



Responsible Land Governance: Towards an Evidence Based Approach

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TRACKING IMPACTS OF TAJIKISTAN LAND REFORM ACROSS MULTIPLE PROJECTS, DONORS AND DISTRICTS FROM 2006-2016 USING A COMMON CORE OF SURVEY QUESTIONS AND FIELD METHODS

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Abstract

Title: Tracking Impacts of Tajikistan Land Reform Across Multiple Projects, Donors and Districts from 2006-2016 Using a Common Core of Survey Questions and Field Methods

This paper utilizes a series of four major project survey evaluations undertaken across a 10-year period to track key impacts of country-wide land restructuring in Tajikistan. Each survey of more than 1200 scientifically selected farm households by different donors including the World Bank, USAID and DFID included the same set of core questions and enough of the same regions and districts so that longer-term impacts could be followed over time. Cross-project collaborative leadership, careful planning and cooperation, and care in preserving and maintaining datasets made it possible to examine impacts of land reform in key geographic areas, as well as across the country in general. Key impacts identified include: (1) Most of the agricultural farmland has been restructured into plots of less than 5 hectares; (2) Farmers increasingly make their own independent farming decisions (freedom to farm); (3) farmers are investing more money and labor in their farms, and agricultural production and income are increasing; (4) The average number of crops grown has more than doubled over time, with significant increases in fruits and vegetables; (5) Farmers report eating more fruits and vegetables when they are produced on the farm; (6) Some land reform impacts on women have been negative.

Key Words: Impacts, Land Reform, Gender, Survey Methodology, Tajikistan



Introduction

The full impacts of land reform projects are challenging to monitor and measure because they tend to unfold over a long period of time and involve assessments not only of household well-being and production, but also longer term agricultural sustainability and adaptation to global climate change. Further complicating assessments is the fact that across time a number of different agencies can often be involved, each of which may be operating in different geographic areas and with their own methods for evaluation. This paper utilizes a series of four major project evaluations—each of more than 1200 scientifically selected farm households—undertaken across a 10-year period (2006 to 2016) in Tajikistan by different donors including the World Bank, U.S. Agency for International Development (USAID) and the Department of International Development (DFID) that included the same set of core questions and enough of the same regions and districts so that longer-term impacts could be followed over time. Cross-project collaborative leadership, careful planning and cooperation, and care in preserving and maintaining datasets over time made it possible to examine impacts of land reform in key geographic areas, as well as across the country in general.

The purpose of the paper is to examine a broad range of impacts that the land reform and changes in land use rights have had on farmers in Tajikistan. While no attempt was made to assess all possible impacts, the paper examines a number of key impacts that would be useful to policymakers and donors who have invested in the land reform over a long period of time. Impacts examined in the paper include:

- **Trends in types of farms.** The land reform divided large collective farms with a hundred or more shareholders into smaller “family” or “individual” dehkan farms, granting certificates confirming long-term inheritable rights to specific pieces of land identified by GPS coordinates and registered with the government. Analysis examined the progress that has been made in creating new farms over time.
- **Freedom to Farm.** Under the Soviet central system, farmers were told by local authorities what to plant, and every step was supervised. One key impact of the reform was to empower farmers to make their own decisions about every step of the process. Analysis examined the extent to which farmers truly make their own decisions now.
- **Increases in Farm Investment.** One expectation from the reform has been that if farmers receive long-term rights to land, they will begin to invest in it to increase value-added crops. Analysis examined trends in farm investments over time.
- **Increasing Crop Diversity.** The baseline survey in 2007 showed that most farms were producing only one crop – either cotton or wheat. This was due in large part to national and



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local quotas mandating growing these crops. Under a market system, farmers could grow whatever crops they wanted, and could diversify to help ensure income even if one crop failed to deliver a profit.

- **Improved Food Security and Nutrition.** When farmers can make their own decisions about crops, it was expected that they would increase the growing and consumption of foods needed by the household. (This is in addition to food already grown on small “household” or “kitchen” plots that farmers manage in addition to their family or individual farms). Analysis focused on whether or not there has been an increase in production of fruits and vegetables, and whether these crops add to the food security of households growing them.
- **Increases in Household Income.** A 16-item household possessions index repeated in all four surveys was used as a rough indicator of household economic prosperity. If households are benefitting economically from land restructuring, this should show up in terms of purchases of household items such as cars, color TVs, mobile phones and washing machines.
- **Awareness of Climate Variability and Change.** Several of the surveys included a cluster of questions designed to assess the seriousness of a range of environmental problems farmers might face. In addition, focus groups also provided specific examples of the types of environmental problems encountered by farmers after receiving their plots of land.
- **Challenges for Women.** In most rural areas, men and women both worked on the large collective farms prior to the land reform. Given that Tajikistan is a traditional society in which much power goes to the senior male head of the household, how did women fare as a result of the land reform process? Both survey and focus group results were analyzed to assess impacts on women.

Until its independence from the Soviet Union in the early 1990s, Tajikistan’s agricultural system mirrored the Soviet model of centrally managed large state or kolkhoz farms producing crops according to a national plan. In the irrigated lowlands, cotton production was emphasized. In the highlands, wheat and livestock production were most important. Following independence, a years-long civil war erupted. By the late-1990s, with the civil war and collapse of central support of agriculture, the needs of the rural economy were largely neglected with little or no investment in equipment, new seed varieties, extension services and maintenance of the irrigation system. As a result agricultural productivity plunged, and land degradation intensified as a major environmental challenge.

Following the collapse of the central system, a decision was made to privatize land use rights in 1992, and was extended in 1996 to provide individuals and families with the opportunity to reorganize the



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state and collective farms into “dehkan” farms with former workers as shareholders. In 2003, the World Bank launched a pilot restructuring 10 collective/state farms. Results suggested that after receiving certificates, farmers doubled production of cotton and other crops, while collective farms did not increase yields or income (World Bank, 2004). Subsequently, both the World Bank and USAID assisted the government of Tajikistan to develop legal and administrative procedures plus modern computerized methods of land registration. Both donors then launched separate projects to stimulate farmland restructuring. USAID’s Land Reform and Market Development Project beginning in 2006 emphasized the mass education of shareholder farmers on collective/state farms so they could demand their own piece of land with rights to farm it as they wished (World Bank, 2005). The USAID project also introduced legal aid centers designed to protect farmer rights as well as providing information. The World Bank Land Registration and Cadastre System for Sustainable Agriculture (LRCSP) Project started in 2005 to support farmland restructuring with computerized methods to issue land use rights certificates to 75,000 farmers (later extended to 112,000). LRCSP also included resources to educate farm shareholders about the process, and later to support Water User Associations (WUAs) comprising restructured farms to improve water management. Other donors, including Helvetas also invested in efforts to protect the rights of farmers through legal aid centers.

Collaboration in data collection and evaluation began in 2006 when USAID and the World Bank agreed to field a common baseline survey of 1500 farm households in 15 raions of the country in February 2007 (World Bank and USAID, 2007). Core questions included types of farms created, farmers’ knowledge of their land rights, access to information, crops produced, an index of household possessions, and attitudes of farmers toward their land rights and toward farm reorganization in general. In 2011, the World Bank, USAID and DFID financed a second survey of 1800 farm households in 18 raions that included most of the same core questions as in 2007, but also included an additional set of questions designed to assess rural vulnerabilities of farmers to environmental, market, financial, labor and other problems (World Bank, DFID, and USAID, 2012). In 2014-15, a third survey of 1600 farm households in 16 raions using the core questions plus additional questions designed to assess other socio-economic impacts was conducted by LRCSP as part of its final evaluation (Government of Tajikistan, 2015). The fourth survey was conducted in May 2016 of 1200 farmers in Khatlon region for the USAID Land Reform and Farm Restructuring Project (USAID, 2016). Although it was not a national survey, it covered a number of the same raions surveyed previously, and repeated many of the core questions. Although the four surveys were not of the same farmers, they did include repeated surveys of the same raions in 15 out of the 38 total raions studied. In seven of the 15, surveys were conducted in three out of the four survey



periods. In eight more, at least two surveys included each raion. This made it possible to begin to assess longer term impacts of land reform by region and raion over the 10-year period. The surveys were conducted in all four of the major regions of the country (Khatlon, Sughd, RRS, GBAO). Table 1 shows all raions surveyed during each of the four survey periods. Seven of the repeated survey raions were in the cotton-producing Khatlon region, one of the poorest areas in terms of farm income and household nutrition. Another four were from the northern Sughd region, which is also an important cotton-producing area. Three additional raions were from the RRS region, which has more highlands with wheat production and livestock. The 15th area was in the mountainous GBAO region bordering the Pamir mountain range.

Figure 1 shows a map of Tajikistan with the four major regions of the country.

Methodology

In general, a similar sampling methodology was used by all four of the major surveys conducted between 2006 and 2016. In 2006, very few restructured farms had been created. Many former state and Kolkhoz farms had been officially “restructured” into what were called collective dehkan farms that allocated a share to each shareholder. However, in practice, many of these farms functioned just as the state farms did, and many farmers were unaware that any change had occurred. The survey examined the situation of all farmers – shareholders on these larger farms who might, in the future, get their own plots of land, as well as those who already had received a restructured plot. Since lists of farmers were incomplete, the sampling method selected was to use a random cluster sampling technique designed to give each farmer in an area an equal chance to be selected. In the 2007, 2011, and 2014-15 surveys, a number of raions (districts) were selected in each of the four major regions of the country. Within each raion, 100 farmers were selected for personal in-field interviews using the following method: (1) Five jamoats (sub-county units within the raion) were selected in each raion, and within each jamoat, two villages were selected. (2) Ten interviews were conducted with a household farmer in each village. When interviewers arrived, they used a scientifically drawn random number as the starting point to select a household within the village, and then used a skip interval to select the next household for interviews. The skip interval was adjusted to match the number of households in the village. (3) Usually, the head of household was interviewed. However, these were often males. Since women had the same rights to land as men, a quota of 30% women was also set for the survey work. In some areas, many women were interviewed, far beyond the 30% minimum. But in other areas, field interviewers would sometimes ask the head of household if there was an adult woman working the dehkan land (not just her kitchen plot)



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who could be interviewed. Except for a few raions in which cultural restrictions made it very difficult to reach women, the 30% target was met or exceeded. For the 2016 USAID Land Reform and Land Restructuring survey carried out in 12 raions of Khatlon region, sampling among raions was done in a way that was proportional to the overall number of farms in each raion. A total of 1200 interviews were conducted, but there were more than twice as many interviews completed in some raions as there were in others. This made it possible to generalize to all farms in the project zone. Other aspects of the sampling process were the same as in the other three surveys.

The surveys were designed to provide enough cases from each raion so that local differences due to actions by local authorities in each raion could be detected, and also so that the performance of different project staff in different raions could be examined. Since the populations of the raions, jamoats and villages differed, the resulting survey data do not scientifically represent the overall numbers of farm households in the country. However, since multiple raions were included in each survey, results provide a rough indication of general changes occurring across the country.

There also were several differences in the sampling methods used in the surveys. Since the 2014-15 survey was a final project evaluation, half of those surveyed were farmers who had received their certificates from the World Bank LRCSP project, and the other half were selected using the random selection method described above. Project farmers' names were selected within the raions, jamoats and villages from project lists using a random sampling method. This difference introduced a potential bias in the results. However, the reality in many areas was that in project zones nearly all of the farmers had received their land plots through project activities, and very few by other means. In other words, a random selection would have yielded about the same group. Overall, there was sufficient uniformity across the surveys to make longitudinal comparisons possible.

Trends in Types of Farms

Survey and official government figures show that there has been a dramatic change in types of farms over the 10-year period from 2007 to 2016. The 2007 baseline survey found that about two-thirds of the households interviewed were working on either state/kolkhoz-type farms or reorganized collective farms with 25 or more shareholders, while 28.4% had restructured family farms (2 to 24 shareholders) and only 3.5% had individual farm certificates. Results in Table 2 show that by 2011, almost 56% of households had either family farms (26.8%) or individual farms (29.1%). By 2014-15 only 6.6% of responding households were still working on collective-type farms. The type of farms created varied



somewhat by region, with Khatlon region having more family farms created and World Bank project areas having more individual farms created. However, in Tajikistan overall, government official figures indicated that by 2015, only 3.3% of arable agricultural land was still classified as reorganized collective farms (Land Fund of the Republic of Tajikistan, 2015). The same government figures indicate that 80.95% of arable agricultural lands are now classified either as family or individual farms (The remaining almost 16% are in land reserves, official state farms for seed production etc., cooperatives, collectively managed orchards, etc.). The survey data confirms a similar trend for farm households, showing that by 2014-15 the percentage of households working on collective-type farms had dropped to 6.6%. Through the World Bank-financed LRCSP and the regular Government process, more than 130,000 farmers have received land use rights certificates.

Table 3 shows the trend over time for raions with repeated survey data beginning in 2007. The results for individual raions show considerable variation with more individual farms in the RRS and GBAO regions and more family farms in Khatlon. Sughd shows some raions such as Konibodom and Istaravshan with three-fourths of households on individual farms, but within the same region Zafarabod has three-quarters family farms. The variation in types of farms created is due in part to the relationships among extended family groups, the crops and topography, leadership by local authorities, and the emphasis of differing donor projects. However, by 2016, there were officially very few households still working on collective-type farms with 25 or more shareholders in any region.

Focus group interviews in Khatlon in 2016 found that in some isolated areas, farmers themselves, and especially women, were unaware that their farms had been restructured. They were farming as they had before, and local authorities told them what and when to plant. Several anecdotal cases were reported in which local officials or farm managers had restructured the farms but kept the paperwork locked in a safe without telling anyone there had been change. However, this was not typical. Other focus groups indicated that farmers were not only aware of their farm classifications, but they had made substantial changes in their farming as a result of the changes. The survey results confirmed that with few exceptions, farmers knew about the restructuring and understood the rights that it gave them to make their own farming decisions.

Freedom to Farm

One of the principal objectives of the land reform was to empower farmers to make their own decisions about all aspects of the farming operation. This was important because under the Soviet system local authorities dictated every step of farming, from crop selection through delivery of crops to



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warehouses. In the market-based system being developed in Tajikistan, farmers would be able to make their own decisions, but also would have to consider whether or not crops would make a profit. To assess the extent to which farmers believe they are making their own decisions, they were asked whether or not they agreed with the statement: “In most respects, farmers in this region truly can use the land as they wish.” This question was asked in all four of the surveys.

In later surveys, specific questions also were asked about each step of the farming process (land allocated to a crop, selection and purchase of inputs, financing, and marketing), and a distinction was made between cotton farming and all other crops. Results across time indicate that in 2007 about one-quarter of farmers said they strongly agreed with the statement that they make their own decisions, and this increased to 77% in the 2016 survey. As Table 4 shows, there was considerable variation among raions. Local authorities in some areas continued to tell farmers what to plant, and sometimes threatened to cut off their irrigation water if they didn’t comply. However, overall results indicate that the percentage “strongly agreeing” increased dramatically over time. When combined with “somewhat agree,” the 2014-15 survey of raions in all regions showed 81.2% of farmers either “strongly agreed” or “somewhat agreed” that they made their own decisions.

Cotton has been the crop that local authorities tried to control more than any other because it is a major source of export earnings for the country, and until recently there were nationally imposed quotas for cotton production by raion (International Crisis Group, 2005). In the 2016 survey in Khatlon, a major cotton-producing area, farmers were asked five specific questions about land selection, where to gin their cotton, where to buy inputs, how to finance their crop, and when to collect cotton stalks. Results (Table 5) show that for all five questions, at least three-fourths strongly agreed that they now make their own decisions. However, a slight majority of 51.6% also said that local authorities still try to influence them to grow cotton on their lands. Focus groups indicated that farmers still regard cotton as a key crop, but now grow it only when they believe it is profitable to do so. The ability of farmers to sell their cotton themselves is linked to a major advantage noted by many during focus groups: when they sell directly themselves, they get the money rather than having it filtered through other hands, and they are paid immediately. This permits them to plant the next season’s crop without having to take out credit while they wait to be paid for their cotton.



Agricultural Investments on Restructured Farms

One important expected result of receiving a certificate confirming rights to a specific piece of land is that farmers will begin to invest in that land to make it more productive. The security provided by the certificate means that farmers can make improvements knowing that they or their heirs will continue to reap the benefits. In 2007, few farmers had yet received their own lands or had time for investments, so questions about investments were not included until 2011. In 2016, farmers were asked about 11 specific actions they might have taken that would have involved “investing or spending money” on farm improvements in the past two years. While no attempt was made to provide a comprehensive assessment of all the possible ways farmers might have improved their land, these 11 items do provide one way to examine the pattern of investments that is occurring. The first 10 are investments in specific farm activities. The eleventh one simply asked if the household had prepared a business plan for their agricultural activities. A business plan is the first important step in thinking systematically and financially about how to improve the farm.

Results in Table 6 show that in the 2016 Khatlon region more than half of the households report making investments in improved seed, buying or renting spraying equipment, buying or renting tractors or other mechanical equipment, and upgrading their irrigation systems. The purchase or rental of spraying equipment and tractors is one important indicator, because when farm restructuring first took place, equipment that had been on collective farms largely disappeared, and there were major shortages. These are now being addressed. Buying improved seed indicates that a supply system is now available to provide farmers with improved cotton and other seed needed to increase production. Finally, since almost all farmers in Khatlon have irrigated land, the maintenance and upgrading of irrigation systems is vital to expanding agricultural production. Results also show that more than one-third (36.9%) have invested in planting fruit/nut trees or vineyards, a very important way to add value to farmland. Slightly less than one-third (29.6%) report they are now using plastics (row tunnels, etc.) to control weeds and improve irrigation efficiency on their lands. At this stage, few farmers report building or expanding greenhouses, construction of buildings, or putting up fences (a sign of livestock activity). Almost half say their household has developed a business plan for the farmland.

Table 7 compares results for three of the critical items between the national USAID/World Bank/DFID survey in 2011 and the current 12 raions of Khatlon. All three show substantial increases over



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time, with especially large increases for purchase/rental of tractors and other mechanical equipment and preparing a business plan for the farm.

The average number of investments made from the list of 11 in 2016 was 4.14 per farm with a median of 4 and a standard deviation of 1.97. Only 43 farmers of the 1200 farmers in Khatlon (3.6%) reported making none of these investments in the past two years. Although caution is advised in comparing the national 2011 results with those of the current survey only from Khatlon region, it appears there have been sharp increases since 2011 in reported investments in key farm areas such as irrigation upgrades, purchase/rental of tractors, and preparing a business plan. Focus group results suggest that farmers who got their land early in the process and have farmed it for more than 10 years have made significant investments that have led to increases in agricultural production and income. That is, the longer one has rights to land, the more investments are occurring. However, one must also consider that those who got land early in the process were in some cases more educated and better placed to take advantage of their opportunities.

Increasing Crop Diversity

One major impact of farm restructuring has been to dramatically increase the number of crops farmers produce on their regular farm plots (excluding their small household or kitchen garden plots or presidential plots). When interviewed, each farmer was asked whether they had planted each of 17 crops on their land in the previous year, and a crop diversity score was the sum of the total number of crops planted. In 2007, the score for all raions surveyed was 1.76, reflecting the fact that the majority of farms planted only one crop – either cotton or wheat. By 2011, the score had increased to 2.22, and by 2014-15 it was 3.35. In 2016, when only Khatlon region was surveyed, the score was 4.08. Table 8 shows the increase across time for the 12 raions where repeated surveys were conducted for this question. In all 12 cases, crop diversity scores in the most recent year surveyed were higher than those in the first year surveyed, and in half of the cases they more than doubled over the period. (Tajikistan official national statistical data supports these findings, confirming a 46% increase in vegetable crop production on dehqan farmlands from 2008-2013 (Ludgate, 2015)).

One reason for the increase is that farmers have been able to make their own farming decisions as they are freed from meeting mandatory quotas for cotton or wheat. Thus, they can match crops to what is suited best for their land. Another reason is that farmers must now consider profit and protection of profit by growing multiple crops. This spreads the risk that disease or low market prices might wipe out their



profits in one area. A third reason is investment in value-added crops such as orchards, vineyards and greenhouses that can squeeze more profit out of a given amount of land.

Table 9 shows how the increase in crop diversity has reduced dependence on cotton and wheat in Khatlon region. For all raions surveyed, about half of farmers grew only wheat or only cotton in 2007. By 2016, it was 11% growing only cotton and 2% growing only wheat. The figures for individual raions indicate there is considerable variation across raions, but by 2016 all five raions for which there is repeated data in Khatlon showed fewer than 5% of farmers growing only cotton or only wheat.

Some expected that farmers might switch completely from cotton or wheat to other crops when they were no longer forced to grow them. But the data from the surveys shows that cotton and wheat continue to be the two top crops in terms of area planted. Farmers emphasized that now that they have the freedom, they will grow cotton when prices are high, and stop growing when prices decline. During the 2016 survey, prices for cotton were high, and when asked about changes in crops, more than twice as many farmers had begun growing cotton again as had switched out to other crops. However, they were not growing only cotton. Crop diversity increased.

The increase in diversity of crops complicates the timing and amounts of irrigation water needed. If all farmers are growing cotton, then irrigation water can be supplied in about the same amounts at about the same time along the canals to satisfy the need. But some farmers are now growing two to three different vegetable crops on the same piece of land during the year while their neighbors continue growing cotton. Water needs and timing are very different, and the traditional water system was not designed to provide water on demand by individual farmers.

Impacts on Household Food Security

Khatlon Region has been a special target of USAID's land reform and food security efforts because of the poverty and food insecurity in the area. Feed the Future FEEDBACK (2014) reported that 13.9% of Khatlon USAID project target area households report moderate to severe hunger. Because of the emphasis on food security issues in Khatlon, the 2016 USAID Land Reform and Land Restructuring Khatlon survey examined the impacts of land reform on food security. Farmers were asked, "Would you say that having your own farm or family dehkan farm has caused your household to increase consumption of fruits and vegetables?" They could strongly agree, agree somewhat, somewhat disagree, strongly disagree, or say they didn't know. A total of 59% said they strongly agreed that the land reform had resulted in consumption of more fruits and vegetables. Another 15.9% somewhat agreed, so three-fourths



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answered the question positively. A total of 2.2% somewhat disagreed and 17.7% strongly disagreed, so about one in five farm households reported they were eating fewer fruits and vegetables as a result of the land reform activities.

Table 10 shows that small farm size, fewer total crops, fewer farm investments, and a lower index of household possessions all are associated with consuming fewer fruits and vegetables now than before. About 5% of farmers surveyed have less than 1 hectare of total land, and 25% have 2 hectares or less. Diversity of crops is due in part to having enough land to plant different crops, but the main thing is a decision of the farm household to plant more crops on whatever land is available. Farmers who invest in improvements to their land have financial resources and a desire to improve the productivity of land. The investments lead to more food production on the farm per unit of land. Finally, households with more possessions have more disposable income that can be used to either grow more food crops or buy the food at the market. Results show that the differences between those who strongly disagree and those who strongly agree are statistically significant for all four of the factors.

A regression analysis to see what factors predict consuming more fruits and vegetables in the household confirms that total crops, total land, number of farm investments, number of household possessions and whether or not the household is earning foreign remittances from a migrant worker accounted for about 18% of total variance in consumption of fruits and vegetables. Interestingly, gender and education were not important predictors. Total crops planted was the most important variable, accounting for 12% of the variance by itself. Farm investments added another 4%. Although total farm size was a factor, it was not as important, and was not related to the total number of crops.

Since total crops grown was the strongest predictor of consuming more fruits and vegetables, a special analysis was done by raion of production of fruit/vegetable crops compared to reported changes in consumption of fruits and vegetables. Results shown in Table 11 indicate a strong relationship between those who strongly disagree that they now consume more fruits and vegetables, and less actual reported growing of fruits and vegetables in those raions. Conversely, raions with the highest percentage of those who say they do consume more fruits and vegetables are the same raions that on average grow more of them. Thus, one might conclude that one of the best ways to increase household consumption of fruits and vegetables is to encourage farmers to grow more of them. Focus group farmers said that they can grow multiple vegetable crops in one year on the same plot of land, whereas they can only grow one crop of cotton. Multiple cropping can increase income, they said, but requires more training, good quality inputs, ability to store, refrigerate or process crops, and marketing channels. It also requires adjustments in the irrigation system (both quantity and timing of water delivery).



Index of Household Possessions

In 2007, two-thirds of those surveyed were shareholders on larger collective-type farms. The great majority of them lacked any detailed knowledge about the amount of crops produced on their farms or the income received. Many received “in-kind” distributions in grain or other crops, or had permission to harvest cotton stalks to use as fuel for cooking, but these were difficult to quantify. Thus, it was not possible to get accurate economic data on actual farming household income from the baseline survey.

In order to get a rough estimate of the economic situation of the household, a 16-item index was utilized asking farmers to indicate whether or not they possessed each of 16 items in their household. The index had been used in previous surveys. The same 16-item index was repeated in all four of the surveys (2007, 2011, 2014-15, and 2016), which makes it possible to track changes across time. Results (Table 12) show a steady increase across time in the average number of household possessions, from 4.2 in 2007 to 6.1 in 2011, 7.7 in 2014-15 and 8.5 in the 2016 survey. Details for each of the 16 items show that almost all responding households now have a mobile phone, a dramatic increase from 2007. The percentage owning a car has doubled from 24% to more than half in the current survey. Other indications of economic improvement include 62.9% with a TV satellite connection compared to 6.5% in 2007, three-fourths with a sewing machine compared to half in 2007, more than half with a fridge compared to one-quarter in 2007, and almost one quarter with air conditioning compared to 3.9% in 2007.

The number of household possessions depends in part on the number of people living in the household. As the size of the household increases, the number of reported possessions from the list also increases. As educational attainment and special agricultural training increases, the number of household possessions also increases. The average number of possessions for farmers with only a primary education was 6, compared with 8 for those who finished secondary education, and 10 for those who completed higher education.

In the 2014-15 survey, farmers were specifically asked whether or not receiving a certificate confirming their rights to land had resulted in increased farm income for them. Results show similar results for both individual farm certificate recipients and family farm certificate recipients. Table 13 shows that for both types of farms, 37.4 and 38.7% respectively of farmers strongly agreed that they now had more farm income, and another 35.6 and 36.5% respectively somewhat agreed. About one-quarter said they somewhat or strongly disagreed. These results support the finding that general farm household income has increased, and that an increase in farming income is an important reason.



Awareness of Climate Variability and Change

Tajikistan has been identified as one of the countries most likely to be adversely affected by climate change (World Bank, 2010). In the 2011 World Bank/USAID/DFID survey, 1800 farmers – 100 each from 18 raions – were asked to rate seven environmental or climate change factors in terms of how serious they were, and whether they had become “much worse” in the past 10-15 years. Results [Table 14] show that farmers living on restructured family or individual dehkan farms with fewer than 25 members were more likely to rate drought, rainfall variability, floods, landslides/mudslides and increasing soil erosion as “major problems” than farmers still working on larger reorganized dehkan farms. More important, the restructured farmers on family or individual farms rated all seven of these problems as “much worse” now than 10-15 years ago. This suggests that providing farmers with certificates granting them long term rights to specific land parcels has the effect of increasing their awareness and concern about environmental or climate change factors impacting their land.

In the 2016 survey in Khatlon region (a major cotton-producing area), two focus groups were conducted, one with 10 male farm heads from Khuroson raion, and the second with 10 female farm heads from Rumi raion. Both groups were asked to identify constraints to increased farm production on a flip chart. After discussion of each constraint, farmers were asked to indicate if they believe the constraint is an important one for them. In both groups, climate change was listed by farmers on the flip charts. For the men, all 10 said climate change is a main problem currently, and that because of hotter summers they can lose up to 50% of their cotton crop. Heavy rain, hail and mudslides in the area also damage crops. However, the men attending the focus group said there was little they could do about this problem. No other constraint was rated as a main problem by all 10 men. (Eight of 10 said high fertilizer prices were a main constraint for them, and eight also said lack of access to technologies/equipment was a main constraint.) In the women’s focus group, six out of 10 women said climate changes such as very wet weather and excessive heat had damaged crops and was an important constraint. This factor ranked third behind low cotton prices and high fertilizer prices as main constraints.

Development of a Land Market

A land market would provide opportunities for farmers to formally lease their lands to others, rent out land from others, buy and sell land rights, or use land as collateral. Although legislation



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exists permitting these transactions, the specific administrative and legal procedures for carrying out these activities have not yet been approved and implemented. As it stands now, a farmer is not able to use his/her land as collateral for obtaining a farm loan, and there is no official market for buying/selling land. With the formal establishment of the State Unitary Enterprise for the Registration of Immovable Property, under the State Committee for Land Management and Geodesy (SCLMG), work is under way to operationalize procedures for how all property – land and structures – is to be registered, with a goal of making it possible to buy or sell rights to land, and also buy or sell structures.

Survey results have not been consistent over time concerning farmer attitudes about buying and selling land. The 2011 World Bank/USAID/DFID survey that included four of the 12 raions surveyed in 2016 showed low levels of support, ranging from a low of 6% in favor in Qabodiyon and 7% in Jilikul to a high of 47% in Shahrituz. A 2015 World Bank evaluation that included three project rayons in Khatlon found much higher levels of support, with between 52% and 77% of raion farmers in favor of buying or selling land. The most recent survey results fall between the two earlier surveys, with a third of farmers saying they are in favor of buying/selling land use rights, 58% opposed, and the rest saying they don't know. Those who said they were in favor of buying or selling land in the current survey were asked if they would sell their land if given the opportunity. Only one in five said yes. However, when asked if they would buy land if given the opportunity, 77% said yes. This indicates that if a land market were to be developed, finding enough farmers who wish to sell their land might be difficult. On the other hand, many farmers wish to enlarge their holdings.

Farmers surveyed in 2016 in selected districts in lowland irrigated areas were more positive about using their land as collateral in order to obtain loans, with 47.5% in favor, 45.1% opposed, and the rest not sure. Once again, comparisons with the 2011 survey results indicate that currently about twice as many farmers are in favor of using their land as collateral as was the case in 2011. However, the 2015 World Bank evaluation survey results were even more positive, with about 60% in favor. Survey results in 2016 showed that farmers who depend entirely on farming for their income are more supportive of being able to buy more land and using their land as collateral. A focus group in 2016 comprising male shareholders showed that they were in favor of buying/selling, but not the use of land as collateral. They said that there is too much risk of losing one's land after a bad crop year when land is used as collateral. On the other hand, if someone wants to get out of farming, farmers believe they should be able to sell their land. These results indicate that buying/selling land and use of land as collateral is a topic that will require more education for farmers, as well as perhaps protections to prevent defaults on farm loans such



as insurance. Overall, however, results indicate that farmers over time have become more positive about use of land as collateral. Results from Khatlon in 2016 indicate that about one in five farmers have either leased/rented land or seriously considered doing so. A comparison of groups shows that the people who have leased their land are usually not the same people as those who have rented land from others.

Impacts of Land Reform on Women

In Soviet times in Tajikistan, both men and women worked on large-scale kolkhoz or state farms under the direction of farm managers. That means that the number of male and female workers was about equally split between men and women. Women often did much of the field labor on these farms, including the tedious work of planting and harvesting cotton, the major crop in both Sughd and Khatlon regions. Official ledger books were kept on each kolkhoz or state farm about the work of each person on the farm, and these books were used as evidence to determine such things as pension rights, health care, vacation times, etc. Compensation for work often involved in-kind contributions rather than fixed salaries. For women especially, access to cotton sticks – the major source of fuel for cooking – was especially important, and some women received only rights to cotton sticks for all the work they did on the farm.

When Tajikistan became independent and began its land restructuring process, the large farms were first reorganized into “Collective Dehkan Farms.” At this time, some of them were divided into a number of these “Collective Dehkan Farms,” but in many cases the basic functioning of the farm remained pretty much as it had been under the Soviet system. That is, there was a farm head and a number of “shareholders” who were officially listed in the ledger book as having rights to live and work at the farm. As land restructuring advanced, many of these large “Collective Dehkan Farms” were selected to be further restructured into individual farms or family farms. Individual farms contained only one name on the certificate, while family farms could have up to 24 names (but usually had 4-5 names). On family farms, one person was the farm head, and the others were designated as shareholders. In most cases, the family farms consisted of people who were related to each other in one way or another.

At the time farm restructuring took place, some women were vulnerable to losing some of their rights to land. The 2007 USAID/World Bank baseline survey showed that fewer of the women shareholders were moving to restructured farms. While 38.8% of men said they were working on restructured family or individual farms, only 17.9% of women were working on these farms. Table 15 shows that by 2011, when the second survey was taken, about the same percentage of women as men



reported they were working on restructured farms, an indication that they caught up over time. The 2014-15 survey indicated that both men and women continued to move in about equal numbers to restructured family or individual farms. The 2016 survey, which was conducted only in Khatlon, suggested that women once again were slightly behind in restructuring, but this may have been due to variability among raions selected, with a difference of only 8 percent.

Of the 78.2% of women who remained on collective-type farms in 2007, many had very little knowledge of what their rights were, or where to go for assistance. In some cases, when farms were restructured, women's names were left off of official lists of those who had rights as shareholders. More recently, the government initiated a social security fund monthly fee that had to be paid by each person on a collective, family, or individual farm for every shareholder listed on the certificate. To avoid paying this fee, households in some cases made the decision to leave the names of women off the lists, or to apply for individual farm certificates that have only one name on the certificate.

Legislation in Tajikistan confirms that rights to land can be inherited, so even if a woman's name is not on the certificate, she might still have rights to the land via inheritance if her husband dies. However, in many cases, official marriage licenses do not exist in rural areas, which makes it more important to ensure that women's names appear on land certificates as well. A recent Asian Development Bank report (2016) summarizes a number of laws and policies that affect rural women in Tajikistan, and also documents problems with the marriage/divorce system and women's knowledge of their rights. For example, the report notes that 38% of women in one rural study did not know the meaning of "joint marital property."

In Soviet times, farm heads and those receiving advanced training/education in agriculture were predominantly men. When restructuring occurred, the land law stated that women could become heads or managers of farms. This was important since any woman who was a shareholder could legally petition to get her share for an individual farm that she would then manage. It also was important in confirming that if a husband died, the wife could then be the head of the individual or family farm. In Tajik culture, most households are male-dominated, with decisions made by senior males after consulting with wives, sons and other relatives. But after independence, many men (some estimates are up to a third of the rural male population) went to Russia seeking work, and leaving farm duties to women and others who remained behind. These women sometimes became legal heads of their farms.

Impacts on Female Farm Heads



The purpose of this section is to provide an update concerning women on the restructured farms. The 2016 USAID Land Reform and Land Restructuring Khatlon survey sample was specifically designed to ensure that at least 30% of the respondents would be women, who could be heads or shareholders. Two focus groups with women – one of female farm heads, and the second of women still living on Collective Dehkan farms – were also conducted.

Of the 1200 survey respondents in the 2016 Khatlon USAID survey, 734 were farm heads, and 115 of them – 15.7%—were women. In 2009, when the World Bank began requiring its LRCSP project to monitor the proportion of new farm heads receiving certificates from its project who were women, only 8% were. Largely in response to World Bank donor pressure, emphasis was placed on increasing the number of female farm heads, and in World Bank LRCSP project areas, the annual reported percentages of women receiving certificates as farm heads increased to 16.3% in 2010, 18.7% in 2012, and 23.5% by 2014. Although the increase has been important, the fact remains that farm restructuring has had the impact of registering men as the farm heads in the great majority of cases. Results from the most recent 2016 USAID Survey in Khatlon show that the 15.7% of women who were female farm heads were distributed about evenly across the three farm types, as shown in Table 16. Females were just as likely as males to be on farms that have a certificate confirming their rights to land, and almost all of them do.

Table 17 compares the differences for female and male farm heads in the number of people working on farms and the size of farms. Results show that farms with female heads have slightly fewer shareholders and fewer hired workers. Women’s farms tend to have a much smaller median size (that is, at least half of them are much smaller in size than men’s farms) while the mean sizes are not so different. This means that some women have larger size farms while most have smaller size farms than men. In total area, the median size of women’s farms is about half the size of men’s farms.

One difference between male and female farm heads is in their marital status shown in Table 18. Slightly less than one-fourth of the female farm heads are widows, suggesting that many of them became farm heads when their husbands died.

Female farm heads who are widows have much smaller farms and fewer shareholders than other women. Results just for the 22.6% of female farm heads who are widows are shown in Table 19. The average age of widows is 59, so many of them might have become widows about the time of the Tajikistan civil war in the 1990s. That means they were widows when their farms were restructured, and they received a smaller share of land, perhaps because it was perceived that they lacked labor to farm more, or they deserved a smaller share due a smaller household size.



As noted earlier, during the Soviet period, most women received basic education, but it was men who received advanced education or specialized training in agriculture in most cases. Table 20 compares educational attainment for male and female farm heads. Slightly less than half of the men received education beyond secondary level, while only about 15% of women did. The Asian Development Bank report (2016) documented a similar lack of education and training for women.

In the most recent 2016 USAID Land Reform and Land Restructuring Survey in Khatlon, there were not important differences between male and female farm heads for age, number of people in the household, or whether or not someone in the household is working in Russia. For age the average for men was 51.2, compared to 53.1 for women. For number in the household, it was 10.3 for men, and 9.4 for women. For someone in the household working abroad, it was 50.4% for male farm heads and 53.9% for female farm heads (the figure for female widows was 57%).

Impacts on Female Shareholders

Shareholders have rights to land, but are not farm heads. For individual farms, there is only one name on the certificate, so no shareholders can be listed. However, in the 2016 USAID Land Reform and Land Restructuring Khatlon survey, many of the respondents who said they were on individual farms also said they were shareholders on these farms. There may be confusion about what type of farm they really are on, or they may think they are shareholders when in fact they are not. Those who said they are shareholders on collective-type farms said there were many other shareholders, and also that the land size was much larger, indicating that they classified their farm type correctly. The distribution of farms by sex for shareholders is shown in Table 21. Of shareholders, 47.3% are men, and 52.7% are women.

Table 22 compares both farm heads and shareholders for knowledge about land use rights, information sources, total crops, farm investments and household possessions. Results show average mean scores for each group. They indicate that male farm heads tend to score highest for all variables except household possessions. Female farm heads score higher than shareholders of both sexes, and female shareholders score lowest in every category.

Unlike female farm heads, very few female shareholders are widows – only 5.3% are compared to 22.6% for female farm heads. This suggests that when husbands die, wives often inherit at least some of the land and become farm heads.

Female shareholders, like female heads, tend to have completed secondary education, but very few have advanced educational training (see Table 23). About one in five have received some agricultural vocational training, but only 2.6% have any form of higher education in agriculture.



Results of Female Focus Groups

In addition to the 2016 USAID Survey in Khatlon, two special focus groups were conducted with only women: (1) For women who are farm heads; (2) For women who are shareholders on Collective Dehkan farms.

The focus group for female farm heads was conducted in Rumi raion with 10 women participating. Farm size for all the women but two was 3 hectares or less (one had 4 ha. and the other 27). In contrast, farm size for the focus group of 10 male farm heads conducted in Khuroson raion was 5 to 40 hectares for nine, and 205 for the tenth. While the women are from only one area that may not be representative, these results fit with overall averages showing women's farm areas are smaller. They do not differ from the male focus group farmers in terms of crops – almost all grow cotton, and most grow other crops as well. However, the women said that their lack of farming experience and knowledge was a major problem in managing their farms, at least at first. Three of the 10 women, including the one with the largest land area, had aggressively moved into livestock, dairy, and other crops. Several of the women in this focus group had become farm heads only a few years ago, so they have not yet had time to accumulate resources and diversify their farms. However, five of the 10 have 1.5 ha. of land or less, and several of them said that their land size is really too small to make major changes. The 10 women also noted that they often needed to hire laborers for tasks that they themselves could not do. Most said they now have access to rented farm sprayers and tractors if they need them. Like the male farm heads, they cited low cotton prices and high prices for inputs as a major current problem. However, overall, seven of 10 said that their households have more access to food now than they did before. (The other three said that diets have deteriorated due to growing family sizes and money being diverted to pay for farm expenses instead of food for the household). Paying off farm debt was a problem for several (although they succeeded in paying it off). The women said that one area where some have problems is in getting loans for their farms because they lack houses, cars, or other possessions in their legal names to use as collateral.

The focus group for collective-type farm female shareholders consisted of nine women from Yovon raion who are of Uzbek ethnicity. It became clear early in the focus group that these shareholders, with only a few exceptions, knew very little about farm restructuring or the official status of their farms. Although some knew that their farms had been officially restructured, only two women – wives of the farm heads – had ever seen the certificates, and the rest had no idea if their names were on the certificate



or not. Despite their lack of knowledge about farm restructuring, the women were largely satisfied with their lives, and said their socio-economic situations have improved. All of them are shareholders on rather large farms, ranging in size from 23 ha. to 100 ha. They reported that local officials in the area set production crop quotas for each farm that are then followed. Hired workers provide much of the labor on the farms. The women have no idea what expenses or profits their farms might have experienced. Male farm heads know this and make the key decisions on the farms. Only three of the nine women in this focus group rated their knowledge of farm restructuring above zero on a five-point scale. None had ever attended training. Two had seen publications from USAID at home. The women in this focus group were not typical of women shareholders overall in the survey. However, local experts said that in each jamoat and raion there are some farming areas where not much has changed as a result of farm restructuring, and people – especially women – lack any basic knowledge of what has happened or what their rights might be.

Household Social Security Fund Issues

In Soviet times, each collective farm had the responsibility for tracking the work done by each member of the farm. An official ledger work book was used to determine when an employee qualified for vacation time, and also to document long-term employment that was used as the basis for determining pension eligibility and benefits. When the Soviet kolkhoz and state farms were restructured, a new way was needed to pay for worker benefits. Current laws specify that each head and shareholder of a farm should be listed on a certificate. This certificate is the legal evidence of a person's rights to land, but it also has become one basis for determining eligibility for social security fund benefits in the future. To pay for the social security fund for agricultural workers, the government of Tajikistan instituted a social security fund fee levied each month on each shareholder on the farm. At first, this fee was 15 somoni per person per month (about US \$1.90), but it was later reduced to 10 somoni per person per month. Originally, it had to be paid every month, whether or not the shareholders were actually working during that month. More recently, the requirement in seasonal agricultural areas is that the fee must be paid during working months (about 7 months of the year on highland farms). The same fee is paid per person regardless of land size or farm income.

Respondents to the 2016 USAID Land Reform and Land Restructuring Khatlon survey were asked two important questions about the social security fund. First, they were asked if social security fund payments were made for “you or for any other family member” during the past year. This question was designed to determine whether most farm households were in fact paying into the fund. Results in Table



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24 show that the great majority (87.8%) of households surveyed reported that social security fund payments were in fact made for or by their households during the past year. Only 5.7% said they weren't, and the rest (6.4%) didn't know. This suggests that the social security fund system is in fact collecting at least some money from most of the restructured dehqan farm households. The percentage is lowest for those who are on collective farms, and the main reason is that more respondents there didn't know whether payments were made for them or not.

The second question asked if names of women had been left off the overall list of shareholders during restructuring in order to reduce the number of people for whom the social security fund payments would need to be made. Previous studies have found that households in some cases did choose to leave off names to reduce the financial burden. Of course, leaving off the names also had negative effects on both the ability of that person to claim social security and pension benefits later, and on future inheritance rights.

Table 25 shows that about one in five households in the 2016 USAID Land Reform and Land Restructuring Khatlon survey reported that the names of at least some women in their household had been left off the list of shareholders in order to reduce social security fund payments. (The 2011 World Bank/USAID/DFID survey found the figure was one out of every 10). In the 2016 survey, leaving names off seems to have occurred more frequently for those working on collective dehqan farms than for individual or family farms, but there are only a small number of respondents for collective farms, so this result needs to be viewed with some caution. In addition, many collective farm respondents didn't know whether or not this might have happened. Frequently, shareholders on collective dehqan farms have never seen any official certificates or documents relating to their farm rights.

Although the four surveys used as a basis for this paper were not focused exclusively on gender impacts of changes in land restructuring and land use rights, there is evidence that close attention is needed to impacts of land reorganization on women. Focus group and survey results indicate that one important issue in the future will be how restructured farms keep records about the work history of both men and women, and how this information will be used to determine future social benefits. There is some evidence from the survey that women's names have been left off of shareholders' lists when farms are restructured, and that this might be especially true when kolkhoz farms are first restructured into dehqan farms. The failure to list women's names saves the farm money by not having to pay the per person social security fund fees, but the longer-term negative implications for women for social benefits and inheritance rights for land will need attention in the future.



Conclusions and Way Forward

Improving Methodologies for Tracking Long-Term Project Impacts

Land reform projects typically have agricultural, economic, social and environmental impacts that require long periods of time to unfold. Cross-project and cross-time collaboration can permit a series of related projects over time to track key impacts. The analysis presented in this paper was made possible by collaboration between World Bank, USAID, DFID, and the government of Tajikistan in creating a set of core questions and issues that could be tracked over time and over projects. Despite the fact that some projects focused more in one region of the country than others, and some emphasized different aspects of land reform and land use rights than others, sufficient agreement and overlap in districts was present to permit a general analysis of results of key variables over a 10-year period. Another important aspect was that sufficient data archiving and sharing took place to permit retrieval and analysis of the previous datasets, questionnaires and qualitative protocols. The methods used in the four surveys and the many focus groups used as a basis for this paper were not perfect, and as noted in the methods section, there were some variations in sampling and other methods in some locations. However, overall, the collaboration permitted each project to do what was necessary to adequately evaluate its particular contributions while also including enough common questions, procedures and districts to create a common core of data over time to permit longer-term impacts to be assessed. A major recommendation of this paper is that future projects and evaluations be conducted in this collaborative way so that longer-term impacts can be identified.

Importance of Piloting

Countries need to undertake operational testing and demonstrations in selected areas in order to learn how to integrate functions and data that in the past have been handled by independent agencies, and use these findings to develop a strategy and corresponding investment plan. Premature large-scale investments that do not take into account careful piloting involve delays and risks of wasteful expenditures that do not result in sustainable improvements. Farm restructuring has acquired sufficient momentum in various areas in Tajikistan that by increasing technical capacity, it becomes an irreversible fact throughout much of the country. This requires not only the development of technical capacity to implement the farm restructuring process, but also concerted efforts to improve rural people's access to information and rights regarding their land use rights.



Development of a Land Market.

The Government hopes that by establishing a market for land and rural structures, investments in the rural sector will increase. However, since the majority of the population lives in rural areas and depends on land for food and income, impacts will need to be watched closely. It is not clear at present how transparent land transactions might be. Certainly, donors and other agencies have argued for transparency. Over time, it seems likely that more entrepreneurial farmers with more capital will tend to buy or lease land from neighbors to expand production. While those selling land are likely to reap a benefit from the sale or lease, what might happen to them? Would they desire to sell land and move to cities? If so, what employment opportunities might be available? As some farms are enlarged, what is likely to happen to levels of poverty in the country? These are important questions that will need to be studied over the next 10 years.

Crop Diversification and Resilience.

In Central Asia, Tajikistan is generally recognized as the country most vulnerable to the effects of climate change (World Bank, 2010). In this context and given the importance of its agricultural sector, adaptation strategies such as crop diversification offer opportunities to improve resilience by reducing vulnerability to climate variability and increasing food security. As noted earlier, one outcome associated with land reform in the country has been a greater diversity in agricultural production. A critical factor in the shift from monoculture strategies under the Soviet regime to more diverse cropping systems has been the freedom to undertake independent decision-making in farming. Freedom to farm has been rated as the single most important reason for land restructuring, according to the survey respondents. Consequently, farmers have opted to diversify their cropping patterns to respond to market forces (higher prices) and with positive externalities for food security. By diversifying crop production rural households have a better safety net than they did under earlier periods of obligatory monocultures. However, the shift toward crop diversification is not without challenges. As noted earlier, the increase in crop diversity complicates the timing and amounts of irrigation water needed. Under the previous monoculture regimes, irrigation water was supplied in about the same amounts at about the same time along the canals to satisfy the need. But with some farmers now growing two to three different vegetable crops on the same piece of land during the year, while neighbors continue growing cotton, the traditional water supply system,



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without investment in infrastructure and institutional arrangements, can struggle to meet water demands. Going forward, future studies will need to focus more on how future irrigation management systems can adapt to demand for crop diversity.

Technical and Organizational Assistance for New Dehkan Farmers.

The documented successful transformation in land tenure arrangements has resulted in a number of new challenges that need to be examined and addressed over time. For example, many of the new dehkan farm heads, and particularly women, lack sufficient training in agriculture and marketing. The process of land restructuring has created 10 times more farms and farmers than was the case before. With many more farm units in the agricultural landscape, the process of protecting farmland and watersheds has become more complex. How are they to get the information they need to make good future decisions not only terms of profitability, but also in sustainable land management, the need for which is only reinforced in the context of growing climate variability? Survey results show that soil fertility and soil erosion are both listed in the top-10 of problems farmers are now facing. To date, Tajikistan has not established a formal extension service for land users. State agencies continue to provide mainly supervisory functions, with the bulk of extension efforts undertaken by donor agencies and NGOs but with geographical and topical foci and not always in a coordinated manner. Most farm managers in focus groups say that they learn mostly from farmers around them. With new dehkan farms and farmers, there is considerable experimentation occurring, and this can lead to improved practices and ideas for sustainable agriculture.

Access to water is a major concern among farmers, many of whom already report that they are investing in repair or purchase of equipment to improve their access to irrigated water systems. However, farmers with little experience also are those most in need of training about the importance of crop rotation and soil protection. Nation-wide advisory services, whether public or private, remain an important area that needs to be developed if farmers are to make sound decisions. A number of projects, including those supported by the World Bank and USAID, contained a component that created Water User Associations that could effectively represent the needs of local farmers for water. Such associations have helped develop new ways to use water more wisely to meet the demands of new crops and climate change. However, long-term effective water management will require suitable institutional frameworks that support decision-making at appropriate scales, and can maintain necessary and appropriate infrastructure.

Increased crop diversity means more vegetable crops and fruits in the marketplace. Many of these crops are highly perishable. Thus, consideration needs to be given to how the additional production might



be marketed, stored, or processed. Significant opportunities will be present for small-scale food processing investors or marketers. In focus groups, farmers already are requesting assistance in this area. Small-scale surveys or assessment methods could be used to ascertain what farmers are planting so that marketers and processors can plan for the additional harvests.

Gender Issues.

In the LRCSP evaluation of 2015, for the 23.5% of women who are farm heads, data shows that they have as much or more gross farm income than male heads. However, in focus groups, female farm heads reported that even though they are heads, they often lack access to credit since buildings, cars and other collateral are usually in the husband's name (it is not yet legally possible to use land itself as collateral). Women in the survey, both heads and shareholders, also have access to as much information, and have as much knowledge as men. The conclusion is that if women are involved in the restructuring process, they become equal to men in terms of knowledge, information and ability to farm. Previous studies (baseline 2007 and 2011 farmer perceptions study) of women who were not involved in the process indicated that they had much lower access to information and knowledge about land use rights and land restructuring. Thus, going forward, it will be important to ensure that women are not excluded.

A continuing concern remains the impacts of the social security fee, which is charged to all those listed as shareholders. One way to avoid paying the fee is to apply for an Individual Dehkan farm certificate, which lists only one name. In this case, it is usually a man who is listed. While wives legally are entitled to inherit land from their husbands, focus groups indicate that wives often lack official marriage licenses or other documents that might ensure their rights to inherit land in the future, or gain rights in the event of divorce. While the household saves money by not paying the social security fee for the wife, the wife then may not be eligible for social benefits in the future. Current data suggests that 20% of respondents said they left names of women off the shareholder lists to avoid paying the social security fee. In this case, women are directly excluded from having rights to the farm in the future, and also will not be eligible to receive social benefits. In focus groups, women pointed out that even women who are listed as shareholders may be at risk, since new dehkan farms often do not keep detailed record books concerning work on the farm. In Soviet times, such record books were very important in determining social benefits for maternity leave, sick leave, or pensions. The lack of adequate records now may mean that these women will not be paid social benefits in the future that they deserve.



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Tables

Table 1: 38 Raions surveyed by region and by year showing raions with repeated surveys

2007 USAID/ World Bank (1500 farmers)	2011 World Bank/ USAID/DFID (1800 farmers)	2014-15 World Bank (1600 farmers)	2016 USAID (1200 farmers)
GBAO Region			
Vanj	Vanj	Vanj Rashan Sughnan Rashtakala	
Sughd Region			
Konibodom Istaravshan	Konibodom	Konibodom Istaravshan B. Gafurov Spitamen	
Ganchi Zafarabod Pendjakent	Zafarabod Pendjakent Djabbor Rasulov Khuistoni Mastchov		
RRS Region			
Faizobod Rasht	Faizobod Rasht Gissar	Faizobod Rasht Gissar Varzob	
Tursanzade	Nurobod Tojikobod		
Khatlon Region			
Bokhtar		Bokhtar Qumsangir Vakhsh Muminobod	Bokhtar Qumsangir Vakhsh
Yovon	Yovon Shahritus		Khuroson Yovon Shahritus Khisrav
Qabodiyon	Qabodiyon		Qabodiyon Sarband Jomi Rumi Jilikul
Kolkhozobad Khovaling Kuljab	Jilikul Danghara Panj Temurmalik		



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Table 2: Percentage of households for each farm type by year for all raions surveyed

Survey Year	Individual Farm	Family Farm	Collective/State farm
2007 Survey	3.6%	28.4%	68.0%
2011 Survey	29.1%	26.8%	44.2%
2014-15 Survey	66.4%	26.9%	6.6%
2016 Survey (Khatlon only)	28.8%	60.3%	10.0%

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 3: Change in percentage of households by farm type across surveys for repeated raions

Khatlon Region							
2007	Ind. Frm	Fam Frm	Collective	2016	Ind. Frm	Fam Frm	Collective
Bokhtar	5	6	89		16.7	52.8	27.8
Yovon	10	68	22		49.4	47.7	2.3
Qabodiyon	2	18	80		17.0	65.9	12.5
2011				2016			
Shahrituz	59	32	9		27.3	62.5	8.0
Sughd Region							
2007				2014-15			
Konibodom	3	5	92		11	78	11
Istaravshan	1	24	75		74	26	0
2007				2011			
Zafarabod	8	73	19		11	78	11
Pendjakent	10	2	88		29	6	65
RRS Region							
2007				2014-15			
Faizobod	0	27	73		90	10	0
Rasht	0	88	12		67	33	0
2011				2014-15			
Gissar	1	10	89		87	13	0
GBAO Region							
2007				2014-15			
Vanj	0	1	99		99	1	0

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.



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Table 4: Percentage of farmers by time who strongly agree they can “truly use the land as they wish.”

Raion	2007	2011	2014-15	2016
All Raions	29.1%	44.9%	44.6%	77.0%
Vanj	54%		80%	
Konibodom	1%		34%	
Istaravshan	16%		25%	
Faizobod	25%		53%	
Rasht	73%		56%	
Bokhtar	25%		26%	
Yovon	1%			78.4%
Qabodiyon	6%			85.2%
Jilikul		45%		71.3%
Shahrituz		48%		81.8%

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 5: Farmers’ freedom to farm cotton. Percentages indicating whether or not they make their own farming decisions. (1050 grow cotton of the 1201 respondents).

	Don't agree at all	Don't agree very much	Agree Somewhat	Strongly Agree	Not sure
Farmers are free to choose how much land to allocate to cotton	7.8%	2.4%	2.8%	83.8%	3.2%
Farmers are free to choose where to gin their cotton	11.7%	1.1%	3.5%	77.3%	6.5%
Farmers can buy seed, fertilizer, etc. from whomever they choose	4.6%	.2%	1.1%	90.8%	3.3%
Farmers can choose to finance their cotton from any source	3.8%	.6%	1.3%	89.3%	4.9%
Farmers are free to decide when to collect cotton stalks	2.8%	.2%	1.2%	93.8%	2.0%
Local authorities in this region still try to influence farmers to grow cotton, or a certain amount of cotton, on their lands	32.0%	2.7%	7.9%	51.6%	5.9%

Source: 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 6: Percentage of farmers in Khatlon region who have made investments (spent money) on improvements on their farms in the past two years.

	% Saying they have done this
Buying improved seed	85.3%
Purchase or rental of chemical spraying equipment	67.0%
Purchase or rental of tractors or other mechanical equipment	56.3%
Upgrading irrigation systems, canals, repair or purchase of pumps, etc.	52.5%
Prepared a business plan for the household’s agricultural activities	49.5%
Planting fruit/nut orchard trees or vineyards	36.9%
Buying and using plastics (row tunnels, plastic sheeting, etc.) for crops	29.6%
Construction of fences	19.3%
Construction of agricultural buildings (storage buildings, etc.)	7.4%
Building or expanding a greenhouse	5.4%
Purchase or rental of horses or other animal traction to prepare land	4.6%

Source: 2016 USAID Land Reform and Land Restructuring Project Survey.



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Table 7: Percentage of farmers making three important investments in 2011 and 2016.

	2011 World Bank/USAID/DFID survey of 18 rayons nationally	2016 survey of 12 rayons in Khatlon Region
Upgrading irrigation systems, canals, repair or purchase of pumps, etc.	30%	52.5%
Purchase or rental of tractors or other mechanical equipment	14%	56.3%
Prepared a business plan for the household's agricultural activities	18%	49.5%

Source: Source: 2011 World Bank, USAID, DFID Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 8: Average number of crops planted by year for all farm households surveyed and by repeated raions (does not include crops from household, kitchen or presidential plots)

	2007	2011	2014-15	2016
All regions	1.76	2.22	3.35	4.08
Sughd Region				
Konibodom	1.83	4.00	3.28	
Istaravshan	1.95		5.15	
Zafarobod	2.20	2.38		
Pandjakent	1.38	3.13		
RRS Region				
Faizobod	1.48	.99	3.05	
Rasht	1.65	2.41	3.13	
GBAO Region				
Vanj	2.72	4.23	2.86	
Khatlon Region				
Bokhtar	1.76		2.24	2.08
Qabodiyon	2.18		3.29	6.11
Yovon	2.41	2.74		4.27
Shahrituz		2.89		4.67
Jilikul		1.72		5.66

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.



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Table 9: Percentage of farm households growing ONLY cotton or ONLY wheat by time periods.

	2007 USAID WB Baseline Survey of 1500 farmers	2011 USAID/WB/DFID Survey of 1800 farmers	2014-15 WB evaluation survey of 1600 farmers	2016 USAID Khatlon survey of 1200 farmers
Results for ALL Rayons Included in Each Survey				
ONLY Cotton	51%	22%	12%	11%
ONLY Wheat	45%	26%	14%	2%
Breakout for Selected Khatlon Rayons Showing Changes Across Time				
Bokhtar				
ONLY Cotton	92.7%		28.8%	40.3%
ONLY Wheat	20.0%		28.1%	0.0%
Qubodiyon				
ONLY Cotton	31.1%	19.6%		4.5%
ONLY Wheat	0.0%	1.3%		0.0%
Yovon				
ONLY Cotton	7.5%	5.0%		1.1%
ONLY Wheat	21.8%	7.7%		2.3%
Shahrituz				
ONLY Cotton		2.9%		2.3%
ONLY Wheat		2.4%		0.0%
Jilikul				
ONLY Cotton		74.0%		3.8%
ONLY Wheat		5.0%		1.1%

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 10: Factors associated with strongly disagreeing or strongly agreeing that household is consuming more fruits and vegetables now than before restructuring

	Strongly Disagree that family has more fruits and vegetables	Strongly Agree that family has more fruits and vegetables	ANOVA sig. test
Total farm size (median)	2.7 ha	4.0 ha	F=3.4 P=.009
Total crops (mean)	2.5	4.8	F=56.4 p=.000
Farm investments (mean)	3.2	4.6	F=27.8 p=.000
Household possessions (mean)	7.6	9.0	F=17.1 p.000

Source: 2016 USAID Land Reform and Farm Restructuring Project Survey of 12 Khatlon raions



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Table 11: Above or below average production of specific fruits and vegetables by raion, compared with the percentage of farmers saying they “strongly disagree” that they now consume more fruits and vegetables than before restructuring.

Rayon	Corn	Onion	Potato	Carrot	Tomato	Cabbage	Sunflower	Cucumber	Orchard	Grapes	Score	% No increase Fruits
Vakhsh	-	-	-	-	-	-	-	-	-	-	0	33.5%
Jomi	-	-	-	-	-	-	-	-	+	+	2	33.0%
Yovon	-	+	+	-	+	-	-	+	-	-	4	19.3%
Rumi	-	-	-	-	-	-	+	-	-	-	1	17.8%
Bokhtar	-	-	-	-	-	+	-	-	-	-	1	15.4%
Shahrityus	+	+	-	-	+	-	-	+	+	+	6	12.3%
Khuroson	-	+	+	+	+	+	+	+	-	+	8	9.3%
N. Khisrav	+	+	+	+	+	+	+	+	+	+	10	8.9%
Jilikul	+	-	-	+	+	+	+	+	+	+	8	3.9%
Qumsangir	+	+	+	+	-	-	-	-	-	-	4	3.4%
Qabodiyon	+	+	+	+	+	+	+	+	+	+	10	0.0%
Average %	40.1	31.9	33.3	18.1	32.6	5.0	10.7	15.1	16	3.9		17.7%

Note: Sarband Raion was not included because only 10 farmers were from that raion.

Note: The Score in the table above is the sum of all “+” signs. Each “+” represents above-average production of a vegetable or fruit crop across the 12 raions. A “+” score was awarded if production was at or above the average for the 12 raions. A “-” score was given if production was below the average for the 12 raions.

Source: 2016 USAID Land Reform and Farm Restructuring Project 2016 Survey of 12 Khatlon raions



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Table 12: Average number of household possessions by year and percent ownership of specific household possessions by year.

	2006-07 USAID WB Baseline Survey of 1500 farmers	2011 USAID/WB/DFID Survey of 1800 farmers	2014-15 WB evaluation survey of 1600 farmers	2016 USAID Khatlon survey of 1200 farmers
Average Number of Household Possessions for ALL Raions Surveyed	4.2	6.1	7.7	8.5
Percentage results for specific household possessions				
Carpet	85.5	93.9	97.5	96.7
Radio	49.8	37.6	42.9	52.6
Tape/DVD player	40.4	74.0	60.0	71.5
Mobile phone	25.6	86.4	91.2	98.3
Color TV	54.0	86.9	92.3	93.5
Fridge	23.7	25.3	60.9	54.8
Washing machine	14.6	10.0	29.8	25.1
Sewing machine	50.0	59.1	52.3	77.9
Air conditioning	3.9	5.1	15.4	22.7
Power generator	3.8	14.6	33.1	20.7
TV satellite receiver	6.5	30.2	81.8	62.9
Bicycle	24.1	32.4	29.4	65.4
Motorcycle	3.6	2.5	10.4	5.7
Car	24.2	40.8	55.0	54.3
Lorry	4.3	6.8	15.9	7.3
Tractor	7.1	6.8	15.9	19.7

Source: 2007 World Bank/USAID Baseline Survey; 2011 World Bank, USAID, DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Land Restructuring Project Survey.

Table 13: Percentages of individual and family dehkan farmers who agree or disagree that their farming income has increased because of receiving a certificate.

	Strongly disagree	Disagree somewhat	Somewhat agree	Strongly agree	Don't know
Individual Dehkan Farmers (n=1063)	5.8%	18.7%	35.6%	38.7%	1.2%
Family Dehkan Farmers (n=430)	4.2%	21.9%	36.5%	37.4%	0

Source: 2014-15 World Bank Final Evaluation Survey.



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Table 14: Comparison of responses of farmers on restructured farms with those on larger collective-type farms to environmental and climate change concerns.

Environmental/climate change question	Restructured individual or family farms with 25 or fewer members	Reorganized collective farms with 25 or more workers/members	Restructured individual or family farms with 25 or fewer members	Reorganized collective farms with 25 or more workers/members
	% perceiving item is a “major problem”		% perceiving problem is “much worse” now than 10-15 years ago	
Drought	10.1%	4.8%	15.4%*	3.1%
Rainfall variability	10.8%	5.6%	15.0%*	5.0%
Floods	24.6%	20.7%	18.5%*	6.3%
Landslides/mudslides	31.2%	21.3%	23.4%*	7.8%
Pests/diseases of crops	17.8%	21.6%	17.1%*	6.4%
Decreasing soil fertility	14.6%	17.6%	18.8%*	8.0%
Increasing soil erosion	20.1%	13.5%	19.2%*	9.4%

*Indicates statistically significant difference <.05 between restructured and collective-type farms for this environmental concern.

Source: 2011 World Bank, USAID, and DFID survey of Farmer and Farm Worker Perceptions of Land Reform and Sustainable Agriculture in Tajikistan.

Table 15: Percentage of men and women on restructured individual/family farms versus collective-type farms (with 25 or more shareholders) by each of the four survey periods.

	2007		2011		2014-15		2016	
	Men	Women	Men	Women	Men	Women	Men	Women
FAM/IND	38.8%	21.8%	56.7%	54.4%	93.0%	94.9%	89.7%	81.5%
COLLECTIVE	61.1%	78.2%	43.4%	45.6%	7.0%	5.1%	10.3%	18.5%

Source: 2007 Baseline Survey, 2011 World Bank, USAID and DFID Survey, 2014-15 World Bank Final Evaluation Survey, 2016 USAID Land Reform and Farm Restructuring Survey.

Table 16: Gender by type of farm for 734 farm heads and also if farm has a certificate

	Individual DK farm	Family DK farm	Collective DK farm	Don't know	Farm Has Certificate	N
Men	34.9%	58.6%	5.7%	.8%	94.7%	619
Women	36.5%	59.1%	4.3%	0.0%	96.5%	115

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.



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Table 17: Number of people working on farms and farm size characteristics compared for male and female farm heads. N=734

	Total People Working on Farm (mean average)	Number of Share-holders (mean average)	Number of Hired Workers (mean average)	Total Farm Area (hectares)		Total Arable Land		Total Irrigated Land	
				Mean	Median	Mean	Median	Mean	Median
Men	6.8	6.4	5.7	6.7	3.9	5.5	3.4	5.3	3.3
Women	6.6	5.1	3.5	6.2	2.0	5.3	2.0	6.0	2.0

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.

Table 18: Marital status of male and female farm heads (N=734).

	Married	Widow	Single	Divorced	N
Men	98.4%	.8%	.6%	.2%	619
Women	74.8%	22.6%	0.0%	2.6%	115

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.

Table 19: Farm characteristics for ONLY female farm heads who are widows (N=26)

	Total People Working on Farm (mean average)	Number of Share-holders (mean average)	Number of Hired Workers (mean average)	Total Farm Area (hectares)		Total Arable Land		Total Irrigated Land	
				Mean	Median	Mean	Median	Mean	Median
Female Farm Heads (Widows)	4.62	3.64	2.15	3.1	2.3	2.9	1.9	2.9	2.2

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.

Table 20: Education attainment compared for male and female farm heads.

	Primary Incomplete	Secondary Incomplete	Secondary Complete	Secondary Technical	Secondary Vocational	Higher Incomplete	Higher Complete
Men	1.1%	5.7%	49.9%	15.3%	7.1%	2.7%	18.1%
Women	5.2%	17.4%	62.6%	5.2%	6.1%	1.7%	1.7%

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.

Table 21: Type of Farm by Sex for Shareholders. N=433.

	Individual DK farm	Family DK farm	Collective DK farm	Don't know	Totals
Men	19.5%	60.5%	16.6%	3.4%	205
Women	11.8%	61.8%	20.2%	6.1%	228
Totals	15.5%	61.2%	18.5%	4.8%	433

Source: 2016 USAID Land Reform and Land Restructuring Survey of 1200 farmers in Khatlon region.



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Table 22: Comparisons between Male and Female Farm Heads and Shareholders. Results Show Mean Scores for Each Index.

	Knowledge	Information Sources	Farm investments	Total Crops	Household Possessions
Farm Heads. N=734					
Men	8.1	9.2	4.4	4.2	8.9
Women	7.7	8.7	4.1	4.1	8.1
Shareholders. N=433					
Men	7.6	8.8	4.1	3.9	9.0
Women	6.7	6.3	3.5	3.9	7.3

Source: 2016 USAID Land Reform and Land Restructuring Khatlon Survey.

Table 23: Educational attainment for female and male shareholders. N=433 (205 men and 228 women).

	Primary Incomplete	Secondary Incomplete	Secondary Complete	Secondary Technical	Secondary Vocational	Higher Incomplete	Higher Complete
Men	2.0%	10.2%	49.8%	10.2%	8.3%	3.9%	15.6%
Women	3.9%	17.5%	74.1%	.9%	2.2%	0.0%	1.3%

Source: 2016 USAID Land Reform and Land Restructuring Khatlon Survey.

Table 24: Percentage of Households Making Social Security Fund Payments for “You or Other Family Members” During the Past Year.

	Yes	No	Don't Know
Individual Dehkan Farms	91.2%	6.5%	2.4%
Family Dehkan Farms	89.3%	5.2%	5.5%
Collective Dehkan Farms	74.0%	6.3%	19.7%
All Respondents	87.8%	5.7%	6.4%

Source: 2016 USAID Land Reform and Land Restructuring Khatlon survey.

Table 25: Percentage of households reporting that the names of some women were left off the list of shareholders when the farm was created in order to avoid paying the Social Security Fund fee.

	Yes	No	Don't Know
Individual Dehkan Farms	22.4%	72.6%	5.0%
Family Dehkan Farms	19.0%	73.6%	7.3%
Collective Dehkan Farms	32.3%	48.0%	19.7%
All Farms	21.1%	70.4%	8.6%

Source: 2016 USAID Land Reform and Land Restructuring Khatlon Survey



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Figures

Figure 1: Map of Tajikistan showing its four regions and raions

