3,000 private farms accumulating 84% of farmland in the Project Area, grow products for public use under the conditions defined above, using the IDS and the lands, which are dilapidated due to lack of infrastructure funding and irrational use of water and land resources, which has been lasting for many decades.

Therefore, it would be improper to expect significant investment by private farmers in the project activities. The most that the farmers can do now is to partially participate in the maintenance of on-farm IDS. Dehkans, compounding 90% of the region population, are also ready to make any possible contribution in the form of traditional country *khashars*, but they are not able to co-finance the large-scale works.

In terms of further Project activities, this stresses out the need for 1) not less than 95% of the Project costs to be covered by the investment and from the state budget, and 2) ensuring the sustainability of project results to give farmers and WCAs opportunity to "get themselves back on their feet", to create the necessary foundation in the form of material resources and equipment, to acquire the necessary experience and skills of IDS O&M, which in the future will enable them to maintain IDS from their own funds, ideally, including the off-farm systems.

Until the reaching of the water supply volumes, planned by the Project design documents (which will be achieved in 5-8 years at best), it is necessary to envisage/reserve special funds to cover the costs of repairing and maintenance of constructed borewells, installed pumps and other equipment. Without such a reserve the effect from the investment will be achieved with a significant time lag.

The involvement of households/dehkans in managing, servicing and co-financing the irrigation infrastructure is important for the Project sustainability. Currently, dehkans are excluded from the processes: even though they are key water users and agricultural producers, their status in the system' managing and financing is unclear, so water services cannot be 100% guaranteed. To this end, the Project activities have to envisage (i) models of managing IDS at the level of settlements/communities/dehkan farms, including demonstration models for dehkan plots; and (ii) involvement of dehkans in the activity of WCAs and formalizing the status of groups of dehkans in WCAs.

The owners of garden/dehkan plots have to become rightful water users and cover adequate maintenance and other costs with regards to the irrigation and drainage infrastructure. As there are thousands of dehkan plots of rather small sizes in the Project Area, an optimal solution to address I&D financing issues would lie in uniting dehkans into water consumers groups (WCGs). The improvement of the WCA's co-operation with dehkans, as well as organizing population involvement in public works on the rehabilitation and maintenance of IDS and water management can be effectively implemented only if IDS management involves working with makhallas, which have sufficient authority and experience of working with the population.

The attempts to organize systematic WCAs' work with WCGs (associations of dehkan farms at the level of RACs/makhallas) for several years was carried out under the non-reimbursable assistance of the Swiss Agency for Development and Co-operation (SDC) in 14 administrative districts under the command of World Bank's Rural Enterprise Support Project Phase-II (RESP-II) and ADB's Water Resources Management Sector Project in the Zarafshan and Ferghana valleys. The experience of the SDC in this area proves to be necessary for the dissemination in the FVWRMP-II territories.

The Project is bound to consider coping mechanisms in response to irregular power supply to pumps installed in the new and rehabilitated pumping stations and borewells. Project proposals for the construction of borewells with solar-powered irrigation pumps, have caused a positive

response from all stakeholders. Nevertheless, it is clear that large and medium pumps will not be able to function outside the rigid link to the existing centralized energy system. The existing system categorizes electricity users hierarchically depending on an users/institution's needs and provides power supply in accordance with the category assigned (for example, maternity hospitals are not subject to any limitations of power supply or power cut-offs, whereas khokimiyats have somewhat lower status in this hierarchy etc.). IDS objects in the Project Area need to get the highest possible category. Unfortunately, this issue cannot be resolved at the subproject areas' level; it will require additional consultations at the level of regional khokimiyats of the Ferghana Valley and the ministries of the Republic. Without resolving this issue, the Project investment in the rehabilitation of pump stations/borewells cannot bring the expected returns.

To ensure the normal functioning of the irrigation systems, it is necessary to solve a number of problems connected with the servicing of structures located upstream in the territory of Kyrgyzstan. The change in volume flow of rivers and canals, and even river beds, poses one of the biggest challenges and risks of the Project due to insufficient and untimely service in the neighboring country. The access of Uzbek specialists to the structures in the territory of the Kyrgyz Republic for maintenance and monitoring purposes is also a critical issue.

C. Recommendations for the planning and implementation of the Project components

The schedule of construction works requires coordination with BISAs, AISes, khokimiyats, WCAs, farmers and dehkans. All works on irrigation networks should to be carried out under the condition that there is no irrigation or leaching in progress. Moreover, it is important to note that some farmers and almost all dehkans plant several times a year.

There should be carried out a complete inventory of irrigation structures and land plots prior to the project works. The new assessment of the land quality must be performed (as a priority - in areas where FFS will be organized) as the existing cadastral data may not include a realistic assessment of land ball-bonitet. Otherwise, there will be difficulties in the project evaluation results achieved by increasing water use efficiency, and the productivity growth achieved on demo-plots will not be precise.

The Project should provide recommendations and help to calculate the cost of maintenance of the built structures. In addition, there must be a coherent policy with regard to which and under what conditions that will ensure the transfer of structures built – to PSDs or to WCAs. The important point is that some of the objects of IDS, including old non-operating borewells, appeared ownerless. Before starting work on their rehabilitation, it is necessary to determine which organization will be in charge of them in the future.

It is crucial to secure interaction and coordination of the Project plans and work with other projects/donors operating in the Fergana Valley. In particular, this applies to the non-reimbursable contribution of the government of the Swiss Confederation for RESP-II and WRMSP projects, including the technical support to institutional and organizational strengthening of WCAs and BISAs/AISes; investments in small WCA infrastructure; promotion of applied modern technologies of water management in demo-WCAs and Farmer Field Schools (FFS). In addition, extensive experience was gained as part of the projects RESP-II and WRMSP by both the improvement of IDS, and the interaction with the water management

organizations, providing WCA with equipment, machinery and other. Through the cooperation with this kind of projects, it is possible to foster the creation of favorable conditions for agriculture producing and selling in accordance with the Project tasks (providing equipment to WCAs, establishment of farms' cooperatives, marketing activities, training of farmers, etc.)

WCAs are currently incapable of securing the satisfactory service of agricultural producers as they experience acute need for the improvement of the staff and resources capacity along with institutional development. The Project activities may include (i) design of financial sustainability models for WCAs through improved fees collection from farmers and population (dehkans); (ii) assistance to WCAs with the improving of staff qualifications; (iii) assistance to WCAs with installation of irrigation water measurement structures; and (iv) provision WCAs with machinery and transport means.

The following steps/measures should be taken in order to **facilitate the strengthening of financial stability and of resource potential of WCAs:**

1. Ensure a full coverage/participation/inventory of all water consumers in the WCA territory, considering the needs of beneficiaries from vulnerable groups.
2. Develop plans for the restructuration and pay-off scheme of water consumers' debts to WCAs.
3. Develop and implement a methodology for financial planning for 3-5 years, taking into account the high level of farmers' debts. Financial planning and budgets should also foresee the current level of arrearages all WCAs have (salary and tax payments, unpaid services/materials etc.).
4. Organize a system of informing water consumers about their current financial status, the amount and timing of future payments and existing debts to the WCA.
5. Develop a model of financial sustainability of WCAs through better collection of fees from water users, including the development of socially acceptable system of fines and penalties.

An important factor that will help to enhance the positive impact of the project is the provision of WCAs' access not only to machinery but also to bank credits.

Construction of water measurement and control structures not only at the level of the main canals but also at the level of the WCAs, would provide significant benefits and advantages for the WCAs and farmers which will lead to: 1) increasing the accuracy of water measurement and adequacy/transparency of payments; 2) improving the planning and monitoring of the water supply; 3) observing the water supply schedule more precisely; 4) reducing the number of water conflicts; 5) reducing the cost of water delivery services for farmers (especially for downstream farmers). The Project is not able to address the need of WCAs and farmers for construction of water-measuring and regulating structures. However, the Project can develop recommendations for WCAs, farmers and WCGs, which will set out all the important aspects of the construction and operation of these facilities, including estimates of construction and maintenance costs, selection of construction sites, new structures' registration and transfer to the balance sheets, etc.

Enhancing human capacity through trainings and strengthening of human resources of water management organizations and WCAs is extremely important and demand-driven component of the Project. Therefore, it is necessary:

1. to develop measures for preparing of water management specialists, including the making of trilateral contracts between WCAs, labor agencies and vocational colleges for training, retraining, and requalification.
2. to involve representatives of makhallas, WCGs, as well as farmers who do not grow products under the state order (first of all, gardeners and livestock producers) into professional trainings. This will require the development of new training programs and adaptation of the existing ones.
3. Areas of training for BISA / ISA / WCA workers and WCGs leaders could include:
    - Tax, land and water legislation, legislation on NGOs, with an emphasis of the study of regulations and enforcement practices
    - Maintenance and repair of water measuring and control structures
    - Planning and implementation of activities to improve the quality of land
    - Financial planning and budgeting
    - Credits management and obtaining
    - Computer skills
    - Methods and forms of work with the population, participation enhancement, identification and resolution of water conflicts
    - Personnel management
4. Curricula for the trainings of farmers may include:
    - Implementation of measures to improve the quality of land
    - Crop, fruits and vegetables production and cultivation technologies
    - Processing and storage technologies and equipment
    - Livestock and Veterinary
    - Farm management, production management, including accounting and record keeping
    - Credits management and obtaining
    - Computer literacy
5. Given the farmers' and WCAs' need for teaching materials, it is necessary to provide WCAs with the means for printing and distribution of the materials and the Project recommendations
6. Provision of water management organizations, farmers and WCAs with teaching materials could be enhanced through the provision of BISAs / ISAs / WCAs with electronic versions of these documents for replication in the required quantities in case of the absence of printed copies.

The successful **introduction of innovative technologies demonstrated in the FFSs** will depend on farmers' ability to bear related expenditure.

The RESP-II 2015 survey showed that such irrigation technologies as irrigation with organic fertilizers, level furrow irrigation, short-cut furrow irrigation and every-other furrow irrigation were applied in the RESP-II private farms more often than other project recommended technologies. These technologies were applied by 97%, 60%, 63% and 66% of the surveyed farms, respectively. Such technologies were applied, on average, on 55-80% of a farm's area.

These irrigation technologies were applied at farms earlier, and the Project's principal achievement was the introduction of efficient and correct methods of the technologies utilization. As for other water-saving technologies, the Project played a significant role in their introduction and dissemination. Such innovations as dead-end furrow irrigation (21% private farms), variable flow irrigation (7%) and liquid ammonia winter wheat irrigation (13%) gained a relatively wide application. Other technologies requiring additional capital investments (polyethylene pipes, flexible irrigation hoses, perforated black PE film; irrigation with magnetized water; and treatment of cotton seed with high-frequency current) were applied in 1-7% of RESP-II private farms on 20%-40% of a plot's area.

It should be emphasized that during the SDC project implementation, drip irrigation was not demonstrated in the RESP-II FFSs due to its high costs and high sensitivity to water quality: in the 7 RESP-II districts the level of water mineralization was substantially high.

The lack of funds is not always the main reason that causes farmers to refuse new technologies. Common causes include also an inapplicability of a particular technology on a farm and the lack of understanding how to apply the technology. In this regard, within the framework of the regular Project work on the assessment and evaluation of conducted trainings, it would be appropriate to conduct a study to assess the acceptability of the proposed technologies and the reasons farmers mention talking about the technologies' unacceptability.

The enhancement of beneficiaries' participation in water management and in the Project planning and implementation is a critical task. In this regard it is necessary:

1. To enhance the participation of water users in water management within the Project component, to develop WCAs' Participation Plans, providing a series of measures to attract water users in decision-making process based on inventory of all water users);
2. To include in the Project activities the development of IDS' management models at the level of settlements/makhallas and dehkan farms, including demo-models of water management for households/dehkan plots;
3. To consider the establishing of quotas for vulnerable group of water consumers (low-income people, women etc.) in WCAs' Boards of members to ensure the wider representation of all water users in decision-making;
4. To develop an effective permanent system of WCAs clients' informing about the planned works, meetings and agenda, decisions, debts etc. (possibly via SMS-informing).

The proposed Project has gained support and approval at all levels, ranging from land users to governmental bodies. However, both the population and the specialists have to be constantly informed about the current objectives of the Project phases, especially regarding the physical interventions envisaged. The lack of information on goals and expected outcomes of the Project may result misleadingly high expectations from the Project. Thus, a detailed plan of informing stakeholders should be developed and realized via WCAs, makhallas, and dissemination workshops to be held in the Project area.

The range of **methods to ensure public participation and information dissemination** developed during the SA to ensure public control over the implementation of the Project components include:

1. The regular dissemination of information on Project progress and planned activities, including expecting benefits and advantages for all groups of beneficiaries. It is necessary to conduct wide media-campaigns using local TV and print media. Incomplete or distorted information about the Project generates water users' unjustified expectations and can

subsequently lead to a negative assessment of the Project activities. The lack of adequate information may affect the interest of water users and cause difficulties with their involvement into the Project;

2. Establishing Project Supervisory Groups (PSGs) to ensure independent monitoring of implementation of the Project objectives, goals and schedule. The PSGs should include government officials, competent specialists, and the representatives of farms, households, WCAs and makhallas.
3. Conducting regular population living standard and farms conditions surveys to monitor the negative or positive impact of the Project on different population groups and farmers. A comprehensive set of socio-economic indicators should be used during these studies to reflect the changes in progress.
4. Taking into account the indispensable role of the WCAs as the conductors of Project interventions, it is recommended to use them as resource centers for water consumers to ensure Project results' sustainability. It's essential that a WCA have all the materials developed by the Project (in print and in electronic form), and the necessary equipment for copying. WCA staff should acquire the status of trainers and provide expert advice to water users on irrigation and land improvement technologies, and others.

CHAPTER VII. PUBLIC PARTICIPATION PLAN

The proposed Project is demand-driven and includes the works on rehabilitation and construction activities to be done in the existing irrigation infrastructure. So far the specialists have not considered the construction of new structures very urgent. Nevertheless, during the Project implementation a number of measures have to be taken into account to strengthen wider stakeholder participation.

The world experience shows that wide participation of stakeholders, farmers and governmental/non-government institutions strongly contributes to the success of development projects in the agricultural sector. Participation is a process which allows all stakeholders and people who can be adversely affected by the Project to influence the decision-making and activities throughout the Project implementation. Through public participation, people will determine what sort of contribution they wish to make in order to yield tangible and desired Project results. The participation process includes several levels of stakeholders' involvement.

The dissemination of the information on the Project. The process of information dissemination was initiated in November-December, 2014 within the preparation of the SA, when all key stakeholders were informed about the Project, including khokimiyats, local self-governance bodies, maintenance establishments subordinate to MAWR and the residents of the subproject districts. Nevertheless, the study revealed low public awareness of the Project as 73% of the respondents had not heard anything of the preparation.
Thus, the procedures of informing and involving the population in the Project activities must be initiated once the Project appraisal document is ready, including:

- Providing information on goals and expected outcomes of the Project so that the people and specialists will be guaranteed against misleadingly high expectations of the Project;
- Awareness-building on measures aimed at the protection of the irrigation system, and on negative social consequences of damaging the irrigation structures and violating the protection zones, etc.

The campaigns for public awareness building should involve makhallas and vocational colleges with the participation of specialists responsible for maintenance of irrigation systems. Moreover, the information about the Project can be disseminated through the national and local mass-media, as well as posters in communities and web-pages.

Information on the Project along with the results achieved by the groups of ecologists, social scientists and technicians was provided to representatives of key stakeholders in the course of the three workshops held in May 2015 in each of the subproject areas. On the basis of the workshops' results, the report of the SA and EA were revised in accordance with the comments and recommendations received. The further stage is when the MAWR of Uzbekistan and the PIU will disseminate the information to the authorities of all levels, from the national government to district khokimiyats. Considering the nature of the Project, there is a wide range of stakeholders that are responsible for the O&M of irrigation systems. Hence, this information is to be available to all organizations that will participate in the implementation of the Project. The reliable and up-to-the minute information on the Project's implementation will help the beneficiaries to adjust their activities to get prepared for the interventions, to plan their production and economic activities in greater detail, to identify priorities, to re-allocate labor

and production resources, to adjust socio-economic development forecasts, and to secure comprehensive consideration of all positive and negative impacts of the Project.

Consultations. All opinions about the causes of the situation and the desired direction of changes that will ensure the realization of the project, as well as the priorities that inevitably arise in the determination of action schedule must be taken into account to improve the effectiveness of the Project implementation. In addition, neither FS team, PMU nor the Project beneficiaries can claim to know "absolute truth", which would take into account the interests of all stakeholders. Therefore, it is important to synergy the potential of all stakeholders in order to develop unified approach to forthcoming changes, which enables to address stakeholders' interests and expectations.

Conducting social assessment throughout various phases of the Project cycle is one of the consultation forms. Through participatory techniques (in-depth interviews, focus groups, etc.), the SA reveals the key needs of I&D services users and providers, and assess their views and attitudes towards the upcoming changes. Regular SA activities will allow stage-by-stage analysis of beneficiaries' satisfaction to make corrections to the proposed investment, in particular by:

- identifying the opinion of the population, agricultural producers and specialists on the relevance of the Project objectives and realization methods to address urgent problems with the irrigation system and to meet agricultural producers' and regions economies' needs;
- analyzing all social, institutional and administrative factors that might adversely affect the Project implementation arrangements.

The participation of representatives of all organizations responsible for O&M of irrigation systems, from the MAWR to the Project contractors, will highlight the actual potential (regarding organization, management and production) of the institutions, which allows determining the organizations' role in the Project implementation as well as their positive and adverse influence on the proposed changes.

It is important to boost the participation of non-governmental organizations in the consultations, the activity of which influenced directly or indirectly the expected interventions. For instance, the regional offices of the Farmers Council of Uzbekistan and WCAs in the subproject regions are directly interested in positive changes following the Project implementation. Moreover, the analysis of their activities and the possible impact of the changes on water use will provide necessary information on institutions which can be established to facilitate the implementation of the project and ensure sustainable post-Project result.

Local communities represented by citizens' self-governance bodies (Makhallas) should continue to actively participate in the consultations. Makhallas' participation is important as they can serve as a source of reliable information about the mood, views and expectations of the population. Considering the fact that the heads of local government bodies are active, experienced and have great influence on their communities, continuous consultations with them will provide adequate analysis of interventions' impact on the social and psychological climate of communities and the public opinion on the changes made.

One of the consultations objectives during the design and implementation of the Project is to develop a virtual model of changes and their consequences for the environment. In this

context, public and non-governmental organizations should be mandatory participants of the consultation process (State Committee for Nature Protection and its regional departments, the Fund ECOSAN and other NGOs).

The project will have a significant effect on the socio-economic development of the FV regions. Thus, consultations should involve governmental institutions, especially regional and districts khokimiyats, economy, labor and social protection departments. The participation of these institutions in the consultation process will provide adequate assessment of the impact of changes on the socio-economic situation in the Project Area and on the situation in the region as a whole. For example, it can be assumed that the improvement in water supply resulted from the Project implementation will change the structure of employment in the Project Area. Therefore the labor agencies will have to adjust their actions and recommendations regarding the forecasts of labor market demand and new jobs creation in the Project Area and in the entire FV region.

Cooperation. The cooperation mechanism assumes creation of structures (working groups, associations) for streamlined and coordinated implementation of programs envisioned by the Project. Taking into account the objectives of the Project, it is necessary to have of at least two types of structures:

- Organizations, which comprise agricultural producers and IDS users;
- Institutions responsible for operation and maintenance of the irrigation and drainage systems (state administrative bodies, industrial, construction and service organizations etc.)

Both types of organizations in the Project Area have already been formed: the first type includes the FC, WCAs and RACs; the second type includes the state and privatized organizations and their associations functioning under the control of state (there is a clear hierarchy of management and coordination of these organizations' activities by the MAWR of Uzbekistan and its structures, as well as by regional and district khokimiyats).

It is important therefore to ensure close cooperation between the two types of institutions so that their mutual interests will be satisfied and common goals will be concretized.

In addition, the cooperation assumes active participation of the above-mentioned structures in the financing or covering partly the costs of the Project, including as labor input. As the local communities have rich experience in the realization of social and human capital, the collaboration with makhallas are expected to take over the job of mobilizing the population to take part in public works/khashars necessary to improve the operation of I&D facilities.

A special form of cooperation during the Project implementation should be applied to beneficiaries from the poor population and other vulnerable groups. Ultimately, it is the category of beneficiaries that should receive the greatest benefit from the Project primarily by creating favorable conditions for them to increase their revenues and participation in decision-making. Thus, specific conditions must be worked out in order to ensure their cooperation in associations with an emphasis on functional, rather than financial participation.

Cooperation with the majority of the stakeholder groups and institutions will significantly boost the realization of comprehensive reforms not only within the narrow context of irrigation system rehabilitation but also with respect to broader reforms needed for proper water and

land management. The population and farmers are cooperating successfully now. Farmers also cooperate with authorities at national and local levels in order to resolve the problem of the poor performance of IDS. In addition, they are willing to participate in this process through other activities: environmental protection, rational water use, water measurement, service fees for water delivery, and participation in IDS maintenance, including as labor input.

Delegation of authority. Delegation of authority assumes providing an opportunity to parties involved in the Project to make decisions on issues within their competencies independently. Within the Project it means the direct involvement of agricultural producers and the population in Project design, implementation, monitoring and evaluation.

Public participation in the form of delegation of authority must be ensured by transferring the results of the Project, funded by foreign investments, to the ownership of the local organizations, including WCAs, and, possibly, rural communities (makhallas).

This will create consumers' sense of ownership and co-participation regarding the irrigation system, as well as precedents for improved management and liberalization of the water sector.

Participation of vulnerable groups (the low-income, women, pensioners, and people who work only on dehkan plots etc.) will have greater difficulty to be involved in Project operation and IDS' maintenance. To ensure their broad participation there is a need i) to reserve a certain number of places in supervisory groups for these categories; and ii) to use participatory techniques (participatory rural appraisal and focused group discussions) to diagnose problems associated with the Project and propose relevant corrections into the Project activities, if needed.

Table 82. Organization of participation processes within the Project

	Information dissemination		Consul-tations	Cooperation				Delegation of authority		
	Disseminating the information about the Project	Trainings for the population, farmers, WCAs and specialists	In-depth interviews, FGD, surveys, workshops	Planning, decision-making	Implementing Project tasks	Co-financing	Conducting monitoring	Ensuring preservation of irrigation facilities	Transferring ownership rights on facilities	Control over the activities and works
PMU and PIUs										
National and territorial governmental bodies; MAWR and its regional departments										
BISA, ISA, HGME, PSD										
WCA										
FC										
Local self-governance bodies (RACs, Makhallas)										
Project beneficiaries (population, dehkans, private farmers, disadvantaged and vulnerable groups)										
Executive agencies / Contractors										
PAP / Groups to be affected during the RAP implementation										
Organizations responsible for land acquisition										
Donors										
Environmental NGOs										
Project supervisory groups and M&E specialists										

To implement the abovementioned activities the Project Management Unit and Project Implementation Units must enable the strong coordination between the Feasibility team and other stakeholders using the results of Ecological and Social Assessments components as a basis for further steps. The participation and information strategies have to be further developed, including details on information dissemination techniques/channels, and cost estimations for public informing campaigns.

CHAPTER VIII. MONITORING AND EVALUATION OF THE PROJECT

The effectiveness of the Project implementation is to be assessed via regular monitoring and evaluation of the current state of IDSs, water institutions and water consumers. It is recommended to conduct evaluations based on sets of socio-economic indicators that illustrate the impact of the Project on the development in the Project Area, including:

- Indicators of water supply and land ameliorative conditions, including the quality of agricultural land, IDS' physical conditions, and indicators of hydro-ameliorative activities;
- Indicators of agricultural production growth (including horticulture and livestock), including the growth of productivity and capacity of agricultural producers (including dehkan farms);
- Indicators of the living standards of the population, including employment, income, health, access of households to social and communal infrastructure.

Each indicator will be compared both with the corresponding figure of the previous period, pre-project values (if available) and/or with normative (standard) indicators. Some of the recommended monitoring indicators can be used for assessing the effectiveness of the second phase of the Project as well as for the preparation/justification of proposals for the forthcoming Phase-III of the Project.

Table 83. Proposed monitoring and evaluation indicators

Interventions and groups of indicators	Indicators	Monitoring participants
1. Improving the water supply and land ameliorative condition quality		
Construction of new IDS, including borewells. Rehabilitation of IDS and antimud-flow structures. Condition of IDS.	Number of operating and constructed irrigation borewells, units Number of malfunctioning irrigation borewells, units The number of operating and rehabilitated pump stations, units Length of canals, gutters, collectors and antimud-flow structures, km Length of canals, gutters, collectors and antimud-flow structures which require rehabilitation/repairs, km Length of canals, gutters, collectors and antimud-flow structures cleaned/reconstructed/repaired, km Area of irrigated land where the construction of IDS is required, ha The number and capacity of water storage structures, which were rehabilitated Observing the schedule of IDS maintenance (cleaning etc.) The number of borewells with Solar-Powered Irrigation Pumps, units The area of land where the technology of drip irrigation was implemented, ha	BISA, ISA, HGME, PSD, WCA, FC, PMU and PIU
Water supply and hydro-ameliorative activities	Irrigation water supply, % of demand Water supply by farm type, m^3/ha Irrigation sessions of main crops by farm type, % of demanded The share of private and dehkan farms lacking irrigation water, % The share of dehkan farms that do not use land plots for agricultural production due to the lack of irrigation water, % The intensity of planting,% Share of fallow land, % Share of land under crop rotation, % Amount of drainage water used for irrigation by farm type, m^3/ha Amount of fertilizers used by farm type, tons/ha	BISA, ISA, HGME, WCA, FC, PMU and PIU

Improving the quality of agricultural land	Share of water-logged lands, % Share of salinized lands, % Soil bonitet (points) Area of ameliorated land, ha Area of land excluded from agricultural turnover because of water shortage, ha	BISA, ISA, HGME, FC, PMU and PIU, Department of land cadaster
2. Agricultural production growth		
Increase in agricultural productivity	Volume of agricultural products (plant and livestock) by farm type and crop, tons Crops yields by farm type, centners/ha Resource-intensity of agricultural products, resources spent per production unit Productivity of agricultural workers, UZS per person Profitability level by farm types, % Share of unprofitable farms, % Share of liquidated farms, %	Khokimiyat, BISA, ISA, HGME, FC, WCA, PMU and PIU
Development of livestock sector	Number of cattle by farm type, heads Area of hayfields and pastures, ha Share of land under fodder crops, % Livestock production per conventional head of cattle, UZS Fodder production per conventional head of cattle, centners	Khokimiyat, BISA, ISA, FC, PMU and PIU
Enhancing capacities of agricultural producers	Number of WCAs, units Average number of WCA members, people Structure of WCAs' members groups (farmers, dehkans, organizations), % The number of WUGs - WCA members paying WCA for the water supply services, units Operating agricultural machinery on WCAs' balance sheets by types, units Share of WCAs with no arrears in payments to the budget and to the employees, % of WCAs WCA debts, % of annual income Share of WCAs with no members who run a debt to the WCA, % of WCAs WCAs' expenditure on IDS O&M, % of annual expenditure The share of wages in WCAs' expenditure, % The number of water control and measuring structures on WCAs' balance sheets, units / 1 ha WCAs' office equipment and transport means availability, units Number of organized FFS and demonstration plots Participation of farmers and dehkans in trainings on FFS and demo-plots, number of trainings and participants, units Indicators of water-saving technologies implementation in the areas of farmers who were trained in the FFS and demo-plots, Number of trainings and study tours, participation indicators by groups (farmers, dehkans, women, BISA workers etc.)	Khokimiyat, BISA, ISA, FC, WCA, PMU and PIU
Increasing marketability of agricultural producers	Share of dehkans, selling their produce, % Share of private and dehkan farms processing agricultural products for sale, %	Khokimiyat, BISA, ISA, FC, WCA, PMU

	Share of farmers and dehkans exporting agricultural products, % Agricultural production for sale (including for export) by type, items	and PIU
3. The living standards		
Employment	Employment level, % Level of official and hidden unemployment in the agricultural sector, % Employment in the agricultural sector by farm and employment type, % Employment related to processing and selling agricultural products produced by dehkans and farmers, %	Khokimiyat, BISA, ISA, FC, PMU and PIU
Household Incomes	Average per capita income, UZS Share of income from agricultural activity in the structure of HH income, % Average per capita consumption from garden plots, UZS Population in the bottom quintile, % Salary in the agricultural sector, sums Average daily wage of agricultural workers, by employment type, UZS Labor costs in overall production costs, % Households with a vulnerable member (the poor, the disabled, long-term unemployed, and others), %	Khokimiyat, BISA, ISA, FC, PMU and PIU, Local self-governance bodies
Public health	Morbidity of the population, including children under 14, with somatic and infectious gastrointestinal and renal diseases, associated with the use of water for drinking and household needs from unsafe sources	District health depart-ments, Epidemiological stations, PMU and PIU
Access to social infrastructure	Number of educational institutions, by type, that are in emergency condition or that require repairing due to ground water or mud flows, % Number of healthcare institutions, by type, that are in emergency condition or that require repairing due to ground water or mud flows, %	Khokimiyat, District departments of education and health , PMU and PIU
Life quality and access to public utilities	Share of households with access to piped potable water supply, % Number of medical and educational institutions, by type, not provided with piped water, units Water pipes network requiring repairs, km	Khokimiyat, Suvokava (potable water authorities), PMU and PIU
4. Participation indicators		
Information dissemination	Number of copies of the summary ESA reports disseminated, units Number of stakeholders receiving ESA results, units Number of trainings conducted, units Number of training participants, people Number of materials disseminated via mass-media (TV, radio, printed versions), on the website, via makhallas and WCAs, units	PMU and PIU, BISA, ISA, HGME, PSD, WCA, FC, makhallas
		PMU and PIU,

Consultations	Number of stakeholder workshops, in-depth interviews, FGDs held, units Number of participants of the consultation process by type, people	BISA, ISA, HGME, PSD, WCA, FC, RAC, makhallas, NGO
Cooperation	The structure of the Project costs by sources of financing, % Involvement of vulnerable groups into the Project, people	PMU and PIU, BISA, ISA, khokimiyats, makhallas, HHO
Delegation of authority	Number of IDS structures and infrastructure facilities transferred to non-governmental institutions and to individuals (WCAs, RACs, farmers), units	PMU and PIU, BISA, ISA, WCA, FC
5. Monitoring of land acquisition and compensations		
Determination of the entitled people and the size of compensation Compliance of applied procedures with WB OP 4.12 Complaints and claims processing	Number of persons from the non-entitled, who were included in the list of compensation recipients (mistaken inclusion) Number of persons entitled, but not included in the list of compensation recipients (mistaken exclusion) Area of land, subject to temporary acquisition, for which compensations have been paid Area of land, subject to permanent acquisition, for which compensations have been paid Number of trees, for which compensations have been paid Number of persons, who received compensation on time and in full, by compensation types Number of persons, who did not receive compensation on time and in full, by compensation types Compensations' amount paid Spending of funds allocated for compensations, % of envisaged under the RAP Number of persons, on whose plots temporary acquisition needs to be extended Area, on which construction works will be continued after the established deadline Number of compensation recipients, who participated in consultations and coordination meetings at each stage of land acquisition Number of complaints Number of complaints resolved Level of satisfaction with the types and sizes of compensations.	PMU and PIU, cadaster bodies, external and internal M&E specialists, Independent Panel of Experts

APPENDIXES

APPENDIX 1. THE MAIN TASKS CARRIED OUT BY THE SOCIAL ASSESSMENT TEAM

The SA incorporated both quantitative and qualitative methodologies, including a background socio-economic study, in-depth interviews, focus group discussions, farmers/household survey and three consultative workshops. Completed works are summarized below.

- ***Task 1: Background Socioeconomic Study - Identification of Important Social Development and Participation Issues.*** The SA team conducted a review of available sources of information and data to identify the social development and participation issues relating to this Project. The review includes both qualitative descriptions and analyses, and quantitative indicators of change (positive and negative) such as: total population, economic activity, standard of living, physical infrastructure, investments, land ownership, and farm conditions. This task involves the following sub-tasks.
  (a) Subtask 1.1: Identify Broad Social Development Issues
  (b) Subtask 1.2: Identify and Analyze Main Stakeholder Groups

- ***Task 2: In-Depth Interviews.*** The Team carried out 52 in-depth interviews to provide a detailed understanding of all stakeholders' views. The results (quotations) of these interviews were incorporated into the SA report.

- ***Task 3: Focus Group Discussions.*** The SA team conducted 15 Focus Groups involving representatives of all key stakeholder groups. Following the discussions, a content analysis of the discussions and articulate conclusions and implications of the discussions for the project design and implementation were prepared. The results of FGDs were incorporated into the final SA report.

- ***Task 4: Farmers/Household Survey.*** A survey of 494 households and 260 farmers has been carried out to: establish baseline socioeconomic and farm conditions in the Project Area; determine how farmers view the current arrangements for management and O&M of irrigation systems; determine farmers' preferences for alternative management arrangements and any proposed technical improvements; determine the extent to which farms are currently paying for water, and farmers' willingness and ability to contribute to an improved supply of water, and improved irrigation and drainage systems.
  This task involves the following sub-tasks.
  (a) Subtask 1: Design Farmers/Households Questionnaire (Appendix3)
  (b) Subtask 2: Design Sample
  (c) Subtask 3: Field Survey
  (e) Subtask 4: Data Entry, Data Cleaning, and Analysis

- **Task 5: Develop Public Participation Plan.** The SA team prepared a Public Participation Plan that provides a general framework for involving participation throughout the next stage of project preparation and accomplishing the various types of participation mechanisms during project implementation. The Plan can be updated by the managers during the Project implementation. The Plan, identifying key stakeholders and delineating appropriate level of participation for each stakeholder group, must be corrected and supplemented by Project Management Unit and Project Implementation Units during the Project implementation. The Public Participation Plan is provided in Chapter VII.

- ***Task 6: Identify Social Development Indicators and Define Mechanisms for Monitoring and Evaluation.*** The inclusion of monitoring and evaluation (M&E) procedures is mandatory for Bank-financed projects. The SA provided inputs to the M&E component by identifying social development indicators for monitoring the Project's effectiveness during implementation. M&E indicators provided in the Chapter VIII.

- ***Task 7: Stakeholder Workshops Implementation.*** The study team conducted three stakeholder workshops with the participation of 153 stakeholder representatives, during which the SA results and recommendations were presented and Public Participation Plan was discussed. The list of workshop participants is provided in Appendix 2.

APPENDIX 2. CONSULTING WORKSHOPS OF INTERESTED PARTIES – PROGRAM AND LIST OF PARTICIPANTS

Environmental and Social Assessment
Consulting workshops of interested parties
Workshops Protocol

Objective: The main objective of consultations is to inform all interested parties from the number of organizations, institutions, non-government organizations, representatives of communities, farmers and vulnerable groups of population in Project territory on the results of ecological and social studies, assessment of project measures and recommendations on plans of environmental management, mitigation of possible negative effects of environmental and social impact, plan of interested parties participation in project implementation and monitoring of project actions, and to receive their responses for such measures.

Organization: In accordance with ToR the responsible for organization of consulting workshops are the teams on environmental and social assessment.

Participants: The list of participants is attached below. In each of three subproject areas 40-45 representatives of various target groups of the Project were invited to the workshops, in total in conclusive consultations 153 persons took part. 8 participants from Tashkent were represented by specialists of PIU, MAWR, representatives of academic organizations of WRA sector and the team of EA and SA. 22 women took part in the consultations, mainly «maslakhatchi» - collaborators of NGO «Committee of Uzbekistan Women» representing women councils under makhalla committees and rural gatherings of citizens, and also collaborators of district and regional khokimiyats, BISA and HGAE.

Program: The program of consulting workshops is given below in Table 84. Workshops in each of three subprojects were opened by opening statement of BISA managers, on which command area the subproject will be implemented, and also by greetings of authorized persons from regional and district khokimiyats of Namangan, Andijan and Ferghana regions. As introduction information also they were listening the speech of the PIU for WI responsible collaborator (Mr.Norbayev M.) who submitted to participants attention brief review on proposed within FS preparation technical arrangements for FVWRMP – Phase II, including specifics and contents of proposals for technical interventions, options of investments and next steps on agreement and execution of project measures.

Table 84. Program of consulting workshops on three subprojects FVWRMP Phase-II

May 12, 2015. Namangan Subproject Podshaota –Chodak	
090 - 09.30	**Registration of participants**
09.30 - 09.50	**Opening of the workshop. Opening speech:** Mr. U. Mekhmonov, Deputy head of Naryn-Syrdarya BISA Mr. M. Norbaev, PIU for WI, Tashkent, MAWR
09.50-10.10	Project preparation and Feasibility Study (FS) (Assignment A) for «Ferghana Valley Water Resources Management Project, Phase-II (FVWRMP-II): Azim Nazarov, Deputy Team Leader, Sheladia Associates Inc. (USA) in association with NBT (Uzbekistan) and IKS (Uzbekistan).
10.10-10.30	**Questions of workshop participants**

10.30 - 110	**Coffee break**
110 - 11.30 11.30 – 11.45	Environmental assessment: Issues of environment, project impact, management of ecological risks, environmental management plan, mitigation and monitoring. Mrs. Gulchekhra Khasankhanova, EA Team Leader **Questions of workshop participants**
11.45 - 12.15 12.15 - 12.30 12:30 – 12:45 12:45 – 13:00	Social assessment: Social issues, project benefits and risks, action on promotion of OP 4.12: Mr. Yakov Asminkin, SA Team Leader **Questions of workshop participants** Presentation of participation plan draft. Elaboration of recommendations on promotion of participation in the project of all interested parties.
130 – 13.30	General discussion, elaboration of recommendations. Sizing up. **Closing of the workshop**
13.30 - 14.30	**Lunch**
14:30 – 16:00	Time for discussions and consultations with some specialists
May 13, 2015. Andijan. Subproject Savay – Akbura	
090 - 09.30	**Registration of participants**
09.30 - 09.50	**Opening of the workshop. Opening speech:** Mr. Shukhratbek Ergashev, First Deputy Head of Naryn-Karadarya BISA Mr. M. Norbaev, PIU for WI, Tashkent, MAWR
09.50-10.10 10.10-10.30	Project preparation and Feasibility Study (FS) (Assignment A) for «Ferghana Valley Water Resources Management Project, Phase-II (FVWRMP-II): Azim Nazarov, Deputy Team Leader, Sheladia Associates Inc. (USA) in association with NBT (Uzbekistan) and IKS (Uzbekistan). **Questions of workshop participants**
10.30 - 110	**Coffee break**
110 - 11.30 11.30 – 11.45	Environmental assessment: Issues of environment, project impact, management of ecological risks, environmental management plan, mitigation and monitoring. Mrs. Gulchekhra Khasankhanova, EA Team Leader **Questions of workshop participants**
11.45 - 12.15 12.15 - 12.30 12:30 – 12:45 12:45 – 13:00	Social assessment: Social issues, project benefits and risks, action on promotion of OP 4.12: Mr. Yakov Asminkin, SA Team Leader **Questions of workshop participants** Presentation of participation plan draft. Elaboration of recommendations on promotion of participation in the project of all interested parties.
130 – 13.30	General discussions, elaboration of recommendations. Sizing up. **Closing of the workshop**
13.30 - 14.30	**Lunch**
14:30 – 16:00	Time for discussions and consultations with some specialists
May 14, 2015. Ferghana. Subproject Isfayram- Shakhimardan	
090 - 09.30	**Registration of participants**
09.30 - 09.50	**Opening of the workshop. Opening speech:** Mr. A. Rakhmatillaev, Head of Syrdarya – Sokh BISA Mr. M. Norbaev, PIU for WI, Tashkent, MAWR
09.50-10.10 10.10-10.30	Project preparation and Feasibility Study (FS) (Assignment A) for «Ferghana Valley Water Resources Management Project, Phase-II (FVWRMP-II): Azim Nazarov, Deputy Team Leader, Sheladia Associates Inc. (USA) in association with NBT (Uzbekistan) and IKS (Uzbekistan). **Questions of workshop participants**
10.30 - 110	**Coffee break**
110 - 11.30 11.30 – 11.45	Environmental assessment: Issues of environment, project impact, management of ecological risks, environmental management plan, mitigation and monitoring. Mrs. Gulchekhra Khasankhanova, EA Team Leader **Questions of workshop participants**

11.45 - 12.15 12.15 - 12.30 12:30 – 12:45 12:45 – 13:00	Social assessment: Social issues, project benefits and risks, action on promotion of OP 4.12: Mr. Yakov Asminkin, SA Team Leader **Questions of workshop participants** Presentation of participation plan draft. Elaboration of recommendations on promotion of participation in the project of all interested parties.
130 – 13.30	General discussions, elaboration of recommendations. Sizing up. **Closing of the workshop**
13.30 - 14.30	**Lunch**
14:30 – 16:00	Time for discussions and consultations with some specialists

Table 85. List of workshop participants in the Namangan, May 12, 2015

No	Name	Position
1	A.Ahmedov	Khokimiyat of Namangan region, specialist of agriculture secretariat
2	A. Hoshimov	Khokimiyat of Yangikurgan district, Deputy Khokim
3	A. Hasanov	Goskompriroda, Namangan region
4	I. Toshmatov	Goskompriroda, Yangikurgan district, Head
5	Abdurahmanov	Goskomzemkadastr, Namangan region
6	S. Mamatov	SANIIRI, Deputy Director
7	S. Mehmonov	Naryn-Syrdarya BISA, First Deputy Head
8	S. Kamolov	Naryn-Syrdarya BISA, Head SRB
9	G. Huzhamov	Naryn-Syrdarya BISA, Head of IT and GIF
10	H. Ubajdullaev	Naryn-Syrdarya BISA, Head of TMAAT
11	R. Zhabbarov	Naryn-Syrdarya BISA, Main specialist of SRB
12	I. Nazrullaev	Naryn-Syrdarya BISA, Main specialist of TMAAT
13	A. Bojmirzaev	Naryn-Syrdarya BISA, Key specialist of SRB
14	V. Ohunmirzaev	Naryn-Syrdarya BISA, Main specialist of IT and GIF
15	M. Sunaeva	Naryn-Syrdarya BISA, Main specialist of SRB
16	B. Kutpiddinov	Naryn-Syrdarya BISA, specialist
17	Zh. Zhabborov	Naryn-Syrdarya BISA, specialist
18	D. Abdullaeva	Naryn-Syrdarya BISA, specialist
19	T. Kirgizboev	Naryn-Syrdarya BISA, specialist
20	N. Tujchiboev	Naryn-Syrdarya BISA, specialist
21	R. Rahmatullaev	NSJe i AB, Head IChB Yangikurgan district
22	M. Ismatillaev	Podshaota-Chodak ISA, Deputy Head
23	A. Akbarov	Podshaota-Chodak ISA, Head SRB
24	K. Turdiev	Podshaota-Chodak ISA, Yangikurgan district, Head of department
25	N. Hudajberdiev	Podshaota-Chodak ISA, Yangikurgan district, Head of department
26	M. Zhalolov	Podshaota-Chodak ISA, Head of Hydro site, Yangikurgan district
27	H. Ahmadzhonov	Podshaota-Chodak ISA, Head of department, Chartak district
28	Hodzhaev	Podshaota-Chodak ISA, Chartak district, Head of department of vertical drainage
29	A. Appokov	Podshaota-Chodak ISA, Chartak district, Head of department Hydro site
30	S. Kalandarova	Podshaota-Chodak ISA, Lead engineer
31	Z. Rizvanova	HGME, Namangan region
32	Z. Ahmedova	HGME, Namangan region
33	M. Turgunova	HGME, Namangan region
34	A. Hasanova	HGME, Namangan region
35	R. Jusupov	Yangikurgan district, Chairman RGC
36	N. Aliboev	Yangikurgan district, RGC «Dustlik», resident

37	O. Berdijorov	Yangikurgan district , WCA «Navkent bulogi», Chairman
38	B. Otahonov	Yangikurgan district , WCA «Iskovot Obi Hayot», Chairman
39	H. Jergashev	Yangikurgan district , WCA «Shark Yulduzi», Chairman
40	Z. Bajdodoev	Chartak district, Head of WCA
41	I. Kurbonov	Chartak district, Head of WCA
42	J. Hamroev	Yangikurgan district, Manager of farm
43	K. Pulatov	Yangikurgan district, Manager of farm
44	I. Mansurov	Chartak district, Manager of farm
45	G. Khasankhanova	EA Team leader
46	Ja. Asminkin	SA Team leader
47	M. Narbaev	PIU-WI
48	S. Khamzin	Specialist EA
49	R. Ibragimov	Specialist EA

Table 86. List of workshop participants in the Andijan, May 13, 2015

No	Name	Position
1	Kosimov Sohibzhon	Khokimiyat of Bulakboshi district, Deputy Khokim
2	Mahatova Irodahon	Khokimiyat of Andijan region, Main specialist
3	Ismoilov Bobur	Khokimiyat of Kurgantepa district, Main specialist
4	Kushmadov Ilhomzhon	Khokimiyat of Khodjaabad district, First Deputy Khokim
5	Zhumaev Abror	Khokimiyat of Bulakboshi district, specialist
6	Nazhimova Zarifa	Khodjaabad district, Committee of Woman
7	Jergashev Vohidzhon	Representative of MAWR RUz
8	Umarov Dilshodbek	Goskompriroda of Andijan region, Head of Water Inspection
9	Shoudinov Doston	Goskompriroda , Khodjaabad district
10	Shokirov Bahodirzhon	Goskompriroda of Andijan region, Inspector
11	Aripov Salohiddin	Goskompriroda, Jalakuduk district
12	Imoilov Isokzhon	Goskomzemgeodezkadastr, Andijan region
13	Abdurazzokov Sherzodbek	HGME, specialist
14	Tujchiev Alisher	NSJeAB, specialist
15	Jergashev Shuhratbek	Naryn-Karadarya BISA, First Deputy Head
16	Rahmonov Nodirbek	Naryn-Karadarya BISA, Lawyer
17	Komilov Mavlonbek	Naryn-Karadarya BISA, Head of department
18	Uraimov Husanboj	Naryn-Karadarya BISA, Head of department
19	Gajnutdinova Al'bina	Naryn-Karadarya BISA, Head of department
20	Zajnobiddinov Mansurbek	Naryn-Karadarya BISA, Sector manager
21	Madibaev Nodirbek	Naryn-Karadarya BISA, Sector manager
22	Hidojatov Muhammadsodik	Naryn-Karadarya BISA, Main specialist
23	Holmatov Alisher	Naryn-Karadarya BISA, Main specialist
24	Muhammadamin Dilhumor	Naryn-Karadarya BISA, specialist
25	Jergasheva Parizodhon	Naryn-Karadarya BISA, specialist
26	Zokirova Lola	Naryn-Karadarya BISA, specialist
27	Ahlitdinov Dostonbek	Naryn-Karadarya BISA, specialist
28	Jakubbekov Mashhurbek	Savay-Akburasai ISA, Head
29	Abdullaev Abrorbek	Savay-Akburasai ISA, First Deputy Head
30	Umarov Murodzhon	Savay-Akburasai ISA, Head of department
31	Bakirov Gofirzhon	Savay-Akburasai ISA, Head of department
32	Nazarov Bahromzhon	Savay-Akburasai ISA, Head of department
33	Jusupov Rahmonzhon	Savay-Akburasai ISA, specialist
34	Kuzibaev Shohruh	Savay-Akburasai ISA, specialist
35	Hafizov Sardor	Savay-Akburasai ISA, specialist
36	Mirzaahmedov Alisher	Head of Savay canal department
37	Kurbonov Adhamzhon	RGC «Kushtepa», Jalakuduk district
38	Sotivoldieva Dilfuza	RGC «Kurgantepa», Kurgantepa district

39	Hasanov Abduhalim	WCA «Madiyorov», Khodjaabad district
40	Holberdiev Tuhtasin	WCA «Vodij gidroteh», Jalakuduk district
41	Sotivoldiev Madamin	WCA «Istikbol suv bul», Kurgantepa district
42	Mirzaev Dilmurod	WCA «Jurapolvon», Bulakboshi district
43	Hozhisultonov Sh.	«Istikbol», Kurgantepa district, Manager of farm
44	Abdullaeva S.	Kurgantepa district, Deputy manager of farm
45	Rahmonov Abdukodir	«Jergash Rahmon er» farm, Bulakboshi district
46	Mirolimov Alizhon	«Mirolim Ota» farm, Khodjaabad district
47	G. Khasankhanova	EA Team leader
48	Ja. Asminkin	SA Team leader
49	M. Narbaev	PIU-IW
50	S. Khamzin	Specialist EA
51	R. Ibragimov	Specialist EA

Table 87. List of workshop participants in the Ferghana, May 14, 2015

No	Name	Position
1	A.Zikrijaev	Khokimiyat Ferghana district, First Deputy Khokim
2	U.Umaraliev	Khokimiyat Kuvasay district, specialist
3	Zh. Madjarova	Khokimiyat, Kuvasay , RGC Pashona
4	O. Shamsutdinova	Committee of Woman
5	Z. Zhuraev	MAWR RUz
6	B.Hamidov	Goskomzemkadastr, Ferghana region, Main specialist
7	S. Amirov	Goskompriroda, Ferghana region
8	B. Topivoldiev	Goskompriroda, Ferghana district
9	R. Isroilov	Goskompriroda, Kuvasay
10	G.Bojpulatov	Regional Department of MAWR, Head of department
11	M. Gaipov	Ferghanagiprovodhoz, Director
12	A.Holikov	NSEAB, First Depuyu Head
13	Zh.Kamolov	NSEAB, Head of department PTO
14	Zh.Sajmatov	Syrdarya-Sokh BISA, First Deputy Head
15	A. Kuziboev	Syrdarya-Sokh BISA, Water balance specialist
16	H.Akbarov	Syrdarya-Sokh BISA, Water balance specialist
17	G.Holmatov	Syrdarya-Sokh BISA, Head of department
18	A.Azizov	Syrdarya-Sokh BISA, Water balance specialist
19	D. Mamadalieva	Syrdarya-Sokh BISA, Main specialist
20	A.Tozhaliev	ISA Isfayram-Shakhimardan, Deputy Head
21	Sh. Mirzaev	ISA Isfayram-Shakhimardan, Water balance specialist
22	S. Abduraimov	Kuvasay, Water Resources Department, Head
23	F. Ahmadaliev	Kuvasay, Pump Stations Department, Manager
24	H. Nasimov	Kuvasay, Pump Stations Department, specialist
25	M.Bakirov	HGME, Ferghana region, First Deputy Head
26	Abdulahatov	HGME, Ferghana district, Head of department
27	Z. Ishankulova	HGME, Laboratory
28	G. Toshpulatova	HGME, Laboratory
29	S. Odilova	HGME, Laboratory
30	G. Aminzhonova	HGME, Laboratory
31	D. Hamdamova	HGME, Laboratory
32	M. Fahritdinov	Water Department, Tashlak district, Head
33	B. Turgunov	Pump Stations Department, Tashlak district, Head
34	Sh.Zhumaev	UNES, Ferghana district, Head of department
35	O.Shokirov	UNES, Ferghana district, specialist
36	F.Tolipov	RGC «Kaptarhona», Chairman
37	A.Mannosov	RGC «Novkent», Chairman
38	Zh. Nazirov	RGC «Avval», Chairman
39	B. Jerkaboev	RGC «Okbilol», Chairman
40	M. Sobirov	RGC «Kalacha», Chairman

41	A. Nabiev	RGC «Lashkar», Chairman
42	H. Shukurova	RGC «Logon», Consultant of Chairman
43	S. Ahmadzhonov	RGC «Ahror mirob Muminzhon», Chairman
44	B. Mirzasharipov	RGC «Isfayram», Chairman
45	H. Sobirov	RGC «Valik», Chairman
46	O. Toshtemirov	WCA «S. Zoirzhonobod», Chairman
47	S. Zokirov	WCA «Zamin Usmanobod», Chairman
48	D. Jakubov	WCA «Far Nurmamat Kuchkarboj», Chairman
49	I. Madaminov	WCA «Tursunali Madaminov», Chairman
50	A. Boltaboev	WCA «Okbilol Abdumalik», Chairman
51	A. Otaboev	WCA «Mindon Turobzhon Sattorov», Chairman
52	A. Davronov	WCA «Polmon Obihajot», Chairman
53	A. Rahmonjorov	WCA «Jukori Mujan», Chairman
54	V. Kamchinov	WCA «Valik Najman», Chairman
55	S. Mirzaliev	WCA «Husanboj Olimov», Chairman
56	M. Nazarov	WCA «Chashmai Sufon», Chairman
57	Je. Samarov	WCA Kuchkorchi Urmion», Chairman
58	Zh. Urazova	Urta Najman settlement, Consultant
59	G. Khasankhanova	EA Team leader
60	Ja. Asminkin	SA Team leader
61	M. Narbaev	PIU-IW
62	S. Khamzin	Specialist EA
63	R. Ibragimov	Specialist EA

A. Review of presentation on studies for environmental assessment - Mrs. G. Khasankhanova

In the beginning of presentation it had been noted that large scale projects, such as FVWRMP, Phase-II require elaboration of environmental and social assessment, that had been implemented in accordance with requirements of policy/guidelines of the World Bank and the Republic of Uzbekistan. One of those requirements is carrying out consultations with interested parties with the objective for obtaining from them the response for planned arrangements for undertaking joint decisions. Dr. G. Khasankhanova familiarized participants with objectives and tasks of ecological study and submitted project arrangements and their distribution in project territories. Then the results of ecological studies had been presented in subproject areas in the context of environment current conditions, from the view point of water and land resources use, biological diversity, social resources, and also problems related to water shortage and low water availability, deterioration of I&D infrastructure and irrigation services, and their impact on environment. The main approaches on project impacts assessment had been described (including according location, types of arrangement during the period of construction, operation) and summed up the results of positive and negative impacts, that the project might have, and also proposed mitigation measures and the plan of environmental management and project monitoring had been submitted (EMP). DR. Khasankhanova gave detail clarification on sources and data used, and answered to all questions. Due to the absence of specialists from Feasibility Study team, all questions related to technical arrangements partially were addressed to the representative of the PIU for WI and BISA specialists. In conclusion, the participants thanked for EA constructive contribution and support in execution of FVWRMP, Phase-II.

B. Review of presentation on studies for social assessment – Mr. Yakov Asminkin

During presentation the approach of the World Bank to selection of projects with priorities not influencing for reduction of low wealth, and also main objectives of social assessment, sources and methods for data collection were set forth. Project components had been described

towards socio-economic problems, according policy/guidelines of the World Bank on social assessment and aspects for resettlement. Then the results of social studies had been presented, that described situation in subproject areas from the view point of demography, employment, influence of agricultural activities on population wealth, problems related to irrigation water shortage and other problems of agricultural producers (including dehkans and farmers). Besides, more general recommendations were highlighted, related to such concepts as approach on the basis of participation, involvement of dehkan/household farms in water resources management and co-financing of WCA activities, problems of infrastructure related to the project (including conditions of I&D networks, problems of absence of necessary number of water measuring and regulating structures, irregularities with energy supply and etc., issues for assets ownership, issues of WCA development and the others. The last part of presentation was concentrated on compensation mechanisms, issues of monitoring and evaluation of project actions, and aspects and levels of information exchange/participation, highlighted in the terms of society participation. The questions and proposals addressed to social assessment team were mainly related to land acquisition. Y. Asminkin answered to all questions and informed participants on the progress for preparation of resettlement plan/land acquisition and mechanisms of compensation, that within the project would be carried out in accordance with the requirements of the World Bank OP 4.12. In the end of presentation Mr. Y. Asminkin thanked the participants and proposed to ask questions if any, or to give comments.

C. Key questions/comments of workshop participants and responses:

1. Subproject Podshaota - Chodak
May 12, 2015 Namangan **Naryn – Syrdarya BISA**

Q1: R. Yusupov, Chairman of rural gathering of Yangikurgan district citizens. The project envisages complex of technical arrangements, that provide positive effect and benefits for natural environment and increase of agricultural land productivity and rural population incomes. On what area the systems of drip irrigation will be created? These measures on water savings are important for farmers and dehkans, as water deficit, especially during summer months, leads to significant damage of yields, loss of orchards.

R1: G. Khasankhanova. Within the component «System Modernization» it is envisaged to introduce drip irrigation on the area of 100 ha. Besides, demonstration plots will be created for distribution of advance practices and technologies, and trainings will be carried out for farmers, dehkans, WCAs, ISA and etc.

Q2: M. Jalolov, Podshaota-Chodak ISA, Head of hydraulic section of Yangikurgan district. Will reconstruction of on-farm network be included into Phase-II?

R2: M. Norbaev. PIU for WI. Acting WCAs face big difficulties due to shortage of funds, knowledge and experience. The project component «System Modernization» envisages measures on potential increase and strengthening WCA capacity, with the objective for improvement of efficiency and quality of provided by them services.

Q3: S. Mamatov, SANIIRI, Deputy Director. Project envisages complex of technical arrangements, including construction of new borewells. What impacts on environment are expected from those measures?

R3: G. Khasankhanova. The results of EA witness about positive impact of technical arrangements on project territory through increase of irrigated lands water availability, there are only partial temporary negative impacts during period of construction and objects operation, that will be considered by the Contractor. The Podshaota-Chodak system water resources are famous for their quality (river flow mineralization is up to 1

gr/l), there is provided inflow and outflow of fresh groundwater, the processes of water logging and soil salinity are not observed. For impacts assessment the results of studies of corresponding MAWR bodies, scientific institutions and organizations (Uzbekhydrogeology, IWMI, TIIM and etc.) were used, obtained within preparation of IWRM plan and Feasibility Study.

Q4: I. Mansurov, farmer from Chartak district. There are problems with electric power in the village Khozratshokh, borewells are necessary. Let PSA help us. Will those borewells be included in the list of works of the subject project?

R4: M. Norbaev, PIU for WI. The construction of 105 new borewells is included into the list of works. Their location will be determined at the stage of detailed design. Location of those borewells was presented in EA presentation.

Q4: O. Berdiyorov, Chairman of WCA «Navkentbulogi». We would like faster implementation of the subject project arrangements.

R5: M. Norbaev. We also would like it and hope for foster beginning of project implementation, as the need in measures is very high.

Q6: A. Khoshimov, Deputy Khokim of Yangikurgan district. WE support that project. This project is rather important for Namangan region. Is there any possibility to reduce the time required for project preparation? This is rather important for farmers and, especially for citizens of both districts, that are served by Podshaota – Chodak system.

R6: M. Norbaev, PIU for WI. I understand your concern. The World Bank and the Government are also insisting on acceleration of preparation and timely agreement and approval of necessary documents in the established order.

The following persons took part in the discussions:

1) A. Khasanov. Regional Department of Goscompriroda. I familiarized with the project. These are the lowest water availability districts of Namangan region. The project has great use, there no negative aspects. Project measures will improve land and environment conditions. Thanks a lot for your work.
2) A. Appokov. Podshaota – Chodak ISA. Chartak division. The project is very important for all of us. Mud flow storage is required for Chartak district. I ask to include this to the project next Phase.
3) M. Norbaev, PIU for WI. In accordance with adopted regulations and programs on water savings, the areas under drip irrigation should be increased for 20%. We should deal with those issues.
4) N. Khudayberdiev, Podshaota – Chodak ISA. Proposal on mud flow storage is really necessary, it should be further developed and included in Phase-III. While preparing Feasibility Study several options of technical arrangements were submitted for consideration, including on introduction of drip irrigation on the area of 2000 ha. Though, in accepted option only 100 ha are planned for drip irrigation, but also other important technical arrangements are included.

Q7: I. Nazrullaev, Chief Specialist of Naryn-Syrdarya BISA. What mechanisms of compensation are envisaged in the project within land acquisition plan for damage to state buildings?

R7: Y. Asminkin. The prepared within social assessment Resettlement Policy Framework envisages mechanisms of compensation for all possible impacts, related to temporary and permanent land acquisition, and described all possible categories of citizens, entrepreneurs, farmers and etc., that have the right for damage compensation, in case if there is any. Usually, according conditions of loan agreements, any damage to state ownership is removed by the state itself and is considered as its contribution to the project. No damage is envisaged within that project to state owned buildings.

2. Subproject Savay - Akbura
May 13, 2015 Andijan **Naryn – Karadarya BISA**

Q1: A. Kholmatov, Chief Specialist, Naryn-Karadarya BISA. The project includes complex of technical arrangements on reconstruction of irrigation canals and structures. How the works will be carried out in water protection areas along canals?

R1: G. Khasankhanova. All the works and project arrangements on reconstruction of main and interfarm canals and structures will be carried out in accordance with approved construction norms (SNIIP) and requirements of State Committee on Nature Protection (Goscompriroda). Ecological types of works will be included into Contractor's contracts during the period of construction and operation of infrastructure objects, the PIU will carry out supervision for observance of requirements and monitoring of project works execution.

Q2: A. Mirzaakhmedov, Head of hydraulic section Savay-2. Great deal of work had been done on environmental assessment of project arrangements, aimed at reconstruction of main and interfarm canals and structures. On-farm structures also need reconstruction. What types of works will be carried out at on-farm level?

R2: G. Khasankhanova. The project does not envisage reconstruction of on-farm network. Though, on the component «System Modernization» for the first time they will introduce the technology of SCADA system in order to increase efficiency of operation and for monitoring of discharge at main hydrotechnical structures. Also the support will be provided on WCA strengthening (equipment, measuring devices, vehicles) and improvement of on-farm water use by introduction of drip irrigation systems and other arrangements.

Q3: A. Mirzaakhmedov, Head of hydraulic section Savay-2. Will new canal be constructed?

R3: M. Norbaev, PIU for WI. No, the project envisages canal rehabilitation.

Q4: S. Kasymov, First Deputy Khokim of Bulakboshi district. When the project will start and how long is its duration? How water will be allocated during the period of construction?

R4: M. Norbaev, PIU for WI: The duration of the project is 7 years. The works will be carried out during non-irrigation period.

R4(2): M. Yakubbekov, Head of Savay-Akburasay ISA. During the period of consdtruction temporary bypass canals will be constructed.

Q5: G. Bqakirov, Department Head of Savay-Akburasay ISA. Are there any ways to help WCA in construction of Djalal – Kuduk canall?

R5: Sh. Ergashev, First Deputy Head of Naryn-Karadarya BISA.: No. It is necessary to look for own possibilities.

Q6: M. Yakubbekov, Head of Savay-Akburasay ISA. This project is very important and necessary for farmers and population served by Savay-Akbura system. My question is concerning trees along canals, should they be cut during the period of construction and operation?

Q7: A. Mirzaakhmedov, Head of hydraulic section Savay-2. Will the project compensate cutting trees along Savay canal?

R6,7: Y. Asminkin. According OP 4.12 the loss of any types of plantings, buildings and etc., the owner of which can be detected, is subject to unconditional compensation, even if such type of buildings and plantings have been produced against the legislation of the Republic of Uzbekistan in «red» areas of irrigation systems alienation.

Q8: Sh. Ergashev, First Deputy Head of Naryn-Karadarya BISA. Will it be taken into account dismantling/removal of productive structures along canals ?

R8: Y. Asminkin. Yes, damage to any structures, including located in canal protection area and belonging to private persons or enterprising structures will be completely compensated. As I have already said during presentation, one of the key tasks, including for specialists

involved in resettlement plans preparation, is the selection and proposal of options envisaging minimal impact on citizens ownership.

Q9: Sh. Ergashev, First Deputy Head of Naryn-Karadarya BISA. Resettlement of households will be compensated from project funds or that will be done by the state?

R9: Y. Asminkin. Resettlement Policy Framework envisages that all funds necessary for compensation of any type of damage will be put in project budget. The World Bank envisages special and obligatory for any project mechanisms for information of persons that will be subject to impact, on expected impacts and mechanisms for compensation of damage. All terms for carrying out such work on information are fixed in the document of Resettlement Policy Framework.

The following persons participated in discussions:

1) G. Bakirov, Savay-Akburasay ISA, Head of Department. We are thankful to you for the work done and replies to the questions, regarding issues on land acquisition and compensations. That project is rather necessary to all water users. Current problems related to deterioration of irrigation canals and structures, wear and tear of equipment and water shortage limit possibilities of ISA on promotion of irrigation services, operation and maintenance of infrastructure. All farmers, households and WCA personnel should be familiarized with rules and procedures on land acquisition and order of compensation.

2) Sh. Ergashev, First Deputy Head of Naryn-Karadarya BISA. Today we familiarized with results of environmental and social assessment, that will help us in the work with rural communities and public organizations of our province. It is necessary to publish urgently in local newspapers and magazines information about objectives and tasks of the Project FVWRM, Phase-II, about results of environmental and social assessment, discussed at consulting workshop, in order all citizens are informed about the project and can apply to us with all questions.

3) Y. Asminkin. We would be very thankful if the local authorities could publish information of such type for familiarization more broad number of specialists, farmers and dekhkans about forthcoming Project. From our side we are ready to submit all necessary information for press release.

3. Subproject Isfayram - Shakhimardan
May 14, 2015 Ferghana Syrdarya – Sokh BISA

Q1: J. Madyarova, Kuvasay Khokimiyat /rural gathering of citizens Paskhona. Thank you very much, I was listening to you very attentively. The project is needed for everybody, the major part of agricultural produce is in our district, water shortage is the main problem, orchards vineyards and other crops are drying without water. Will the borewells for irrigation be built in Kuvasay?

R1: G. Khasankhanova. The project envisages construction of 138 new borewells for irrigation, there location is shown on the map of my presentation. Within Feasibility Study general requirements in additional borewells had been revealed, their justified location on project territory, including Kuvasay town, will be carried out at the stage of project detail design.

Q2: Kh. Shukurova, Chairman of Rural Gathering Advisor of Logon village on female issues. WE have another problem. Our village faces the problems of impoundment and groundwater

level raising due to excess irrigation on upper located areas. Why groundwater is not derivedоды? What should be done in order to improve living standards for population?

R2: M. Norbaev, PIU for WI. The arrangements to combat impoundment, waterlogging of territories due to excess water use on upper located areas are carried out by Syrdarya-Sokh BISA subdivisions and khokiniyat of Ferghana region with support of specialized departments and Amelioration Fund. Within Phase-I of the subject project they carry out complex of technical arrangements for derivation of waste water by construction of interceptor collectors and drainage. Implementation of those measures will improve the situation and will remove risks of impoundment in your village and adjacent to it areas.

Q3: Y. Akhrorov Head of Isfayram-Shakhimardan ISA. How the cost of cut trees and demolition of premises/structures will be compensated?

R3: Y. Asminkin. Cost of premises subject to demolition will be established on the basis of employed by Goszemgeocadastre bodies independent evaluation organizations, which should carry out evaluation of structures cost according market prices. Compensation of trees cost will be carried out on the basis of calculations, that include type of each tree, its age, terms of fruiting, yields and incomes obtained for the last 3 years, and also cost on new seedlings, time necessary for the beginning of fruiting (if the plot is allocated instead of acquired one) and other factors.

Q4: S. Abduraimov. Kuvasay Water Management Department Will the cost of rehabilitation works be compensated, after the damage to reconstructed structures?

R4: Y. Asminkin. In case if Contractor brings damage to reconstructed by him objects, removal of damage will be done for the account of Contractor.

The following persons participated in discussions:

1. Tojaliev, Deputy Head of Isfayram-Shakhimardan ISA. Thank you for your work on assessment of project arrangements in Isfayram-Shakhimardan system. We were working closely with Feasibility Study specialists and teams on environmental and social assessment. We are thankful for your work and submission of final version of technical arrangements, and also measures on support of WCA and training. Reconstruction of pump station (PS) Isfayram and construction of PS Avaal-lagan are extremely important for improvement of water availability at upper marks and increase of farmers and rural population incomes.
2. Kholikov, First Deputy Head of Regional Administration for PS Operation. I also support all speakers and propose to put into protocol recommendation on approval of conclusions and recommendations of environmental and social assessment executed according accepted option of technical arrangements.

After completion of consulting workshops in all three subproject areas the teams of environmental and social assessment had discussions with WCA representatives, gatherings of rural citizens, BISA responsible managers and khokimiyats of project districts.

APPENDIX 3. QUESTIONNAIRE FOR HOUSEHOLDS AND FARMS

MINISTRY OF AGRICULTURE AND WATER RESOURCES OF
THE REPUBLIC OF UZBEKISTAN
FERGHANA VALLEY WATER RESOURCES MANAGEMENT PHASE-II PROJECT IN

Q1|___|___|___|

Hello! My name is _____ . We do interviews with families to learn about problems, related to water resources management in several rayons of your region. The Government of Uzbekistan and the World Bank are discussing opportunities of raising funds for improving the irrigation and drainage network along with reinforcing the capacity of agricultural producers in the Ferghana Valley. In connection with this, we are interviewing families about their needs. We give a guarantee to you that no personal information about you will ever be disclosed. All information we will get from you will be presented in a very general way only and also will be used to draw general conclusions.

Q U E S T I O N N A I R E

Questionnaire passport

Q2. Respondent's surname and name_____

Q3. Area	Savay-Akburasay …1 (Andijan)	Podshaota-Chodak ...2 (Namangan)	Isfayram-Shakhimardan. ..3 (Ferghana)
Q4. Rayon	Jalalkuduk……..1 Kurgantepa……2 Khodjaabad……3 Bulakbashi……4	Yangikurgan……5 Chartak……6	Ferghana city……7 Ferghana district……8 Kuvasay……9 Altyaryk……10 Tashlak……11 Kuva……12

Q5. Rural Assembly of Citizens _____ |__|__|

Q6. Makhalla _____ |__|__|

Q7. City/Village name_____ |__|__|

Q8. City……1 **Village/semo-urban** …… 2

Q9. Household address (street, block, house/apartment):

_____

Q10. Quota

Randomly sampled household 1
Randomly sampled HH of a private farmer 2
HH of a Private Farmer - quota selection 3

Q11. Interviewer's surname and name: _____ |__|__|

Q12. Date of interview: |____| **December 2014r.**
Q13. Supervisor |__|__|
Q14. Coder |__|__|
Q15. Operator |__|__|

A.FAMILY

Before we start our interview, I would like to explain the exact meaning of the word "household", which we are going to use often during our conversation. I mean that household is made of people who live permanently in your house and share your household expenditures, at least those related to nutrition.

Please name all members of your family, including small children, and also those who live in your house and share his or her income and expenditures with you. Please start from yourself.

INTERVIEWER: FILL THE TABLE STARTING FROM THE RESPONDENT

Order number	**Name**	Gender 1 – male 2 – female	Age (as at the last birthday); children under 1 YEAR OLD = 0	*EDUCATION* **Adult** 1 - did not completed school (no any certificate) 2 - basic secondary education (7-9 forms) 3 - complete secondary education (10-11 forms) 4 - completed specialized secondary, vocational education (vocational technical school, specialized vocational technical school, technical college, lyceum, college) 5 - completed higher education and postgraduate education, etc. **Children and schoolchildren** **6**- preschool-age child **7** – child under 16 years old, who neither studies, nor works **8** – schoolpupil **9**-student of college, lyceums **10-** student of a higher educational establishment (fulltime student)	**Basic occupation** 1- preschool child 2 –school student 3 - child under 16 years old, who neither attend educational establishments, nor have employment, including due to disablement 4- student of college, lyceum, student of a higher educational establishment or postgraduate student (fulltime student) **Has permanent hired official/registered employment (including those who are on maternity leave):** **5 - in the agricultural sector, on private farm plot, including those belonging to the household, and on shirkat's plots** 6 - in the non-agricultural sector, at private and state-owned enterprises, including family business 7-budgetary establishments (healthcare, education, administration, enforcement institutions, etc.) **Owning registered private business:** 8 – patented registered business in the non-agricultural sector 9 – registered as legal entity in the non-agricultural sector 10- owner of a private farm plot **Self-employed, mardikors (day-laborers), hired workers without labor contracts, labor migrants, assisting family members** 11-an unregistered business in the non-agricultural sector including resale of livestock without fattening 12-mardokors in the non-agricultural sector (construction, etc.) 13- employed in tomorka (garden plot)/dehkan farm, belonging to the family, including feeding livestock for resale 14-- employed in tomorka, but consider himself/herself as unemployed 15- employed unofficially in shirkat or private farm (including those belonging to the family member); mardikors in the agricultural sector 16- labor migrants absent from home for work in other regions of Uzbekistan or abroad **Unemployed** 17 – Officially registered as an unemployed person 18 – Unregistered unemployed, seeking employment and ready to accept employment immediately **Other categories** 19 – Unemployed and do not seek employment for any reason excluding disabled persons and pensioners 20 – Retirement and superannuation pensioner (working or not-working) 21 – Disabled adult of 18+ years old , registered with social security authorities (working or not working)
A1.		**A2.**	**A3.**	**A4.**	**A5.**
1					
2					
3					
4					
5					
6					
7					
8					

A6. Who is the head of your household?
No. OF PERSON FROM COLUMN A1 OF THE TABLE _____

A7. Who is ethnically the head of your household?
Uzbek 1
Kyrgyz 2
Tajik 3
Slavonic 4
Other (FILL IN) _____

A8. Who of the following live in your household …

		No of people
1	Disabled children under 18, registered with the social security authorities	
2	Elderly persons and disabled registered and not registered with the social security authorities, requiring permanent care (who need help for eat, bathe and to visit the toilet, dress, move, suffers mental requiring permanent care)	
3	How many women in the family who have at least one child under 2 years old? (DO NOT FILL IN THOSE WITH 2+ YEARS OLD)	
4	Single mothers with children under 18	
5	Mothers having 5 or more children	
6	Over 65 years old pensioners	
7	Single elderly (ALONE AT THIS HOSEHOLD!)	
8	Beneficiaries of makhalla allowance to low-income families	
9	Beneficiaries of makhalla allowance to families with 2-14 years old children	
10	Beneficiaries of makhalla under 2-year-old child benefit	
11	Breadwinner-loss pension /allowance beneficiaries	
12	The long-term unemployed (females at the age of 18-54 and males of 18-59 who unsuccessfully had been looking for a job for 12+ months)	

A9. How many hours a day does the caring of the elderly/sick members usually take?
_____hours
No sick/elderly family members (A8.1 and A8.2 =0) **= 0 hours**

B. HOUSING AND PROPERTY

B1. What kind of housing is one where the interview is taking place?
Private house of a detached-dwelling type 1
Separate apartment in a multi-storey apartment house/ cottage 2

B2.Are the following utilities available in the house/apartment where you live?

		Yes, it is available and operating	**Yes, it is available, but irregular**	**Yes, it is available, though not functioning**	**No, unavailable at all**
1	Centralized water supply	1	2	3	4
2	Centralized sewerage	1	2	3	4
3	Electricity	1	2	3	4
4	Centralized gas supply	1	2	3	4

B3. How many days within the last 7 days water was available in the pipeline, at least for short period of time?_____ days (0→B5)

B4. How many hours a day on the average there was water supplied in the pipeline within the last 7 days?_____ hours 99 – N/A

B5. Where do you get water for bathing and laundering needs?
MULTIPLE ANSWER OPTIONS ARE POSSIBLE

B6.Where do you get water for drinking and cooking needs?
MULTIPLE ANSWER OPTIONS ARE POSSIBLE

	B5. Bathing and laundering	B6. Drinking and cooking
From water supply pipe in own house, in the yard of the house	1	1
From public standpipe in the street/ at neighbors	2	2
From hand-pumped standpipe in the yard	3	3
From a borehole equipped with an electric pump	4	4
From a well, self-infiltrated with ground water, located in the yard of own house	5	5
Buy from a water vendor	6	6
Bring water themselves from water reservoir, water pump station	7	7
From a public khauz (pool water storage)	8	8
From rivers, canals, ditches, lakes	9	9
From a spring	10	10
From a drainage canal	11	11
others (SPECIFY)		

B7.Now, I'd like you to listen to a list of problems other people in your rayon reported having. Please, tell me whether or not you consider each of the following as a serious issue of your settlement. READ OUT THE LIST AND CIRCLE THE ANSWERS

Destruction/damage of houses and outbuildings caused by high levels of ground water..... 1
Destruction/damage of houses and outbuildings caused by soil salinity..... 2
Destruction/damage of houses and outbuildings caused by mudslides 3
Destruction/damage of houses and outbuildings caused by erosion of a river/reservoir bank 4
None of listed..... 5

B8. Do your family members <u>own</u> any of agricultural machines or equipment in an operating condition, which I am going to read from the list? If they have, please tell me how many units of every type of agricultural machines do you have?

	Type of agricultural machinery	Number of units <u>in an operating condition</u>
B8_1.	Tractor	
B8_2.	Combine harvester	
B8_3.	Plows, seeding machines, cultivators, thrashers	
B8_4.	Mills, rice mills, milk separator	
B8_5.	Truck	
B8_6.	Car (EXCEPT FOR DAMAS, RAF et al.)	
B8_7.	Minivan (EXCEPT FOR DAMAS, RAF et al), a bus	
B8_8.	Water pump (electric or diesel) for irrigation purposes	
B8_9.	Green house	

C. POULTRY AND LIVESTOCK RISAING

C1. **Did your family have own livestock or poultry during the last 12 months? INCLUDE ALSO THOSE LIVESTOCK AND POULTRY, WHICH ARE FORMALLY KEPT WITH A PRIVATE FARM**
MULTIPLE ANSWERS ARE POSSIBLE

Yes/was on the dehkan farm or tomorka 1
Yes/was on a farm..... 2
No ..... 3→C6

C2. Which kind of livestock/poultry and how many heads did your family own in 2014?
C3. How much Sums did you receive as money income from selling all kinds of livestock and poultry products for the last 12 months? (thousand Sums)
C4. Please try to estimate how much Sums do cost all livestock and poultry products which your family consumed for the last 12 months? (thousand Sums)

		C2.Number of heads IF 0→ GO TO NEXT LINE	C3. Income (thousand Sums)	C4. Personal consumption (thousand Sums)
1.	Cows, oxen, calves, etc.			
2.	Sheep and lambs			
3.	Other livestock (horses, donkeys, goats, camels, etc.)			
4.	Poultry			

C5. Which of the following problems related to keeping livestock is your family facing?
MULTIPLE ANSWERS ARE ALLOWED

Lack of grazing land.....1
A shortage of mixed fodder and grain forage (not always available).....2
High forage and fodder prices.....3
Livestock easily gets infected on the waterlogged pastures.....4
Low quality of water used in livestock and poultry drinkers 5
Fodder crop areas are first to be reduced because of bad drainage and land deterioration 6
None..... 99 →C6
OTHER (WRITE DOWN)_____

C6. Does your family have any plot at current disposal?

Yes..... 1
None, including tomorka ..... 2 →CC1

D. HOUSEHOLD GARDEN PLOTS (TOMORKA)

D1. How many ha is the area of your household plot (tomorka) which your family owns?
_____ ha If 0→ **GO TO E1**
1 sotka = 01 ha 10 sotkas = 0.1 ha 100 sotkas =1 ha

D2. How much in total have you earned by selling agricultural crops grown on your tomorka over the last 12 months?
_____thousand Sums

D3. If you had buy the products grown on the tomorka, which your family members consumed for the last 12 months, how much would you have to pay?
_____thousand Sums

D4. Do you have enough water for irrigating your tomorka at present time?
Yes 1
No 2

D5. Is there any soil salinization or high ground water table problem with your tomorka?
MULTIPLE ANSWWERS ARE ALLOWED!
Soil salinization 1
High of ground water table 2
No .....3→E1

D6. How does lack of water along with high ground water table or soil salinization affect the productivity of your tomorka?
MULTIPLE ANSWERS ARE ALLOWED
Lack of water /high water table / soil salinization do not affect the productivity..1
Crop yields on the tomorka is decreasing 2
We have to stop growing some of the crops 3
Trees and other perennial plants die 4
Other consequences (WRITE DOWN) _____

D7. Please, estimate roughly how your annual income from the tomorka could increase if the problems of irrigation water shortage, high ground water table, soil salinity and drainage you were saying about were solved?

by_____%
99-no problems with irrigation/soil salinization/high ground water table

E. PRIVATE FARM PLOT

E1. How many ha is the total area of private farm plot which is used by your family at present time?

_____ Ha If 0→ GO TO F 1

E2. Farm specialization

Crop farming.....1
Gardening 2
Livestock farming.....3
Other (WRITE DOWN)_____

E3. Where is your private farm plot (mostly) located against the canal/river, from which the plot is irrigated?

Upstream 1
Midstream 2
Downstream 3
The plot is watered not from canal/river (or rain-fed land).....4

E4. Please, list all agricultural crops you grew on your private farm plot in 2014.
E5. How many ha was the area for each crop?

Circle	E4. Crops	E5. Ha
1.	Cotton	
2.	Wheat	
3.	Rice	
4.	Corn	
5.	Potato	
6.	Other vegetables	
7.	Lucerne	
8.	Other forage	
9.	Melons	
10.	Grapes	
11.	Fruit	
other		
other		

E6. How many people worked for your private farm in total in 2014?
E7. Please, remember the amount of man-months the workers generated?

		E6. People	E7. Total man-months
1	Permanent workers hired officially and unofficially (without a contract) including the head of the farm		
2	harvesters hired by the farmer (excluding permanent workers)		
3	people sent to a farm by local authorities to help with the harvesting		
4	others, including day-laborers, part-time workers for weeding, planting, etc.		

E8. Do you find the people who are re-directed from non-agricultural sector to your farm as cotton harvesters any helpful and productive? MULTIPLE ANSWERS ARE ALLOWED EXCLUDING ANSWER 1

No cotton field on the farm 1
Yes, because I cannot do without the extra workforce which can be replaced only with machinery, combine harvesters, for example.....2
Yes, as such helpers are much cheaper than the workers I hire by myself 3
No, as such workers generate problems rather than help harvest 4
Other (WRITE DOWN) _____

E9. **Please try to remember how much Sums IN TOTAL did you spend for the private farm within the last 12 months, including cash and in-kind payments, informal payments, buying seedlings, seeds, fertilizers, salaries etc.?**

E10. How much Sums do you still have to pay to service providers, creditors, etc.?

PUT CODE 999 INTO THE FIRST ROW IN CASE THE PLOT HAS BEEN OBTAINED RECENTLY AND NO MONEY SPENT ON IT SO FAR

	Types of expenditure	**'000 UZS**
E9.	Total expenditure over the last 12 months	
Out of which on:		
1.	Payments of WCA services	
2.	Maintenance, construction and repair of the irrigation system, including pumps, electricity and payments to workers	
3.	Maintenance, construction and repair of the drainage system, including pumps, electricity and payments to workers	
E10.	Total amount of the debts of the private farm to service providers for the last 12 months. How much more, in Sums, do you still have to pay?	

E11. Please, remember the amount of income you earned/had expected from the farm over the last 12 months including the money incomes and the cost of products your family members have consumed?

PUT CODE 999 INTO THE FIRST IN CASE THE PLOT HAS BEEN OBTAINED RECENTLY AND NO MONEY SPENT ON IT SO FAR

	Types of income	**Amount, UZS '000**
1	The income from the sale of agricultural products raised and harvested by the farm in the past 12 months,	
2	The value of agricultural products raised and harvested by the farm in the past 12 months; the products have not been yet either sold or paid for	
3	The value of agricultural products raised and harvested by the farm in the past 12 months**;** the products were consumed by the family	

IRRIGATION AND DRAINAGE ON THE PRIVATE FARM PLOT

E12. How many ha is the area of IRRIGATED land of your private farm plot? _____ha
"0" = rain-fed land, no irrigated land → GO TO WCA1

E13. Which source do you largely use to irrigate this plot?
NOT MORE THAN 2 ANSWER OPTIONS ARE ALLOWED
From irrigation canal, flume 1
From drainage canal 2
From river, lake 3
From a borehole 4
Other sources for irrigation (WRITE DOWN) _____

E14. Which of the following possesses the pumps used on the plot?
MULTIPLE ANSWER OPTIONS ARE ALLOWED EXCEPT ROW1!
No pumps; gravity irrigation ..... 1→**E16**
The farm 2
The WCA 3
Other (write down)_____

E15. Which of the following pays for electricity used by the pumps?
MULTIPLE ANSWER OPTIONS ARE ALLOWED!
The farmer 1
The WCA 2
Other (write down) _____

E16. Do you believe you are provided with enough water for irrigation, or the amount is insufficient/abundant?
The exact amount of water my farm's irrigation takes 1
The amount exceeds the actual needs 2
The amount is insufficient 3

E17. Was any repair and cleaning work done on irrigation canals, flumes and aryks, on you private farm plot within the last 12 months?
Yes, it was done 1
No it was not done, though it was necessary 2
No it was not done, and it was not necessary 3

E18. Was any repair and cleaning work done on the drainage canals and borewells on you private farm plot within the last 12 months?
Yes, cleaning only 1
Yes, repair only 2
Both repair and cleaning ..... 3→ **E20**
No, it was not done, though it was necessary 4
No it was not done, and it was not necessary ..... 5→ **E20**
There is no drainage system ..... 6→ **E20**

E19. Why hadn't any repair/cleaning work been done on the drainage system
MULTIPLE ANSWERS ARE ALLOWED

Lack of necessary funding..... 1
Lack of necessary machinery..... 2
Other (WRITE DOWN)

E20. Was any soil washing done within the last 2 years (autumn of 2012-2014) on your private farm plot?

Yes, it was done..... 1
No, it was not done, though it was necessary..... 2
No it was not done, and it was not necessary 3

E21. Was any land leveling done within the last 3 years (2012-2014) on your private farm plot?

Yes, it was done..... 1
No, it was not done, though it was necessary..... 2
No it was not done, and it was not necessary 3

E22.Is there any soil salinity or high ground water table observed on your plot? What's the affected area in ha?

MULTIPLE ANSWER OPTIONS ARE ALLOWED !

1. Salinized lands, area_____ (Ha)
2. High ground water table, area _____ (Ha)

No soil salinization / high ground water table .....99→**E26**

E23.What's the total area of disused land due to salinity and high water-table _____Ha

If the whole area of the plot is used, write down "0"

E24.How does high water-table level/salinity along with lack of water affect crop yields on your private farm plot?

MULTIPLE ANSWERS ARE ALLOWED

The high water-table level/salinity along with lack of water does not affect crop yields 1
Crop yields are decreasing..... 2
We have to stop growing some of the crops 3
Trees and other perennial plants die 4
The area of pastures is decreasing..... 2
Other consequences (WRITE DOWN)

_____

E25. Please, estimate roughly how your annual income from the private farm plot could increase if the problems of water shortage, ground water, salinity and drainage you were saying about were solved?

by_____% 99-no problems with irrigation /soil salinization/ground water table

E26. Let us talk about how much of irrigation and drainage networks need to be reconstructed or constructed on your farm plot in order to reduce the problems of water supply, water loss and drainage.

		The assumed area ,ha
1	Reconstruction/repair of the irrigation network	
2	Construction of the new irrigation network	
3	Reconstruction/repair of the drainage network	
4	Construction of the new drainage network	

WCA. THE PERFORMANCE OF WCAs

WCA1. Are you a member a WCA?

Yes.....1
No .....2→ F1

WCA2. Are you satisfied with the performance of your WCA?

Yes, fully 1
Yes, partially 2
No, I am not 3

WCA3. Have you taken part in making a decision on any of the following questions?

READ OUT THE LIST AND CIRCLE THE ANSWERS

The approval of the Articles of Association / WCA Charter 1
The approval of the staff and salary net of the Association 2
Discussing the work plans of the WCA 3
Discussing the results/performance of work done by the WCA 4
Discussing the spending patterns of the WCA 5
Discussing the terms of contract signed by water users and the WCA 6
The distribution of water among the users 7
The schedule/ order of priorities of the irrigation sessions 8
The approval of tariff and pricing policy of the WCA 9

WCA4. Do you consider your WCA's performance effective?

		Effective	**Not effective**	**D/K**
1	The planning of water consumption	1	2	3
2	Distribution of water between farmers	1	2	3
3	The supply of agreed amounts of water	1	2	3
4	The fair control over the amounts of supplied water	1	2	3
5	The observation of agreed turns in irrigation sessions	1	2	3
6	Timing of the supply of water	1	2	3
7	Control over the timing of the water supply	1	2	3
8	Cleaning/repair of the irrigation networks	1	2	3
9	Cleaning/repair of the drainage networks	1	2	3
10	Promoting of water users' interests at governmental and administrative bodies	1	2	3
11	Countering water thefts	1	2	3
12	Resolving conflicts between users	1	2	3

WCA5. In your opinion, whose interests WCAs promotes mostly?

ONE ANSWER OPTION ONLY!

All water consumers'/ both dehkans' and farmers' 1
Farmers' only.....2
Dehkan farms' only 3
The state's.....4
Own WCA's only 5
A WCA is unable to promote one's interests as in lacks influence 6
Other (WRITE DOWN) _____

WCA6. Which of the following do you believe should be done primarily in order to improve the capacity of WCAs?

NO MORE THAN 5 ANSWERS ALLOWED

Setting water meters and regulating equipment in the territory of the WCA 1
Providing WCAs with machinery for hydro-ameliorative works on credit 2
Providing WCAs with computers and software.....3
Providing WCAs with transportation means 4
Offering credits to WCAs on immediate cleaning/construction of interfarm irrigation/drainage networks 5
Offering credits to farmers on establishing water meters and regulating equipment.....6
Vocational training provided to WCAs' staff.....7
The training of farmers on agrotechnology including water saving technologies.....8
Legal aid provided to WCAs.....9
Legal aid provided to farmers working with WCAs 10
Involving more people into the association to cover all water consumers 11
Involving farmers, dehkans and other consumers into water use management and control over the activities of WCAs. 12
Creating of the mechanism of charging dehkans and other water consumers 13
Other (WRITE DOWN) _____

F. OTHER LAND PLOTS AND PROBLEMS OF ALL AGRICULTURAL PRODUCERS

F1. Does your family have any other land plots, which you use for agriculture, along with your tomorka and private farm? How many ha is the area of this land plot?

	PUT 999 IN ROW1 – IF THERE IS NONE OF THE PLOTS GIVEN BELOW → **F4**	**F1. Area of plot** (ha) 1 sotka = 01 ha 10 sotkas = 0.1 ha 100 sotkas =1 ha
1	Dehkan plot (not near the housing for growing agricultural products)	
2	Plot will be used for constructing a new house; is being used for agriculture	
3	Other (a countryside cottage/"dacha", a plot sub-rented from a farmer)	

F2. Please, remember the amount you earned by selling all agricultural products grown on all these plots over the last 12 months.

_____UZS,'000

F3. If you had to buy everything produced on your plots mentioned above which your family consumed over the last 12 months, how much you would have to pay?

_____UZS,'000

F4. Please, point out major problems you find typical of all agricultural producers. Tell me which of the following describe your tomorka or farm plot's problems.
MULTIPLE ANSWERS ARE ALLOWED. READ OUT THE LIST

Poor condition of irrigation system 1
Shortage of water in the irrigation system 2
Poor ameliorative condition of land 3
Plots are too small 4
Shortage of and low quality of seeds and plants 5
Breakdown/cut-off of electricity supply for agricultural purposes (for pumps etc.) 6
I am lacking in training and knowledge 7
Lack of information on new technologies, markets, new better kind of seeds, insecticides, etc. ... 8
High forage prices 9
A shortage of necessary type of forage 10
Lack of pastures 11

Codes for farmers only

Poor condition of drainage network; no such network 12
Poor performance of WCAs regarding the distribution of water 13
No precise metering of amounts of water supplies on the plots 14
High fertilizers prices in specialized governmental stores ('Agrochemistry') 15
Shortage of key fertilizers in Agrochemistry 16
High prices for chemicals in Agrochemistry 17
A shortage of key chemicals in Agrochemistry 18
A shortage of agricultural machinery available on local leasing stations (MTPs) 19
High lease payments on the agricultural machinery in MTPs 20
Lack of affordable leasing schemes 21
A shortage of fuel in specialized storages 22
Limits on import/export activities 23
High transportation costs 24
Lack or poor performance of local storage units and processing enterprises 25
Lack of storage space for the product 26
High taxes 27
Lack of financial resources 28
Difficulties with free utilization of money received as governmental 'tranches' for the production of cotton and wheat under state order 29
Untimely transaction of money on the 'tranches' 30
Low prices for cotton and wheat under state order 31
Overdue payment of the products ordered by the state 32
Bans on planting other crops instead of cotton 33
High unofficial payments (bribes) to officials' 34
Other (WRITE DOWN) _____

F5. Please tell me what should be done to make farming more profitable?
NO MORE THAN 3 ANSWER OPTIONS ARE ALLOWED
Crops, which give a better harvest on our land, should to be cultivated 1
Land plots of larger area should be allocated 2
Drainage systems need to be put in order 3
Irrigation systems need to be put in order 4
There should be more irrigation water 5
Higher purchase prices for agricultural products produced under the state order should be set 6
Additional privileges should be given to farmers 7
Opportunities of selling agricultural products should be ensured for farmers 8
Conditions of storing and processing agricultural products should be ensured 9
Opportunities of receiving credits should be provided for farmers 10
Other (WRITE) _____

CC. COOPERATION AND ATTITUDES TOWARDS THE PROJECT

CC1. **Do your family members cooperate with neighbors, co-villagers, private farmers or residents of neighboring villages/kishlaks to solve these problems together?**
READ OUT THE LIST. MULTIPLE ANSWERS ARE ALLOWED
cleaning/repair of drainage systems 1
cleaning /repair of irrigation canals 2
purchase /repair a pump for watering 3
herding cattle 4
buying seeds, fertilizers, fuel 5
selling agricultural products 6
joint use of agricultural machinery 7
distribution of water among the land plots 8
Other (please, specify) _____

CC2. Did disputes/conflicts over irrigation water take place often in 2014?
Never 1
Yes, but very seldom 2
Yes, quite often 3

CC3. Have you ever heard or seen any disputes/conflicts over improper maintenance/cleaning of drainage systems and canals in your area? If there are, how often?
Never 1
Yes, but very seldom 2
Yes, quite often 3

CC4. Which of the following do you believe the disagreements over improper maintenance/cleaning of drainage systems and canals take place most frequently?
NOT MORE THAN 3 ANSWER OPTIONS ARE ALLOWED
Between Rayselvodkhoz officials and private farmers 1
Between Rayselvodkhoz officials and WCAs 2
Between officials and residents of the settlement 3
Between WCAs and farmers 4
between WCAs and dehkans 5

between upstream and downstream farmers 6
between neighboring farmers 7
between farmers and dehkans 8
between neighboring kishlaks/makhallas 9
Other (SPECIFY) _____

CC5. Has the number of such conflict cases changed in 2014 in comparison with that of 2013?

increased 1
decreased 2
has not changed 3

CC6. Have you heard of repair/reconstruction of irrigation/drainage network project that the Government of Uzbekistan and the World Bank plan to implement in your district?

Yes..... 1
No 2

CC7. To which degree do you believe such repair/reconstruction activities are necessary and well-timed? ONLY 1 ANSWER!

The work needs to be done urgently 1
The work can be done after more urgent problems are solved 2
I think that the drainage/irrigation network do not need repair and rehabilitation 3
I do not know, I cannot say anything about this 4

CC8. Which of the following will change due to the successful implementation of such repair/reconstruction of the network?

READ OUT THE LIST. MULTIPLE ANSWERS ARE ALLOWED**.**

Land quality will be improved 1
Private and dehkan farmers will have higher income 2
Ground water-table level on fields will decrease 3
Soil salinity will decrease 4
Crop yields will increase 5
Population migration from the area will decrease 6
Number of working places will increase 7
Damage of houses and other buildings will stop 8
Environmental situation will improve 9
Living condition of people will improve 10
People will get sick less often 11
Cattle will get sick less often 12
There will be fewer mosquitoes and other parasites 13
Nothing will change, everything will remain as it was before 14
Other (WRITE DOWN) _____

CC9. Which kind of damage or inconvenience could constructing/repairing a drainage/irrigation system cause to your family, if the work will be conducted on your plot or nearby?

MULTIPLE ANSWERS ARE ALLOWED

The area of my plot for growing crops will decrease, and the expected productivity growth will not cover the loss 1
I do the gardening, and I am afraid that I could lose trees/vineyard, the rehabilitation of which will take several years 2
Though the area of my private farm plot will decrease, and the government-order conditions will not change 3
Construction work will affect my regular sowing/harvesting activities 4
Land quality can worsen because of the construction (diesel oil, construction material wastes, machinery of large weight can damage the leveling of the plot and the soil structure, etc.) 5
My household's buildings and out-buildings can be damaged 6
Public infrastructure can be damaged (roads, pipelines etc.) 7
Private farmers or residents of settlements/towns will be involved in unpaid work or money will be collected from farmers and residents to cover the expenditure on, for example food for the workers, etc. 8
No inconveniences are expected for my family 9
Other (WRITE DOWN) _____

CC10. What kind of information would you like to get regarding the following project featutes?

MULTIPLE ANSWERS ARE ALLOWED EXCEPT ROW1

No information is needed ..... 1→ CC12
The project's plan and anticipated completion dates 2
The coverage of the plan / territories to be covered 3
Contact information of officials in charge of the implementation of the project 4
Funding sources of the project 5
Estimated costs of the introduction of new technologies/innovations suggested/developed within the framework of the Project 6
Results achieved within the framework of the Project 7
Compensation schemes which should be established to cover the losses related to resettlement, land acquisition 8
Other (WRITE DOWN) _____

CC11. Which of the following is the most convenient way for you to learn more about the project?

Television 1
Radio 2
Printed mass media 3
The official web site of the project 4
Self-governance bodies (makhallas) 5
WCAs 6
Other (WRITE DOWN) _____

CC12. Which of the following should be done by the Government to involve people in discussing plans on the improving of irrigation/drainage networks

MULTIPLE ANSWER OPTIONS ARE ALLOWED!

Publicizing the project's plans in local newspapers for the wide-scale discussion 1
Setting up a number of discussions on the issue on local television canals 2
Conduction opinion polls.....3
Providing the population with information on completed stages of the project 4
Engaging farmers, WCAs and dehkans into monitoring activities 5
Securing effective control over the expenditure 6
Other (WRITE DOWN)

_____

G. FAMILY EXPENDITURE AND INCOME

G1. How would you define your family's income?

Insufficient even to pay for food 1
Sufficient to pay for food only.....2
sufficient to cover food, clothing and utilities expenses 3
sufficient to cover various expenditure including food, clothing and utilities, entertainment, home appliances, etc. 4
sufficient to make affordable almost any expensive purchase including cars, furniture, jewelry… 5

G2. Now I am going to read out the list of some goods and services. Please, try to remember, how much in UZS did your family spend on these goods and services for the last month. If you didn't have to pay any of the following, please tell me about it.

	Expenditure ON	**UZS'000**
1.	Food bought for the family along with money spent on food elsewhere	
2.	Potable water delivery and purchase	
3.	Clothing and footwear for adults and children	
4.	Laundry agents, sanitation and hygienic goods	
5.	Electricity bills	
6.	Other utilities and property tax **EXCEPT ELECTRICITY!**	
7.	Public transport, taxies and minivan taxies	
8.	Education/school supplies, textbooks along with contributions to school funds; tutors and courses taken to get in to higher educational institutions, etc.	
9.	Medication, and the service of doctors and nurses	
10.	Repair, construction of the house including the purchase of materials	
11.	Expenditures for dehkan and garden plots including expenditures for livestock and poultry **DO NOT INCLUDE EXPENDITURE DONE ON PRIVATE FARMS!**	
12.	Other (durable goods, wedding ceremonies, tableware, etc.)	

G3. Tell me please, how much, in sums, was the cash and in-kind income of all your family members <u>for the last month,</u> including salaries, pensions, social benefits, stipends, income from entrepreneurial and agricultural activities and all other types of income?

	Income types	**UZS,'000**	
1.	Sale of own agricultural products, including livestock products grown on the family's dehkan plot		
2.	Sale of own agricultural products, including livestock products grown on the family's private farm plot		
3.	<u>Non-agricultural entrepreneurship activity (including resale of agricultural products originated by other producers)</u>		
4.	Makhalla benefits for low-income families		
5.	Makhalla-distributed child benefits for families with 2-14 year-old children		
6.	Makhalla-distributed child benefits for families with under 2- year-old children		
7.	All other benefits (unemployment benefit, stipends, sick leave payments, child benefit paid by employers, etc.)		
	Income types	**A. Men** UZS,'000	**B. Women** UZS,'000
8.	Hired work in the agricultural sector (employment in shirkat, dehkan and private farms, which do not belong to the family, income of agricultural onetime workers – mardikors)		
9.	Hired work in the non-agricultural sector (enterprises, organizations, firms, including non-agricultural mardikors)		
10.	Old-age and superannuation pensions		
11.	Disability pensions (with a required record of employment)		
12.	Breadwinner-loss pensions		
13.	Money sent/brought by family members employed somewhere else as labor migrants		
14.	Other		

Thank you very much for your participation in the interview!