GOMAL ZAM COMMAND AREA DEVELOPMENT PROJECT

MIDTERM PERFORMANCE EVALUATION

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ABSTRACT

In 2015, USAID/Pakistan joined the Government of Khyber Pakhtunkhwa to implement the Gomal Zam Command Area Development Project. The project sought to improve the agricultural and livestock productivity and incomes of 30,000 farm families by helping them fully realize the benefits of a perennial source of irrigation water. The project is far behind schedule, however, thus deferring much-anticipated benefits.

The evaluation focused on producing recommendations to accelerate implementation and identifying lessons learned to improve the design and implementation of future government-to-government projects. To address this purpose, the evaluation team reviewed a rich set of documents, interviewed a wide range of stakeholders and beneficiaries, and drew from secondary sources to triangulate findings.

The evaluation concludes that a poorly managed design process failed to produce a design document specific enough to effectively guide implementation. Furthermore, staffing and compensation issues embedded in the design left the project without the skills and experience necessary to effectively manage project activities. Because the project has made little meaningful progress on its foundational activities, it generated few benefits. Nevertheless, the evaluation concludes that completing the project has the potential to sustain benefits achieved so far and enhance them substantially.

Recommendations for accelerating implementation focus on bolstering the project's management capacity, producing detailed work plans, filling staffing gaps, reassessing the suitability of consultants, and managing contracts more tightly. In future government-to-government projects, USAID should take a more hands-on approach to project design and implementation, reserving a role in approving design documents and selecting key personnel and providing short- or long-term technical assistance as necessary.

ACKNOWLEDGMENTS

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We also wish to recognize USAID, and particularly the Economic Growth and Agriculture Office and the Performance Management Unit, for their invaluable support, guidance, and assistance.

Thank you.

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ACRONYMS

A&E	Architect and Engineering
ADS	Automated Directives System
BoQ	Bill of Quantities
CADP	Command Area Development Project
CDWP	Central Development Working Party
CRBC	Chashma Right Bank Canal
D.I. Khan	Dera Ismail Khan
DoA	Department of Agriculture
ECNEC	Executive Committee of National Economic Council
FGD	Focus Group Discussion
G2G	Government-to-Government
GoKP	Government of Khyber Pakhtunkhwa
GoP	Government of Pakistan
GZD-CADP	Gomal Zam Dam Command Area Development Project
GZIP	Gomal Zam Irrigation Project
IL	Implementation Letter
kg	Kilogram
km	Kilometer
KP	Khyber Pakhtunkhwa
KPPRA	Khyber Pakhtunkhwa Public Procurement Regulatory Authority
LOP	Life of Project
M&E	Monitoring and Evaluation
MoU	Memorandum of Understanding
NESPAK	National Engineering Services Pakistan
O&M	Operation and Maintenance
OFWM	On-Farm Water Management
P&D	Planning and Development
PAD	Project Appraisal Document
PDWP	Provincial Development Working Party
PIC	Project Implementation Committee
PIL	Project Implementation Letter
PIU	Project Implementation Unit
PMU	Project Management Unit

PSC	Provincial Steering Committee
Rs.	Pakistani Rupee
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority
WIG	Women's Interest Group
WUA	Water Users' Association

GLOSSARY

chak:	In the context of command area development, a *chak* is an area of land served by a single outlet on an irrigation distributary or minor.
chakbandi:	"The entire process of collection of data for working out details of gross commanded and culturable commanded areas of channels as a whole or of individual outlets for working out the *chak* boundary. *Chak* boundary is the boundary of areas reserved for irrigation from a particular outlet." https://www.lawinsider.com/dictionary/chakbandi
kanal:	An area of land equal to one-eighth of an acre or 0.0506 hectare.
kharif:	"[A] secondary [winter] harvest that consists of various crops, such as rice, sugarcane, corn (maize), and cotton." https://www.merriam-webster.com/dictionary/kharif
mogha:	The outlet on a distributary or minor that delivers water to a tertiary watercourse.
nallah:	A usually dry watercourse that can flood during heavy rains.
nucca:	The outlet on a tertiary watercourse that carries water from the watercourse to farmers' fields.
rabi:	Pakistan's "primary harvest [spring] and consists of various crops, including wheat, barley, pulses, and mustard." https://www.merriam-webster.com/dictionary/rabi
rod kohi:	The local term for spate irrigation.
warabandi:	"[A] rotational method for equitable distribution of the available water in an irrigation system by turns fixed according to a predetermined schedule specifying year, day, time and duration of supply to each irrigator in proportion to the size of his landholding in the outlet command." https://www.civilengineeringterms.com/water-resources-irrigation-engineering/warabandi-system-water-management/

PROJECT SUMMARY

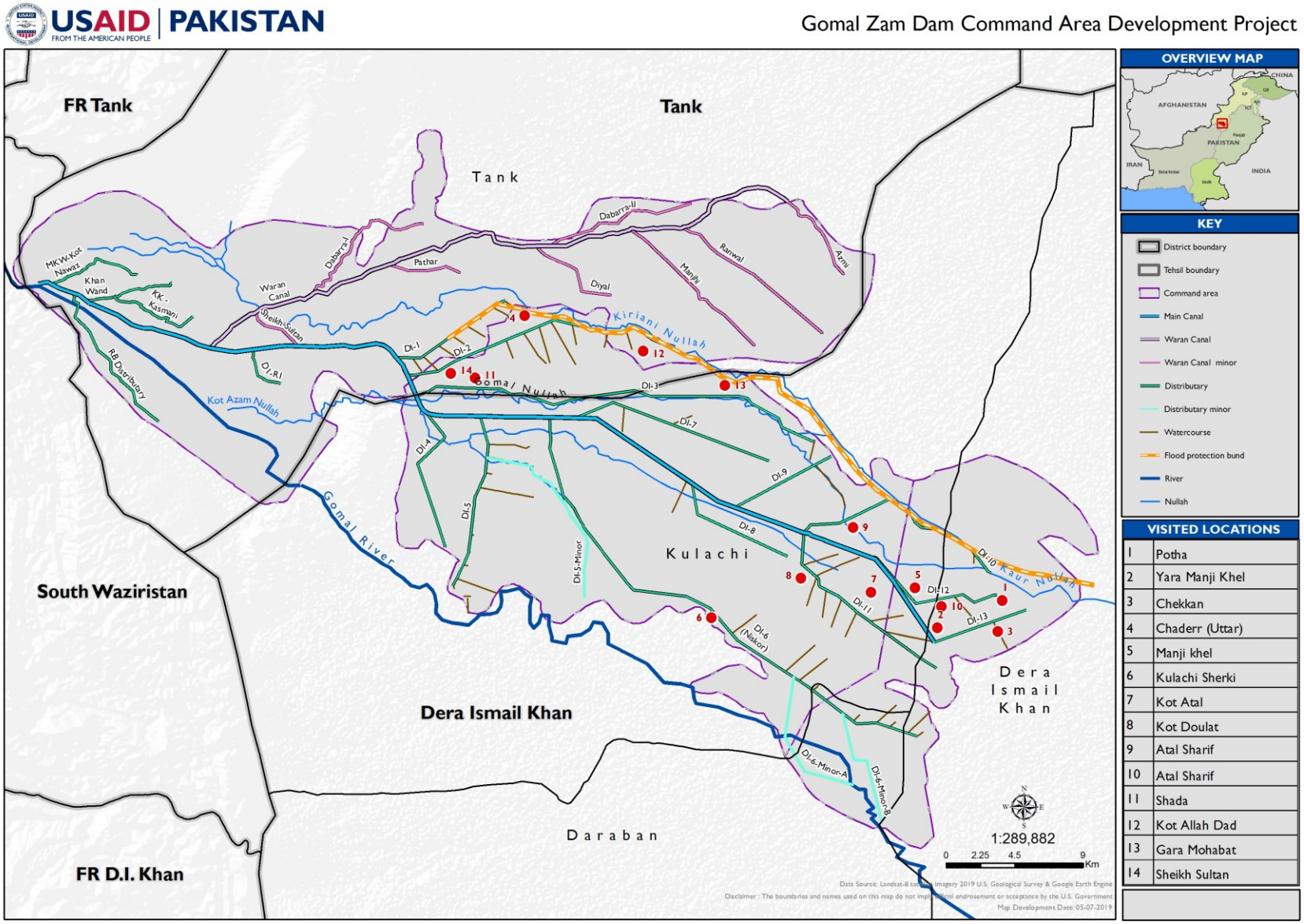
The Gomal Zam Command Area Development Project (CADP) is a government-to-government (G2G) project of the United States Agency for International Development in Pakistan (USAID/Pakistan) and the government of Khyber Pakhtunkhwa (GoKP). Table 1 summarizes basic information about the project.

TABLE 1: PROJECT SUMMARY

Title/Field	Project/Activity Information
Contract/agreement numbers	391-DOA-GZDCADP-001-001 (and amendments IL-001, IL-002, IL-003)
Start date	September 30, 2010
Completion date	September 30, 2017, extended to December 31, 2019 with Project Implementation Letter (PIL)-001
Location	Dera Ismail (D.I.) Khan and Tank districts of Khyber Pakhtunkhwa (KP) province
Implementing partner(s)	GoKP Planning and Development Department through the Department of Agriculture (DoA)
USAID/Pakistan Mission Strategic Framework objectives addressed[a]	DO 2: Improved economic status of focus populations IR 2.1: Improved economic performance of focus enterprises IR 2.1.3: Increased use of modern technology and management practices
Budget	$34.08 million[b] • $22.22 million (USAID) • $7.19 million (GoKP, cash and in-kind) • $4.67 million (farmers' cost-share)

a. Refers to the 2013–2017 Mission Strategic Framework under which the project was implemented.
b. U.S. dollar amounts for the GoKP and farmers' shares calculated using a Pakistani rupee (Rs.) 99 to $1.00 exchange rate.

FIGURE 1: GOMAL ZAM DAM COMMAND AREA



EXECUTIVE SUMMARY

Evaluation Purpose and Questions

The project[1] is far behind schedule, and delays have potentially deferred benefits and prolonged harms to intended beneficiaries. This evaluation develops recommendations for how USAID and the GoKP can accelerate implementation in this and future G2G projects. It also assesses the project's benefits to date and the likelihood that they will be sustained after USAID support ends, information that will guide USAID, Government of Pakistan (GoP), and GoKP decision-making on how best to continue supporting the project.

The evaluation addresses four questions:

1. How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?
2. How did the project's implementation/operation/management contribute to, or detract from, achieving anticipated results within the original life of the project?
3. Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?
4. Are project results likely to be sustainable beyond the end of the project and how?

Project Background

Farmers have for centuries raised crops and livestock along the Gomal River in the Tank and D.I. Khan districts of KP. Agriculture, however, relied on relatively unproductive spate irrigation that depends on unpredictable rainfall events to raise crops. Farmers thus struggle to meet their families' food requirements or to earn a living from agriculture.

In 2001, the GoP initiated the Gomal Zam Multipurpose Dam project to generate electricity, control flooding, and provide water to irrigate 191,139 acres of land, thus improving the livelihoods of the estimated 30,000 households in the dam's command area. The overall project consisted of three distinct phases: the Gomal Zam Dam project to build the dam; the Gomal Zam Irrigation Project (GZIP) and Waran Canal activity to construct the canal system to distribute water throughout the dam's command area; and CADP to construct tertiary watercourses, build the capacity of farmers to maintain watercourses and manage water distribution, and increase the productivity and profitability of crops and livestock. The three-year CADP (the subject of this evaluation) began in September 2015 and, after an extension due to slow progress, is scheduled to end in December 2019.

CADP consists of four components designed to build sequentially on the achievements of preceding components. Component one activities focus on constructing watercourses, forming and strengthening water users' associations (WUAs) to maintain the watercourses and manage water distribution, and promoting adoption of water-efficient technologies and practices. As farmers gain access to a perennial source of irrigation water through constructed watercourses, component two (starting in year two) promotes productivity-enhancing technologies and practices for crops and livestock to further enhance the benefits of the canal system. As production begins to increase, components three and four (starting in year three) promote value addition and market access to enhance farmers' financial return from crops and livestock.

[1] Although CADP is called a project, it is more accurately an activity in current USAID nomenclature. To avoid confusion, this report refers to CADP consistently as a project.

At the time of the evaluation in mid-2019, the project has made little meaningful progress on the core activities of component one, and this has postponed the start of components two through four, potentially deferring benefits to farmers.

Evaluation Methods and Limitations

In preparation for fieldwork, the evaluation team reviewed a rich set of project documents encompassing project design, implementation, and potential benefits. The findings and preliminary conclusions from the document review framed the primary data collection, which consisted of key informant and group interviews. The evaluation team conducted key informant interviews with individuals involved in project design, members of the project management and implementation units (the PMU and PIU), consultants, contractors, and others knowledgeable of the project and its outcomes. The team conducted group interviews with farmer members of WUAs and women's interest groups (WIGs), the social organizations consisting of beneficiaries that are instrumental in enhancing and sustaining project outcomes. The evaluation team further triangulated findings from the document review with secondary data including agricultural production statistics and analysis of satellite imagery to document changes in cultivated and irrigated area.

The evaluation faced few serious limitations. Perhaps the most serious was the absence of baseline data on agricultural production indicators, which limited the evaluation team's ability to quantify many project outcomes. The team was able, however, to create a plausible baseline, and trend, of cultivated area from analysis of satellite imagery, which it then triangulated with data reported by farmers and others. It also drew from a series of impact assessment studies of a similar nearby irrigation project—the Chashma Right Bank Canal (CRBC)—to explore the potential benefits of a fully developed and mature Gomal Zam command area.

Summary of Key Findings and Conclusions

Project Design

How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?

A design phase that lasted more than four years reflects the GoKP's limited capacity in project design as well as time-consuming USAID bureaucratic requirements. The prolonged design process probably did not delay the start of implementation, however, as the prerequisite Main Canal was not operational until March 2016, six months after CADP began. Deficiencies in the design itself, however, contributed substantially to delays in implementation. Specifically:

- The decision not to conduct the pre-implementation feasibility and master planning exercise required by the GoP left the project with only a concept note (the PC-1[2]) to guide implementation of the large and complex project.

- GoP and GoKP officials responsible for approving and finalizing the design failed to appreciate the project's complexity and thus did not specify a staffing plan appropriate to effectively managing the project or contracting, managing, or supervising the contractors and consultants who were essential to implementation.

[2] PC-1 is the project proposal form required for public sector development projects in Pakistan.

- The PC-1 stipulated staffing the project with government officers deputed from other departments at standard pay scales that were not adequate to attract highly qualified technical professionals to a hardship post.

Project Implementation

How did the project's implementation/operation/management contribute to, or detract from, achieving anticipated results within the original life of the project?

Delays in implementation largely reflect poor project management, due in part to decisions embedded in the design. Specifically:

- Project staff lacked the expertise to select a qualified consultant to conduct the feasibility study and develop a master plan or to effectively manage and supervise the work. Consequently, the exercise failed to provide any additional operational guidance in a timely manner.

- The project had five project directors, only one of whom was full-time (i.e., without additional duties) and posted full-time in the PIU.

- Project staff lacked the expertise necessary to procure the services of qualified contractors and consultants or effectively supervise their work. Consequently, the project engaged unqualified service providers to form and strengthen WUAs, substantially delaying this foundational activity, and the consequences rippled through all facets of implementation. Similar failures in procuring, managing, and supervising construction contractors substantially delayed watercourse construction.

- Project managers struggled to coordinate the many government units required to effectively implement project activities. Delays in handing over the canals from Pakistan's Water and Power Development Authority (WAPDA) to the Irrigation Department compromised WUA formation and watercourse construction, as did poor coordination between project staff, the Irrigation Department, and the Revenue Departments in developing revenue *chakbandi* [the boundary of an area served by a single outlet on an irrigation distributary or minor] and owners' lists.

Project Benefits

Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?

By providing a perennial source of irrigation water in the command area, the canal system constructed under GZIP unquestionably improved agricultural and livestock outcomes for command area farmers—expanding cultivated area by 90 percent or more; increasing yields, production, and income; creating new on- and off-farm employment opportunities; enhancing land value; and increasing economic activity in the command area. However, because CADP has not yet made substantive progress on the foundational WUA formation, watercourse construction, and land leveling activities, it has not appreciably enhanced the benefits associated with GZIP.

The benefits associated with the canal system accrue primarily to those who can access the water, and access is not equitably distributed. Barriers to more equitable distribution include the absence of tertiary watercourses to distribute water far from the canal system, ineffective enforcement of water rights, and slow adoption of more efficient irrigation practices. The three primary activities of CADP's first component directly address these issues and are thus crucial to extending and enhancing the benefits associated with the canal system. However, time is of the essence as failure to address these issues

perpetuates inequities in access to water, contributes to damaged infrastructure, and threatens the sustainability of the benefits attributable to GZIP.

Sustainability

Are project results likely to be sustainable beyond the end of the project and why?

Economic incentives alone should largely sustain the substantial production-related benefits (e.g., increased cultivated area, production, and incomes) that farmers who can access canal water enjoy, as long as the canal system is maintained and operational. Although these benefits are largely attributable to GZIP, they reflect the sustainable benefits that CADP interventions can extend to a much greater number of farmers. Secondary benefits associated with increased production (e.g., increased on- and off-farm employment, land values, and economic activity) should also be sustainable under the same conditions.

USAID/Pakistan's experience with agricultural development activities similar to CADP components two through four[3] suggests that such interventions have the potential to sustainably enhance the benefits associated with completing component one. The likelihood of sustainability, however, relies on thoroughly understanding the relevant value chains and supporting them with government resources, such as extension services and Farm Services Centers, and—importantly—meaningfully engaging relevant private sector actors such as input dealers, service providers, processors, and traders.

Key Recommendations

To accelerate the pace and quality of implementation, the GoKP must, as a matter of utmost urgency, strengthen project management capacity; address gaps in staffing; engage, and adequately supervise, a qualified and competent social mobilization consultant to form and strengthen WUAs; and develop a new approach to watercourse construction. Specific recommendations to address these issues include:

Project Management

- The project should conduct a strategic planning exercise to develop a detailed work plan with realistic targets for completing the project within the remaining time.
- The project needs to fill key gaps in its staff's expertise, e.g., procurement, contracts, monitoring and evaluation, social mobilization, and human resources, as soon as possible with competent and experienced professionals.
- The project should engage an experienced, full-time project management professional (or team) as part of senior management to help plan, coordinate, and manage project activities.
- The GoKP needs to appoint a full-time, dedicated, and qualified project director posted in D.I. Khan for the duration of the project.

[3] Management Systems International, *Satpara Development Project Evaluation: Irrigated Agriculture in Gilgit-Baltistan* (Islamabad: USAID, 2015); Management Systems International, *Building Sustainable Agribusinesses in Pakistan: Final Evaluation of the Agribusiness Project* (Islamabad: USAID, 2015); Management Systems International, *Improving the Competitiveness of Small and Medium Enterprises in Pakistan: Final Evaluation of the Firms Project* (Islamabad: USAID, 2014).

Strengthening WUAs and WIGs

- The project must prioritize forming WUAs and WIGs using a true social mobilization process and strengthening new and existing groups to be sustainable and capable of performing their roles in the project.

- Clarify the objectives of and approaches to strengthening WUAs and WIGs; reassess consultants to determine whether they have the understanding and capability to perform the work; and make changes if necessary to accomplish this critical objective quickly.

- Design and implement a communication strategy to educate communities about their water rights and the implications of the transition from a spate irrigation system to a regulated perennial system.

Water Distribution and Use

- Where feasible (i.e., where watercourses have not been completed and where water is available), consider allowing farmers to lay out and construct unlined, earthen watercourses. Consider other approaches to improving watercourses, such as coordinating with the National Program for Improvement of Watercourses through On-Farm Water Management (OFWM).

- Develop and implement a strategy for executing land leveling. Develop criteria for facilitating land leveling among farmers, perhaps by offering a subsidy to anyone interested.

- Facilitate orientation meetings between contractors and farmers before construction begins on each watercourse to elicit farmers' input on watercourse design, layout, construction, timing, and other issues to encourage farmers' understanding and cooperation during the construction process.

Recommendations to USAID for Improving the Performance of Future G2G Projects

- To the extent possible within ADS 220 requirements, USAID should consider following the lead of donors such as the Asian Development Bank and reserve for itself a stronger role in project design, management, and oversight.

- In future G2G projects, USAID should consider directly providing technical assistance to fill critical positions the government may not be able or willing to fill based on the project staffing plan. Select the individuals or firms for these positions, hire them directly at competitive rates, and embed them within the project staff.

- For projects that engage the private sector as contractors, USAID should review its arrangements for independent monitoring and verification to ensure that they do not unduly burden service providers.

EVALUATION PURPOSE AND QUESTIONS

Since CADP began in September 2014, the project has made little meaningful progress on its core activities despite USAID's extension of the planned end date from September 2017 to December 2019. The lack of progress has deferred much-anticipated benefits to command area farmers and led USAID to question its continued support of the project. This midterm evaluation (conducted between January 11 and July 15, 2019) generates recommendations for accelerating, and improving, project implementation and develops lessons learned to improve the design, implementation, and performance of future G2G projects. The evaluation's findings and conclusions on project benefits and their likely sustainability will guide USAID, GoP, and GoKP decision-making on how best to continue supporting the project.

Evaluation Questions

To address these objectives, the evaluation documents GoP and GoKP project design and implementation processes and how they played out in CADP; explores the project's benefits and their likely sustainability to date; and assesses the likelihood that continued USAID support will enhance benefits or their likely sustainability. The evaluation addresses four questions which are further elaborated in the evaluation statement of work and assignment work plan (Annexes 1 and 2):

1. How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?
2. How did the project's implementation/operation/management contribute to, or detract from, achieving anticipated results within the original life of the project?
3. Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?
4. Are project results likely to be sustainable beyond the end of the project and how?

PROJECT BACKGROUND

For centuries, farmers eked out a living on the Daaman Plain where the Gomal River emerges from the Sulaiman Mountains in the Tank district of KP. Farming relied on spate irrigation (*rod kohi* in the local language) in which farmers divert floodwater from seasonal channels fed by unpredictable heavy rains and impound it in their fields. Upstream farmers have first rights to the water, with rights passing successively downstream as upstream farmers meet their needs. Because they rely on unpredictable rainfall events, spate irrigation systems are relatively unproductive.

In 2001, the GoP set out to introduce modern canal-based irrigation to the region in an effort to increase agricultural productivity and the well-being of the estimated 30,000 command area households who rely largely on subsistence agriculture for their livelihoods. From 2011, USAID/Pakistan supported the work through the Gomal Zam Multipurpose Dam project, of which CADP (the subject of this evaluation) is the third and final phase. Because each phase depended on the successful execution of the preceding phase, the current status of each phase is important context for this evaluation.

In January 2011, USAID/Pakistan contributed $40.00 million to completing the Gomal Zam Dam, started by the GoP in South Waziristan Agency in 2001.[4] The dam was designed to generate electricity, control flooding, and provide perennial irrigation to 163,086 acres[5] of culturable land situated in the Tank and D.I. Khan districts of KP (Figure 1). The dam was completed in June 2013.

In October 2011, USAID contributed $40.00 million to fund GZIP, which constructed a canal system to distribute irrigation water from the dam within the command area. In July 2012, USAID provided an additional $12.00 million to construct the Waran Canal (a major distributary of the GZIP Main Canal) and associated distributaries that added 28,053 acres to the command area, increasing its total size to 191,139 acres. USAID subsequently increased funding for GZIP and the Waran Canal, respectively, by $11.52 million (in June 2015) and $8.16 million (in September 2015). The Main Canal and its distributaries and minors came on line in March 2016. The Waran Canal was not yet complete at the time of this evaluation.

In March 2015, USAID executed a $22.22 million agreement with the KP Planning and Development (P&D) Department to fund CADP, with the aim of constructing the tertiary watercourses to further distribute water from the canal system, forming and strengthening WUAs to maintain watercourses and manage distribution, and otherwise improving agricultural production within the command area.[6] The water available annually from the dam for irrigation is not sufficient to adequately irrigate the entire command area using current irrigation practices.[7] Therefore, CADP also promotes the high-efficiency irrigation systems and practices necessary to fully realize the potential benefits of the interventions.

CADP implements four components to achieve these objectives. Figure 2 summarizes these components, their planned duration, and current status. Annex 3 provides a more detailed description of the components' activities and status.

Sequencing of activities is important to achieving intended outcomes. WUAs should be formed and strengthened to play their intended role in watercourse layout and construction; farmers should have access to perennial water before the project begins work on productivity enhancement; and production should start to rise before implementing value addition and marketing activities. Slow progress on component one activities has therefore substantially postponed implementation of components two through four.

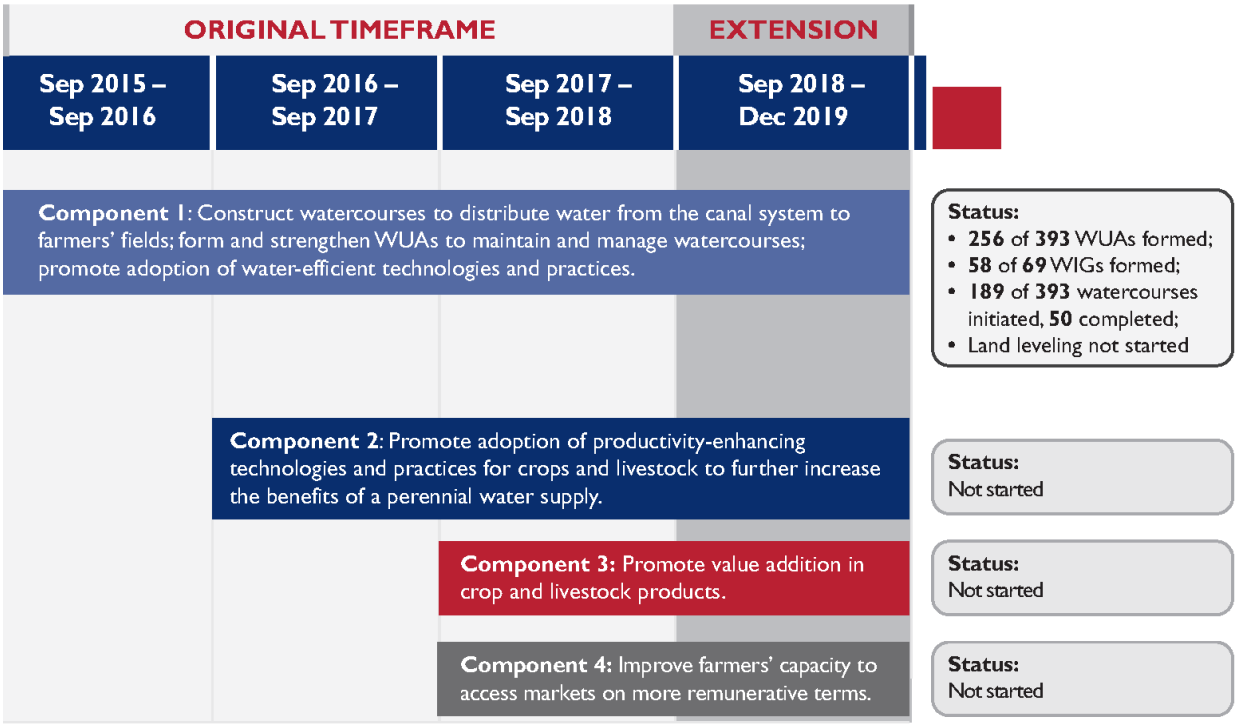
[4] In May 2018, the 31st Amendment to Pakistan's constitution merged the seven agencies of the Federally Administered Tribal Areas and the Frontier Regions into the Khyber Pakhtunkhwa (KP) province. South Waziristan is now a district in the Dera Ismail Khan division of the KP province.

[5] Different documents report slightly different acreage values.

[6] In March 2013, USAID increased funding for the dam by $5.00 million, thus increasing the total USAID investment in all three phases of the Gomal Zam Multipurpose Dam Project to $138.9 million. Office of Inspector General. *Audit Report 5-391-18-001-P: Pakistan's Gomal Zam Dam Has Not Generated the Electricity Anticipated Despite Millions in USAID Investments,* (Islamabad: Office of Inspector General, U.S. Agency for International Development, February 12, 2018).

[7] According to the PC-1, the 324,400 acre-feet of water supplied by the dam and canal systems is sufficient to "dependably irrigate 163,086 acres (employing traditional methods) or 191,560 acres (with improved methods per the PC-1). The dam and canal systems were designed to support only a 60 percent cropping intensity on more than half of the command area and intensities of 100 to 120 percent on the rest."

FIGURE 2: CADP COMPONENTS AND CURRENT STATUS



Development Hypothesis

The CADP development hypothesis suggests that further developing command area infrastructure (watercourses); forming and strengthening social structures (WUAs) to manage the infrastructure and water distribution; promoting water-efficient modern irrigation technologies and practices to extend the benefits to as many farmers as possible; and enhancing farmers' ability to profit from the perennial water will improve yield, production, and income derived from crop and livestock activities, thus contributing to increasing household income for about 30,000 households, creating new on- and off-farm employment opportunities, and advancing overall economic development of the command area.

EVALUATION METHODS AND LIMITATIONS

The mixed-methods evaluation selected approaches best suited to answering each of the evaluation questions. Qualitative methods are most appropriate to developing a detailed understanding of complex design and implementation processes. The evaluation team therefore relied largely on document review and individual and small group interviews to document these processes and identify causes of delays. The team interviewed individuals involved in, knowledgeable of, or affected by each of the facets of these processes to triangulate findings across a diverse range of perspectives and experiences.

To assess project outcomes, benefits, and the likelihood of sustainable results, the evaluation examined secondary data and analyses to obtain quantitative estimates of potential benefits. It then used qualitative data obtained through interviews with beneficiaries and other knowledgeable individuals to triangulate and explain the quantitative estimates. For example, the evaluation team obtained estimates of changes in cultivated land within the command area from analysis of satellite imagery. It then triangulated these

findings with qualitative data from interviews with command area farmers and others to validate the quantitative findings and plausibly attribute outcomes and benefits to CADP activities.

Data Collection and Analysis

The evaluation team collected secondary data from project and other documents (see the bibliography in Annex 4), satellite imagery, and the KP Crops Reporting Service. It collected primary data through individual and group interviews with people involved in project design, PIU and PMU staff involved in implementation, consultants, watercourse construction contractors, Farm Services Center representatives, USAID personnel, and members of WUAs and WIGs. The team's document review suggested that farmers' experiences with the canal system may depend on their location along a watercourse. The evaluation team thus selected a sample of WUAs for interviews to represent a range of positions along a watercourse, and also to capture farmers' views from both watercourses that are completed and those that are not. Figure 1 illustrates the location of selected WUAs.

The team developed five core interview modules that addressed issues of the project design process, characteristics of the design, implementation, outcomes (benefits and harms), and prospects for sustainability (defined as the likelihood of project outcomes' continuing after donor funding ends). Discussion guides (Annex 5) included the modules relevant to the interviewed individual or group. Annex 6 summarizes the content of the various discussion guides and provides a complete list of the evaluation team's interviews.

Data Analysis

The evaluation team used analysis methods appropriate to the type of data: analysis of satellite imagery to estimate changes in cultivated area, descriptive statistics to present quantitative data on agricultural production and farmers' experiences, and rigorous analysis of qualitative data with MAXQDA—software for managing and analyzing qualitative data—to explain the quantitative data and to unpack design and implementation processes. Annex 7 presents a brief description of the team's approach to analyzing the data to answer the evaluation questions.

Limitations

The evaluation did not face serious limitations. Although the project did not have reliable baseline data on agricultural production indicators, the evaluation team was able to create a plausible baseline, and trend, of cultivated area from analysis of satellite imagery—which it then triangulated with data reported by farmers and others. The analysis also mitigated this limitation to some extent by reviewing a series of impact assessment studies of the CRBC command area as a proxy for the benefits of a fully developed and mature Gomal Zam command area.

The absence of reliable quantitative data, and the time and effort required to collect such data, limited the team's ability to precisely quantify many outcomes mentioned in the evaluation statement of work. However, Mission staff agreed that quantitative measures of outcomes were not necessary.

FINDINGS AND CONCLUSIONS

Design Process and Design

Question: How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?

Public sector development projects in Pakistan start with the sponsoring department developing a project proposal—the PC-1. For infrastructure projects costing Rs. 50 million or more, the GoP also requires a feasibility study to define the project scope and develop a detailed design and indicative budget.[8] The PC-1 approval process depends on the project's size and activities. The Provincial Development Working Party (PDWP) can approve projects up to Rs. 10 billion, above which approval of the federal Central Development Working Party (CDWP) and the Executive Committee of National Economic Council (ECNEC) is required. Regardless of cost, projects with a foreign financed share above 25 percent (USAID's share in CADP was initially 71 percent) also require CDWP/ECNEC approval. Design and approval of the CADP PC-1 followed this process, although it incorporated the required feasibility study as a project activity rather than as a separate study prior to beginning implementation.

Designing and approving CADP and executing the activity agreement between USAID and the GoKP required 51 months from the date of USAID's Project Appraisal Document (PAD) on June 9, 2011, to signing the Project Implementation Letter (PIL) on September 8, 2015 (Figure 3).

Developing the PC-1 (about 17 months) and approving it (about 25 months) consumed most of the lengthy design and approval period. The six-month period between executing the activity agreement and producing the PIL authorizing the GoKP to begin implementation was also considerable.

Developing the PC-1

According to USAID personnel, the DoA produced several drafts of the PC-1 that USAID found unsatisfactory. Ultimately, USAID, at the request of the GoKP, engaged a consultant to work with the DoA to draft the PC-1. The DoA further refined the PC-1 (e.g., according to the design consultant, replacing USAID's proposed administrative structure with one that relied on deputed government employees and stipulating government pay scales), and the final version proposed a five-year project with a budget of Rs. 4,300 million ($43.43 million,[9] with a USAID share of $31.00 million or 71.4 percent of the total).[10] The few people the evaluation team interviewed who were directly involved in the design[11] said the consultant hired to write the PC-1 conferred with line department staff but that nobody engaged farmers in the design process.

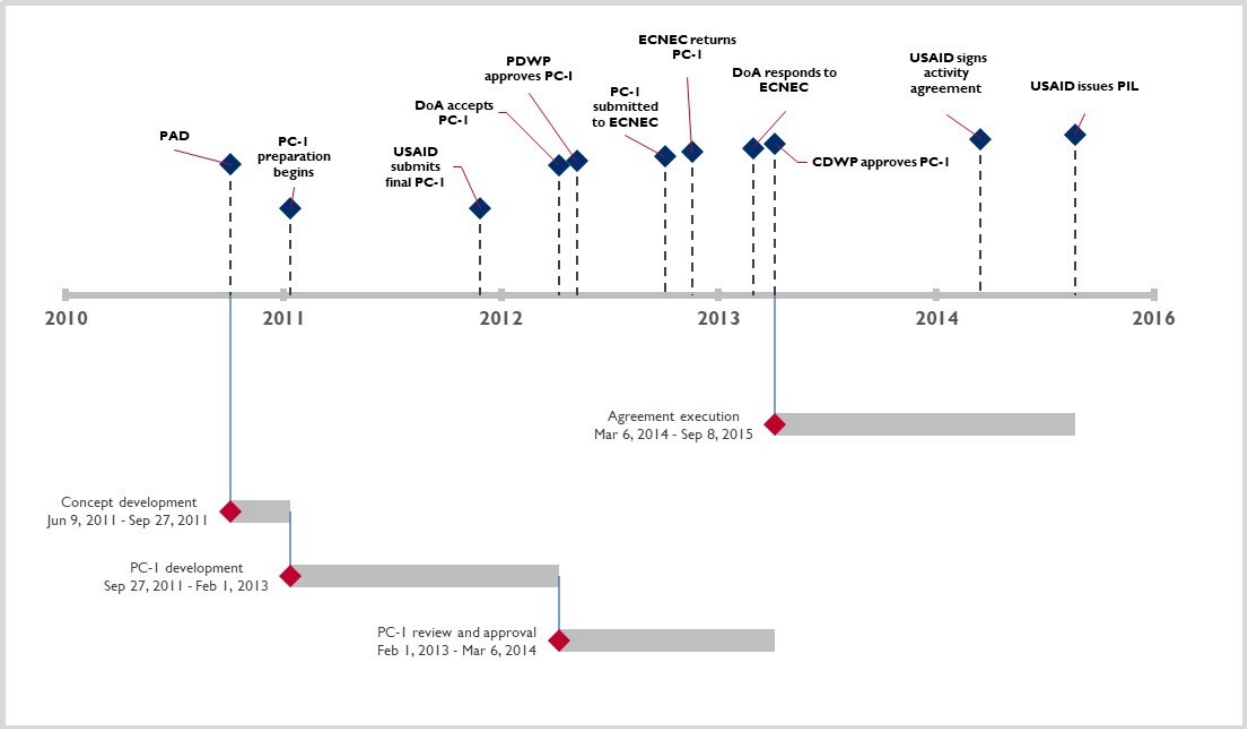
[8] Government of Pakistan, Ministry of Planning, Development and Reform, *Manual for Development Projects: Identification, Preparation, Appraisal, Approval, Implementation, Monitoring and Evaluation* (Islamabad: Government of Pakistan, 2017).

[9] The PC-1 used an exchange rate of $1.00=Rs. 99.00.

[10] DoA (Department of Agriculture, Livestock and Cooperatives), Government of Khyber Pakhtunkhwa. *PC-1: Gomal Zam Dam's Command Area Development and On-Farm Water Management for High Value and High Efficiency Agriculture Project (GZD-CADP),* (Peshawar: Department of Agriculture, Livestock and Cooperatives, June 2014).

[11] Provincial assistant chief agriculture, chief planning officer, assistant chief foreign aid, deputy director (and former project director) OFWM, and the design consultant.

FIGURE 3: PROJECT DESIGN PROCESS TIMELINE



Sources: Various project and USAID documents and the evaluation team's interviews. See Annex 8 for milestone dates.

Approving the PC-1

The PC-1 approval process progressed relatively quickly at the provincial level—PDWP approved it in about five weeks and submitted it without changes to CDWP. CDWP/ECNEC reviewed it about six weeks later and recommended that the DoA reduce the life of the project from five to three years and the budget from Rs. 4,300 million to Rs. 3,000 million with the justification that:

> *"1) [I]t would be ridiculous to develop command area in duration of next 5 years while the dam would be ready and water from the dam will be available by end of 2014 and 2) The command area to be developed is 163,000 acres of land while 28,053 acres of land which falls under the command of Waran Canal has already been developed and is under utilization."*[12,13]

A senior P&D official involved in processing the PC-1 told the evaluation team that the rationale for the changes was not correct but no technical people were present to defend the PC-1. USAID communicated to the GoP its concern that ECNEC's proposed changes omitted critical project elements and would compromise the project's effectiveness and timely implementation. Despite the pressure from USAID, however, the CDWP/ECNEC decision stood.

Senior DoA and USAID officials involved in processing the PC-1 reported that it took about four months to respond to CDWP/ECNEC direction and submit a revised PC-1. They explained that it took time to consult with the involved line departments to prioritize activities and reallocate the revised

[12] Ministry of Planning, Development, and Reform. "Position Paper for ECNEC," (Islamabad: Government of Pakistan, no date).

[13] The Waran Canal was not finished or in operation, and its command area was not developed, so the total area requiring development was the 191,139 acres included in the PC-1.

budget suggested by ECNEC (Annex 9). The CDWP approved the revised PC-1 in about six weeks (on March 6, 2014).

It took another year, spent largely satisfying bureaucratic requirements related to environmental compliance and risk assessment and mitigation, for USAID to draft the activity agreement. A USAID official involved in the project design explained:

> *"USAID started working on the activity agreement immediately after PC-1 approval but took almost a year to finally get it signed. The main reasons were completion of the environmental documentation [Environmental Documentation Form and Environmental Mitigation and Monitoring Plan, or EMMP] by a third party in October 2014, the PFMRAF [Public Financial Management Risk Assessment Framework] through a follow-up assessment in June 2014, and the Risk Mitigation Plan [RMP], which was approved by USAID in February 2015. These two documents (EMMP and RMP) were pre-requisites before sub-obligation of funds through the activity agreement."*

It then took USAID an additional seven months to produce the PIL so the project could formally begin. A USAID representative involved in the design attributed this to "USAID bureaucracy."

Design

Not only was the design process lengthy, but it produced only the PC-1, a general concept note that lacked the specificity to effectively guide implementation—a failing that this evaluation concludes is perhaps the single most consequential cause of the prolonged and poor-quality implementation. Contrary to GoP regulations that require a feasibility study for a complex project the size of CADP,[14] the PC-1 incorporated the feasibility study into implementation.[15] Consequently, the project began implementation guided only by the PC-1 and, due to the project's limited capacity to select and supervise qualified consultants, did not have a final master plan until January 2017, 16 months after the project began.

Furthermore, the final feasibility study and master plan did not augment the PC-1 in any meaningful way and lacked the detail necessary to effectively guide implementation.[16] Halcrow Pakistan, USAID's independent monitoring and verification contractor, raised concerns about the quality of the feasibility study in its site visit reports spanning a period of about a year, citing unprofessional work and errors, and during interviews Halcrow representatives said they had to play a major role in finalizing the study report.[17] PIU staff and other stakeholders also questioned the value of the feasibility study, and when asked directly, one staff member said the reports were not timely, useful, or used. Identified issues included the relevance of proposed interventions, improperly specified activities (e.g., the failure to require sulphate-resistant cements that could better withstand the high levels of dissolved salts in the area's water), and errors in the reports that demonstrated limited knowledge of agriculture. The views of an agricultural professional on the PIU staff exemplify these concerns:

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[14] "It is mandatory that all infrastructure projects (or having infrastructure component) costing Rs.50 million or above should be based on feasibility studies (PC-II) including reference design and bill of quantities, etc." GoP, *Manual for Development Projects* (GoP, 2017), 68.

[15] The evaluation team was unable to determine who made this decision.

[16] AAB (Pvt.) Ltd. *Master Plan of 393 Mogas of GZD-CADP Volume-I (Text),* (Islamabad: USAID, July 2017) and AAB (Pvt.) Ltd. *Feasibility and Baseline Report of GZD-CADP,* (Islamabad: USAID, July 2017.

[17] Halcrow Pakistan (Pvt) Limited. *GZD-CADP Site Visit Report No. 2,* (Islamabad: USAID, September 23, 2016).; Halcrow Pakistan (Pvt) Limited. *GZD-CADP Site Visit Report No. 3,* (Islamabad: USAID, March 2, 2017).; Halcrow Pakistan (Pvt) Limited. *GZD-CADP Site Visit Report No. 4,* (Islamabad: USAID, April 19, 2017).; and Halcrow Pakistan (Pvt) Limited. *GZD-CADP Site Visit Report No. 5,* (Islamabad: USAID, July 20, 2017).

"We did not agree with the livestock development plan suggested in the feasibility report when we were asked to give our feedback on that. The activities [milk chillers] proposed by the feasibility study were not applicable and not practical as well."

Consequently, this large and complex project—which required deliberate sequencing of activities, hiring and supervising of private sector contractors and consultants, engaging multiple line departments and coordinating their activities, and working closely with communities to prepare them for a new irrigation regime—was ultimately left with little more than a concept note to guide implementation. The most consequential failings of the design that affected the start date, pace, and quality of multiple project activities include:

- Failing to anticipate, and mitigate, the difficulties in obtaining revenue *chakbandi* and owners' lists;
- Not including contracting, procurement, and social mobilization specialists in the staffing plan for a project that relied on hiring and effectively supervising watercourse construction contractors and consultants to manage a critical social mobilization component;
- Prioritizing hiring government personnel at standard rates that were insufficient to attract highly qualified individuals to a hardship post;
- Providing limited guidance on the qualifications of anticipated consultants; and
- Not accounting for security issues that hampered access to the field.

Revenue Chakbandi and Owners' Lists

Revenue chakbandi and owners' lists are essential inputs for forming WUAs and constructing watercourses. Owners' lists identify the irrigators within a watercourse command area—the eventual members of the WUA and the owners of the land through which contractors must construct watercourses. Although it is not the project's responsibility to produce revenue *chakbandi* and owners' lists, none of the basic planning documents (PC-1, feasibility study, or master plan) mentioned revenue *chakbandi* or owners' lists or anticipated the difficulties involved in obtaining them.[18] It took the project about 10 months to receive any (66) of the 393 revenue *chakbandi* and another 3 months to obtain the owners' lists associated with some (49) of these *chakbandi*. According to its quarterly progress reports, the project had received owners' lists for only 75 percent of watercourse commands at the time of the evaluation, more than three years into implementation.

Difficulties in obtaining revenue *chakbandi* and owners' lists, along with not engaging the appropriate expertise in WUA formation, were the most significant causes of delays in forming WUAs—delays that cascaded through all aspects of implementation.[19] The PIU staff member in charge of managing the WUA formation process said, "The formation of WUAs would have been ensured without wasting any time if owners' lists were received in a timely manner in the beginning."[20] The explanations provided by parties involved in implementation suggest that the project's difficulties in obtaining revenue *chakbandi* derived largely from the multiple government departments involved in the process,[21] some of which (i.e., Revenue Department) were not formally engaged with the project and thus had little ownership; rapid turnover in land ownership within the command area; and out-of-date ownership records. The following

[18] AAB (Pvt.) Ltd., *GZD-CADP Master Plan*.; AAB (Pvt.) Ltd., *Feasibility Study Report*.; and DoA, *GZD-CADP PC-1*.

[19] Among the evaluation team's 19 interviews with individuals directly involved in implementation (PIU and line department staff and consultants), 10 mentioned the absence of owners' lists as a cause of delay.

[20] Interview with senior PIU representative involved in implementation.

[21] Pakistan's Water and Power Development Authority (WAPDA) was responsible for providing the engineering *chakbandi*, the Irrigation Department (in two districts) was responsible for providing the revenue *chakbandi*, and the Revenue Department (in three tehsils) was responsible for the owners' lists.

quote from the evaluation team's interview with the consultant responsible for forming WUAs illustrates these challenges.

> *"I conducted a survey, in the year 2000, the owners were rapidly changing. … about 25 percent of the … owners were changed. If you get data and the names in it are from 20 years ago, what will you do? … These are small things but create big problems." – Interview with Taaleem Foundation, Islamabad*

Staffing

Implementation also suffered from a number of staffing issues, many related to decisions embedded in the PC-1 that did not include some necessary positions, specified qualifications that were not consistent with job requirements, and did not consider the compensation packages necessary to attract qualified personnel to work in the difficult project area.[22]

Respondents to the evaluation team's interviews most frequently mentioned the absence of a full-time, dedicated project director posted in D.I. Khan as a cause of delayed and poor-quality implementation.[23] They explained that a full-time, on-site project director is necessary to motivate and supervise staff, interact with community members, and make timely decisions. Project directors with additional charges or those not posted in D.I. Khan cannot effectively perform these tasks.[24]

> *"The project director was not there. They [project staff] would tell the project director that they are in the field, but in fact they weren't in the field. All of these things led to delays because decisions were not made. The approval authority was not on the spot." – Interview with representative of AAB Pvt. Ltd., feasibility and master planning consultant*

The project appointed a temporary[25] project director in May 2014 to guide startup while the project sought a full-time director. It hired a full-time director from the private sector in May 2015—two months after USAID and DoA executed the activity agreement. A monitoring exercise conducted by the Directorate General of Monitoring and Evaluation, Planning and Development, GoKP, in May 2016, however, concluded that "The incumbent project director…is not versatile or proactive to plan, coordinate, and implement such an essentially important project," and recommended taking strict disciplinary action against the project director for failing to effectively manage implementation and for allegations of nepotism in hiring project staff.[26] Consequently, the project did not renew his contract.[27] A second monitoring exercise conducted in August 2016 again noted that implementation was well behind schedule and, among other things, recommended hiring a dedicated project director stationed in D.I. Khan.[28] Nevertheless, between May 2016 and August 2019, the project had three project directors, all with additional charges. In August 2019, the project appointed the last of these temporary project directors to be the full-time director and posted him to D.I. Khan.

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[22] The consultant who drafted the PC-1 reported that the GoKP made these decisions.

[23] Sixty-five percent of interview respondents directly involved in implementation or project management (i.e., representatives of PIU, PMU, and the GoKP, as well as consultants) mentioned the lack of a full-time, dedicated project director stationed in D.I. Khan as a cause of either delay or poor quality.

[24] Of the project's five project directors, only one (hired from outside government) did not have an additional charge and was posted in D.I. Khan.

[25] The first project director held an additional charge of district director of OFWM in Peshawar.

[26] Government of Khyber Pakhtunkhwa, *Visit Report of Gomal Zam Command Area Development Project Dera Ismail Khan Khyber Pakhtunkhwa,* (Peshawar: Government of Khyber Pakhtunkhwa, May 2016).

[27] One individual the evaluation team interviewed suggested that political considerations influenced the decision not to renew the project director's contract.

[28] GoKP, *Visit Report*.

For other staff positions, the project reported hiring all support staff (grades 1–16) by the quarter ending March 2016.[29] Hiring technical staff of grades 17 and above was more challenging, however, due to their hesitation to relocate to the relatively difficult and insecure D.I. Khan for the offered government salaries.[30] A previous project director the evaluation team interviewed explained how this affected staff quality:

> *"The posts were advertised, and the project director before me tried to recruit, but nobody was willing to come to D.I. Khan on the pay [basic pay scale] government was offering. We advertised the positions three times but we failed to hire proper people. … Then I took up this case with the then secretary agriculture and he gave me people from the surplus pool which are normally useless people."*

Even then, however, the project was missing key positions necessary to implement the project effectively, deficiencies that continue to plague implementation and compromise quality.[31] Individuals the evaluation team interviewed specifically noted the lack of monitoring and evaluation, procurement, contracts, logistics, and administrative specialists.[32] The following quote from a PIU representative illustrates these concerns:

> *"We don't have a procurement specialist here, we were doing EOIs [expressions of interest], RFPs [requests for proposals], and other things ourselves. This is a reason why we had to face an inquiry, but that was settled later."*

In one of its site visit reports,[33] Halcrow Pakistan summarized the consequences of poorly qualified PIU staff on project management.

> *"The PIU staff has no capacity to monitor and supervise the work of project consultants. … PIU staff had never raised concerns on the reviewed work of MPC [master planning consultant] rather kept forwarding the submitted numerical figures about progress. … Similarly, PIU staff is forwarding progress reports of DSC [design and supervision consultant] and OFWM Directorate without any proper verification at their own end. It appears that the Project is relying too much on the review of documents by the A-E [architect and engineering] Contractor rather than undertaking proper review at their level as well."*

As a consequence of these staffing issues, the project did not have a full complement of staff until September 2017,[34] leaving it without the expertise to competently contract or effectively supervise the contractors and consultants responsible for implementing key project activities.

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[29] PIU (Project Implementation Unit), GZD-CADP. *Third Quarterly Progress Report (January-March, 2016),* (Peshawar: Department of Agriculture, Livestock & Cooperatives, March 31, 2016).

[30] P&D (Planning and Development Department: Agriculture and Environment Section), Government of Khyber Pakhtunkhwa. "Minutes of Provincial Steering Committee for Gomal Zam Dam Command Area Development Project," (Peshawar: Planning and Development Department, June 20, 2017).

[31] Participants in 52 percent of the evaluation team's 23 interviews with individuals directly involved in project implementation or management said that the staffing plan did not include some necessary positions, and 26 percent said some staff members did not have the qualifications necessary to competently perform their assigned tasks.

[32] Seven interviews—four with PIU representatives and three with consultants—mentioned that the PIU did not have the necessary staff positions to implement the project effectively or efficiently.

[33] Halcrow Pakistan (Pvt) Limited, *GZD-CADP Site Visit Report No. 5,* (Islamabad: USAID, July 20, 2017).

[34] PIU, *Quarterly progress reports*.

Security

None of the design or implementation documents—i.e., the PC-1, feasibility study report, or master plan—mentioned security. However, the tenuous security situation in the command area affected all field-based project activities. Four of the nine PIU staff members the team interviewed said that security concerns limited their access to the field. All four contractors the evaluation team interviewed reported being threatened, and one said his representative was killed while in the field. Consultants also reported discomfort with the security situation and reported that dusk-to-dawn curfews limited their time in the field, especially as they did not maintain offices in the command area and had to travel daily from D.I. Khan city.

The GoKP's monitoring exercise in May 2016 noted the security issue and recommended that "The quick response force of FWO [Frontier Works Organization] may be engaged at the earliest to facilitate technical staff to implement project activities in time."[35] The project steering committee meeting on August 18, 2016, noted that the PC-1 contained no provision for engaging the quick response force but that district administrations had ensured the security of project staff. The evaluation team's interviews with project staff and consultants, however, suggest that security remained a concern throughout implementation. Although security was an ever-present concern that slowed implementation, it is difficult to quantify the impact of security on project activities.

Conclusions

The project's design process, while lengthy, probably did not unduly delay implementation, as some of the prerequisite infrastructure upon which CADP depended—e.g., the Main Canal and Waran Canal—was not in service until after CADP began. However, the GoKP's management of the design process demonstrates that it did not appreciate the complexity of CADP and lacked the capacity to manage a design process for a project of CADP's complexity. Consequently, the project began implementation with little more than a concept note, the PC-1, to guide implementation. Consequential deficiencies in the PC-1 that spilled over into almost every facet of implementation included the following:

- The decision to skirt the GoP requirement to conduct a feasibility study prior to implementation left the project without a detailed work plan that should have guided implementation and identified, and proposed mitigation strategies for, key constraints such as the difficulties involved in obtaining revenue *chakbandi* and owners' lists.

- The staffing plan relied on government employees deputed from other assignments (or the surplus pool) and pay scales that were inadequate to attract highly qualified candidates to a hardship post. These issues substantially extended the time required to hire the project's technical staff, which slowed implementation. It also contributed to hiring staff who did not have the experience necessary to effectively perform their tasks, e.g., the monitoring and evaluation officer.

- Not including contracting, procurement, or social mobilization specialists in the staffing plan left the project without the expertise to develop and manage contracts or effectively supervise the work of contractors or consultants—including the supervision consultant.

- The PC-1's lack of clarity on the role of WUAs and the expertise required to form and strengthen them contributed to the project's selecting service providers to implement this

[35] GoKP, *Visit Report*.

foundational activity who did not have the necessary expertise in social mobilization, which substantially affected the quality and timeliness of WUA formation and strengthening.

Implementation

Question: How did the project's implementation/operation/management contribute to, or detract from, achieving anticipated results within the original life of the project?

The project's failure to make meaningful progress on the three foundational activities of component one (forming and strengthening WUAs and WIGs, constructing watercourses, and leveling land) reflects poor project management and the deficiencies in design described in the previous section. Because components two, three, and four have not yet started, the evaluation collected no evidence on the implementation of these components. It thus addresses implementation of one critical administrative activity—procuring consulting services—and the three core activities of component one—WUA and WIG formation, watercourse construction, and land leveling.

Procuring Consulting Services

Project implementation relied extensively on the services of consulting firms 1) to conduct a feasibility study and formulate a master plan, 2) to design the watercourses and other structures and produce the associated bill of quantities for required materials, 3) to supervise the quantity and quality of the work conducted by watercourse construction contractors and consulting firms, and 4) to form and build the capacity of WUAs and WIGs. Ultimately, the project combined the design and supervision services under one contract.

The PC-1 contained illustrative outlines for the requests for proposals for the first three of these consultancies but did not specify selection criteria or processes which are governed by the KP Public Procurement Regulatory Authority (KPPRA) Act, 2012. The project selected all three consulting firms based on quality and cost-based criteria, which was appropriate for procuring services that are "intellectual or advisory in nature," and established procurement committees and selection subcommittees as required.[36]

Procurements did not appear unduly protracted. The design and supervision and WUA formation contracts required about four months from when the project invited expressions of interest to when the contract was signed (Table 2). While the feasibility study and master plan contract took longer, this was likely due to delays in finalizing the PIL to formally begin implementation, and the firm began the work just over four months after the PIL was signed.

Project documents and the evaluation team's interviews with staff and consultants revealed no issues with the procurement process for the feasibility study and master plan contract or the design and supervision contract. Project documents[37] and the evaluation team's interviews with several project staff members,[38] however, noted that an unsuccessful bidder obtained a stay in court that delayed the start of work on the WUA and WIG formation contract for two months.

[36] Government of Khyber Pakhtunkhwa. "KP Procurement Regulatory Authority Rules," (Peshawar: Government of Khyber Pakhtunkhwa, 2014). https://www.kppra.gov.pk/download/?action=procurement%20rules

[37] PIU, *Quarterly Progress Report*, (October-December, 2017).; Halcrow Pakistan (Pvt) Limited, *GZD-CADP Site Visit Report No. 8,* (Islamabad: USAID, January 31, 2018).; and Taaleem Foundation, *Inception Report - Social Mobilization and Capacity Building of Farmers GZD CADP,* (Peshawar: Government of Khyber Pakhtunkhwa, February 2018).

[38] Productivity enhancement lead,

TABLE 2: CONTRACT PROCUREMENT TIMELINES

Procurement Steps	Contract		
	Feasibility Study and Master Plan	Design and Supervision	WUA and WIG Formation and Strengthening
Expression of interest invited	Apr. 3, 2015	Jun. 8, 2016	Sept. 6, 2017
Number of qualified applicants	4	5/5*	4
Technical and financial proposals invited	Nov. 16, 2015	Jun. 26, 2016	Oct. 6, 2017
Letter of intent issued	Jan. 11, 2016	Aug. 16, 2016	Nov. 16, 2017
Contract signed	Jan. 27, 2016	Aug. 26, 2016	Dec. 4, 2017
Length of process (days)	300	81	89

* The project qualified the same five applicants for the design contract and for the supervision contract and ultimately combined the services under one contract.

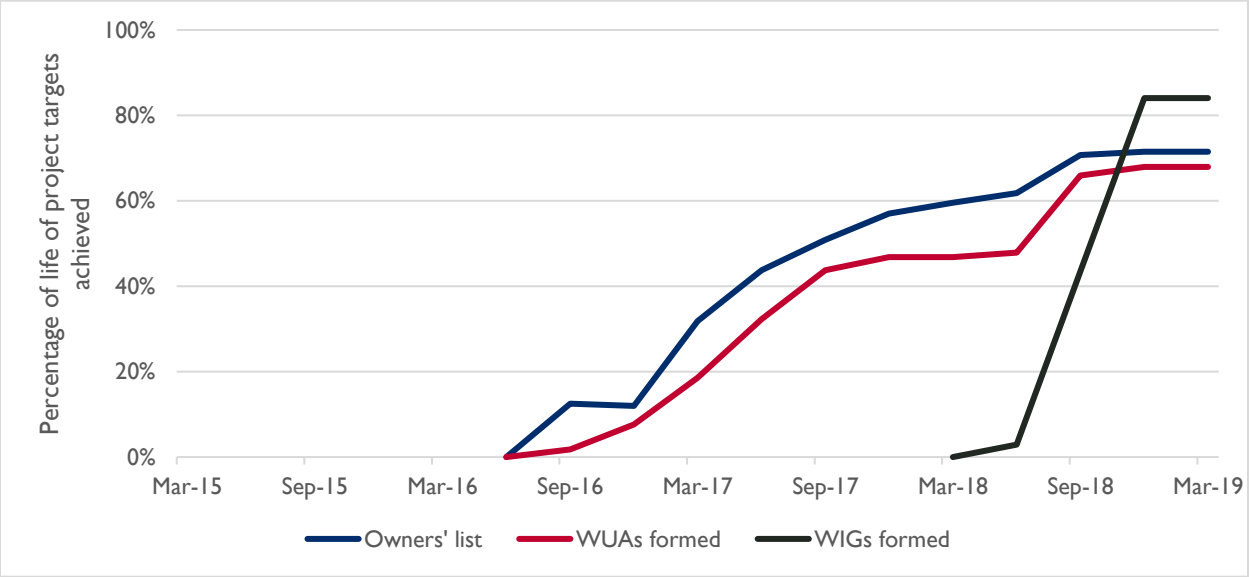
Issues that arose with procurements, however, reflect the absence of contracting or procurement specialists on the project staff. Well after the project awarded the WUA formation contract, the executive engineer, Gomal Zam Irrigation Division raised concerns that the procurement process was not consistent with KPPRA rules. These issues were eventually resolved with no disruption of contract activities. The project also encountered problems procuring consultancy services for "Provision of Service for Productivity Enhancement and Value Added Agriculture and Livestock under GZD-CADP" and ultimately cancelled the procurement. Although the evaluation team was unable to get a full explanation of the issues, the written record reveals disagreements about the KPPRA rules that applied to the procurement.

Also, the project's experience with the feasibility study and master planning exercise suggests that the selection committee did not adequately evaluate the proposals. A senior representative of the team that conducted the feasibility study and master planning exercise reported that the cost proposed by the winning firm was far below that of other bidders and did not include the resources—e.g., budget and staff—necessary to conduct the activities required under the contract. Project staff and Halcrow Pakistan respondents agreed that the feasibility study, baseline survey, and master plan took far too long, were of poor quality, and for these reasons were not useful in implementing the project. A careful review of the technical and cost proposal by the selection committee—especially for an unusually low bid—should have identified the deficiencies that would lead to these issues.

WUA and WIG Formation

Two design-related issues—the difficulties the project encountered in obtaining revenue *chakbandi* and owners' lists and the project's inability to engage a qualified social mobilization consultant—were responsible for the late start in forming WUAs. Consequently, the project reported forming its first WUA in the quarter ending in September 2016, immediately after receiving its first batch of owners' lists but a year after the project officially began (Figure 4). Once the project began forming WUAs, the uneven pace of the formation process reflected the PIU's limited understanding of how to form effective WUAs and how to prepare them for their roles in the project—issues that trace back to the project design documents' lack of clarity about social mobilization processes which contributed to the PIU's selecting organizations for the task who did not have the necessary social mobilization expertise. The project did not report forming WIGs until the quarter ending in June 2018.

FIGURE 4: TRENDS IN WUA AND WIG FORMATION



Source: Quarterly progress reports.

WUA Formation Process

The PC-1 alludes to a variety of roles for WUAs, including maintaining watercourses, participating in establishing and enforcing *warabandi*, partnering with private sector contractors to construct watercourses, participating in productivity enhancement demonstrations in partnership with the private sector, and serving as the "basic unit of community organization of the *Mogha* [canal outlet for a watercourse] command" through which to disseminate training to build capacities in crop and livestock productivity. Although the PC-1 recognizes the importance of strengthening WUAs, it provides no guidance on how to operationalize the formation process to prepare WUAs to fulfill their intended roles, and instead emphasizes satisfying the bureaucratic requirements of forming WUAs.

Requirements of the Water Users' Association Act of 1981

- At least 51 percent of the irrigators in a watercourse command area apply to the OFWM director to form a WUA.
- OFWM convenes a meeting of all irrigators in the command area.
- If at least 75 percent of the irrigators consent to forming the WUA, all irrigators in the command area are deemed to have consented.
- After receiving a complete membership list provided by the irrigators, OFWM verifies that the application meets the requirements, accepts the application, and registers the association.

Similarly, the PC-1 gives little attention to WIGs, briefly mentioning using WIGs to "engender" the development process by encouraging women's participation in WIGs, WUAs, and farmers' organizations; by building their capacities in livestock management (a traditional role for women in the local culture); and by eliciting their input into "…finaliz[ing] the layout of the watercourse so that requirement of women is fully incorporated in the layout and design."

Because it had little understanding of the importance of WUAs, or how to strengthen them, the PIU did not engage appropriate organizations to

form and strengthen WUAs well and did not have a social mobilization specialist on staff who could supervise the process. A senior PIU staff member explained:

> *"The formation of WUAs falls in the CAD [command area development] activities, but we do not have any social mobilization team and social activist. We all are engineers and we do not know about community mobilization."*

In August 2016, the project engaged OFWM Directorate of DoA to form WUAs, citing its "good hand of expertise in the field of social mobilization in irrigated agriculture."[39] Although OFWM's memorandum of understanding (MoU) specified a range of WUA-strengthening activities, the required deliverables included only forming and registering the WUAs and aggregating them into registered farmers' organizations. Consequently, OFWM focused solely on forming WUAs in compliance with the Water Users' Association Act of 1981. Difficulties in obtaining accurate owners' lists taxed OFWM's ability to form WUAs quickly, especially within the limits of a budget that had no flexibility to absorb unanticipated difficulties.[40] Participants in the March 2017 joint review meeting expressed concern about the pace and quality of OFWM's work (a view shared independently by Halcrow Pakistan) and discussed outsourcing the social mobilization assignment "as the OFWM is taking it very casually."[41,42] The August 2018 joint review meeting minutes illustrated the consequences of OFWM's approach, noting that "[t]he delay in [watercourse construction] is mainly due to social issues at site as the farmers are not properly mobilized and totally unaware of the new irrigation system."[43]

Subsequently, the project contracted Taaleem Foundation to form and strengthen WUAs and WIGs and reactivate 184 WUAs improperly formed by OFWM. The organization mobilized in February 2018.[44] Taaleem Foundation's contract also specified a wide range of WUA-strengthening activities, including conducting a training needs assessment and training farmers in watercourse operation and maintenance, water management, irrigation practices, productivity enhancement for crops and livestock, value addition, and marketing. The transition from OFWM to Taaleem Foundation stalled the formation of WUAs for a year,[45] and the project's most recent quarterly progress report illustrates that questions about the quality of social mobilization and WUA formation persist.[46]

> *"While searching the causes of delays, complaints from various quarters regarding the poor performance of the TF [Taaleem Foundation] in the formation of Water Users Associations*

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[39] DoA (Department of Agriculture, Livestock and Cooperatives), Government of Khyber Pakhtunkhwa. "Minutes of Project Implementation Committee (PIC) Meeting for Gomal Zam Dam Command Area Development Project," (D.I. Khan: Project Implementation Unit, 2016).

[40] The MoU specifies a total budget of Rs. 4.16 million, or Rs. 10,582 per WUA, an amount that was not sufficient to cover the costs of the numerous meetings required to validate and finalize owners' lists.

[41] Halcrow Pakistan, Site Visit Report No. 5.

[42] Ultimately, the project determined that OFWM had not followed appropriate procedures for forming WUAs and charged Taaleem Foundation with reactivating the 184 WUAs formed by OFWM. A senior member of PIU explained: "The current WUAs are only for name, they will not own the process, and will not be able to sustain. The reason is that their capacity has not been built and no trainings have been given to these people. They are not aware of what is good for them and what is not. There is no social mobilization of these people at all. WUAs have to be reactivated. Their needs have to be assessed and their capacity has to be built, and counseling must be provided to them. They should be educated regarding everything from crops to their harvesting, only then it will work."

[43] PIU (Project Implementation Unit), GZD-CADP. "Minutes of Joint Review Meeting of GZD-CADP,." (Peshawar: Government of Khyber Pakhtunkhwa, August 16, 2018).

[44] PIU (Project Implementation Unit), GZD-CADP. *Quarterly Progress Report for January-March, 2018*, (Peshawar: Department of Agriculture, Livestock & Cooperatives, Government of Khyber Pakhtunkhwa, April 2018).

[45] The project reported a cumulative total of 172 WUAs formed in its July–September 2017 quarterly report, 184 WUAs in the next two quarters, and 188 in the quarter ending in June 2018.

[46] PIU, *Quarterly Progress Report, January-March*, 2018.

(WUAs) were surfaced. …the communities are not properly mobilized, the farmers are not taking ownership of the watercourses that fact is visible from the damages to the water courses by the members of the WUAs on regular basis. Moreover, the WUAs are not formed as per the Water Users Association Act 1981, and the task was carried out through inexperienced and non-qualified persons. … As far as formation of WIGs is concerned, the condition is even worse than the WUAs; 58 WIGs are formed in the matter of 2-4 months, which is beyond imagination and clearly speaks [to] the quality and authenticity of performance of the teams of TF." – Quarterly Progress Report, March 2019

The evaluation team's interviews with 14 WUAs and 4 WIGs confirmed the poor performance of both OFWM and Taaleem Foundation in forming these groups. All 12 of the WUAs the evaluation team interviewed that provided data on the formation process knew that their responsibilities included maintaining watercourses and managing water distribution among WUA members, although they saw little value in this knowledge as they did not have watercourses. Ten reported receiving only one visit from the organization that formed the WUA, none reported any formal training or strengthening beyond a general orientation to their roles, only one reported having opened a bank account, and four reported having some sort of registration documentation. The four WIGs the evaluation team interviewed told a similar story of one visit with no follow-up and little understanding of their purpose.

The project's failure to properly orient farmers to the opportunities of, and their responsibilities in, the new irrigation system contributed to some farmers' resisting changes in their water rights and others' not abiding by laws dictating how they access water from the canal system—a situation that threatens the sustainability of project outcomes. In 2017, Halcrow Pakistan reported that farmers on three outlets of the Makali-Wah distributary in Tank district refused to form WUAs in the belief that the canal regulation regime would reduce their water share, and they plan to go to court to protect their rights. The report also noted that seven WUAs on another distributary also intend to revoke their WUAs and join the litigation.[47] The report warned of the potential consequences of a failure to address the underlying cause of these issues immediately:

"All this is happening when the layout of watercourse[s] is neither communicated to the farmers nor any watercourses has been constructed. Water is being used through pipes (inverted syphon) and in some places also through outlets. If this trend of non-cooperation by the framers is not checked at this stage, many other outlets or existing WUAs may join hands and revoke their WUAs. The social fabric of the area is dominated by large landlords known for their highhandedness and disrespect of the regulations. This is [a] most important and urgent matter which needs to be dealt without further delay. There is a need for social mobilization and this project has not carried out any social mobilization to date. The WUA formation process is just a mechanical exercise without any social mobilization."

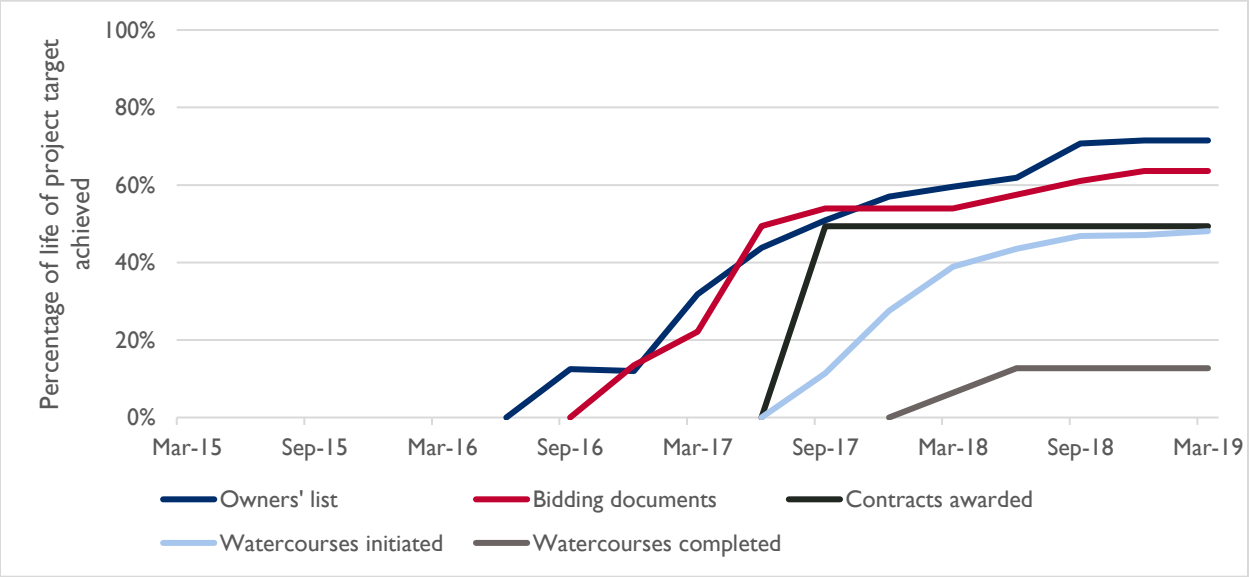
Watercourse Construction

Difficulties obtaining accurate owners' lists, along with the PIU's poor management of construction contracts, delayed the start of watercourse construction. The project began preparing bidding documents for watercourse construction within three months of receiving owners' lists but did not award construction contracts for another three quarters (Figure 5). By the end of March 2019, project progress reports indicated that contractors had initiated work on 189 of 194 awarded watercourses but completed only 50.[48]

[47] Halcrow Pakistan (Pvt) Limited, *GZD-CADP Site Visit Report No. 6,* (Islamabad: USAID, August 23, 2017).

[48] PIU, *Quarterly Progress Report (January-March, 2019)*.

FIGURE 5: TRENDS IN WATERCOURSE CONSTRUCTION



Source: Quarterly progress reports.

The slow progress and completion rate for watercourses reflects the limited technical and financial capacities of construction contractors, inadequate orientation of farmers, and poor contract management by PIU. The project's practice of awarding packages consisting of 12 to 28 watercourses, and making multiple awards to contractors,[49] taxed contractors' capacities to complete their work within the initial 60-day contract period. A senior PIU staff member explained:

> *"But when we hired the contractors it was realized that they do not have enough capacity to build watercourses within the planned timelines. They do not have sufficient and required machineries for civil works. Their technical staff and engineers are not available on the sites as required for the agreed contracts. The delay in certification process [by the project and USAID] has been the main issue of contractors besides other site-related issues with the farmers."*

The PC-1's lack of clarity about the nature of farmers' 20 percent share of project costs exacerbated this situation. The PC-1 mentioned that farmers could contribute their share of project costs in cash or in kind but did not specify how the contribution would be collected. Project management appears to have considered only cash contributions and had no mechanism in place through which farmers could contribute in kind. All four contractors the evaluation team interviewed reported that the project initially withheld 20 percent of their invoice amount with the expectation that it would eventually be recovered from farmers. Project staff, however, reported no plan or process for collecting the money, and farmers said they could not pay their imputed share of Rs. 2,420 per acre in cash up front.[50] When contractors were unable to collect the money, some stopped work. The Provincial Steering Committee (PSC) considered three proposals for addressing this issue and recommended that the GoKP incur the farmers' share as an interest-free loan that landowners will repay over 10 years after completion of the project. The proposal was accepted at the next PSC meeting.

[49] The project awarded 12 contracts for a combined total of 124 watercourses.

[50] Farmers also objected to paying 20 percent of the cost of public goods such as roads and buildings (PSC meeting minutes, December 2017).

Halcrow Pakistan concurred with this assessment, stating in its March 2019 site visit report:[51]

> *"[The] main issues … that resulted in delays are: weakness in social mobilization and awareness campaign in motivating community participation in the implementation process, award of more than one watercourse construction package to a firm with inappropriate resources (labor and equipment) to undertake implementation activities simultaneously on all packages; and non application of Contract Management tools to expedite implementation including; timely update of work-plan with remedial measures to address and cover the delays by increasing resources, periodic issuance of warning letters to the non-responsive contractors, increasing frequency of monitoring visits, issuance of repetitive time extensions without assessment of contractors resources and remaining works."*[52]

Contractors, understandably, had a somewhat different perspective on the cause of construction delays. All four contractors the evaluation team interviewed attributed their slow progress to the project's lengthy verification and payment processes,[53] explaining that they could not afford to wait months to be paid for their work. Three of the four also noted that the lengthy process exposed them to unacceptable risk as they were liable for damage farmers often inflicted on the watercourse before the project verified completion. All four contractors also reported that farmers often resisted construction activities because they had not been informed of the process. One contractor explained the difficulties he faced as follows:

> *"People have exhausted me a lot. I have been in fights in the field. People have taken me to court. The army has called me to investigate. I have held many jirgas in the hujra of the ex-minister. It has tired me. People wanted their own choice [layout of watercourses which suited their lands] while we were doing things according to instructions of engineering chakbandi. They used to stop us from going into their lands. I got too much involved in public dealings."*

Land Leveling

The PC-1 specifies leveling 163,000 acres of land to promote more efficient irrigation. Although they are not explicit, project documents suggest that land leveling should follow watercourse construction. However, the project did not report conducting engineering surveys for land leveling until the quarter ending March 2018 and made little substantive progress until the quarter ending March 2019. Although it reports having invited bids for leveling 3,779 acres, it had not awarded contracts for land leveling as of its March 2019 progress report.

Delays in completing watercourses and a slow decision-making process about how to allocate scarce funding slowed progress on this activity. The cost estimate in the PC-1 (Rs. 6,400 per acre) substantially

[51] Halcrow Pakistan (Pvt) Limited, *GZD-CADP Site Visit Report No. 10*, (Islamabad: USAID, March 13, 2019).

[52] In its December 2018 site visit report, Halcrow Pakistan reported that 8 of the 12 construction packages had been extended twice, and four had been extended three times. National Engineering Services Pakistan (NESPAK), the project's design and supervision consultant directly responsible for supervising the construction contractors, claimed that "[i]n most of the case the contractors are given four times extension."

[53] The process involves many actors and approvals. These include: 1) the contractor submits an invoice to the PIU; 2) PIU forwards the invoice to NESPAK for verification; 3) NESPAK communicates verification to the PIU; 4) the PIU informs USAID that NESPAK has verified the watercourse; 5) USAID waits until it has a sufficient number of watercourses to verify and then instructs Halcrow to conduct a verification site visit; 6) Halcrow communicates verification results to the contractor and the PIU in the field and to USAID in a formal report; 7) after Halcrow's successful verification, the project director submits an invoice to USAID; 8) the PIU pays the contractor.

understated the actual market rate for precision (i.e., laser) land leveling (Rs. 14,812).[54,55] At the actual rate, the project's budget for land leveling can cover leveling for only 71,000 acres. At its December 2018 meeting, the PSC concluded that it was neither necessary nor appropriate for the project to fund precision leveling on the planned 163,000 acres on the rationale that some land would require rough land leveling first; precision leveling of land on which farmers will practice furrow, raised bed, drip, or sprinkler irrigation is unnecessary; and some farmers were already leveling land on their own. The committee decided to establish criteria for where to use project funds for rough and precision land leveling and conduct both on a demand/need basis, adjusting targets accordingly within existing funding levels.

Conclusions

Most of the consequential delays in implementation trace back to a flawed design process that failed to produce a detailed design that addressed the project's operational requirements. Specifically, the project had no detailed work plan to guide implementation, limited management capacity, and a staff missing key skills required to effectively implement core project activities.

- All key informants the evaluation team asked believed the project was "designed to fail," in part because CDWP/ECNEC arbitrarily reduced the project time frame from five to three years. Completing the project within the original five-year time frame would have been challenging even under ideal conditions, and three years was clearly unrealistic.

- The design team's decision to forgo the required pre-implementation feasibility planning exercise left the project without a detailed implementation plan, with little operational clarity on key activities, and with a staffing plan that was not commensurate with effectively implementing project activities. This decision compromised almost every facet of implementation, including the critical activities of forming and strengthening WUAs and constructing watercourses. To compound the problem, the project's poor management of the procurement process for the feasibility study resulted in a study that provided little, if any, additional guidance for implementation.

- The GoKP was not up to the task of managing a complex project that required carefully sequenced activities; hiring, supervising, and managing contractors and consultants; coordinating the activities of multiple line departments; and working closely with communities. Although these deficiencies were, in part, embedded in the weak design, project managers at the PMU and PIU failed to identify and resolve the issues in a timely manner. The project's failure to appoint a full-time, dedicated project manager stationed in D.I. Khan contributed substantially to its poor performance and failure to adapt, as did the project staff's lack of capacity to effectively manage or supervise the work of contractors and consultants.

- The project's experience procuring consulting services also demonstrates a lack of capacity within both the PMU and PIU to manage procurement efficiently and transparently. Two of the three consultants hired by the project failed to meet deadlines or deliver quality services. Also, although the evidence is thin, it suggests that political interests may have influenced some

[54] The most common explanation for the discrepancy in land leveling costs is that market rates increased between the time the PC-1 was developed and when implementation began. A former PIU staff member, however, implied that the PC-1 mistakenly used OFWM's subsidized rate for land leveling.

[55] P&D (Planning and Development Department: Agriculture and Environment Section), Government of Khyber Pakhtunkhwa. "Minutes of Provincial Steering Committee for Gomal Zam Dam Command Area Development Project," (Peshawar: Planning and Development Department, December 20, 2018).

procurement decisions, thus extending the process and perhaps leading to the hiring of unqualified firms.

The cumulative effect of these issues cannot be overstated. The project has formed most of the WUAs, but the evaluation team found no evidence that any are strong enough to play their ongoing roles in the project. Because WUAs and WIGs are the social platforms for implementing the activities of subsequent components, their weakness does not bode well for implementing these additional components quickly or effectively. It will also continue to plague watercourse construction, adding to the challenges the project will face in accelerating the pace of watercourse construction and sustaining outcomes.

Project Benefits

Question: Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?

By providing a perennial source of irrigation water in the command area, GZIP markedly improved agricultural and livestock outcomes for some command area farmers. Farmers who are getting water from the canal system reported cultivating more of their land, increasing yields, changing cropping patterns, and earning greater incomes from farming. However, farmers who are not able to get water, or an adequate quantity of water, from the canal system reported few, if any, benefits, and often reported being harmed. Inequitable access to water and benefits from the canal system reflects the incomplete tertiary irrigation infrastructure (watercourses), limited enforcement of water rights, and slow adoption of more efficient irrigation practices appropriate to a perennial water source.

Because CADP has made little progress on the three primary activities of component one—forming WUAs, constructing watercourses, and leveling land[56]—it has not appreciably enhanced the benefits associated with the canal system constructed under GZIP. Nevertheless, the benefits associated with the canal system illustrate CADP's potential if it can mitigate some the challenges to distributing water more equitably, enhance irrigation and water conveyance efficiencies, and improve prospects for extending and sustaining the demonstrated benefits associated with the canal system. Similarly, because the project has only recently formed an appreciable number of WIGs, and done so poorly, it has not measurably contributed to increasing employment or income-earning opportunities for WIG members.

Agricultural Production

Several independent secondary data sources, and the evaluation team's interviews, strongly suggest that access to perennial irrigation water from the canal system substantially increased both cultivated and irrigated land in the command area, changes that positively affected a range of production indicators.

Analysis of satellite imagery shows a substantial increase in cultivated land in the command area associated with completion of the canal system (Figure 6).[57] In 2001, before construction of the dam began, when command area farmers relied entirely on relatively unproductive spate irrigation, they cultivated approximately 29,385 acres in the *rabi* [spring] season, the primary agricultural season in the command area. The decline in cultivated area in 2014, while the canal system was under construction,

[56] In the most recent quarterly report (January – March 2019), the project reported completing 50 of 393 watercourses, forming 267 of 393 WUAs, and leveling none of the target of 163,000 acres of land.

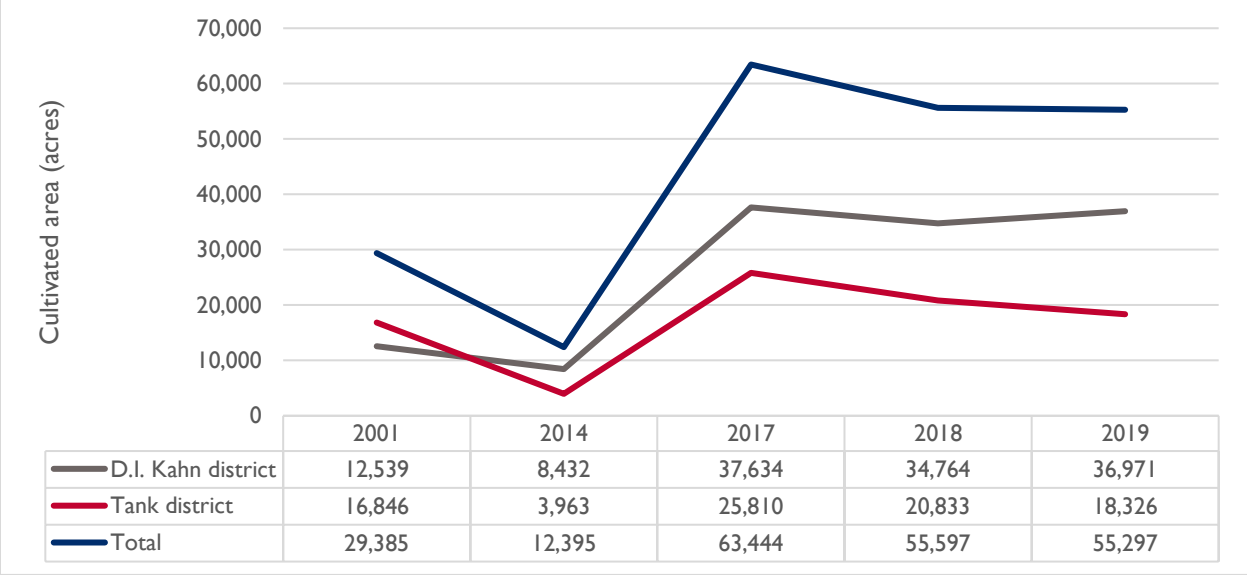
[57] See maps in Annex 10.

corroborates anecdotal evidence from farmers that construction activities disrupted traditional *rod kohi* irrigation and left some farmers unable to cultivate any land.[58]

> *"We are not getting water from canals and watercourses and we can also not use the flood/rainwater for our fields anymore. It has been 5–6 years that we are not getting water, or you can say since these canals were constructed, after that we were unable to get water for our crops. Our lands are at the down side [the lower end of the canal/distributary]." – WUA member, Kot Essa*

Cultivated area increased sharply after the Main Canal was completed in 2016. The decline in cultivated area in 2018 compared to 2017 reflects the relatively poor timing of rains in 2018. On average, however, the canal system may have increased cultivated area by as much as 98 percent. Tellingly, the increase in D.I. Khan district (191 percent) is much larger than in Tank district (29 percent), where the Waran Canal is not yet in service.[59]

FIGURE 6: CHANGE IN CULTIVATED AREA (GEOGRAPHIC INFORMATION SYSTEM ANALYSIS)



	2001	2014	2017	2018	2019
D.I. Kahn district	12,539	8,432	37,634	34,764	36,971
Tank district	16,846	3,963	25,810	20,833	18,326
Total	29,385	12,395	63,444	55,597	55,297

Source: PERFORM analysis of Landsat-7 (2001) and Landsat-8 (2014, 2017, 2018, and 2019) satellite imagery, courtesy of the U.S. Geological Survey and Google Earth Engine.

The maps in Annex 10 illustrate the importance of being close to the canal system: Cultivated area is clustered near distributaries. The substantial increase in cultivated area along the Main Canal relative to the unfinished Waran Canal also strengthens the case for attributing the increase in cultivated area to the perennial water source provided by the canal system.

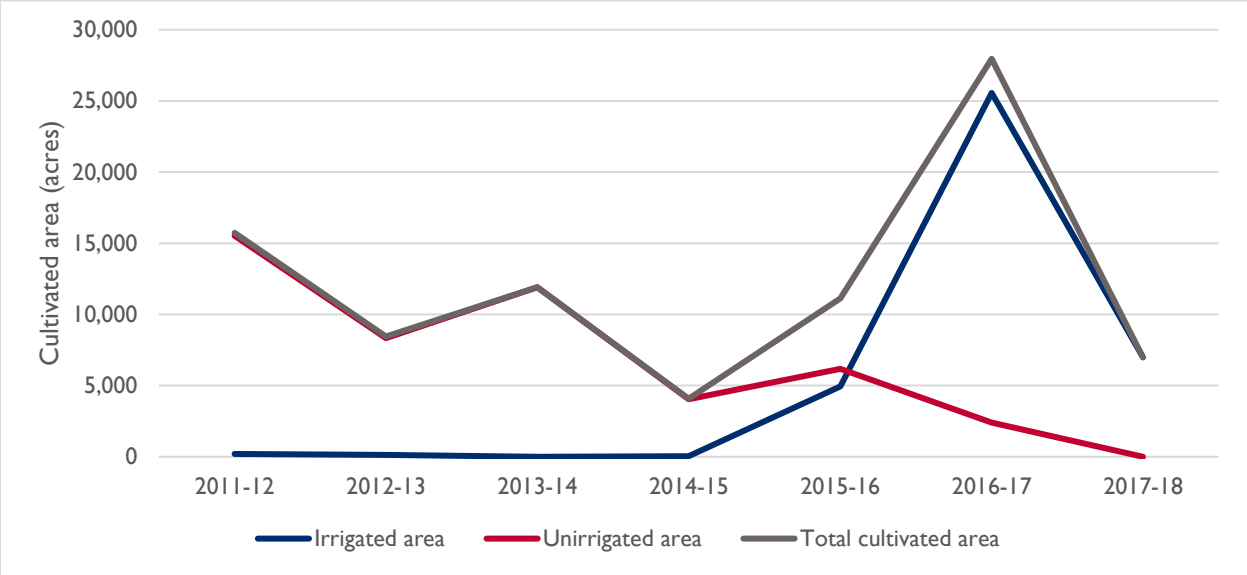
Command area-specific data on crop production, which PIU staff extracted from provincial Crops Reporting Service data, corroborate these trends in cultivated area for wheat, the primary *rabi* crop in

[58] In 7 of the 14 WUAs the evaluation team interviewed, at least 1 participant (and often, most of the participants in a group described a common experience) explained that they were no longer able to cultivate their land due to project activities that disrupted their *rod kohi* system without replacing it with access to the canal system.

[59] Calculated as the difference between cultivated area in 2001 and cultivated area averaged over 2017, 2018, and 2019 divided by cultivated area in 2001.

the command area (Figure 7). These data also emphasize the importance of irrigation to increasing cultivated area.

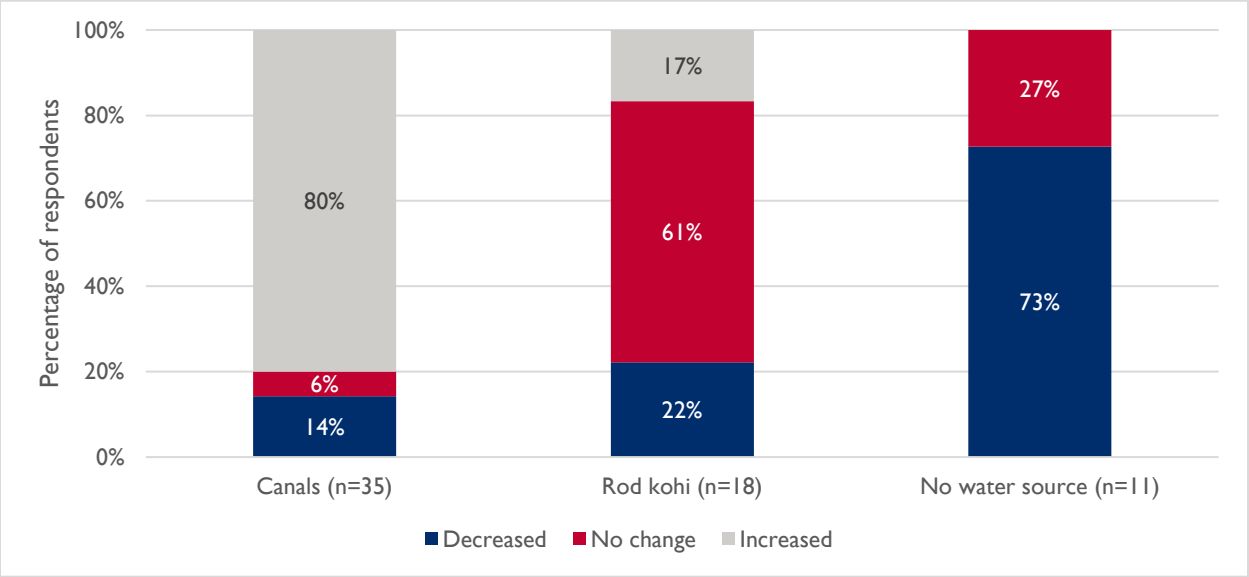
FIGURE 7: CHANGE IN CULTIVATED AND IRRIGATED AREA (WHEAT)



Source: Extracted by PIU staff from Crops Statistics of Khyber Pakhtunkhwa, 2011-19. Crops Reporting Services, Agriculture, Livestock and Cooperative Department, Peshawar.

The evaluation team's interviews also support the hypothesis that access to the perennial water from the canal system increased cultivated area. Of the 64 WUA members the evaluation team interviewed, 35 (55 percent) reported getting water from the canal system; 18 (28 percent) reported still using the traditional *rod kohi* system because they could not get water from the canal system, either because they did not have watercourses or because the distributaries did not contain enough water; and 11 (17 percent) reported not being able to get water from any source. In general, those who are now getting their water from the canal system increased the area they cultivated, most who are (still) using *rod kohi* reported no change in cultivated area, and those with no source of water reported cultivating less land (Figure 8).

FIGURE 8: CHANGE IN PERCENTAGE OF OWNED LAND CULTIVATED BY WUA MEMBERS (RABI)



Note: The analysis classified farmers who were cultivating all their land before and after completion of the canal system as increasing cultivated area. Classifying farmers who could not increase cultivated area as "no change" would have conflated them with farmers who could have increased cultivated area but did not. In the "Canals" group, 50 percent of the "Increased" group cultivated all their land before completion of the canal system, while in the "*Rod kohi*" group, all farmers in the "Increased" group reported cultivating all their land before completion of the canals.

The 35 farmers who reported getting water from the canal system also reported generally higher values than others on a range of production-related indicators (Table 3).

TABLE 3: EFFECT OF CANAL WATER ON PRODUCTION INDICATORS

Indicator	Percentage of Farmers		
	Canals (n=35)	Rod Kohi (n=18)	No Water (n=11)
Increased cultivated area	80%	17%	0%
Cultivating all fields	65%	33%	0%
Increased yield	57%	0%	0%
Increased income	51%	0%	0%
Planted new crops	29%	0%	0%
Getting required water	18%	45%	0%

Source: PERFORM group interviews with 64 farmers from 14 WUAs.
Note: Table values are column percentages.

The perennial water source provided by the canal system clearly confers benefits on farmers who can access the water, but the experiences of farmers who cannot access the water are mixed. The experiences reported by members of these three groups of farmers illustrate the benefits of a perennial source of irrigation water and illuminate barriers to more equitable access.

Farmers Getting Water from the Canal System

The following quote from a farmer in Atal Sharif (near the end of the Main Canal) typifies the experiences of farmers in this group.

> *"Before the canals, we were totally dependent on floodwater/rainwater. We would cultivate land subject to availability of water in rod kohi. Secondly, we would not get enough yield from the cultivated land because water for irrigation was not necessarily available when needed. … On average, we would cultivate about one-third of the total land. Due to uncertain availability of water, we would not cultivate the entire land/fields. [Now] I cultivate my entire land, but we do not get water through watercourses and outlets. We irrigate our land directly from the distributary through pipes."*

All farmers in this group, even the 10 who reported having completed watercourses, appeared to be using siphons and pipes to get water from the distributary.[60] Farmers without watercourses have little choice but to access the water "illegally":[61] They are not in a position to forgo using water that is available.

> *"Lack of water management [watercourses and outlets not constructed] is the primary reason for getting water from canals through illegal means. You have to steal water when you need it. Without stealing of water, you cannot irrigate your farms in our area." – WUA member, Atal Sharif*

Farmers with watercourses also reported getting water illegally because they cannot get enough water to meet their irrigation needs through the watercourses. They explained that low water levels in the distributaries limit the quantity of water flowing through the outlet and into the watercourse; high conveyance losses in unlined watercourses prevent sufficient water from reaching fields; and continued use of inefficient irrigation practices requires quantities of water the watercourses are not designed to carry. As a farmer from Atal Sharif explained, the absence of completed watercourses contributes to inequitable distribution of water and its consequent benefits:

> *"We have water for irrigation, but we are facing [the] lack of [an] equitable water distribution system in our area. The ones who are near to outlets/distributaries have [an] adequate amount of water anytime they need."*

Furthermore, to obtain sufficient quantities of water through siphons or pipes, farmers often block canals or distributaries to raise water levels. This practice deprives downstream farmers of water.

Access to perennial water is also beginning to change cropping patterns among farmers who can access the water, although the change in practices is nascent. Four farmers—all getting their water from the canal system—reported cultivating *kharif* [winter season] crops for the first time, an outcome they attributed directly to the perennial water provided by the canal system. Members of two WIGs and two WUAs, as well as both Farm Services Center representatives, noted that some farmers are diversifying their cropping pattern, shifting to more productive—and often more water-dependent—crops such as sugarcane, rice, vegetables, and fruits. These changes may herald a more significant shift toward higher-value crops as observed in the CRBC project command area (see "Chashma Right Bank Canal Project" below).

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[60] Although not all participants in a group interview may have reported using siphons or pipes, all members of a group generally reported common experiences accessing water. It is reasonable, therefore, to infer that all farmers in a group where one participant reported getting water illegally were following similar practices even if they did not mention it specifically.

[61] It is technically illegal to take water from the canal system other than through a legal outlet.

Farmers Using Rod Kohi

Farmers who are still relying on *rod kohi* water do so largely because the canal system does not supply water to their area, either because watercourses are not completed or because distributaries serving their area do not contain enough water, perhaps as a result of excessive upstream withdrawals. Of the 18 farmers who reported relying largely on *rod kohi*, 11 explained that the distributary that served their area provided little or no water.

> *"I won't say it's less water in it [the distributary], it is such that if three healthy goats got there and drink water from it, then there will be no water in it." – WUA member, Sheikh Sultan*

Farmers using rod kohi attributed their situation to upstream farmers' blocking the distributary or, on distributary number two, to damaged infrastructure.

The five WUA members the evaluation team interviewed in the village of Kot Atal reported having completed watercourses. However, no water reached fields at the tail end of the watercourses because the watercourses were too small or conveyance losses too high. Consequently, farmers could irrigate land that lay near the head of the watercourse—although they used pipes to get enough water—while their ability to cultivate land they owned at the tail end relied entirely on unreliable *rod kohi* water.

The nine farmers the evaluation team interviewed from WUAs near the villages of Kot Allah Dad and Sheikh Sultan reported still getting some water through their traditional "flood canals"[62] but that construction of the canal system had reduced these water flows. Nevertheless, all nine farmers reported being able to cultivate the same amount of land they cultivated prior to construction of the canals. They admitted, however, that yield was generally low and uncertain. One explained that, even though they have not reduced the area they cultivate, they suffered some harm from construction of the dam and canals.

> *"This is what we are trying to tell you that now with the construction of [the] dam, that floodwater is maintained at the dam and only surplus water is released. So, we have less water in [the] floodwater canal as well as no water in the distributaries. That's why the dam has affected us negatively so far."*

The experiences of these farmers emphasize the importance of watercourses to convey water away from distributaries and enforcement of water rights to distribute available water more equitably.

> *"Once the entire irrigation infrastructure is in place, then warabandi and strict laws will be necessary for all the farmers to get equal and proper water. Otherwise, if the same kind of approach prevails, farmers like us will be left out in that system also." – WUA member, Kot Allah Dad*

> *"There is a main distributary, and then there are minors, but the last field level watercourses are not there. My land is almost at the middle of that minor, but water could not reach my fields as there are no watercourses." – WUA member, Sheikh Sultan*

Farmers with No Access to Water

The 11 farmers who reported having no access to water were from three villages at the extreme tail end of the Main Canal. These farmers suffered substantial harm as the canal system deprived their area of the floodwater on which they used to rely, and meanwhile the canals in their area are dry. Only 1 of

[62] "Flood canals" refer to old earthen canals and seasonal streams (nallahs) that fed the *rod kohi* system prior to construction of the canal system.

the 11 farmers reported cultivating any land. The situation of farmers the evaluation team interviewed in the villages of Potha and Chekkan illustrates the common experience of farmers in the three villages.

> *"Before the dam, we were using rod kohi for irrigation. These were channels that used to provide us flood/rainwater for irrigating our lands. We used to get water on our turn. But after the dam construction, even the rain/floodwater that we used for irrigation has been stopped. In our area, Potha, not even a single kanal [an area of land equal to one-eighth of an acre or 0.0506 hectare] is irrigated. Our livestock is finished." – WUA member, Potha*

> *"We used to grow crops in our land and we didn't need any employment. But now I am working as a helper in a shop because I don't have any other source of income. Earlier, we would meet our financial requirements from our land/crops, but now we do not have any regular source of income and we are compelled to search for [wage] labor to earn bread for the family." – WUA member, Chekkan*

Farmers attributed their current situation to the behavior of upstream irrigators, limited use of efficient irrigation practices, and no formal water distribution schedule.

> *"The people at the head of the distributary utilize maximum water leaving nothing for others to use. They have large land holdings of 150 kanals, 200 kanals, and 300 kanals, which are irrigated like [the old] spate irrigation system, i.e., using retention walls to retain water in the fields for longer times. Water distribution is not organized, there is no time schedule, no warabandi. The lands are not leveled, resulting in large amounts of standing water in the fields, which is just wastage of the precious water." – WUA member, Potha*

Other Outcomes

The interviews also provided anecdotal evidence that increasing agricultural production in the command area is stimulating other positive changes.

Investment in productivity-enhancing technologies and practices: Access to more reliable irrigation water may be encouraging farmers to invest in productivity-enhancing technologies and practices. Both Farm Services Center representatives the evaluation team interviewed—who have a broader perspective than individual farmers on agricultural activities and practices within the entire command area—reported increased sales of productivity-enhancing inputs such as quality seed, fertilizer, weedicide, and pesticide. They explained that these inputs were most effective with reliable water, thus associating farmers' willingness to make these investments with their improved access to water. Although interviewers did not explicitly ask farmers about their use of inputs, one farmer noted that he is using high-quality seeds now that he has sufficient water to justify the investment.

Some farmers are also investing in leveling their land from their own resources.[63] Many more, however, noted the importance of land leveling but said they could not afford it. The issue came up in all 14 of the evaluation team's interviews with WUAs, and members of 4 believed that the project was leveling land only for influential landowners or that officials were pocketing the money.

Mechanization: Participants in 9 of the 14 group interviews with WUAs and both Farm Services Center representatives said that they noticed a recent increase in the use of machinery in agriculture, although none explicitly attributed it to project activities. It is plausible, however, that increasing

[63] Reported in interviews with representatives of Halcrow Pakistan, Taaleem Foundation, two Farm Services Center representatives, PIU, one WIG, and three WUAs. Interviews with two WUAs in the CRBC command area also confirmed that farmers began to invest in land leveling as the benefits became apparent.

production and financial returns to agriculture may encourage investment in mechanization, much as it encourages farmers to invest in other productivity-enhancing inputs.

Employment opportunities: Many respondents believed employment opportunities had improved in the command area and provided plausible explanations for the project's contribution. Participants in eight of the group interviews with WUAs attributed increased employment to rising agricultural production. For example:

> *"People from these areas are benefited a lot. They used to go for work to Tank and D.I. Khan, but now they are farming. Now people from other areas are coming to our areas for harvesting." – WUA member, Gara Mohabat*

The two Farm Services Center representatives the evaluation team interviewed cited new small restaurants and mechanical workshops in the command area that created jobs, primarily for unskilled labor, and improved job prospects in agricultural support sectors.

> *"Unskilled employment opportunities have also increased. There are several industries and trades that depend directly or indirectly on agriculture. For example, I am a farmer and I have been producing vegetables, it means I will access [the] agricultural market to sell my products. So, I will hire the services of goods transporters, grocery shops, fruit and vegetable packers, etc. So, I believe that the entire process would increase employment opportunity in the area." – Farm Services Center representative, Tank*

Other economic activity: The two Farm Services Center representatives and participants in three of the WUAs the evaluation team interviewed reported more mechanic's shops, small restaurants, petrol shops, and other businesses in their areas. They attributed this increase in commercial activity to the growing agricultural economy. For example:

> *"The project has increased the production of sugarcane in the areas with more water. The merchants visit our area and purchase sugarcane directly at the farms. I have observed that the increased production of sugarcane has improved the business of goods transport. I have observed that new shops and hotels/restaurants have opened on the points where the sugarcane trade is being conducted in the area. I have seen that the area of Kaward Junction has become a small city/business center because of the project. New shops have opened there. I have seen that agriculture shops, medicine stores, and restaurants have opened there. Consequently, a lot of new businesses and employment opportunities have been provided by the project. I have seen that the living standard of the people has been improved due to the project." – Farm Services Center representative, Tank*

Land values: Eleven of the 14 WUAs reported that access to water increased the value of land in the command area. Speculation appears to have increased land values even before the canal system was completed. The value of land with commercial potential increased dramatically.

> *"When construction of the dam was not even started, the price of land in our area was 2,000 or 2,200 rupees per kanal. … Then when dam construction started, the prices got higher to as much as 30,000 rupees per kanal. These were the prices of lands which were away from the roads and water. The land near to the road [with commercial value] [is] sold [at] up to [Rs.] 250,000 per kanal." – WUA member, Kot Allah Dad*

Access to water was crucial: Two of the WUAs at the tail end of the Main Canal that reported having no access to water reported that land values increased when the project began but fell again when it became apparent that they were not going to get water.

"Let me tell you that the value of our land has decreased from Rs. 50,000 to Rs. 35,000 per kanal. However, the value of land where proper water is available has increased." – WUA member, Chekkan

Increased mobility/market access: Although the project reports constructing only 7.5 kilometers of roads, participants in 4 of the 14 WUAs reported that the earthen roads along the distributaries improved their mobility and access to local markets. However, the canals also reduced mobility: Farmers in 6 of the 14 WUAs the evaluation team interviewed reported having to travel long distances to reach a bridge to cross a canal or distributary. This particularly affected farmers with land or properties on both sides of a canal.

Livestock: Although the project has not launched most of its livestock-related activities,[64] the evaluation team's interviews suggest that access to water changed some farmers' livestock management practices. Members of four WUAs the evaluation team interviewed, as well as both Farm Services Center representatives, reported that farmers are producing more and better-quality fodders, which contributed to increased herd sizes and improved animal health.

Chashma Right Bank Canal Project

The CRBC project is similar to GZIP in that it constructed a canal system to replace *rod kohi* irrigation along the right bank of the Indus River in D.I. Khan district.[65] A series of research papers examined the impacts of the project on land use, agricultural production, cropping intensity, cropping patterns, and economic characteristics of beneficiary communities.[66] The research concluded that the project influenced agricultural practices, increased production, and improved the overall economy of the area (see Annex 11). Specifically:

- Command area farmers increased the percentage of their land they cultivated—from an average of 15 percent to 36 percent in the *kharif* season and from 23 percent to 53 percent in the *rabi* season.[67]

- Average yields of all crops except *rabi* oilseed increased—from an average of 42 percent for *kharif* pulses to 268 percent for *rabi* wheat.

[64] As of the January–March 2019 quarterly report, the project reports having trained 42 WUAs in livestock management.

[65] CRBC constructed a 285 kilometer-long main canal along the west bank of the Indus River between the Chashma barrage and the Taunsa barrage. Sixty percent of the 570,000-acre culturable command area is in D.I. Khan district and close to the Gomal Zam Dam command area. The population of the command area is similar in culture and demographics and, prior to the construction of the canal, employed agricultural practices similar to those in the Gomal Zam command area.

[66] Shah, Mahmood. "Irrigation, Agricultural Productivity and Poverty Alleviation: A Case Study of Chashma Right Bank Canal (CRBC) in D.I. Khan," (Gomal University: Department of Economics, February 2008).; Shah, Mahmood, Mohammad Mumtaz Khan, and Malik Amer Atta. "Comparative Study of Wheat Production before and after Chashma Right Bank Canal," *Journal of Managerial Sciences* IV, no. 1 (2006): 97-104.; Rahman, Attaur and Amir Nawaz Khan. "Ex Post Impacts of Chashma Right Bank Irrigation Project on Cropping Pattern in D.I. Khan district, Pakistan." *Journal of Basic & Applied Sciences* 9 (2013): 452-467 https://www.lifescienceglobal.com/pms/index.php/jbas/article/view/1134; Rahman, Attur, Amir Nawaz Khan, Shah Nawaz Khan, and Said Qasim. "Impact of Chashma Right Bank Canal (CRBC) on Agricultural Production of District D.I. Khan: An Ex-Post Evaluation." *Journal of Science and Technology* 37, no. 2 (2013): 37-51. https://www.researchgate.net/publication/316041668_IMPACT_OF_CHASHMA_RIGHT_BANK_CANAL_CRBC_ON_AGRICULTURAL_PRODUCTION_OF_DISTRICT_DI_KHAN_AN_EX_POST_EVALUATION; and Rahman, Attur, Amir Nawaz Khan, Samiullah, Shehla Gul, and Shakeel Mahmood. "Impacts Evaluation of Chashma Right Bank Canal on the Water Table of District Dera Ismail Khan, Pakistan," *Journal of Basic & Applied Sciences* 12, 12 (2016): 281-288. https://www.researchgate.net/publication/305661777_Impacts_Evaluation_of_Chashma_Right_Bank_Canal_on_the_Water-_Table_of_District_Dera_Ismail_Khan_Pakistan.

[67] Values are averages across the four study area villages.

- Cropping patterns shifted away from relatively low-productivity, drought-resistant crops such as sorghum, millet, barley, and maize toward higher-productivity, but more water-intensive, crops such as sugarcane, rice, and fruit.

- Improved agricultural productivity contributed to commensurate increases in agricultural income.

- Greater agricultural production spurred development with positive and negative consequences. Higher agricultural productivity increased land values by between 200 percent and 1,500 percent—the range in part determined by access to water. However, development also converted some highly productive agricultural land to residential and commercial use.

These results are generally consistent with the experience of farmers in the Gomal Zam command area who have access to water. The challenges documented for CRBC farmers echo those found in the Gomal Zam command area and point to issues that CADP needs to address to improve the equity of water access and the sustainability of outcomes. These include reliable access to water, especially at the tail end of distributaries; land that is not properly prepared (leveled) to accommodate new irrigation practices; and limited access to the financial resources necessary to adopt productivity-enhancing technologies and practices, e.g., high-quality seeds, fertilizers, and farm machinery.

Furthermore, most of the WUAs established by OFWM to line watercourses in the CRBC area are now largely inactive because they were formed only to access a program to subsidize watercourse lining. The two WUAs the evaluation team interviewed explained that the CRBC project had no role in their formation. Instead, farmers collaborated on their own to construct watercourses, and some formed WUAs later as required to participate in the National Program to Improve Watercourses.

The evaluation team's interviews with the two CRBC WUAs confirmed the findings of the evaluation studies, i.e., increased agricultural production, shifts in cropping patterns toward higher-value crops, higher yields, increased mechanization, more employment opportunities, and greater income.

> *"I have observed that, before the CRBC, people could not afford the use of modern farm machineries. Farmers are now using laser leveler machines to prepare their lands for better irrigation. They also use cultivators. Earlier, people used to cultivate rice manually, but people are now using [a] rice seed drill machine for cultivating rice." – WUA member, Fateh*

Conflicts Over Water

The change in water rights from the *rod kohi* system to a regulated, canal-based system requires significant change in farmers' mindsets and practices. The incomplete irrigation infrastructure exacerbates the already considerable challenges of making this shift by trapping farmers between the two water rights regimes: While the canal system establishes regulated access to water, farmers' inability to manage access at the watercourse level confronts many with a choice between following the rules—and limiting production—or "stealing" water to better their lives. This situation establishes an environment rife with prospects for conflict. An irrigation expert involved in the feasibility study emphasized the importance of watercourses and enforcement of water rights:

> *"We do need a water network and distribution system, otherwise there will be chaos. Whoever is mighty will take away the water. So, an agency like the Irrigation Department should enforce the law. At least 90 percent of people should get water—so watercourses must be there."*

Inequitable access to water contributes to conflict between farmers in the command area. Members of 12 of the 14 WUAs the evaluation team interviewed spoke of conflicts, and 9 related conflicts to issues

of sharing water within the canal system. A farmer from Sheikh Sultan echoed a common view that blamed the conflict on farmers' attempts to access water in an unregulated system:

> *"These minors [canal irrigation system] have increased our problems in fact. Everyone is on his own when it comes to watering his fields. Everyone blocks the minors according to their own needs, and nobody is there to stop them. These minors have done nothing for us except increase our disputes. We have fights about water on an almost daily basis."*

Furthermore, the incomplete, and perhaps inadequately designed,[68] system exacerbates farmers' difficulties getting adequate water to their fields and thus contributes to conflict. Members of 12 of the 14 WUAs the evaluation team interviewed also raised issues with the design and layout of the watercourses and outlets. These issues largely related to the canal system's limited capacity to deliver the quantity of water farmers need to irrigate their land (Table 4).

TABLE 4: FARMERS' CONCERNS ABOUT WATERCOURSES AND OUTLETS

Number of Interviews (n=12)	Explanation
7	Low conveyance efficiencies in unlined watercourses limit the amount of water that will reach the tail of a watercourse.
6	The water level in distributaries is too low to deliver (through the outlet) the quantity of water required to irrigate the command area.
5	There are too few outlets, or the distance between outlets is too great.
4	The construction quality of the watercourse is poor.

Unleveled land also emerged as a major constraint to farmers' ability to fully utilize water from the canal system to improve their agricultural production. Members of 13 of the 14 WUAs the evaluation team interviewed said they could not irrigate all their land from the canals because the land was not properly leveled. One explained more specifically that land leveled for *rod kohi*/spate irrigation was not necessarily properly leveled for the canal irrigation system. Two also specifically mentioned that their land was above the level of the distributary and could be irrigated only if the land was lowered/leveled.

> *"Suppose we used to irrigate our land from the south but now we get water from the east. The land we prepared for rod kohi could not be irrigated with canals." – WUA member, Sheda*

This issue was sometimes a result of WAPDA designing polygonal command areas with straight watercourses along one edge, which meant that field-level outlets (*nuccas*) came off only one side of the watercourse. When the straight watercourse bisected a farmer's land, he could irrigate only the section on the downhill side of the watercourse and would have to irrigate the other portion from another watercourse.

Conclusions

Access to a perennial source of irrigation water from the canal system constructed under GZIP conferred substantial benefits on farmers who could access the water, stimulating an increase in

[68] It is difficult for the evaluation team to determine whether the irrigation system can ultimately deliver perennial water to all farmers in the command area. However, the PC-1 describes the system as "water deficit" and states that it will not allow all farmers to achieve the same cropping intensities. A senior official of the Irrigation Department also explained that the Canal Act limits the command area of a watercourse to 400 acres. Analysis of summary data on the 393 watercourse command areas contained in the CADP feasibility study report found that the average size of watercourse command areas is 484 acres, the maximum size is 1,389 acres, and 64 percent are larger than 400 acres.

cultivated and irrigated area, enhancing yield and production, and improving incomes. The command area is also beginning to experience secondary outcomes associated with increased agricultural production. These include greater investment in productivity-enhancing technologies and practices such as machinery, high-quality seeds, fertilizers, pesticides, and land leveling; shifts in cropping patterns toward high-value crops; increased land value; increased production of fodder, which improves livestock productivity; expanded job opportunities; and overall economic growth. While many of these secondary outcomes are nascent in the command area, they signal the potential of a complete and mature irrigation system, a potential similarly illustrated by the impacts of the nearby CRBC project.

Fully realizing this potential, however, entails addressing several significant challenges. At this stage in the development of the command area, the canal system primarily benefits farmers who can access the water, largely those with lands adjacent to distributaries. The almost complete lack of fully functional watercourses restricts farmers' ability to convey adequate quantities of water to land far from the canal system and compels farmers near the canal system to resort to illegal means (using pipes and pumps and blocking the distributary to raise water levels) to get water from the distributaries. Furthermore, because many farmers have not prepared their land for efficient perennial irrigation practices, they extract more water from the canal system than it was designed to provide, leaving insufficient water in the system for downstream farmers. These issues contribute to inequitable distribution of benefits, fuel conflict over water, and threaten the sustainability of the system's positive outcomes.

To fully realize the potential benefits of a perennial source of irrigation water, perennial water must be distributed more widely within the command area, farmers must adopt more efficient water conveyance and irrigation technologies and practices, and water rights must be established and equitably enforced. These are precisely the issues CADP is designed to address. Constructing watercourses will help convey water to fields far from the canal system. Promoting more efficient irrigation technologies and practices by leveling land and supporting high-efficiency irrigation demonstrations will help distribute available water more equitably. Forming and strengthening WUAs, and aggregating them to tehsil-level farmers' organizations, will contribute to establishing and enforcing water rights and maintaining the irrigation system. Interventions that focus on productivity enhancement, value addition, and marketing will help farmers to extract the greatest value possible from the available water.

Although delays in implementation have deferred the benefits of a perennial water source for many farmers, the potential benefits of successfully completing the project are huge. Even with the Main Canal in operation, farmers are cultivating only about 34 percent of the cultivable area within the Main Canal command, compared to nearly 60 percent in most communities in the mature CRBC command area. The potential risks of not completing CADP include persistent, and perhaps increasing, inequity in benefits, with farmers near the head of the system, and those with influence, reaping the benefits at the expense of the rest; escalating conflicts over water; and a reduced functional life of the irrigation infrastructure.

Sustainability

Question: Are project results likely to be sustainable beyond the end of the project and why?

CADP has made little meaningful progress on its primary component one outputs, i.e., forming and strengthening WUAs, constructing watercourses, and leveling land. The substantial positive agricultural outcomes farmers in the command area have enjoyed to date are thus associated largely with GZIP and not with CADP. Furthermore, because CADP components two through four have not yet started, it is not possible to determine the sustainability of outputs or outcomes associated with these components' activities. This section therefore examines the conditions that may eventually support sustainable outcomes and identifies challenges to sustainability.

The previous section on benefits concluded that CADP interventions are essential to expanding and more equitably distributing the benefits of the canal system, developing the social structures and sense of community "ownership" necessary to sustain the physical infrastructure, and establishing and enforcing water rights under the new irrigation regime. In fact, it suggests that without CADP interventions, conflict among farmers acting in their individual interests may damage infrastructure and render irrelevant the social structures necessary to achieve, enhance, and sustain even the results of GZIP.

The substantial benefits that farmers who are able to access water from the canal system enjoy provide a powerful incentive to invest in technologies and practices to increase productivity and to maintain the physical infrastructure. Thus, for those with water, the benefits of access to a perennial water source for irrigation are likely sustainable if the canal system is maintained and remains operational. In the absence of widespread acceptance of and adherence to the rules of a new irrigation regime, adoption of appropriate irrigation practices, completed watercourses, and empowered WUAs, however, the benefits are not likely to extend to the many command area farmers who do not yet have access to canal water.

Therefore, the immediate concern is not sustaining existing benefits, but completing CADP interventions to extend and enhance sustainable benefits to a greater number of farmers. As a PIU representative said:

> *"I have observed that farmers are taking an interest in sustaining the infrastructure of the project. But I think they do not know how to manage this and how to increase the benefits of [the] project. They need a comprehensive training on how to maximize the benefits and how to sustain the project infrastructure. They need training on the new system because they are still using the irrigation methods they had adopted during the old rod kohi days."*

Once watercourses are completed and WUAs formed, sustainability of benefits depends on maintaining and regulating the canal system to ensure a reliable and adequate supply of water in all distributaries, maintaining the watercourses, and managing equitable access to water within the watercourse commands.

Ensuring that the canal system provides an adequate and reliable supply of water equitably throughout the command area depends on the Irrigation Department maintaining the infrastructure and enforcing water rights (with the help of law enforcement agencies). The large number of farmers who reported not getting water, or enough water, from the distributaries (50 of 64 farmers interviewed); damaged or compromised canals (farmers from 4 of 14 WUAs interviewed); and disregard for water rights (farmers from 12 of 14 WUAs interviewed) suggests that the Irrigation Department is not yet adequately maintaining or managing the canal system.

Although strong and sustainable WUAs are important as platforms for other project interventions aimed at enhancing productivity and profitability—e.g., promoting more efficient irrigation and productivity-enhancing technologies and practices, introducing value addition, and improving access to markets—they may not be necessary to maintaining watercourses and managing water distribution within a watercourse command.

Although the WUAs in the command area are nascent organizations at best, the 10 that responded to a question about their own capacity during interviews said that, when they had water, they would be able to maintain their watercourses and manage water distribution within their command areas. In fact, farmers in these groups noted that they have already been doing this under the traditional rod kohi system and required no additional training. The experiences of the two mature CRBC WUAs the team interviewed confirmed the notion that WUAs can maintain watercourses and manage water distribution

with little additional support beyond formation: Even though the farmers in these two WUAs formed WUAs solely to access government support to line their watercourses, they were still active and reported having no difficulty organizing members to clean the watercourse (as often as every two weeks during the summer when watercourses silt up quickly) and resolving conflicts over water.

Conclusions

Economic incentives alone should largely sustain the substantial production-related benefits (e.g., increased cultivated area, production, and incomes) that farmers who can access canal water enjoy, as long as the canal system is maintained and operational. Although these benefits are largely attributable to GZIP, they reflect the sustainable benefits that CADP interventions can extend to a much greater number of farmers by constructing watercourses to distribute water further from distributaries, and by forming and strengthening WUAs and aggregating them into tehsil-level farmers' organizations, thus contributing to equitable enforcement of water rights. Secondary benefits associated with increased production (e.g., increased on- and off-farm employment, land values, and economic activity) should also be sustainable under the same conditions.

While CADP can contribute to substantial benefits merely by completing watercourses, the project strives to accomplish much more. Improving irrigation efficiency, promoting productivity-enhancing crop and livestock technologies and practices, introducing value-added opportunities, and expanding access to markets have the potential to substantially enhance the benefits associated with access to a perennial water supply. Because the project has not started implementing any of these activities, it is not possible to assess their magnitude or likely sustainability. Nevertheless, the experience of other development projects that followed similar approaches (e.g., FIRMS, The Agriculture Project, and the Satpara Development Project)[69] suggests that such interventions can create sustainable benefits. The likelihood of sustainability, however, relies on thoroughly understanding the relevant value chains and supporting them with government resources, such as extension services and Farm Services Centers, and—importantly—meaningfully engaging relevant private sector actors, such as input dealers, service providers, processors, and traders.

RECOMMENDATIONS

The evaluation team developed two types of recommendations: those it believes are important to implement immediately to accelerate and improve implementation in the project's remaining time and those relevant to improving future G2G programming more broadly.

Recommendations for Immediate Implementation

The evaluation team first developed preliminary recommendations, and then conducted a day-long recommendations workshop with representatives of USAID and the GoKP to assess the relevance and practicality of the recommendations, refine recommendations they believed had merit, and develop detailed action plans to implement accepted recommendations. A separate workshop report contains more detail on the workshop process and outputs. This section presents recommendations organized around three key themes: project management, strengthening WUAs and WIGs, and water distribution and use.

[69] MSI, *Satpara Development Project Evaluation. MSI, Building Sustainable Agribusinesses in Pakistan*. MSI, *Improving the Competitiveness of Small and Medium Enterprises*.

Project Management

- **Recommendation 1:** The project should conduct a strategic planning exercise to develop a detailed work plan with realistic targets for completing the project within the remaining time. The plan should identify opportunities for implementing project activities in parallel in geographic "clusters" instead of implementing uniformly throughout the entire command area. For example, the plan might focus first on completing WUA formation and watercourse construction in discrete geographic areas where it can do so most quickly and then follow up with subsequent activities in that area, thus allowing each "cluster" to proceed at its own pace.

  Workshop participants' response: Participants in the recommendations workshop believed this recommendation was relevant and practical. The project director committed to working with external experts and short-term consultants, as necessary, to develop a work plan to present at the next PSC meeting.

- **Recommendation 2:** The project needs to fill key gaps in its staff's expertise, e.g., procurement, contracts, monitoring and evaluation, social mobilization, and human resources, as soon as possible with competent and experienced professionals.

  Workshop participants' response: Participants in the recommendations workshop proposed three strategies for implementing this recommendation. In the short term, the project will transfer a contracts specialist from the PMU to the PIU. In the medium term, USAID can provide technical assistance. In the long term, the project will include these positions in the PC-1 revision it is currently preparing.

- **Recommendation 3:** The project should engage an experienced, full-time project management professional (or team) as part of senior management to help plan, coordinate, and manage project activities. This individual(s) should participate in strategic planning, coordinate tracking progress against the plan, identify emerging problems and coordinate with senior management to resolve them, and manage staff to keep activities on track toward achieving project objectives in a timely manner.

  Workshop participants' response: Participants in the recommendations workshop believed this recommendation was relevant and practical but did not develop a specific action plan for implementing this recommendation. They noted that the project had funds available for technical assistance that could be used to hire additional technical staff and proposed that the project use these funds to engage management assistance immediately. The project director advocated for training project staff to fulfill the management role, and other roles, as a long-term strategy.

- **Recommendation 4:** The GoKP needs to appoint a full-time, dedicated, and qualified project director posted in D.I. Khan for the duration of the project.

  Workshop participants' response: The GoKP recently appointed a new project director who is posted in D.I. Khan. The secretary agriculture will request that the PSC order that the project director remain at his post until the end of the project.

Strengthening WUAs and WIGs

- **Recommendation 1:** The project must prioritize forming WUAs and WIGs using a true social mobilization process and strengthening new and existing groups to be sustainable and capable of performing their roles in the project.

Workshop participants' response: Workshop participants found the recommendation relevant and practical and proposed creating a "Social Mobilization and Gender Mainstreaming" component within the PIU to implement the recommendation. The project director committed to writing the new component into the PC-1 revision that is underway.

- **Recommendation 2:** Clarify the objectives of and approaches to strengthening WUAs and WIGs; reassess consultants to determine whether they have the understanding and capability to perform the work; and make changes if necessary to accomplish this critical objective quickly.

  Workshop participants' response: Workshop participants noted that the previous project director had already initiated a review of Taaleem Foundation's performance and discussed addressing some of the consultant's performance issues. The project director committed to another review in collaboration with PIU staff and taking necessary remedial actions.

- **Recommendation 3:** Design and implement a communication strategy to educate communities about their water rights and the implications of the transition from a spate irrigation system to a regulated perennial system. Consider collaborating with OFWM, Farm Services Centers, and others with ties to the communities to design and implement the strategy.

  Workshop participants' response: Workshop participants believed that the social mobilization consultant should implement this recommendation by training WUAs. They proposed working with the Taaleem Foundation to develop a strengthening plan covering WUAs' purpose and responsibilities, their role in maintaining and managing watercourses, and WUA strengthening.

Water Distribution and Use

- **Recommendation 1:** Where feasible (i.e., where watercourses have not been completed and where water is available), consider allowing farmers to lay out and construct unlined, earthen watercourses. Consider other approaches to improving watercourses, such as coordinating with the National Program for Improvement of Watercourses through OFWM.

  Workshop participants' response: Workshop participants agreed that the recommendation was relevant but believed an alternative approach would be more practical. They preferred to continue using private sector contractors to construct watercourses, but they also planned 1) to work with WUAs to mitigate farmers' resistance to construction activities, 2) to give contractors one final extension, and 3) to rescind and re-award the contracts of contractors that failed to complete their work on time.

- **Recommendation 2:** Develop and implement a strategy for executing land leveling. Develop criteria for facilitating land leveling among farmers, perhaps by offering a subsidy to anyone interested. Consider where land leveling will contribute most to enhancing the overall benefits throughout the command area.

  Workshop participants' response: Workshop participants found the recommendation to be relevant and practical. The project director committed to identifying *chaks* for branch watercourses with farmers, establishing *warabandi*, and developing a strategy and criteria for leveling land through the DoA.

- **Recommendation 3:** Facilitate orientation meetings between contractors and farmers before construction begins on each watercourse to elicit farmers' input on watercourse design, layout,

construction, timing, and other issues to encourage farmers' understanding and cooperation during the construction process.

Workshop participants' response: Workshop participants agreed to ensure that the Taaleem Foundation integrated this recommendation into its work with WUAs. The project director will draft a working paper for PSC approval proposing to give the Taaleem Foundation a final notice to improve progress on social mobilization.

Recommendations for Improving Future G2G Projects

- To the extent possible within ADS 220 requirements, USAID should consider following the lead of donors such as the Asian Development Bank and reserve for itself a stronger role in project design, management, and oversight. In CADP, USAID could have insisted on conducting a feasibility and detailed design exercise prior to implementation; played a role in reviewing and approving consultant contracts; and ensured that the project engaged a professional manager or a management team—perhaps by hiring them directly.

- In future G2G projects, USAID should consider directly providing technical assistance to fill critical positions the government may not be able or willing to fill based on the project staffing plan. Select the individuals or firms for these positions, hire them directly at competitive rates, and embed them within the project staff. In the case of CADP, these key positions could have included specialists in contracting, procurement, social mobilization, human resource development, monitoring and evaluation, and project management. Task these individuals with building the capacity of local project staff and commit to providing the assistance for as long as necessary.

- For projects that engage the private sector as contractors, USAID should review its arrangements for independent monitoring and verification to ensure that they do not unduly burden service providers. In CADP, requiring that the verification contractor make more frequent site visits, or establish a local office, could have substantially reduced the burden the slow process placed on watercourse construction contractors.

ANNEXES

Annex 1: Statement of Work

GOMAL ZAM DAM COMMAND AREA DEVELOPMENT PROJECT (GZD-CADP)

MIDTERM PERFORMANCE EVALUATION STATEMENT OF WORK (SOW)

JANUARY 10, 2019

GOMAL DAM COMMAND AREA DEVELOPMENT PROJECT (GZD-CADP)

MIDTERM PERFORMANCE EVALUATION

STATEMENT OF WORK (SOW)

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ACRONYM LIST

A&E	Architect and Engineering
ADB	Asian Development Bank
CPA	Certified Public Accountant
DoA	Department of Agriculture, Livestock and Cooperation GoKP
D.I. Khan	Dera Ismail Khan
EGA	USAID Office of Economic Growth and Agriculture
FFS	Farmers Field School
FO	Farmer Organization
GoKP	Government of Khyber Pakhtunkhwa
GOP	Government of Pakistan
GZD	Gomal Zam Dam
GZD-CADP	Gomal Zam Dam Command Area Development Project
GZIP	Gomal Zam Irrigation Project
Ha	Hectare
IL	(USAID Project) Implementation Letter
KP	Khyber Pakhtunkhwa
M&E	Monitoring and Evaluation
MAF	Million Acre Feet
MOU	Memorandum of Understanding
MSI	Management Systems International
MW	Mega Watt
NESPAK	National Engineering Services of Pakistan
OFWM	On Farm water Management Directorate of GoKP-DoA
PAD	Project Appraisal Document
P&DD	(GoKP) Planning and Development Department
PIU	Project Implementation Unit
PMU	Project Management Unit
SOW	Statement of Work
TPW	Team Planning Workshop
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority
WUA	Water User Association

BACKGROUND INFORMATION

Activity Agreement and Implementation Letters

On March 18, 2015, USAID signed an Activity Agreement (391-DOA-GZDCADP-001-001) for GZD-CADP with the Government of Khyber Pakhtunkhwa (GoKP) through the Planning and Development Department. The command[1] area for the Gomal Zam Dam is located in the districts of Dera Ismail Khan (D. I. Khan) and Tank in Khyber Pakhtunkhwa. The overall objective of the activity is to ensure that the water available from the Gomal Zam Dam is used efficiently and productively through an integrated command area development approach. These efforts will ultimately lead to increased income and employment for the people living in the command area. An estimated 30,000 families, or approximately 195,000 people, will directly benefit from the development of the command area.

The project has two main components, i.e. soft component (design and technical assistance) and hard component (infrastructure). On September 8, 2015, USAID signed first Implementation Letter No.1 (IL-001) authorizing $5.05 million for financing activities under the soft component, including conducting preliminary studies such as a master plan, feasibility, baseline, detailed design and cost estimation. USAID signed second Implementation Letter No.2 (IL-002) on January 25, 2017 to sub-obligate $7,820,000 for activities under the hard component (construction of watercourses, ponds and link roads, land leveling and installation of drip and sprinkler systems).

Overview of Gomal Zam Dam Command Area Development Project (GZD-CADP)

The GZD-CADP is last part of the three-phase Gomal Zam Dam Multipurpose Project. The command area is located in the districts of D. I. Khan and Tank, and there are 69 villages in three Tehsils (Tank, D.I. Khan and Kulachi) in the area. The total command area is 191,000 acres, comprising 94,000 acres in Tank, 87,235 acres in Kulachi, and 9,765 acres in D. I. Khan. With irrigation, the land and ecology is suitable for raising high value crops, such as fruits and vegetables, along with field crops. The development of the command area was planned under an approved PC-1 from the Government of Pakistan and the Government of Khyber Pakhtunkhwa.

Project Objective

GZD-CADP will provide assistance and funding to the people of Gomal Zam Dam command area to build and operate a modern irrigation system on 191,000 acres with major considerations for water use efficiency and productivity, while providing food self-sufficiency and income from high value crop production. The Project will create jobs, new industries, and increased opportunities for the people in this fragile ecosystem. These opportunities will provide new and better livelihoods for all especially women. An estimated 30,000 families, or approximately 195,000 people, will directly benefit from development of the command area.

[1] The irrigated area served by the Gomal Zam Dam.

The project is implemented by the Agriculture, Livestock and Cooperation Department (DoA) of the Government of Khyber Pakhtunkhwa (GoKP), through a Project Management Unit (PMU) located in Peshawar and a Project Implementation Unit (PIU) located in D.I. Khan. (The PIU is a sub-unit of the PMU.) The actual work on the ground is done through the private sector and, in some cases, through Government line departments in situations where private sector services are not available, both of which are contracted and coordinated by the PMU/PIU.

The total project cost of GZD-CADP in $34.08 million, including USAID contribution of $22.22 million, GoKP contribution of $7.19 million and farmers' share of $4.67 million (See Table 1 below). Due to extreme poverty in the region, government decided in 2018 to pay farmers' share as well which will be later on recovered through easy installments.

TABLE 1: SUMMARY OF THE PROJECT COSTS

S. No.	Description	Budget (USD Million)				Percent of Budget
		Year 1	Year 2	Year 3	Total	
1	Administration and Supervision					
1.1	Establishment	0.16	0.21	0.14	0.51	1.48
1.2	Operational	0.09	0.12	0.10	0.30	0.89
2	Transport (Vehicle)	0.15	0.00	0.00	0.15	0.44
3	Office Equipment and Furniture	0.05	0.00	0.00	0.05	0.15
4	Interventions (Program Cost)	5.86	9.47	8.02	23.35	68.52
5	Social, Training and Agricultural Activities	1.06	2.32	1.47	4.85	14.22
6	Consultancy Assignments and Technical Assistance	0.81	0.71	0.40	1.92	5.63
7	Program Audit	0.03	0.05	0.03	0.10	0.30
8	Project Review and Impact Evaluation (Mid-Term and Final)	0.05	0.10	0.05	0.20	0.59
9	Grantee Share in Supervision and Administration (In-kind)	0.45	0.80	1.00	2.24	6.56
10	Physical and Price Contingencies	0.08	0.18	0.16	0.41	1.21
TOTAL PROJECT COST		**8.77**	**13.96**	**11.35**	**34.08**	**100.00**
Cost Share (by Year, USD Million)		**Year 1**	**Year 2**	**Year 3**	**Total**	**Percent Cost Share**
Grantee Share (cash)		1.23	2.02	1.70	4.95	14.51
Grantee Share in Supervision and Administration (In-kind)		0.45	0.80	1.00	2.24	6.56
Farmers' Share (In-kind)		1.22	2.02	1.43	4.67	13.71
USAID Share (cash)		5.52	9.05	7.66	22.22	65.22

For the purpose of preparation of the budget, the conversion rate of 1 USD = PKR 99 is used.

Implementation Strategy for Command Area Development and Water Productivity

The strategy for the development of the command area and productivity enhancement is to be implemented through the following four components:

Component 1: Command Area Development and On-Farm Water Management
Component 2: Enhancing productivity of crops, horticulture and livestock
Component 3: Value added agriculture and livestock
Component 4: Marketing of marketable products

Each component is discussed briefly below.

Component 1: Command Area Development and On-Farm Water Management

Component 1 includes the following activities:

- Preparation of a feasibility and master plan for the GZD-CADP;
- Mapping and layout of rural dirt link roads and watercourses;
- Detailed designs and an estimation of quantities of materials needed for the award of contracts for the implementation of the four components for GZD-CADP;
- Recruitment of supervisory consultants to support quality control in the construction of the various physical interventions and to verify the quantity of materials used in order to authorize payments to the contractors;
- Construction of rural dirt roads and linking these with the existing paved roads to provide access of farms to nearby markets;
- Land reclamation and land leveling in ravines and gullied areas;
- Field layout;
- Construction of watercourses, concrete turnouts, and culverts and lining of up to 20 percent of watercourses' length;
- Furrow irrigation on precision leveled fields using laser land levelers;
- Formation of Water User Associations (WUAs); and
- Trainings of WUAs for the operation and maintenance of the watercourse for multiple uses of water.

Component 2: Productivity Enhancement of Crops, Horticulture and Livestock

Component 2 includes the following activities, divided between activities associated with crop production and livestock:

<u>Action 1: Crops and Horticulture</u>

The productivity enhancement for crops and horticulture will be implemented through the following activities:

- Orientation and training of the WUAs in field and horticultural crops;
- Formation of interest groups for specified commodities, in collaboration with other USAID projects;

- Use of the Farmers Field School (FFS) to provide training to farmers;
- Demonstrations of high efficiency irrigation systems (e.g., furrow irrigation on laser leveled fields, sprinkler, drip, etc.) for field crops, fruits, melons, and vegetables;
- Development of demonstration plots on the use of sprinkler and/or drip irrigation systems;
- Provision of services from private sector, contracted through the PMU, for inputs (e.g., seeds, fertilizer, machinery, etc.);
- Trainings on the adoption of hybrid seeds (e.g., maize, sorghum and millet) and improved seed varieties (e.g., wheat and chickpea); and
- Assisting farmers in designing the cropping patterns based the availability of water and type of irrigation systems and market requirements.

Action 2: Livestock

The productivity enhancement for livestock will be implemented through the following activities:

- Orientation and training of the WUAs in small and large ruminants;
- Training on improvement of breeds, nutrition, and cost-effective housing and management for cattle and small ruminants;
- Training for stock water management, quality, and quantity and improved veterinary care;
- Improving cattle and small ruminants breeds through artificial insemination and the provision of progeny bulls, rams and bucks;
- Demonstrations on improving fodder through the use of improved hybrid seeds and preparation of silage;
- Demonstrations on the effectiveness of balanced feeds for fattening small and large ruminants and dairy animals for increased milk yield; and
- Arranging veterinary care camps to provide effective health cover services to livestock farmers.

Component 3: Value Added Agriculture and Livestock

Component 3 includes the following activities, divided between activities associated with crops and livestock:

Action 1: Introduction of High Value Crops

- Grading of grains (e.g., wheat, sorghum, millets, pulses, etc.) for seed stock and commercial sale;
- Grading, packing and storage of fruits (e.g., melons, mangoes, and dates);
- Use of lower grade fruits for secondary processing; and
- Linking farmers with the processing industries for marketing of processed products and developing demand-orientation for production plans.

Action 2: Introduction of Highly Productive Breeds, Feeds and Modern Management of Livestock

- Storage of milk and preparation of value added products through provision of cost-effective chillers using indigenous technology;
- Formation and training of milk production interest groups in the use of chillers;
- Training of farmers in the production of value added products (e.g., cottage cheese and traditional sweets);
- Formal trainings on hygienic handling of the milk to maintain quality of milk and value added products;
- Promotion of livestock products (e.g., hair, wool, and skins/hides);
- Introduction of proper shearing techniques for sheep and camel; and
- Encouragement of private sector to provide trainings on proper removal, collection, storage and transportation of skin/hides and wool to the tanneries and weaving industry.

Component 4: Marketing of Marketable Products

Component 4 includes the following activities, divided between activities associated with access to markets for crops and livestock:

Action 1: Access to market information, linkages, local marketing platforms for crops, fruits, vegetables, and value added products:

- Access to market information by linking Farmer Organizations (FOs) with the local markets and industries and markets in neighboring countries;
- Strengthening of the market in D.I. Khan through the development of local marketing platforms for the FOs by development partnerships with local small entrepreneurs;
- Revision of the Existing Market Act to ensure participation of the private sector in the establishment of specialized markets for crops, fruits, and vegetables and associated products; and
- Create links to markets and industries through the construction of dirt link roads.

Action 2: Increased private sector investment in the dairy and livestock industry

- Networking of the milk collection areas to the paved roads through dirt road development;
- Formation of milk collection units and the installation of chillers;
- Establishment of milk market platforms in collaboration with private sector in order to make connections with value added milk processing plants;
- Small scale enterprises will be established with the involvement of private sector; and
- Create links to markets and access to market information through partnerships with the private sector.

TABLE 2: PROJECT SUMMARY

Title / Field	Project/Activity Information
Agreement Number	391-DOA-GZDCADP-001-001 (and Amendments IL-001, IL-002)
Government Agreement Technical Representative (GATR)	
Start Date	September 8, 2015
Completion Date	December 31, 2019
Location	District D.I.Khan and Tank, Khyber Pakhtunkhwa
Name of Implementing Partners (IPs)	Department of Agriculture (DoA), Government of Khyber Pakhtunkhwa
USAID/Pakistan Mission Strategic Framework Linkages	DO 2: Improved Economic performance of Focus Enterprise IR 2.1.3: Increased Use of Modern Technology and Management Practices IR 2.1.3a: Number of Hectares with Irrigation and Drainage Services
Budget	$22.22 million

DEVELOPMENT CONTEXT

Irrigated agriculture is the largest source of livelihood in KP, as irrigation is essential for the successful harvest of crops, fruits and vegetables, due to the aridity prevailing in major part of the province. In addition, this sub-sector provides feed resources (fodders and forages) for dairy and meat animals.

Current cultivated area in KP province is around 1.87 million ha, representing 18.4% of the geographical area of the province. The additional cultivable area (1.86 million ha) available in the province is almost of the same size as of current cultivated area. The cultivable area is comprised of culturable waste (1.25 million ha) and the current fallow within the current cultivated area (0.61 million ha). The major limitation for the development of potential cultivable area is the availability of water. Thus, in future the cultivable land and available water resources in the province would provide opportunity for doubling of the cultivated area. The province has not yet fully utilized its water resources from the Indus basin irrigation system as per Pakistan Water Apportionment Accord 1991 due to limited infrastructure. Inadequate industrial development in the province suggests that irrigated agriculture will continue as a major sub-sector for future growth of provincial economy.

The public-managed canal irrigation system is largely located in the Indus basin irrigation system in northern and southern KP. Number of initiatives have been undertaken in these systems and financed by the large donors like USAID, ADB and World Bank. The institutional reforms were also introduced in these systems during 1997-2005 but could not be adopted after the pilot scale testing.

Besides Indus Basin irrigation system, there are six hill torrents (called *Zam* in local language) originating in the Suleiman range with considerable flows that are being used as spate irrigation

(*Rud Kohi*) for agriculture production for centuries in DI. Khan, Tank and other adjacent areas. However, the productivity of these spate irrigation systems is quite low compared to modern reservoir and canal irrigation. For this purpose, the Government of Pakistan initiated Gomal Zam project in 2001 to transform the spate irrigation in to modern reservoir-based control irrigation system. Although, it is a huge transformation for economic growth but it comes with a social cost and that is the disturbance of the existing centuries old established water right system. The damming of water also created winners and losers as there will still be traditional water right holders who are kept out of the command area (irrigated area) of the Gomal Zam. The construction of dam, canal infrastructure and command area development in GZD are being supported by GOP, USAID and the KP provincial government.

With the controlled reservoir based canal irrigation system, the water availability for 191,000 acres will be ensured on weekly or ten daily bases (meaning each farmer under the canal command will receive its due share once every week or ten days). Such a reliable and adequate irrigation water supply will enhance agriculture production, productivity, crop diversification and pull more investments from farmers on inputs, machinery and fertilizers. An estimated 30,000 households in D.I. Khan and Tank will be directly benefited from Gomal Zam project.

Problem or Opportunity Addressed

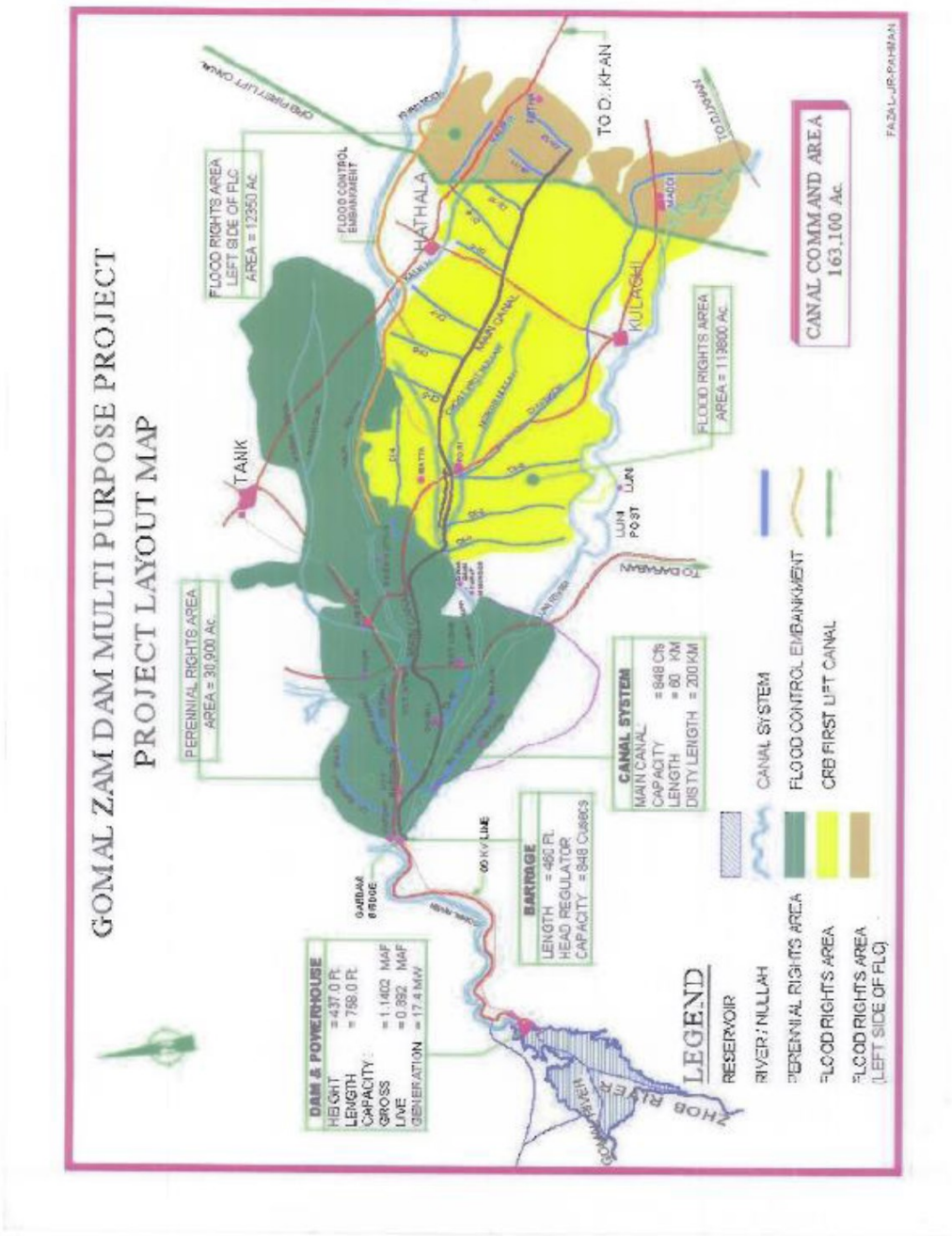
The major problem, as discussed above, is the unreliability and unpredictability of the spate irrigation system which kept agriculture productivity quite low in areas served by the hill torrents in southern KP. Gomal Zam was a similar spate irrigation system which used the ensuing floods from Suleiman range one or twice a year. The farmers would dump the flood waters in their fields up to a depth of one meter. Once this stored water would infiltrate into the soil, the farmers would cultivate the land. The crops (generally wheat and grams) would use the residual moisture and occasional rains. Thus the whole economic system was dependent on the floods and the subsequent rainfalls. The major challenge was the timing of water availability to suit the cropping calendar. In addition, farmers would not invest in their lands due to unreliable water supply. Consequently, the economy of the area remained fragile and unproductive. This is why the people of the area were poorest of the poor.

The GOP tackled this problem by turning it into an opportunity by initiating Gomal Zam Multipurpose Dam project in 2011. The main purpose of the dam was to capture flood water through a reservoir of 1.14 MAF storage capacity, provide water for irrigation of 191,000 acres and generation of 17.4 MW electricity. USAID funded all three phases (dam, irrigation and command area development) of the multipurpose project. The dam was completed in 2013; the irrigation system completed in 2016; and the last phase of command area development (GZD-CADP) is in progress for which this mid-term evaluation is undertaken.

Focus Areas and Groups

Project activities focus on the development of the command area (191,000 acres), productivity enhancement, processing and marketing in D.I. Khan and Tank districts of Khyber Pakhtunkhwa (see Figure 1 below).

FIGURE 1: MAP OF THE PROJECT AREA



Note: The command area is shown 163,000 acres because by that time Waran canal was not included initially but added later on to irrigation additional 28,000 acres land in Tank district.

DEVELOPMENT HYPOTHESIS

The development hypothesis for the GZD-CADP suggests that once the command area is developed through construction of 393 tertiary water channels (called watercourses) and similar number of water user associations formed, efficient irrigation and productive farming practices adopted, and processing value chain and market linkages established, then the yield, production and income of farmers besides resulting in creation of new employment opportunities (on- and off-farm) in D.I. Khan and Tank districts of Khyber Pakhtunkhwa.

INTENDED RESULTS

At the objective level the project expects to increase farmers' income and employment opportunities through improved water and land productivity on 191,000 acres in D.I. Khan and Tank.

APPROACH AND IMPLEMENTATION

The project is implemented in two phases, i.e. soft component (social, design, training and technical assistance) and hard component (infrastructure, agricultural activities), both of which go side by side and are complementary. Soft component is comprised of conducting preliminary studies such as a master plan, feasibility, baseline, detailed design and cost estimation, water user association formation, training of farmers, and hiring of consultancies for social, design, supervision and productivity enhancement activities etc. The hard component includes construction of watercourses, ponds and link roads, land leveling and installation of drip and sprinkler systems etc.

The project is implemented by the Agriculture, Livestock and Cooperation Department (DoA) of the Government of Khyber Pakhtunkhwa (GoKP), through a Project Management Unit (PMU) located in Peshawar and a Project Implementation Unit (PIU) located in D.I. Khan. GZD-CADP has hired NESPAK in August 2016 on one year contract for design work and supervision of infrastructure activities. The NESPAK contract was then amended (Addendum-1) for one year extension to August 2018. A third Addendum is in process for a further two years extension up to August 2020. For social activities (formation of water user association, training etc.), the project signed an MOU with On-Farm water Management directorate of the GoKP Agriculture Department in August 2016 for a nine month task of formation of 393 water user associations. The OFWM registered only about 180 water user associations. Due to poor progress, the project decided to outsource social mobilization to the private sector. In December 2017, the project signed a contract with Taleem Foundation for 2 years. Till date, Taleem Foundation has completed formation of 75 water user associations. The process of hiring a third consultancy firm for productivity enhancement is in progress. Similarly, the procurement of project staff was completed with significant delays and even some of the positions are vacant till date.

USAID payment process involves prior certification of physical works by Halcrow (USAID hired A&E Firm) and financial status by KPMG (USAID-hired CPA Firm). Both these firms are hired by USAID for verification of the work done.

TABLE 3: SUMMARY BUDGET FOR SOFT COMPONENT

S. No.	Parameters	(in USD Million)		
		USAID	GOP	Total
1	Administration & Supervision			
1.1	*Establishment*	-	0.37	0.37
1.2	*Operational*	-	0.20	0.20
2	Transport – Vehicle	-	0.15	0.15
3	Office Equipment and Furniture	-	0.05	0.05
4	Social, Training and Agricultural Activities	3.38	-	3.38
5	Consultancy Assignments and Technical Assistance	1.52	-	1.52
6	Program Audit	-	0.08	0.08
7	Project Review and Impact Evaluation (Mid-Term and Final)	0.15	-	0.15
8	GoKP Share in Supervision and Administration (In- Kind)	-	1.24	1.24
9	Physical and Price Contingencies	-	0.26	0.26
Sub Total		**5.05**	**2.35**	**7.40**
Cost Share (USD Million)				
Grantee Share (Cash)				**1.11**
Grantee Share (In-Kind)				**1.24**
USAID Share (Cash)				**5.05**

TABLE 4: SUMMARY BUDGET FOR INFRASTRUCTURE COMPONENT

S.No	Activities	Unit	Target	Budget (USD in million)			
				USAID	GOKP	Farmers (in-kind)	Total
1	Earthen Shingle Road	KM	20	0.33	0.00	0.08	0.41
2	Multi-Purpose Pond (Earthen)	Nos	200	0.39	0.00	0.10	0.49
3	Earthen Watercourses	Nos	200	2.34	0.00	0.59	2.93
4	Lining of Watercourses	Nos	200	1.95	0.28	0.49	2.72
5	Precise land leveling	Acres	60300	2.31	1.40	0.93	4.64
6	Drip system (5-acre)	Nos	40	0.27	0.04	0.00	0.31
7	Sprinkler system (5-acre)	Nos	40	0.22	0.03	0.00	0.25
8	Furrow system (5-acre)	Nos	50	0.01	0.00	0.00	0.01
9	Construction of Farmers Office Support Centers	Nos	2	0.00	0.38	0.00	0.38
10	Construction of Field Office	Nos	1	0.00	0.19	0.00	0.19
Total				**7.82**	**2.33**	**2.19**	**12.34**

CURRENT STATUS OF ACTIVITIES

Out of the four components, substantial progress is achieved on component 1 (Command Area Development and On-Farm Water Management) while progress on other three components (productivity enhancement, processing and marketing) is at the beginning stage (See updated progress report as Annexure 1).

According to the PC-1, the project was originally scheduled to be completed by September 30, 2017. However, later on the completion period was extended to September 7, 2020. This is one important area which needs to be evaluated as to why this project was delayed from its original schedule.

USAID signed an Activity Agreement for GZD-CADP with the Government of Khyber Pakhtunkhwa (GoKP) through the Planning and Development Department on March 18, 2015. The project implementation letter (IL-001) for soft component was signed on September 8, 2015 with stipulated completion date of September 30, 2017. USAID signed second Implementation Letter No.2 (IL-002) for hard component on January 25, 2017 with the same completion date as that of IL-001. On February 5, 2018, the third implementation letter (IL-003) was signed through which the project completion date was extended to December 31, 2019. Due to delays in implementation, the project lagged behind significantly in achieving its intended progress. The project progress is well behind its stipulated schedule. The reasons behind delays could be, inter alia, one or combination of more of the following factors:

1. Design constraints
2. Procurement
3. Security challenges
4. Coordination issues
5. Technical issues
6. Project management capacity issues

RATIONALE FOR EVALUATION

The Project started on ground in 2015 when USAID entered into Agreement with GoKP in September 2015. Ever since, progress has achieved some progress only on one out of four components. Even the progress on component 1 is well below 50% mark. Significant time overrun delayed project benefits to the beneficiaries on the one hand and caused huge loss of economic gains (benefit forgone) to the overall economy on the other. There could be direct cost to the parties implementing the project as well in terms of the inflation and increased cost of management for the expanded period. The project requires a mid-term evaluation to analyze the overall progress, figure out factors that caused delays and recommend ways to put the project on its path to achieve the intended results efficiently and effectively. The evaluation results would lead to informed management decision, both at the GOP and USAID, for the rest of the time. In addition, the report findings would also benefit future project design and management decisions.

EVALUATION PURPOSE

The main purpose of the evaluation is to inform on the project performance vis-à-vis achievement of the intended objectives. As the project was delayed for more than two years, USAID and GoKP also need to fully understand the causes of delays to inform management decisions on future line of action for improvement of project performance. The findings would be highly useful to guide future project planning, design, implementation and other related decisions that are likely to improve performance of future investment efforts. The evaluation is also expected to provide valuable lessons for USAID and GOP/GoKP entities to modify future investments to avoid time and cost over-runs.

AUDIENCE

The primary audience for the evaluation includes: (1) the USAID/Pakistan Mission, particularly the EGA Team, (2) the USAID Office of Afghanistan and Pakistan Affairs, and (3) the implementing partners (GoKP Department of Agriculture, Planning and Development Department), WAPDA and Irrigation Department. Recommendations from the evaluation will help USAID/Pakistan, GoKP and GOP improve future investments. Lessons learned will help all audiences design and implement more effective projects in the future.

EVALUATION QUESTIONS

Three key questions will guide the evaluation:

1. **How appropriate was the project design to achieving anticipated results?**

   Explanation: This question focuses on the extent to which the project's design (PAD, PC-1, Activity Agreement and PILs) contributed to, or detracted from, achieving results. The evaluation should examine the project's original design and subsequent changes and focus particularly on assessing the timing, funding, processes and sequencing of project activities, the flexibility of the design in adapting to obstacles beyond the project's control, and whether the length of the project is sufficient to achieve the project's planned results. The question also looks into the institutional processes involved in project PC-1 design (i.e. who initiated project PC-1 design and what level, what project design guidelines are used, how market research was done, how the stakeholders were involved, how the future price escalation were captured, how does the project implementation plan, especially procurement (project staff and firms), was incorporated and flexibility for amendments/revisions of the PC-1. Relevant recommendations should focus on how the project design could have avoided delays. Lessons should focus on if and how future projects could be designed differently to avoid issues faced by the GZD-CADP, i.e. time (and indirect cost overruns).

2. **How appropriate was the project Implementation/operational/management to achieving anticipated results?**

   Explanation: This question will look into the project implementation and management factors (other than design) that contributed to achieving the project objectives. The question will dig deep into the processes that governed overall project management

including selection and composition of team, the splitting of management into Project Management Unit (PMU) and Project Implementation Unit, staff turnover, procurement of project staff, incentive structure, targets setting, financing plan including recovery of loan from farmers, M&E, accountability structure for PMU and PIU), and political/bureaucratic interference.

The evaluation will specifically look into the procurement of private sector firms and contract management (number of contracts signed, who and how contracts are prepared, what procurement guidelines used, processes followed, who and how contracts are supervised to avoid cost and time overrun, contract amendment and extension procedures (especially for cost and time overrun), what kind of reward and punishment mechanisms used in case of failure, on part of the client and contractor, to deliver as per terms and conditions. In addition, the evaluation will also look into the procurement processes of public sector organizations and their impact on project objectives' achievements.

This question should identify obstacles the project experienced during implementation, their effect on achieving planned results in the original planned time frame, and measures the partner took to ameliorate emerging issues. The question should also address the extent to which project implementation incorporated women and whether alternative implementation approaches may have engaged women more effectively. The question should also assess whether the implementing partners had the requisite background and expertise, particularly in project management, to effectively implement the project including environmental compliance to USAID Environmental Mitigation and Management Plan (EMMP). Recommendations should focus on changes in the implementation approach that could improve performance.

In the end the question should look into causes of delays and recommend measures to achieve project objectives.

Lessons should also include implications for the future projects, particularly on USAID's processes for future G2G programs.

3. **To what extent are results likely to be sustainable beyond the end of the project and why?**

Explanation: This question should generate conclusions about the likelihood that the project will produce sustainable results, i.e., that the results will persist beyond the end of donor support. Specific issues include the sustainability of the physical infrastructure (tertiary irrigation canals and their maintenance); the sustainability of the enabling environment results (e.g., water user associations, the regulatory system for water distribution among farmers); the sustainability of productivity enhancement support services (quality seeds, land leveling, varieties and yield of high value crops, horticulture and livestock); sustainability of processing value chain (harvesting, cleaning, sorting, packaging, branding, storage, transportation); sustainability of marketing linkages (e.g., regulatory environment, access, information, competition); and the sustainability of employment and income outcomes related to improved agricultural production and value addition. The answer to the question should address how and why results are sustainable

or not sustainable; generate lessons for enhancing the prospects of sustainable results in future projects. The question should evaluate the following questions on the basis of the baseline indicators as well:

i. Change in acres under perennial irrigation
ii. Equity in water share (*warabandi* system or makeshift mechanism through which farmers get their due share of water)
iii. Sustainability of WUAs
iv. Sustainability of watercourse maintenance
v. Change in cropping intensity
vi. Change in yield
vii. Change in production of crops, horticulture and livestock
viii. Changes in crop types/diversification (are farmers growing higher-value crops from what they were growing before irrigation)
ix. Change in farmers' income
x. Change in land value
xi. Change in water conflict resolution
xii. Change in access to market
xiii. Change in groundwater table and quality
xiv. Change in availability of drinking water in command area
xv. Change in social conditions of the beneficiaries (education and health indicators)
xvi. Change in the status of private sector service providers in agriculture and livestock (opportunities for corporate sector investment, opening franchises for quality inputs based on the new potential in D.I.K, Kulachi, Tank or any local markets.
xvii. Changes in employment opportunities as a result of project
xviii. Gender and youth integration
xix. Change in soil chemical composition of command area

DESIGN AND METHODOLOGY

The evaluation design will utilize a number of sources and methods to triangulate findings as extensively as possible. To the extent feasible and applicable, it will use randomized approaches to select interview subjects and sites for site visits. The evaluation will rely largely on qualitative data and the team will employ rigorous approaches to reduce qualitative data, quantify responses, and detect patterns relevant to answering the evaluation questions.

DATA COLLECTION METHODS

The evaluation will collect data from a number of sources using a variety of methods including reviewing project design and performance documents and sector analyses/reports; conducting semi-structured interviews with project staff, USAID personnel, sector stakeholders including private sector players (shop keepers, input providers, wholesale market agents in DI Khan and Tank, Farm Services Centers and Agriculture extension and livestock extension staff), selected participants/beneficiaries, sector experts, including staff of other donor agencies working in the sector; District government including Administration and revenue collection staff, Agriculture

extension, Agriculture Statistics, and Livestock offices for any changes in yield, diversification, livestock population and income of farmers; GoKP Planning and Development department, Irrigation department and Agriculture department; conducting group interviews (project staff, sub-contractors' staff, farmers, private sector service providers and others); and harvesting secondary data from the project's monitoring and evaluation system, performance reports, and other sources (e.g., national statistics or surveys). To the extent practicable, it would be useful to evaluate benefits/issues concerning livestock holders separate from horticulture/crops, there may be different results for each. The illustrative Getting to Answers table in Annex I summarizes potential data collection methods, data sources, sampling procedures (when applicable), and anticipated analyses.

The evaluation design will be sensitive to the requirements of collecting data from men and from women, where applicable. Female team members will interview women and visit female-dominated activities while both male and female team members will visit with and interview men.

DATA ANALYSIS METHODS

The evaluation will employ rigorous methods to analyze qualitative and quantitative data. Qualitative data will provide rich evidence of the outcomes associated with project interventions and, more importantly, how project interventions contributed to anticipated results, reasons interventions may have failed to produce anticipated results, and unanticipated results. The evaluation team will use rigorous content analysis and coding techniques to identify key themes in the qualitative data and use quantitative analysis (e.g., descriptive statistics, cross-tabulation, or regression) methods to report results and identify patterns and correlations in the quantitative and qualitative data.

If the evaluation team is able to obtain relevant and high quality quantitative data from the project's monitoring and evaluation system, it will use methods appropriate to the data to identify patterns and draw out findings.

The analysis will disaggregate results by sex whenever applicable and draw out sex-specific conclusions and recommendations. The analysis will also disaggregate results by administrative units (District and Tehsil), head, middle and tail of main canal, distribution canals and watercourses.

METHODOLOGICAL STRENGTHS AND LIMITATIONS

Strengths: The variety of data collection methods and sources employed in the evaluation facilitate triangulation across methods and sources which will strengthen the credibility and depth of findings and thus the validity of conclusions and recommendations.

Limitations: The evaluation will rely largely on qualitative data which is not as easily generalized as quantitative data from a representative survey. This raises the potential for biased results. Careful design of the field work and selection of respondents as well as triangulating findings across multiple sources and methods will serve to minimize bias. Rigorous analysis of the qualitative data will also strengthen internal validity.

EXISTING DATA AND INFORMATION SOURCES

Prior to beginning field work, evaluation team members will review the following documents and data (and others if provided)

a) Project PC-1 and Amendments
b) USAID Project Activity Agreement 391-DOA-GZDCADP-001-001, March 18, 2015 and subsequent 3 Implementation Letters (IL-001, IL-002 and IL-003)
c) USAID-hired A&E Firm (Halcrow) site visit reports
d) USAID-hired CPA Firm (KPMG) monthly progress reports
e) Biweekly reports
f) Quarterly progress reports by IP (GoKP-DoA)
g) Environmental assessment report by USAID
h) Environmental documentation Form including EMMP by USAID
i) Other assessments, evaluations, and secondary data as relevant

EVALUATION PROCESS

PERFORM's evaluation process includes:

1. Mobilizing the team
2. Reviewing relevant documents from team members' homes
3. Convening a Team Planning Workshop (TPW) in Islamabad. The TPW includes:
    a. Meeting with USAID to gain a thorough understanding of the evaluation task;
    b. Meetings with the implementing partner(s) to learn about project implementation and plan partners' engagement in the field work;
    c. Internal discussions of roles, responsibilities, and evaluation procedures; and
    d. Developing data collection instruments.
4. Conducting fieldwork
5. Analyzing data
6. Briefing USAID on initial findings, conclusions, and recommendations
7. Writing the draft report and delivering it to USAID
8. Reviewing and revising the report based on USAID's input
9. Delivering the final report and uploading it to the Development Experience Clearinghouse
10. Submission of raw data sets for USAID Development Data Library (DDL)

TEAM COMPOSITION

As noted in ADS 201.3.5.16, "evaluations must be conducted by individuals with appropriate training and experience, including but not limited to, evaluation specialists." To be considered an external evaluation, the evaluation team must be led by an expert external to USAID who has no fiduciary relationship with the implementing partner. All team members should be familiar with the USAID ADS 201 operational policy on evaluation and the USAID Evaluation Toolkit. The

team members will be required to provide a signed statement attesting that they have no conflict of interest, or describing an existing conflict of interest.

The proposed team structure may include evaluation expert/s, and Pakistani sector experts, including female team members, where applicable. One of the experts will serve as the team leader and that individual will be a senior level evaluator with at least some experience in agriculture or economic growth. The Pakistani sector experts should have expertise related to agriculture, irrigation, agribusiness, economics, social organization, gender and gender analysis. All team members must be fluent in English and have strong writing skills.

More detailed descriptions of team member qualifications include:

Team leader/Evaluator: A senior evaluator with at least some background in agriculture, agricultural development, or agricultural value chains and experience in Pakistan. The team leader will assign responsibilities within the team and ultimately be responsible for:

- Designing specifics of the evaluation approach;
- Supervising execution and implementation;
- Checking team member's work;
- Guiding data analysis; and
- Drafting reports, presentations and other deliverables.

The team leader should have the following qualifications:

- At least a master's degree in a relevant field with at least 15 years of experience or Ph.D. in a relevant field with at least 10 years of experience.
- Demonstrated experience in conducting high quality evaluations to USAID standards. Specific experience in agriculture and agribusiness development is a plus.
- Excellent communication (written and spoken) and interpersonal skills.
- Native fluency in written and spoken English.

Evaluation and/or water/agriculture/irrigation specialist: Senior or mid-level evaluation and/or water/agricultural development specialists. Qualifications include:

- At least a master's degree in a relevant field with 5 years of experience.
- Demonstrated subject matter experience. Specific experience in agriculture, agribusiness development, irrigation and gender is a plus.
- Excellent communication (written and spoken) and interpersonal skills.
- Native fluency in written and spoken English.

The final team composition will be approved by USAID through PERFORM COR. CVs of the selected evaluation team members must be shared with USAID before hiring takes place.

EVALUATION PRODUCTS

Deliverables under this evaluation include:

- **Debriefing note/outline**: The evaluation team will prepare and submit a debriefing document that outlines the team's preliminary findings, conclusions, and recommendations at least 24 hours in advance of the briefing. This may also be accompanied by a presentation of the findings.
- **Debriefing with USAID/Pakistan's Performance Management Unit and Economic Growth and Agriculture Office on findings, conclusions, and recommendations:** The team will present the major findings of the evaluation to USAID/Pakistan. The team will consider USAID comments for use in the draft report, as appropriate.
- **Draft evaluation report:** The report will answer the evaluation questions and will include findings, conclusions, and recommendations across the components/sub-components. The draft evaluation report (not to exceed 30 pages) will be submitted to USAID/Pakistan's Performance Management Unit and Economic Growth and Agriculture Office for review and comments. USAID will submit all comments to the evaluation team leader and evaluation advisor.
- **Final evaluation report:** The final evaluation report will incorporate final comments provided by the USAID/Pakistan's PMU and the EGA office. USAID comments are due within 10 days after the receipt of the initial final draft.
- **One-page brief**: A brief on the key qualitative and quantitative findings and conclusions relative to the evaluation questions will be developed for use by USAID decision makers and other interested stakeholders. This document will be written in English and can be translated and disseminated as desired by USAID's Performance Management Unit and Economic Growth and Agriculture Office.
- **A Presentation to USAID/Pakistan**: A presentation on the final report will be given to USAID's PMU and EGA, and implementing partners as desired.

The evaluation report will follow standard guidelines as laid out in Appendix 1 of USAID's Evaluation Policy and operationalized in ADS 203.3.1.8 (Documenting Evaluations), reproduced in Annex 2. The evaluation report will follow the structure given below (the section titles and order are illustrative):

- Title page
- Table of contents and table of tables and charts
- List of acronyms
- Acknowledgements
- Project summary
- Map showing the location of program activities
- Executive summary (ideally not to exceed five pages)
- Evaluation purpose and evaluation questions
- Project background. This information provides important context for understanding the evaluation purpose, questions, methods, findings and conclusions and includes:
    - the problem statement;
    - the theory of the intervention;
    - the design of the project;
    - the project's results framework; and
    - project implementation, including the current status of the project.

- Evaluation methods and limitations, describing in detail the evaluation design and methods with a rationale for design choices. Annexes will include additional information if required.
- Summary of data analysis, including methods and other relevant observations.
- Findings and conclusions. This section (or sections) will include findings and conclusions for each evaluation question. If there are a large number of findings, there will be a synthesis or summary of findings for each question that establishes the connection with the conclusions that follow.
- Recommendations. This section will highlight relevant recommendations, or clusters of recommendations, framed as actionable statements consistent with the evaluation's purpose and based on the evaluation's findings and conclusions.
- Lessons learned. Lessons learned differ from recommendations in the sense that they reflect generalized learning from the evaluation experience. As generalized learning, lessons learned differ from recommendations in they do not refer to a specific circumstance. Lessons may contribute to the design of future USAID interventions.
- Annexes
    - Evaluation statement of work
    - Evaluation methods and limitations
    - Data collection instruments
    - Data analysis plan
    - Bibliography of documents reviewed
    - List of individuals and agencies contacted
    - Disclosure of conflicts of interest
    - Statement of differences (if applicable)
    - Evaluation team biographies

EVALUATION MANAGEMENT

Evaluations will be managed by Program Office staff to enhance evaluation independence. Program Office staff will be supported by Technical Office team members, other knowledgeable members of U.S. Government operating unit, or partner organizations. All the technical directions to the contractor (PERFORM) will be provided through PERFORM COR only.

ILLUSTRATIVE SCHEDULE, LEVEL OF EFFORT AND BUDGET

Illustrative schedule of activities and required LOEs are given below. Detailed LOEs and budget will be proposed by PERFORM/MSI in assignment workplan and approved by USAID through PERFORM COR.

FIGURE 2: ILLUSTRATIVE EVALUATION SCHEDULE

Activity	Weeks														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Prep work	■														
Team Planning Meeting		■													
Field work			■	■											
Data Analysis					■	■									
Debriefing and report writing							■								
Internal review & revision								■	■						
Branding and editing										■					
Submit draft report											■				
USAID review											■	■			
Revise report													■	■	
Submit final report															■

FIGURE 3: ILLUSTRATIVE LEVEL OF EFFORT SCHEDULE

Tasks	Level of Effort (days)			
	Team Leader (STTA)	Sector Specialist (STTA)	Sector Specialist (STTA)	Evaluation Expert (LTTA)
Prep Work				
Document review and initial findings	4	4	4	4
Team Planning Meeting	5	5	5	5
Field work	12	12	12	12
Quantitative/qualitative data analysis	12	12	12	12
Report writing and initial findings debriefing	6	6	6	6
Internal review/ revisions	3	1	1	2
Final revisions	3	1	1	2
Travel	4	4	4	4
Total	**49**	**45**	**45**	**47**

ANNEXES

ANNEXURE I: DRAFT GETTING TO ANWERS MATRIX

Evaluation Question	Type of answer/ evidence	Data Collection			Data analysis methods
		Method	Sources	Sampling	
How appropriate was the project design to achieving anticipated results?	Descriptive	Document review	• Project design documents (technical proposals or PC-1, Agreement) • Project reports (site visit reports, environmental assessments, biweekly, monthly, quarterly and annual) • Secondary research or reports on irrigation infrastructure development	Not applicable	Identify relevant elements of design. Document reported effectiveness relative to performance indicators. Secondary sources provide evidence of relevance of design elements.
		Site visits	• Barrage (if needed) • Irrigation infrastructure (main and secondary channels) • Tertiary irrigation channels (watercourses) • Villages	Convenience sample of main and secondary channels (context only)	Collect qualitative data on effectiveness. Rigorous content analysis to assess how and why design elements have, or have not, influenced

Evaluation Question	Type of answer/ evidence	Data Collection			Data analysis methods
		Method	**Sources**	**Sampling**	
		Semi-structured interviews	• All project staff (PMU/PIU) • P&DD staff (if needed) • Contractor staff • Local farmers • USAID third party monitoring (Halcrow) Firm staff	Not applicable	effectiveness. Quantify qualitative results to facilitate more complex analysis (correlations, crosstabs, etc.)
		Group interviews	Not applicable	Not applicable	
		Expert interviews	• Sector and government stakeholders	Purposive sample to capture important perspectives/expertise	
How appropriate was the project management to achieving anticipated results?	Descriptive	Document review	• Project reports (site visit reports, environmental assessments, biweekly, monthly, quarterly and annual) • Project HR, procurement, financial and M&E reports • Secondary research or	Not applicable	Identify relevant elements of implementation. Document reported effectiveness relative to performance indicators. Secondary sources to provide evidence

Evaluation Question	Type of answer/ evidence	Data Collection			Data analysis methods
		Method	Sources	Sampling	
			reports on agricultural development		of effectiveness of implementation approaches in other situations.
		M&E data	• Project monitoring data	Not applicable	If possible, analyze outcomes by sex, type of beneficiary. Link outcomes to implementation approaches.
		Site visits	• Barrage (if needed) • Irrigation infrastructure (main and secondary channels) • Villages • Markets	Convenience sample of main and secondary channels (context only)	Collect qualitative data on effectiveness. Rigorous content analysis to assess how and why design elements have, or have not, influenced effectiveness. Quantity qualitative results to facilitate more complex analysis (correlations, crosstabs, etc.)
		Semi-structured interviews	• All project staff (PMU/PIU) • P&DD staff (if needed) • Contractor staff • Local farmers • USAID third party monitoring (Halcrow) Firm staff	Not applicable	

Evaluation Question	Type of answer/ evidence	Data Collection			Data analysis methods
		Method	Sources	Sampling	
		Group interviews	Not applicable	Not applicable	
		Expert interviews	• Government and private sector stakeholders	Purposive sample to capture important perspectives/expertise	
To what extent are results likely to be sustainable beyond the end of the project and why?	Descriptive	Document review	• Secondary research or reports on agricultural development	Not applicable	Document evidence of sustainability of WUAs and other agricultural productivity interventions/ approaches in Pakistan.
		Site visits	• Barrage (if needed) • Irrigation infrastructure (main and secondary channels) • Villages • Markets	Convenience sample of main and secondary channels (context only)	Rigorous content analysis of qualitative information to assess prospects for sustainable results.
		Semi-structured interviews	• All project staff (PMU/PIU) • P&DD staff (if needed) • Contractor staff	Not applicable	Quantity qualitative results to facilitate more complex analysis (correlations,

Evaluation Question	Type of answer/ evidence	Data Collection			Data analysis methods
		Method	Sources	Sampling	
			• Local farmers • USAID third party monitoring (Halcrow) Firm staff		crosstabs, etc.)
		Group interviews	Not applicable	Not applicable	

ANNEX 2: REPORTING GUIDELINES

1. The evaluation report must represent a thoughtful, well-researched, and well organized effort to objectively evaluate what worked in the project, what did not work, and why.
2. Evaluation reports must address all evaluation questions included in the statement of work. The evaluation report should include the evaluation statement of work as an annex. All modifications to the statement of work, whether in technical requirements, evaluation questions, evaluation team composition, methodology or timeline need to be agreed upon in writing by the technical officer.
3. Evaluation methodology must be explained in detail and all tools used in conducting the evaluation such as questionnaires, checklists, and discussion guides will be included in an annex in the final report.
4. When evaluation findings address outcomes and impact, they must be assessed on males and females.
5. Limitations to the evaluation must be disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
6. Evaluation findings must be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions. Findings should be specific, concise, and supported by strong quantitative or qualitative evidence.
7. Sources of information must be properly identified and listed in an annex.
8. Recommendations must be supported by a specific set of findings and should be action-oriented, practical and specific, with defined responsibility for the action.

Note:
These guidelines are taken from ADS 203.3.2.8 (Documenting Evaluations) - http://transition.usaid.gov/policy/ads/200/203.pdf - which is based on Appendix 1 of USAID Evaluation Policy: Criteria to Ensure the Quality of the Evaluation Report.

ANNEXURE 3: BIWEEKLY PROGRESS REPORT (NOV 1-15, 2018)

S. No	Major component	Unit	Project Scope			Previous			This fortnight			Cumulative			Cumulative (%)			Remarks
			D.I.K	Tank	Total	D.I.K	Tank	Total	D.I.K	Tank	Total	D.I.K	Tank	Total	D.I.K	Tank	Total	
1	***Soft Component***																	
a)	***Revenue Record***																	
i	Revenue Chakbandi	No.	210	183	393	193	102	295	0	0	0	193	102	295	92%	56%	75%	-
ii	Aqs-e-Shajra	No.	210	183	393	181	102	283	0	0	0	181	102	283	86%	56%	72%	
iii	Land Owners' list	No.	210	183	393	176	102	278	0	0	0	176	102	278	84%	56%	71%	
b)	***Master Plan & Feasibility Studies (AAB Pvt. Ltd.)***																	
i	Feasibility & Baseline Survey Report	No.	-	-	1	-	-	1	-	-	-	-	-	1	-	-	100 %	Master Plan and Feasibility studies completed and the contract with ABB consultants is over.
ii	Master Plan for 393 mogas	No.	-	-	1	-	-	1	-	-	-	-	-	1	-	-	100 %	
iii	Agricultural Development Plan	No.	-	-	1	-	-	1	-	-	-	-	-	1	-	-	100 %	
iv	Livestock Development Plan	No.	-	-	1	-	-	1	-	-	-	-	-	1	-	-	100 %	
c)	***Social Mobilization (OFWM)***																	
i	Farmers contacted on Outlets	No.	210	183	393	199	109	308	0	0	0	199	109	308	95%	60%	78%	-
ii	WUAs formed	No.	210	183	393	177	84	261	0	0	0	177	84	261	84%	46%	66%	-
iii	WUAs registered	No.	210	183	393	175	84	259	0	0	0	175	84	259	83%	46%	66%	-
iv	ToP signed	No.	210	183	393	96	84	180	0	0	0	96	84	180	46%	46%	46%	-
v	Organization of WIGs	No.	33	36	69	11	24	35	0	0	0	11	24	35	33%	67%	51%	Target: 01 WIG per village in command

																		area
vi	Reactivation of existing WUAs in the project area	No.	159	25	184	5	25	30	0	0	0	5	25	30	3%	100 %	16%	-
d)	***Design & Supervision (NESPAK)***																	
I	***Watercourse***																	
i	Engineering Survey	No.	210	183	393	176	87	263	0	0	0	176	87	263	84%	48%	67%	-
ii	Design & BoQ	No.	210	183	393	176	87	263	0	0	0	176	87	263	84%	48%	67%	-
iii	Bidding Documents	No.	210	183	393	171	69	240	0	0	0	171	69	240	81%	38%	61%	-
II	***Ponds***																	
i	Engineering Survey	No.	210	183	393	176	87	263	0	0	0	176	87	263	84%	48%	67%	Procurement will be initiated after site selection with respective WUAs
ii	Design & BoQ	No.	210	183	393	176	87	263	0	0	0	176	87	263	84%	48%	67%	
iii	Bidding Documents	No.	210	183	393	164	48	212	0	0	0	164	48	212	78%	26%	54%	
III	***Earthern Shingle Raods***																	
i	Engineering Survey	km	20	10	30	20.0	1.2	21.2	0	0	0	20.0	1.2	21.2	100 %	12%	71%	-
ii	Design & BoQ	km	20	10	30	20.0	0	20.0	0	0	0	20.0	0	20.0	100 %	0%	67%	-
iii	Bidding Documents	km	20	10	30	20.0	0	20.0	0	0	0	20.0	0	20.0	100 %	0%	67%	-
IV	***Precise Land Leveling (PLL)***																	
i	Engineering Survey	acre	98877	64123	163000	12500	0	12500	0	0	0	12500	0	12500	13%	0%	8%	Delayed due to approval of revised rates by PSC
ii	Design & BoQ	acre	98877	64123	163000	7500	0	7500	0	0	0	7500	0	7500	8%	0%	5%	

iii	Bidding Documents	acre	98877	64123	163000	3778	0	3778	0	0	0	3778	0	3778	4%	0%	2%	
2	***Hard Component (Infrastructure)***																	
a)	***CAD (Watercourse Construction)***																	
i	Bids invited	No.	210	183	393	171	54	225	0	0	0	171	54	225	81%	30%	57%	-
ii	Bids opened/finalized	No.	210	183	393	171	54	225	0	0	0	171	54	225	81%	30%	57%	-
iii	Contract Awarded	No.	210	183	393	157	37	194	0	0	0	157	37	194	75%	20%	49%	Bids of 2 pkgs (31 WCs) cancelled due to expiry of bid validity period
iv	Work initiated	No.	210	183	393	154	30	184	1	0	1	155	30	185	74%	16%	47%	
v	Work completed	No.	210	183	393	50	0	50	0	0	0	50	0	50	24%	0%	13%	-
vi	Length of earthen section completed	km	525	458	983	56	6	62	11	0	11	67	6	73	13%	1%	7%	Estimated targets
vii	Length of lined section completed	km	105	92	197	38	7	45	0	0	0	38	7	45	36%	8%	23%	
viii	Structures completed	No.	11617	1455	13072	814	39	853	88	0	88	902	39	941	8%	3%	7%	
ix	Area under improved irrigation	Acre	97000	94139	191139	24954	0	24954	0	0	0	24954	0	24954	26%	0%	13%	PC-1 Target
x	Beneficiaries from irrigation service	No.	4200	3660	7860	998	0	998	0	0	0	998	0	998	24%	0%	13%	Estimated target
b)	***CAD (Shingle road construction)***																	
i	Contract Awarded	Km	20	10	30	7.3	0.0	7.3	0	0	0	7.3	0.0	7.3	36%	0%	24%	-
ii	Work initiated (NGC)	Km	20	10	30	7.2	0.0	7.2	0	0	0	7.2	0.0	7.2	36%	0%	24%	-
iii	Sub grade prepared	Km	20	10	30	7	0	7	0	0	0	7	0	7	35%	0%	23%	Sub-grade preparation

iv	Sub base prepared	Km	20	10	30	0	0	0	0	0	0	0	0	0	0%	0%	0%	is in progress in different layers in various sections of katcha roads.
v	Base prepared	Km	20	10	30	0	0	0	0	0	0	0	0	0	0%	0%	0%	
vi	Allied Structures initiated	No.	10	0	10	5	0	5	0	0	0	5	0	5	50%	0%	50%	Lean concrete work completed on 2 culverts while work on 3 culverts are under progress
vii	Structures Work completed	No.	10	0	10	0	0	0	0	0	0	0	0	0	0%	0%	0%	
b)	***FO Centers/Offices (through C&W department)***																	
i	Bids invited	No.	2	1	3	1	0	1	0	0	0	1	0	1	50%	0%	33%	Design/BoQs for Kulachi & Tank offices received from C&W and procurement will start after release of ADP funds
ii	Bids opened/finalized	No.	2	1	3	1	0	1	0	0	0	1	0	1	50%	0%	33%	
iii	Contract Awarded	No.	2	1	3	1	0	1	0	0	0	1	0	1	50%	0%	33%	
iv	Work initiated	No.	2	1	3	1	0	1	0	0	0	1	0	1	50%	0%	33%	
v	Work completed	No.	2	1	3	1	0	1	0	0	0	1	0	1	50%	0%	33%	
c)	***Productivity Enhancement & Value Added Agriculture & Livestock***																	
i	Orientation and Training of WUA (Livestock)	No.	210	183	393	42	0	42	0	0	0	42	0	42	20%	0%	11%	-
ii	Orientation and Training of Individuals (Livestock)	No.	0	0	0	551	0	551	0	0	0	551	0	551	8%	3%	7%	-
iii	Provide trainings to men for O&M of WCs & women for stock-water	No.	210	183	393	0	0	0	0	0	0	0	0	0	0%	0%	0%	-

iv	Orientation and training of WUAs in field and horticultural crops	No.	210	183	393	0	0	0	0	0	0	0	0	0	0%	0%	0%	-
v	Productivity enhancement interventions for livestock	No.	210	183	393	0	0	0	0	0	0	0	0	0	0%	0%	0%	Procurement process for hiring of firm stopped due to Inquiry by Secty Agri KP
vi	Value Addition for Crops, Vegetables and Fruits – interventions	No.	20	20	40	0	0	0	0	0	0	0	0	0	0%	0%	0%	
vii	Value addition of Livestock Products – interventions processing industry	No.	20	20	40	0	0	0	0	0	0	0	0	0	0%	0%	0%	
d)	***Marketing***																	
i	Marketing Channels for Crops, Vegetables and Fruits	No.	2	1	3	0	0	0	0	0	0	0	0	0	0%	0%	0%	Procurement process for hiring of firm stopped due to Inquiry by Secty Agri KP
ii	Marketing Channels for Livestock	No.	2	1	3	0	0	0	0	0	0	0	0	0	0%	0%	0%	
3	***Miscellaneous***																	
i	Contractor mobilized on Package-I to XII (watercourses) and Package-XVI & XVII (Shingle roads)																	
ii	Bidding documents for Package- XX, XXI, XXII, XXIII, XXIV & XXV submitted to HPK for review																	
iii	Workshop on Gomal Zam Watershed Management & Planning organized by USAID-ICARDA on October 23-25,2018 at NARC, Islamabad wherein PIU team participated																	
iv	Briefing to Chief Secretary by PD GZD-CADP & Secretary Agriculture on October 25, 2018 regarding various issues in GZD-CADP for further discussion National Water Council meeting to be chaired by Prime Minister the same day.																	
v	Partners' meeting held at HPK office Islamabad to discuss various issues regarding extension of DSC, liquidation Report, exit strategy, etc. on 29th October, 2018.																	
vi	Joint meeting of PIU CAD component team, DSC and contractors held on October 31,2018 regarding exit strategy of individual completed WC schemes																	

Annex 2: Assignment Work Plan

MANAGEMENT SYSTEMS INTERNATIONAL
A TETRA TECH COMPANY

Gomal Zam Dam Command Area Development Project Evaluation

Assignment Work Plan (EVL.022)

February 18, 2019

Revised: May 30, 2019

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

AAD	Activity Agreement Document
ADS	Automated Directives System
AWP	Assignment Work Plan
COR	Contracting Officer's Representative
CRBC	Chashma Right Bank Canal
DEC	Development Experience Clearinghouse
DoA	Department of Agriculture
G2G	Government to Government
GoKP	Government of Khyber Pakhtunkhwa
HIES	Household Integrated Economic Survey
PAD	Project Appraisal Document
P&D	Planning and Development
PIL	Project Implementation Letter
PIU	Project Implementation Unit
PMU	Project Management Unit
TPW	Team planning workshop
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority
WUA	Water User Association
WIG	Women Interest Group

SUMMARY

Assignment Work Plan (AWP) Number	EVL.022
AWP Title	Gomal Zam Dam Command Area Development Project Midterm Evaluation
USAID/Pakistan Requesting Office	Economic Growth and Agriculture
Requesting Office Point of Contact	
PERFORM Assignment Manager	
Start Date	February 7, 2019
End Date	July 1, 2019 (Draft report) August 5, 2019 (Final report)
Total AWP Cost Estimate	

ASSIGNMENT PURPOSE

The United States Agency for International Development (USAID)-funded Gomal Dam Command Area Development Project is a government-to-government (G2G) project implemented in partnership with the Agriculture, Livestock, and Cooperation (DoA) Department of the Government of Khyber Pakhtunkhwa (GoKP). It is far behind schedule and has made meaningful progress on only the first of four components. The delays have deferred project benefits to beneficiaries and to the economy and may have increased overall project costs due to inflation. The midterm evaluation will explore the causes of delays and assess the project's current achievement in terms of its water delivery, agricultural production, and livelihoods objectives. Evaluation recommendations will help both USAID and GoKP understand the causes of delays so they can make informed management decisions to achieve intended results efficiently and effectively. Lessons from the evaluation will also guide design and management decisions for future similar USAID investments to avoid time and cost overruns.

The primary audiences for the evaluation include: (1) the USAID/Pakistan Mission, particularly the Economic Growth and Agriculture team, (2) the USAID Office of Afghanistan and Pakistan Affairs, and (3) the implementing partners and stakeholders GoKP DoA, GoKP Planning and Development Department, Water and Power Development Authority (WAPDA), and Irrigation Department.

METHODS

Assessment Questions

The statement of work specifies three questions, which the evaluation team repackaged (i.e., splitting the original question 3 into two questions that address effectiveness and sustainability separately) to the following four questions.

1. **How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?**

   Explanation: This question focuses on how the project's design (reflected in the Project Appraisal Document [PAD], amendments, PC-I document, Activity Agreement, and Project Implementation Letters [PILs]) affected the trajectory of implementation and achievement of results. The evaluation will examine the project's original design and subsequent changes and focus particularly on assessing the timing, funding, processes, and sequencing of project activities and the flexibility of the design in adapting to obstacles beyond the project's control.

   The question will also explore the institutional processes involved in developing the project PC-I, i.e., who initiated the PC-I and at what level; the project design guidelines they used, if any; market research they conducted, if any; how, if at all, the design involved stakeholders; how, if at all, the design accounted for inflation; how the project implementation plan, especially procurement (project staff and contractors), was incorporated; and the flexibility for amending/revising the PC-I.

   Relevant recommendations from question 1 will focus on how the project design process and the subsequent design could have avoided delays. Lessons should focus on if and how future projects could be designed differently to avoid issues faced by the Gomal Zam Command Area Development Project.

2. **How did the project's implementation/operation/management contribute to, or detract from, achieving anticipated results within the original life of the project?**

   Explanation: This question will examine project implementation and management processes (other than design) that contributed to achieving project objectives. The question will dig deep into the processes that governed overall project management including selection and composition of the team; the decision to split management between the Project Management Unit (PMU) and Project Implementation Unit (PIU); staff turnover; procurement of project staff; incentive structure; target setting; the financing plan, including recovery of loans from farmers; monitoring and evaluation; the accountability structure for the PMU and PIU; and political/bureaucratic interference.

   The evaluation will specifically examine the procurement of private sector firms and contract management (e.g., number of contracts signed; by whom and how contracts are prepared; procurement guidelines used; processes followed; how, and by whom, contracts are supervised to avoid cost and time overruns; contract amendment and extension procedures (especially for cost and time overruns); and reward and penalty mechanisms used in case of failure, on part of the client and contractor, to deliver as per terms and conditions. In addition, the evaluation will also examine the procurement processes of public sector organizations and their impact on achieving project objectives.

   This question will identify obstacles the project experienced during implementation; their effect on achieving anticipated results in the original planned timeframe; and the measures the partner/s took, if any, to mitigate emerging issues. The question will also address the extent to which project implementation incorporated women and whether alternative implementation approaches may have engaged women more effectively. It will also assess whether the implementing partners had the requisite background and expertise, particularly in project management, to effectively implement the project including compliance with USAID's Environmental Mitigation and Management Plan.

The question will examine causes of delays and recommend changes in the implementation approach that could improve performance and achieve project objectives in a more timely manner. It will also generate lessons about the implications for managing future projects, particularly on USAID's processes for future G2G programs.

3. **Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?**

   Explanation: This question will examine the project's contribution to the key anticipated outcomes of increasing productivity, creating jobs, and increasing incomes. The analysis will address both whether the project contributed to these outcomes and the effectiveness of project activities in achieving outcomes. In this context, it will examine issues—e.g., intermediate outcomes (below) and project design and management decisions—related to achieving outcomes, such as:

   - Change in area under perennial irrigation
   - Equity in water share (warabandi system or makeshift mechanism through which farmers' get their due share of water)
   - Change in cropping intensity and yield
   - Change in production of crops, horticulture, and livestock
   - Changes in crop types/diversification (are farmers growing higher-value crops than they were growing before irrigation)
   - Change in farmers' income from agriculture and livestock activities
   - Change in land value
   - Change in processes and outcomes for resolving conflicts of water rights
   - Change in access to market
   - Change in groundwater table and quality
   - Change in availability of drinking water in command area
   - Change in social conditions of the beneficiaries (education and health indicators)
   - Change in the availability of private sector service providers in agriculture and livestock (opportunities for corporate sector investment, opening franchises for quality inputs based on the new potential in D.I. Khan, Kulachi, Tank, or other local markets.
   - Changes in employment
   - Gender and youth integration
   - Change in soil chemical composition of command area

   Annex I lists possible data sources for each of these outcomes.

   The evaluation team will rely only on available secondary data (e.g., GoKP agricultural statistics), group interviews with farmers, and individual interviews with other relevant project stakeholders to answer this question; it will not conduct a survey of project beneficiaries. The evaluation will address as many facets of the question as possible with these data sources.

4. **Are project results likely to be sustainable beyond the end of the project and why?**

   Explanation: This question will generate conclusions about the likelihood that the project will produce sustainable results, i.e., that the results will persist beyond the end of donor support. The question will address the likelihood of sustainability of project outputs (e.g., maintenance of tertiary watercourses and other structures); water management mechanisms (e.g., water user associations [WUAs] and regulatory systems for water distribution): productivity-enhancing support services (e.g., input suppliers and supply, land-leveling services, processing value chain

services—e.g., harvesting, cleaning, sorting, packaging, branding, storage, and transportation); sustainability of marketing linkages (e.g., regulatory environment, access, information, competition); and the sustainability of employment and income outcomes related to improved agricultural production and value addition. The question will assess how and why results are sustainable, or not sustainable, and provide lessons for enhancing the prospects of sustainable results in this and future projects.

Because the project is far behind in implementing activities related to developing support services and market linkages, it may not be possible to meaningfully assess the sustainability of these outcomes.

Methods of Data Collection and Analysis

The evaluation will use a mixed methods approach relying on document review, key informant and group interviews, and analysis of secondary data. See Table 3 for a detailed description of data sources and collection and analysis methods for each question.

Document Review

Prior to the team planning workshop, the evaluation team will review key project design, implementation, and performance documents and data and relevant sector analyses/reports to gain a thorough understanding of the development context and of the project and its design and implementation processes. Documents and data the team will review include, but are not limited to:

- Project PC-I and amendments;
- USAID Project Activity Agreement 391-DOA-GZDCADP-001-001 of March 18, 2015 and three subsequent Implementation Letters (IL-001, IL-002 and IL-003);
- USAID-hired architecture and engineering firm (Halcrow) site visit reports;
- USAID-hired certified public accountant firm (KPMG) monthly progress reports;
- Biweekly reports from Planning and Development Department;
- Quarterly progress reports from GoKP-DoA;
- Environmental assessment report by USAID;
- Environmental documentation forms including the Environmental Mitigation and Management Plan by USAID;
- The feasibility and baseline report conducted by AAB (Pvt.) Ltd.;
- USAID's Project Appraisal Document and amendments;
- Project Steering Committee meeting minutes;
- Joint Annual Review reports; and
- Other assessments, evaluations, or studies as relevant.

Secondary Data

The evaluation team will also identify secondary data sources that may inform the evaluation by contributing to understanding the project context, agricultural production trends, or project results. These may include, but are not limited to, data from agricultural statistics, Labor Force Survey, Pakistan Social and Living Standards Measurement (PSLM) survey, Household Integrated Economic Survey (HIES), Demographic and Health Surveys (DHS), and Pakistan Economic Survey. Examples of complementary analyses that could inform the evaluation include:

- Analyzing agricultural statistics and data from the project's management information system (MIS) to examine trends in cropping patterns, cropping intensity, and yields on irrigated and rainfed land in the Tank and D.I. Khan districts;

- Analyzing PSLM and HIES data to reveal trends in socioeconomic and demographic characteristics, including household income, in the project area;

- Analyzing Labor Force Survey data to investigate changes in employment, wages, and occupations in the project area; and

- Analyzing DHS and other data to reveal trends in education, health, and other welfare indicators.

The evaluation will also draw on PERFORM's extensive geographic information system (GIS) capabilities and data to map changes on the ground during project implementation. This may include mapping the trajectory of infrastructure development and linking it to changes in irrigated area or cropping intensity identified through remote sensing.

Key Informant Interviews

To understand the project's design and implementation/management processes and their effect on the project's ability to achieve anticipated results within the planned timeframe, the team proposes to interview key stakeholders involved in design and implementation (separately) to examine the design and implementation processes and outcomes. In consultation with USAID and the evaluation team's subject matter expert, the evaluation team will identify and interview the person most knowledgeable of the entire design or implementation process and then conduct follow-up interviews with other design or implementation participants/stakeholders to collect more detail from different perspectives.

The evaluation team may also conduct key informant interviews with some types of project beneficiaries or local stakeholders, e.g., private sector service providers, agriculture or livestock value chain actors, and sector experts. The team will select participants for key informant interviews in consultation with USAID and GoKP. Potential participants include, but are not limited to, representatives of:

- GoKP departments
    - Agriculture Department (DoA)
        - Agricultural Extension
        - Agricultural Research
        - Livestock and Dairy
        - Livestock and Dairy Development (Extension)
        - On-Farm Water Management
        - Crop Reporting Services
        - Project Management Unit
        - Project Implementation Unit
        - Farm Services Centers staff;
    - Planning and Development
    - Irrigation (Gomal Zam Division)
    - Revenue (D.I. Khan and Tank)
- WAPDA
- Sub-contractors
    - NESPAK, contractor for design and supervision of infrastructure activities
    - Taleem Foundation and Associates, social mobilization
    - Halcrow, USAID-hired firm for certification/verification of physical works

    - KPMG, USAID-hired CPA for certification/verification of financial status
- USAID
- Project Steering Committee members
- Civil contractors
- Private sector actors (shop keepers, input providers, wholesale market agents in D.I. Khan and Tank);
- Sector experts, including staff of other donor agencies working in the sector;

The team will select key informants purposively to capture specific information or unique perspectives. Annex 2 lists the individuals the team proposes to interview, the type of interview, and the interview location.

Table 1 summarizes the planned number of key informant interviews by respondent type and location. The evaluation team will refine the respondent types and number of interviews in collaboration with USAID and GoP personnel during the team planning workshop and during the field visits.

TABLE 1: PLANNED KEY INFORMANT INTERVIEWS

Respondent Type	D.I. Khan	Tank	Islamabad	Peshawar	Total
P&D				4	4
PIU	6			1	7
PMU				2	2
OFWM	1	1			2
Irrigation	1	1			2
Livestock	1	1			2
Farm Services Canters	1	1			2
Consultant	2		3	1	6
Civil contractor	2	2			4
USAID			3		3
WAPDA	1				1
Agriculture Engineering	1	1			2
Agriculture Extension	1	1			2
Revenue	1	1			2
Soil Conservation	1	1			2
Total Individual Interviews	**19**	**10**	**6**	**8**	**43**

Group Interviews

PERFORM recommends using group interviews with farmers and other beneficiaries to collect evidence of project implementation, outcomes, and sustainability. This qualitative approach will determine whether the project has increased production, employment, income, and other outcomes addressed under question 3. It will not provide precise quantitative estimates of changes in outcomes. However, triangulated with secondary data, the group interviews will provide a reasonable level of confidence as to whether beneficiaries have experienced planned outcomes and provide a level of plausible attribution to project activities. Although a survey that follows up on the project's baseline could quantify outcomes, it will require significant time, financial cost, and risk if the baseline data are not of sufficient quality. Based on a review of the project's baseline report, the evaluation team has serious reservations

about the quality of the baseline data. Without high quality baseline data, a follow-up survey will not provide reliable measures of changes in planned outcomes.

The evaluation team proposes to conduct group interviews with farmers, WUA and WIG members, and perhaps other types of beneficiaries (e.g., private sector businesses and service providers) to explore the project's effect on production, employment, income, and other outcomes of interest. The group interviews will also discuss the likely sustainability of results, including the role of WUAs in managing irrigation infrastructure and access to water.

Sampling for group interviews

The team will select group interview participants from among WUA and WIG members pseudo-randomly from within areas already served by completed tertiary watercourses. If deemed important, it will also seek to select participants to reflect variation in location within the catchment area (e.g., head or tail of a canal) and crops cultivated. It will select participants to obtain the perspectives of men and women, as applicable. Female team members will interview women and visit female-dominated activities while male team members will visit and interview men.

The latest quarterly report available to PERFORM (July-September 2018) reports that 50 of a planned 393 watercourse have been completed—all in D.I. Khan. It also reports having formed and registered 175 WUAs in D.I. Khan. The evaluation team proposes to conduct 10 group interviews with members of active WUAs with completed watercourses to collect data on if and how the project contributed to outcomes (e.g., productivity, employment, income, and intermediate outcomes that contribute to these high-level outcomes). To the extent possible, the team will distribute the sample across WUAs producing different crops, geography, and date since completion of the watercourse or formation of the WUA to capture data on a range of outcomes. If warranted, the team may also conduct four group interviews with WUAs in areas without completed watercourses to examine issues related to watercourse design and implementation.

The latest quarterly report also notes that the project has formed 30 WIGs. The evaluation team proposes to conduct group interviews with members of four WIGs to understand the extent to which project implementation has engaged women and the outcomes they have experienced.

The evaluation team will collaborate with implementing partners and USAID to select groups that can accurately reflect project outcomes or challenges.

If practical, the evaluation team will conduct group discussions with farmers of the Chashma Right Bank Canal (CRBC) command area. CRBC is a similar nearby project that is now fully mature. This will contribute to the team's understanding of CADP's potential, triangulate information on benefits and harms, and provide perspectives on the sustainability of outcomes.

Table 2 summarizes the planned number of group interviews by respondent and location.

TABLE 2: PLANNED GROUP INTERVIEWS

Respondent Type	D.I. Khan	Tank	Islamabad	Total
Water User Associations	10	4	-	**14**
Women Interest Groups	3	1	-	**4**
Beneficiary (Comparison[1])	2	-	-	**2**
Consultant - Halcrow			1	**1**

Total Group Interviews	**15**	**5**	**1**	**21**

[1] Comparison group has been selected from Chashma Right Bank Canal command area.

Data Analysis

The evaluation will use quantitative data from secondary data sources to develop an agricultural, socioeconomic, and demographic profile of the project area—presented as descriptive statistics at a geographic level that matches the project area as closely as possible. To the extent possible with agricultural data from the provincial DoA, the team will develop a detailed agricultural profile of the project area including irrigated area, cropping patterns, yields, livestock data, average productivity, employment, income and other intermediate outcomes—again using descriptive statistics. The extent of this analysis and the level of geographic precision will be determined by the data.

The evaluation will also draw heavily on project-reported quantitative data to illustrate the project's progress against its key activities.

The evaluation team will use qualitative data from group interviews to 1) map the design and implementation process, including identifying causes of delays; 2) triangulate/validate the quantitative data, 3) describe if, and how, project activities contributed to anticipated outcomes, and 4) explore issues related to project design and implementation that may have affected outcomes.

To map the design and implementation process, the team will piece together a consistent story from the evidence collected from the key informant interviews with those involved in design and implementation. This will likely involve an iterative process of circling back to some informants to resolve contradictions as the story emerges. This analysis will not require coding the qualitative data and will rely instead on systematically reviewing interview notes to construct a consistent description of the processes.

To understand the project's contribution to outcomes, and the implications of design and implementation on outcomes, the team will review relevant key informant and group interviews to identify themes relevant to answering the evaluation questions, e.g., causal explanations of if and how improved access to water has affected agricultural productivity. The team will use MAXQDA—software for managing and analyzing qualitative data—to organize, code, and analyze the qualitative data. It will present qualitative data quantitatively whenever appropriate to illustrate the strength of the evidence, e.g., reporting the number of respondents that mentioned a theme.

Table 3 provides a more detailed summary of the data sources, data collection methods, and analysis the team will use to answer each evaluation question.

Validation and Recommendation Workshops

After the team has analyzed the data, it will arrange two validation workshops—one focused on design and one on implementation—with key GoKP stakeholders (and perhaps USAID) that were engaged in the design or implementation process. The evaluation team will begin each workshop by presenting the evaluation's key findings with respect to design or implementation. It will then engage participants in an open discussion to validate the team's findings and conclusions.

The fieldwork will largely interview stakeholders individually, collecting individual perspectives on the design and implementation processes that the team will then weave into a comprehensive description. Bringing the various stakeholders together is an opportunity for workshop participants (including the evaluation team) to learn more about how the various stakeholders interact during the design and implementation processes. More importantly, it will provide a forum in which to collaboratively explore

the processes and identify opportunities to modify or adapt the processes to design and implement projects more efficiently.

The evaluation team will treat findings from the validation workshops as additional evidence to support practical recommendations grounded in the realities of the project's operating environment. Once the team has reflected on the workshop findings and developed recommendations, it will conduct a separate workshop to discuss the recommendations with USAID and other stakeholders to collaboratively explore the relevance and practicality of the recommendations.

The evaluation team will decide on the need for, timing and number of, and participants in the validation and recommendations workshop in collaboration with USAID. This workplan proposes two validation workshops—one focused on design and one on implementation) and one recommendations workshop including key GoKP and USAID design and implementation decision-makers.

Strengths and Limitations

The most relevant strengths and limitations associated with the proposed approach include:

- **No quantitative estimates of outcomes**: The proposed qualitative approach to assessing project outcomes will not provide quantitative estimates of changes in production, employment, incomes, and other outcomes. It will provide a reasonable level of confidence in the direction of change and plausible attribution to project activities. While the approach will provide weaker evidence of a causal connection between the project and its intended outcomes than would good qualitative data, USAID has agreed that, given the poor quality of the baseline data and the delayed implementation of key project components, the effort to design and implement an inherently flawed quantitative approach is not warranted.
- **Too early to assess sustainability**: It is not possible to determine sustainability at this early stage. Instead, the evaluation will look for evidence that beneficiaries value project outcomes and have an incentive (and structure—WUAs) to maintain the infrastructure and manage water rights. Within government, the evaluation will look for institutional commitment and capacity (financial and management) to sustain the infrastructure and other support to the local agricultural sector. Because the project has made little progress on components 2 through 4,[2] it may not be possible to reach any conclusions about the sustainability of outcomes related to these components.

[2] The four project components are: 1) command area development and on-farm water management; 2) productivity enhancement of crops, horticulture, and livestock; 3) value added agriculture and livestock; and 4) marketing of marketable products.

TABLE 3: SUMMARY OF PROPOSED DATA COLLECTION AND ANALYSIS METHODS

Evaluation Question	Data Source	Data Collection Method	Method of Data Analysis	Limitations/risks
1. **How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?**	Project design documents (PAD/AAD and amendments, PILs, and PC-1.)	Structured document review	Construct a detailed description of the project design process and timeline from the document review, facilitated group discussions, and key informant interviews with involved GoKP departments, USAID, and others involved in project design. Identify points in the process that took longer than expected and document reasons for the delays. Use interviews with subcontractors, sector experts, and select beneficiaries to determine whether the ultimate design was appropriate and if and how design elements affected achievement of results.	Recall of the details of the design process may be an issue. The evaluation will triangulate data from multiple sources (e.g., documents and interviews representing a number of perspectives) to identify and resolve contradictions that emerge during data collection.
	GoKP, USAID, and other stakeholders involved in, or with a perspective on, design	Key informant interviews		
	Select project beneficiaries (farmers, WUA and WIG members)	Group interviews		
2. **How did the project's implementation/ operation/ management contribute to, or detract from, achieving anticipated results within the original life of the project?**	Project implementation documents (progress reports; environmental assessment report; Halcrow site visit reports; KPMG monthly progress reports; other assessments or evaluations)	Structured document review	Construct a detailed description of project implementation and timeline from progress reports; interviews with GoKP, sub-contractors, USAID personnel, private sector actors, and group interviews with select beneficiaries. Identify points in the implementation process that caused delays or otherwise	Recall of the details of the design process may be an issue. The evaluation will triangulate data from multiple sources (e.g., documents and interviews representing a number of perspectives) to identify and resolve contradictions that emerge during data collection.
	GoKP, USAID, PMU, PIU, sub-contractor personnel, and other stakeholders involved in, or with a	Key informant interviews		

Evaluation Question	Data Source	Data Collection Method	Method of Data Analysis	Limitations/risks
	perspective on, implementation		affected achievement of planned results. Use interviews with subcontractors, sector experts, and select beneficiaries to determine if implementation approaches were appropriate and if and how they affected achievement of results.	
	Select project beneficiaries (farmers, WUA and WIG members)	Group interviews		
3. Has the project achieved anticipated farm-level outcomes (e.g., productivity, job creation, income), and how?	• Project documents • PakInfo and other secondary data (e.g., agricultural statistics, Labor Force Survey, Pakistan Social and Living Standards Measurement survey, Household Integrated Economic Survey, Demographic and Health Surveys, Pakistan Economic Survey, etc.)	• Structured document review • Extracted from PakInfo and other datasets	Extract evidence of changes in key outcomes from project-reported results and triangulate with other secondary data. Triangulate results from project and secondary data with evidence from group and key informant interviews with beneficiary farmers, stakeholders, private sector, and sector experts.	The approach will not provide quantitative estimates of change in farm-level outcomes. It will provide a reasonable level of confidence in the direction of change and plausible attribution to project activities.
	Beneficiary farmers	Group interviews		
	• Private sector businesses • GoKP, USAID, sub-contractor personnel • Sector experts	• Key informant and individual interviews		
4. Are project results likely to be sustainable beyond the end of the project and why?	Project implementation documents (progress reports; environmental assessment report; Halcrow site visit reports; KPMG monthly progress reports;	Structured document review	Look for evidence in all sources of sustainability strategies or plans, institutionalization of operation and maintenance in government and among beneficiaries (WUAs),	It is not possible to determine sustainability at this early stage. Instead, the evaluation will look for evidence that beneficiaries value project

Evaluation Question	Data Source	Data Collection Method	Method of Data Analysis	Limitations/risks
	other assessments or evaluations)		acceptance of regulated water rights and processes to resolve water rights disputes.	outcomes and have an incentive (and structure—WUAs) to maintain the infrastructure and manage water rights. Within government, the evaluation will look for institutional commitment and capacity (financial and management) to sustain the infrastructure and other support to the local agricultural sector.
	Beneficiary farmers	Group interviews		
	• Private sector businesses • GoKP, USAID, sub-contractor personnel • Sector experts	• Key informant and individual interviews		

DELIVERABLES

Deliverables under this assignment include:

- **Detailed Methodology, Data Collection Tools and Data Collection Plan**: During the team planning workshop (TPW), the assignment team will prepare a detailed methodology, data collection tools, and a data collection plan for the assignment. The methodology in the AWP will be updated and the AWP revised as needed at the end of the TPW and submitted for PERFORM COR approval. The data analysis plan, data collection tools, and data collection plan will be submitted to the PERFORM COR for approval at the end of the TPW and before the start of field work.

- **Data Collection Completion Report**: At the conclusion of data collection, PERFORM will submit to the PERFORM COR a final data collection schedule indicating dates and location of data collection activities and persons or groups interviewed if relevant.

- **Debriefing with USAID/Pakistan of Findings, Conclusions, and Recommendations**: At or near the conclusion of data analysis the assignment team will present the major findings, conclusions, and recommendations to USAID/Pakistan. As appropriate, the team will consider USAID comments during the debriefing when writing the draft report.

- **Draft Report**: The draft report will answer the assignment questions and will include findings, conclusions, and recommendations across the components/sub-components. The draft report (not to exceed 30 pages) will be submitted by PERFORM to the PERFORM COR for USAID/Pakistan review and comments. The PERFORM COR will submit all comments to the draft report to PERFORM within two to three weeks of receipt of the draft report.

- **Final Report**: The final report will address all USAID/Pakistan comments. PERFORM will finalize the report and submit it to the PERFORM COR for approval within two to three weeks.

- **One-page Brief**: A brief of the key (qualitative and quantitative) findings, conclusions, and recommendations related to the assignment questions will be developed by PERFORM for use by USAID/Pakistan decision-makers and other relevant stakeholders. This document will be written in English and may be translated and disseminated as desired by USAID/Pakistan. PERFORM will submit the document to the PERFORM COR after the final report is approved.

- **Presentation(s) to USAID/Pakistan**: Presentation(s) of the final report will be made to USAID/Pakistan, implementing partners, and other relevant stakeholders if desired by USAID/Pakistan.

- **Raw Data**: Per ADS 579 - USAID Development Data – all quantitative data collected for this assignment will be submitted to USAID/Pakistan in electronic format within 30 days of completion. PERFORM will submit the data in a format requested by USAID/Pakistan for internal archiving and also in formats specified in ADS 579 for uploading to the Data Development Library (DDL). Qualitative data will be delivered as 1) the coded segments used in analysis extracted from MAXQDA in an excel format or 2) tally sheets, as applicable to the analysis.

- **Development Experience Clearinghouse (DEC) Review**: Once the report is finalized, USAID/Pakistan may conduct a DEC review of the report. The PERFORM COR will share the

DEC version of the report with PERFORM for final editing, formatting, and uploading to the DEC.

ANTICIPATED SCHEDULE OF ACTIVITIES AND LEVEL OF EFFORT

TABLE 4: ASSIGNMENT STAFFING WITH ROLES AND RESPONSIBILTIES

Position	Status	Roles and Responsibilities
Team lead/evaluator	PERFORM LTTA (evaluation and assessments advisor)	A seasoned evaluator with experience in agriculture and in Pakistan. The team lead is responsible for leading the team and managing assignments among team members to complete the field work and reporting on time and to required quality standards. The team lead is also responsible for reviewing and approving all aspects of the assignment.
Sector specialist (program management)	Local STTA	An expert in GoKP project design and implementation processes with experience from government, USAID, and implementer perspectives. The sector specialist (project management) is responsible primarily for collecting data to describe the design and implementation processes and identifying causes of delays. The specialist will participate in all assignment activities under the direction of the team lead.
Sector specialist (agriculture)	Local STTA	Solid social science researcher capable of leading data collection activities with communities in command area on topics related to agricultural production, irrigation systems and irrigated agriculture, project implementation, water rights, and livestock. The sector specialist will participate in all aspects of the evaluation including the team planning workshop, developing data collection instruments, and collecting and analyzing data under the direction of the team leader.
Sector specialist (agriculture and gender)	PERFORM LTTA	Solid social science researcher capable of leading data collection activities with communities in command area on topics related to agricultural production, irrigation systems and irrigated agriculture, project implementation, water rights, livestock, and gender. The sector specialist will participate in all aspects of the evaluation including the team planning workshop, developing data collection instruments, and collecting and analyzing data under the direction of the team leader.
Mid-level researchers (x2)	Local STTA	The mid-level researchers will assist the data collection activities of the sector specialists including, but not limited to, taking notes during interviews, helping to translate and transcribe notes in a timely manner, arranging interviews, and other duties assigned by the assignment manager, team lead, or sector specialists. The research assistants may also assist with document review, data collection and analysis, or helping to arrange and schedule interviews or site visits.
Transcribers (x2)	Local STTA	Responsible for translating and transcribing (verbatim) audio recordings of individual and group interviews under the supervision of the sector specialists, assignment manager, or team lead.
Assignment Manager	PERFORM LTTA	The assignment manager will oversee the evaluation; coordinate all travel and logistics; facilitate meetings with USAID/Pakistan; participate in the TPW, data rehearsal, data analysis, and initial

Position	Status	Roles and Responsibilities
		debrief; review draft reports; and ensure that the team adheres to the strict deadlines for deliverables contained in the AWP.

TABLE 5: ANTICIPATED ASSIGNMENT SCHEDULE AND LEVEL OF EFFORT

Activity	Location	Deliverables	Tentative Schedule	Team Lead/Evaluator[3]	Sector Specialist (Project Management)	Sector Specialist (Agriculture)	Sector Specialist (Agriculture and Gender)	Mid-level Researcher # 1	Mid-level Researcher # 2	Transcriber #1	Transcriber #1
Domestic/international travel (non-field)				4	2	2		2	2		
Document review	Islamabad and home base		Mar 25 – Apr 6	10	7	7	7	2	2		
Team planning workshop	Islamabad	• Data collection plan • Instruments	Apr 8 – Apr 20	12	12	12	12	11	11		
Fieldwork (including travel and transcription)	Peshawar, D.I. Khan, Tank	• Data collection completion report	Apr 22 – May 11	18	18	18	18	18	18	20	20
Data analysis	Islamabad		May 13 – June 1	12	12	12	12	12	12		
Recommendations workshops	Islamabad	• Debrief presentation (June 18)	Jun 10 – Jun 20	6	6	6	6	6	6		
Reporting	Islamabad	• Draft report • Final report • One-page brief	Jun 2 – Jun 22 Aug 5	15	7	7	7				
Total assignment LOE				**77**	**64**	**64**	**62**	**51**	**51**	**20**	**20**

[3]71 days are budgeted as PERFORM LTTA and only 6 days are budgeted as PERFORM home office STTA

TABLE 6: LOE SUMMARY BY POSITION

Status	Position	LOE (days)	Notes
PERFORM STTA	Team lead	77	In the reporting phase, the team lead will transition from PERFORM LTTA to home office STTA. So, 71 days will be billed as PERFORM LTTA and 6 days as home office STTA.
Local STTA	Sector experts (x2)	128	
PERFORM LTTA	Sector experts (x1)	62	
PERFORM LTTA	Assignment manager	60	
Local STTA	Mid-level researchers (x2)	102	
Local STTA	Transcribers (x2)	40	
Total LOE		**469**	

RISKS AND ASSUMPTIONS

The primary risk to beginning the assignment on time and thus adhering to the timeline is receiving LECP waivers for some local team members in time. This assignment, however, requires an experienced program management expert who is familiar with government design and management processes, particularly in the context of KP, and especially with infrastructure projects, and who is able to travel in D.I. Khan and Tank. An individual with these skills and experience is likely to require an LECP waiver. We have identified the key personnel from our roster and confirmed their availability which should greatly reduce the risks is hiring the evaluation team. The team lead will also be PERFORM LTTA which will largely mitigate the risks associated with obtaining a visa for an expatriate team lead and working around the schedule of an independent consultant.

The assignment falls over Ramazan and Eid ul-Fitr which may affect the availability of government officials for interviews and may also somewhat limit the team's ability to conduct interviews with farmers. Team members may also need time to be home during key times. The proposed timeline has the team completing fieldwork prior to the start of Ramazan on May 6 and completing data analysis and validation and recommendations workshops prior to Eid ul-Fitr on June 4. If the evaluation adheres to the proposed schedule, Ramazan and Eid ul-Fitr should not delay the assignment.

Finally, the GoKP is implementing the project which should resolve any issues regarding the team's access to the field and permissions required to conduct the fieldwork. While this should greatly ease the process of arranging and conducting the fieldwork, obtaining the required permissions is still uncertain and thus represents a risk.

COST ESTIMATE

A break-down of costs by the four line items is below:

Direct labor	
Travel	
Other direct costs	
Subcontractor	
Grand total	

**Total cost estimates do not include cross-cutting costs, indirect costs, or the MSI fee.*

PERFORM COR APPROVAL

[COR will indicate approval by signing below or indicating "approval" by return email].

Contracting Officer's Representative (COR)	**Date**
_____	_____

ANNEX 1: POSSIBLE DATA SOURCES FOR PROJECT OUTCOMES

Outcomes	Possible Data Source(s)
Change in area under perennial irrigation	DoA statistics, group interviews with farmers, project MIS, and remote sensing using satellite imagery
Equity in water share (warabandi system or makeshift mechanism through which farmers' get their due share of water)	Group interviews with farmers and key informant interviews with implementers.
Change in cropping intensity and yield (DoA statistics, group interviews, remote sensing)	DoA statistics, group interviews with farmers, and remote sensing using satellite imagery
Change in production of crops, horticulture, and livestock	DoA statistics, group interviews with farmers
Changes in crop types/diversification (are farmers growing higher-value crops than they were growing before irrigation)	DoA statistics, group interviews with farmers
Change in farmers' income from agriculture and livestock activities	BISP poverty profiles, Labor Force Survey, HIES data
Change in land value	Group interviews with farmers, key informant interviews with nambardars and real estate agents, revenue department
Change in processes and outcomes for resolving conflicts of water rights	Group interviews with farmers, key informant interviews with district commissioner or ACS who are involved in resolving grievances
Change in access to market	Group interviews with farmers
Change in groundwater table and quality	Group interviews with farmers, Department of Irrigation
Change in availability of drinking water in command area	Group interviews with farmers, key informant interviews with implementers, Department of Irrigation
Change in social conditions of the beneficiaries (education and health indicators)	Group interviews with farmers, Demographic and Health Survey, education statistics, PSLM
Change in the availability of private sector service providers in agriculture and livestock (opportunities for corporate sector investment, opening franchises for quality inputs based on the new potential in D.I. Khan, Kulachi, Tank, or other local markets.	Group interviews with farmers, Labor Force Survey
Changes in employment	Group interviews with farmers, Labor Force Survey
Gender and youth integration	Group interviews with farmers, Labor Force Survey
Change in soil chemical composition of command area	Department of irrigation

ANNEX 2: LIST OF POTENTIAL INTERVIEWEES

Sr.	Designation or Organization	Role in project	Type of Interview	Location
1	Secretary Agriculture	Strategic level engagement	Individual interview	Peshawar
2	Secretary Irrigation	Strategic level engagement	Individual interview	Peshawar
3	Director General - Livestock and Dairy Development	Implementation support	Individual interview	Peshawar
4	Director General - Agri-extension	Implementation support	Individual interview	Peshawar
5	Director General - OFWM	Implementation support	Individual interview	Peshawar
6	Agricultural Research Institute (ARI) - DIK	Implementation support	Group interview	D.I. Khan
7	District Director Agriculture Extension - DIK	Implementation support	Group interview	D.I. Khan
8	District Director Livestock - DIK	Implementation support		
9	District Director Agriculture Engineering - DIK	Implementation support		
10	District Director OFWM - DIK	Implementation support		
11	District Director Agriculture Extension - Tank	Implementation support	Group interview	Tank
12	District Director Livestock - Tank	Implementation support		
13	District Director Agriculture Engineering - Tank	Implementation support		
14	District Director OFWM - Tank	Implementation support		
15	Director Farm Services Centers	Implementation support	Individual interview	Peshawar
16	XEN Irrigation - DIK	Implementation support	Individual interview	D.I. Khan
17	XEN Irrigation - Tank	Implementation support	Individual interview	Tank
18	Deputy Commissioner - DIK	Implementation support	Group interview	D.I. Khan
19	Assistant Commissioner - DIK	Implementation support		
20	Deputy Commissioner - Tank	Implementation support	Group interview	Tank
21	Assistant Commissioners - Tank	Implementation support		Tank
22	Project Director – Gomal Zam Dam Command Area Development Project	Project design, implementation, and leadership	Individual interview	Peshawar
23	PMU staff members	Implementation support	Group interview	Peshawar
24	PIU staff members	Implementation support	Group interview	D.I. Khan
25	Water User Association members	Beneficiary and implementation support	14 Group interviews	Tank/ D.I. Khan
26	Women Interest Groups	Beneficiary and implementation support	4 Group interviews	Tank/ D.I. Khan
27	WAPDA officials	Implementation support	Group interview	Peshawar
28	KPMG representatives	Consultants	Group interview	Peshawar/ Islamabad
29	Halcrow Pakistan representatives	Consultants	Group interview	Peshawar/ Islamabad
30	Community Livestock Extension Workers - DIK	Implementation support	Group interview	D.I. Khan

Sr.	Designation or Organization	Role in project	Type of Interview	Location
31	Community Livestock Extension Worker - TANK	Implementation support	Group interview	Tank
32	Taleem Foundation	Consultants	Group interview	Peshawar
33	NESPAK representatives	Consultants	Group interview	Peshawar/ Islamabad
34	Revenue department - DIK	Implementation support	Individual interview	D.I. Khan
35	Revenue department - Tank	Implementation support	Individual interview	Tank
36	Local real estate agents/ Nambardar - DIK	Local informants	Group interview	D.I. Khan
37	Local real estate agents/ Nambardar - Tank	Local informants	Group interview	Tank
38	Civil Contractors	Implementation (Watercourses and roads construction)	Individual Interviews	D.I. Khan and Tank

Annex 3: Project Components and Status of Activities

CADP comprises four components designed to complete the tertiary irrigation infrastructure (watercourses), establish the social structures (WUAs) to maintain and manage the watercourses, promote efficient irritation technologies and practices, build farmers' capacities to improve crop and livestock productivity, add value to their produce, and access markets on more favorable terms. More specifically:

- **Component 1: Command area development and on-farm water management**—This component focuses on building out the command area irrigation infrastructure and otherwise preparing the area for accessing and using water to enhance productivity. Activities include conducting a detailed feasibility study and developing a master plan; designing and constructing watercourses to distribute water from the canal system to farmers' fields and roads to link farmers to markets; forming and strengthening WUAs to operate watercourses and manage water distribution within a watercourse command area; forming WIGs to ensure that development of the command area addresses women's needs; reclaiming land by reforming (rough leveling) ravines and gullies; precision leveling land for furrow irrigation; and training members of WUAs in operation and maintenance of watercourse and WIGs in livestock management.

- **Component 2: Productivity enhancement**—Activities under this component emphasize orienting WUAs and WIGs to crop and livestock technologies and practices that can leverage the increased availability of water to enhance productivity. For crops, topics may include cropping patterns, cropping intensity, crop production, productivity, water use (including establishing high-efficiency irrigation demonstrations), water productivity, and profitability. Livestock-oriented orientation and training may include effective management of livestock to enhance the productivity of meat, milk, and value-added products; breed improvement; backyard poultry; fodder and silage; and animal health and nutrition.

- **Component 3: Value-added agriculture and livestock**—As farmers begin to adopt productivity-enhancing practices and produce surpluses, this component introduces methods such as processing, grading, or packaging that can add value to crop and livestock products.

- **Component 4: Marketing of marketable products**—Activities in this component concentrate on helping command area farmers access market information; strengthening local markets; and linking farmers to local, national, and international marketing opportunities.

Table 5 presents data on key project activities extracted from the project's quarterly reports.

TABLE 5: PROJECT-REPORTED ACTIVITY DATA

Activity	LOP Target	Quarter Ending on											
		Jun-16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Mar-19
Chakbandi													
Revenue chakbandi (number)	393	66	166	201	249	249	255	286	286	286	294	295	295
Aqs Shajra (number of maps)	393	0	45	181	233	237	243	274	274	274	283	283	283
Owners' list (number)	393	0	49	47	125	172	200	224	234	243	278	281	281
Social mobilization and capacity building													
Farmers contacted (number of WUAs)	393	0	15	35	95	202	264	278	278	288	301	301	301
WUAs formed (number)	393	0	7	30	73	127	172	184	184	188	259	267	267
WUAs registered (number)	393	0	7	30	72	123	170	184	184	184	259	259	259
TOP signed (number)	393	0	0	0	0	0	75	105	105	81	180	180	180
WIGs formed (number)	69	0	0	0	0	0	0	0	0	2	30	58	58
Reactivation of existing WUAs (number)	184	0	0	0	0	0	0	0	0	3	30	51	86
Design and supervision of civil works													
Orientation training (livestock)	393	0	0	0	0	0	42	42	42	42	42	42	42
Orientation training for O&M	393	0	0	0	0	0	0	0	0	0	0	0	0
Orientation training (agriculture)	393	0	0	0	0	0	0	0	0	0	0	0	0
Watercourse construction													
Engineering survey (number of watercourses)	393	0	0	53	152	207	227	231	231	263	263	263	263
Design and bill of quantities (number of watercourses)	393	0	0	53	115	207	227	231	231	263	263	263	263
Bidding documents (number of watercourses)	393	0	0	53	87	194	212	212	212	226	240	250	250
Bids invited (number of watercourses)	393	0	0	0	0	0	194	194	194	194	225	225	225
Contracts awarded (number of watercourses)	393	0	0	0	0	0	194	194	194	194	194	194	194
Watercourses initiated (number of watercourses)	393	0	0	0	0	0	45	108	153	171	184	185	189
Watercourses completed (number of watercourses)	393	0	0	0	0	0	0	0	25	50	50	50	50

Activity	LOP Target	Quarter Ending on											
		Jun-16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Mar-19
Length of earthen sections completed (km)	1,050	0	0	0	0	0	0	0	22	46	62	95	95
Length of lined sections completed (number of watercourses)	210	0	0	0	0	0	0	0	21	41	45	49	49
Structures completed (number of watercourses)	18,000	0	0	0	0	0	0	0	261	805	849	1,250	1,268
Multipurpose ponds													
Engineering survey (number)	393	0	0	53	152	207	227	231	231	231	263	263	263
Design and BoQ (number)	393	0	0	53	115	207	227	231	231	231	263	263	263
Bidding documents (number)	393	0	0	53	87	194	212	212	212	212	202	212	242
Earthen shingle (gravel) roads													
Engineering survey (km)	28.0	0.0	0.0	0.0	8.7	8.7	8.7	8.7	8.7	8.7	21.2	21.2	21.2
Design and BoQ (km)	28.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5	7.5	7.5	20.0	20.0	20.0
Bidding documents (km)	28.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5	7.5	7.5	20	20	20
Bids invited (km)	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	7.3	7.3	7.3	7.3
Contracts awarded (km)	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	7.3	7.3	7.3	7.3
Work initiated (km)	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	7.2	7.2	7.2
Allied structures initiated (number)	20	0	0	0	0	0	0	0	0	0	5	5	5
Structures completed (number)	20	0	0	0	0	0	0	0	0	0	0	0	0
Precision land leveling													
Engineering survey (acres)	163,000	0	0	0	0	0	0	0	7,300	12,500	12,500	12,500	163,000
Design and BoQ (acres)	163,000	0	0	0	0	0	0	0	0	7,500	7,500	7,500	0
Bidding documents (acres)	163,000	0	0	0	0	0	0	0	0	3,778	3,778	3,778	0
Bids invited (acres)	163,000	0	0	0	0	0	0	0	0	3,778	3,778	3,778	0

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Annex 5: Data Collection Instruments

Consultant Interview Discussion Guide

Discussion Guide for Consultants (Taaleem Foundation, NESPAK, AAB)
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

You acted as a consultant for the Gomal Zam Command Area Development Project. We'd like to ask you about any challenges you encountered working on the project and your views on how these could be resolved.

1. Did you have any issues with the bidding and contracting process? Was it efficient and fair? Explain.

2. What challenges have you experienced accomplishing your tasks within the time specified in your contract?

   IF THE RESPONDENT DID NOT MENTION THE FOLLOWING NATURALLY, ASK:

   a. How, specifically, it contributed to delays in performing your tasks?

      i. **FOR TAALEEM -** Social mobilization for WUA formation, WUA registration, WIGs formation, training in watercourse operation and maintenance

      ii. **FOR NESPAK -** Engineering survey, preparation of design and BoQ and preparation of bidding document for watercourses, multi-purpose ponds, link roads, high efficiency irrigation systems, precision land levelling

      iii. **FOR AAB –** Master planning, initial feasibility study

   b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

   c. How future similar projects could be designed to mitigate the issue?

   IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

   □ Did the contract clearly and completely describe your tasks and how they should be done? Did you find out about some requirements only after you started work?

   □ Did the project's supervision and verification processes affect your ability to perform the work according to schedule?

   □ Did you receive payments on time?

   □ Did you encounter any resistance from farmers or others in performing your tasks?

   □ Did security in the project area affect your ability to complete your work on time?

Implementation

As you may know, the project is well behind schedule. As someone who is/was closely involved in implementing the project, we'd like to hear your views on the causes of delays in implementation.

3. In your experience, what were the major causes of delays in project implementation? **FOR THIS AND ALL SUBQUESTIONS, CONTINUE ASKING "AND WHAT CAUSED THAT" TO GET TO ROOT CAUSES. USE THE PROBES BELOW FOR ALL SUBQUESTIONS**

a. How, specifically, the issue contributed to delays in implementation. *For example, challenges obtaining owners lists delayed work on forming WUAs and constructing watercourses.*

b. **IF RELEVANT** How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

c. How future projects can mitigate the issue and the support they may need to do so.

Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

[ASK ONLY OF ABB]

- □ The feasibility study and master plan were not completed until early 2017—a year and a half after the project started. Why did this take longer than expected?
- □ The project has completed 50 of a planned 393 watercourses. Why has this taken longer than expected?
- □ The project has formed 264 of a planned 393 WUAs by the end of 2018. Why has this taken longer than expected?
- □ The project has not completed any of the 20 kilometers of roads it planned to build. Why is this taking longer than expected?
- □ The project is supposed to level 163,000 acres. Why is this activity taking longer than expected?
- □ Components 2 (productivity enhancement), 3 (value-added agriculture and livestock), and 4 (marketing) were supposed to have started in 2016. Why have they not started yet?

Sustainability

We're also interested in your views on the likely sustainability of the project infrastructure and effects on beneficiaries.

4. Do you think the canals built under the Gomal Zam Irrigation Project and the watercourses built under the Command Area Development Project will continue to provide irrigation water to farmers for years after the project ends?

    a. **IF YES**; How will the canals and watercourses (separately) be maintained? What are challenges to maintaining the canals and watercourses and how will they be addressed? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES**

    b. **IF NOT**; Why not? What could improve the likelihood that the canals and watercourses will be maintained? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES**

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - □ Who is responsible for operation and maintenance of canals? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

- Who is responsible for operation and maintenance of watercourses? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

- What steps have you taken, or do you intend to take, to ensure sustainability of the watercourses? *(probes: creating operation and maintenance manual, training WUA members in operation and maintenance of watercourses)?* Do you believe these are enough? What are the remaining challenges?

5. If the project succeeds in enhancing crop and livestock productivity, do you think these benefits will continue after the project ends? **IF YES**; How? **IF NOT**; Why not?

   Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

   - Will canals continue to deliver water equitably to the entire command area?

     - **IF YES;** How will this be ensured?

     - **IF NOT;** Why not? How could this issue be resolved? *(Probe for maintenance, required finances, conflict over water/water rights, interference by powerful/influential landowners)*

   - Do WUAs have the capacity or capability to manage equitable distribution of water within the watercourse command area and address conflicts?

     - **IF YES;** How will this be ensured?

     - **IF NOT;** Why not? How could these issues be resolved? *(Probe for maintenance, conflict over water/water rights, interference by powerful/influential landowners)*

   - Is the availability of required inputs and technical assistance (training) necessary to sustain increased agriculture and livestock production in the area ensured?

     - **IF YES;** How?

     - **IF NOT;** Why not? How could this issue be resolved?

6. In your opinion, what could make it more likely that the project infrastructure and the benefits farmers have achieved so far are sustained?

Contractor Interview Discussion Guide

Contractors Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? ***(DO NOT READ, CIRCLE ONE NUMBER)***

1. Yes
2. No

We understand that you have been contracted to construct watercourses for the Gomal Zam Command Area Development Project. Can you share the information about your assigned WC packages?

Name of the contracting company	
Number of watercourses awarded	
Number of watercourses completed	
Number of watercourses in progress	

We'd like to ask you about any challenges you encountered working on the project and your views on how these could be resolved.

1. Did you have any issues with the bidding and contracting process? Was it efficient and fair? Explain.

2. What challenges have you experienced accomplishing your tasks within the time specified in your contract?

   FOR EACH CHALLENGE MENTIONED, ASK ABOUT:

   a. How, specifically, it contributed to delays in building the watercourse(s).

   b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

   c. How future similar projects could be designed to mitigate the issue?

   IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

   □ Did the contract clearly and completely describe your tasks and how they should be done? Did you find out about some requirements only after you started work?

   □ Did the project's supervision and verification processes affect your ability to perform the work according to schedule?

   □ Did you receive payments on time?

   □ Did you encounter any resistance from farmers?

   □ Did security in the project area affect your ability to complete your work on time?

3. Do you have any other suggestions for how the project could make it easier for you to accomplish your work on time?

4. Do you have any suggestions for how future similar projects could manage contractors and their construction works more efficiently to keep them on schedule?

PC-1 Consultant Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

I understand that you were involved in designing the PC-1 for the Gomal Zam Command Area Development Project. I'd like to ask you about the design process and the design itself.

1. What was your role in drafting and finalizing the PC-1?
2. Who contracted you for this work and how did you work?
3. Do you know who initiated the project? Did the government develop a PC-1 because USAID funding was available?
4. What guided the overall concept of the design? Did the design team review other similar projects, conduct an initial feasibility study, or any other research or consultation?

   Probes:

   - RIPORT studies
   - Chashma Right Bank Canal/Irrigation Project (CRBP)

5. We heard that the project timeframe was reduced from five to three years during the design approval process. Do you know if this is correct? **IF YES**; was the scope of the project scaled back at the same time?
6. Did you engage with P&D during the design?
   a. **IF YES;** How?
7. Did the project design incorporate concerns/feedback/comments/requests from other departments?
   a. **IF YES**; With whom and how? Give examples.
   b. **IF NO**; why not?
8. Did the project design incorporate concerns/feedback/comments/requests from farmers and other stakeholders in the command area?
   a. **IF YES**; How? Give examples.
   b. **IF NO**; Why not?
9. The design process took some time. In your experience, was the time reasonable or normal? If it was slower than normal, what factors contributed to the extended process and how could they be resolved?

Now I'd like to discuss characteristics of the design and whether they were consistent with timely implementation.

10. Can you think of shortcomings in the project design that have contributed to delays in implementation?

FOR EACH SHORTCOMING MENTIONED, ASK ABOUT:

a. How, specifically, the shortcoming contributed to delays in implementation? *For example, the approach to verifying contractors' work delayed payment to contractors and slowed work on watercourse construction because contractors did not have the financial resources to continue work without being paid.*

b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

c. How PC-1s for future projects can be designed to mitigate the issue? Are these proposals feasible within government design guidance?

IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

- □ Three years was not a realistic amount of time to accomplish all the activities.
- □ Did splitting management and implementation between a PMU and PIU contribute to delays?
- □ Did the staff positions in the PC-1 include all positions necessary to manage and implement a large and complex project? For example, did the staffing plan include adequate expertise in supervision, monitoring and evaluation, or contracting/ procurement to implement the project well and on time?
- □ Did deputing staff from government, as opposed to hiring from the market, attract staff with the skills and experience necessary to implement the project well and on time?
- □ Were the procurement/contracting mechanisms specified in the PC-1 consistent with hiring qualified consultants or contractors in a timely manner?

11. Did the PC-1 contain any provisions for addressing time or cost overruns? **IF YES**; Explain.

12. Did the project adjust the design in any way based on the feasibility study and the master plan developed in July 2017? **IF YES:** How? **IF NOT:** Why not?

13. Did extending the project duration or increasing the project budget affect the pace of implementation in any way? **IF YES**: How and why?

Additional Questions

14. Deficit irrigation – how important is improving the efficiency of water use to ensuring that benefits extend to the entire command area, and to fully benefitting from the project? What are the challenges to encouraging farmers to adopt more efficient water use practices? Any challenges about water rights?

Farm Service Centers Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

As someone who is very familiar with agriculture in the command area of the Gomal Zam Dam, we'd like to talk with you about your views on any benefits to farmers from the canals, watercourses, and link roads the Gomal Zam Irrigation Project and Command Area Development Project built in the command area.

1. Are you familiar with these projects and what they are doing? **IF NOT, EXPLAIN THAT THE PROJECT HAVE BUILT CANALS AND WATERCOURSES IN THE COMMAND AREA TO IMPROVE FARMERS' ACCESS TO WATER FROM THE GOMAL ZAM DAM.**

2. Based on your knowledge of the area and your interaction with farmers, do you think the water benefited farmers? **IF YES**, What benefits and how? *(Probe for **how** project activities contributed to benefits. For example, if yields increased, why? Because of more water due to new canals/watercourses or regulation of water, land leveling, high-efficiency irrigation, etc.)*

   PROBE FOR DIFFERENCES BETWEEN THE SITUATION BEFORE THE GZIP PROJECT BUILT CANALS AND NOW

   Probes: **ASK SPECIFICALLY ABOUT EACH IF IT DOES NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ Has it increased yields of crops? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Are farmers cultivating or irrigating more land? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Are farmers doing more intercropping/multi-cropping? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Has the water increased cropping intensity? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Are farmers planting new or different [high-value] crops? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Has it increased farmers' incomes? Explain. Have many farmers benefited in this way or is it only a few?

3. In your opinion, how could the benefits be improved?

   Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ Precision land leveling
   - □ High-efficiency irrigation systems
   - □ Other

4. Has the water project produced any other types of benefits in the area? **IF YES**, What and how?

   Probes: **ASK SPECIFICALLY ABOUT EACH IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ New businesses/shops started
   - □ Increased or new employment (skilled and unskilled)
   - □ Increased use of farm machinery in the area
   - □ Improved crop or livestock techniques
   - □ Improved access to markets
   - □ Other development projects started working in the area
   - □ Increased other development in the area (e.g., schools, BHUs, etc.) Explain.
   - □ Increased stability of the population in the area

5. In your opinion, is there anything negative about the project?

   Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ Did farmers lose cultivated land due to construction activities? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Did construction disrupt the flow of rainwater or floodwater? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Did construction activities temporarily damage land or crops? Explain. Have many farmers benefited in this way or is it only a few?
   - □ Did the project cause conflicts over water? Explain. Explain. Have many farmers benefited in this way or is it only a few?
   - □ Did farmers lose cultivated land due to construction activities? Explain. Have many farmers benefited in this way or is it only a few?

6. Do you expect that these benefits will continue when the project is finished? Explain. **PROBE FOR SUSTAINABILITY OF INFRASTRUCTURE AND OUTCOMES**

   Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ Will canals continue to deliver water equitably to the entire command area?
     - **IF YES;** How will this be ensured?
     - **IF NOT;** Why not? How could this issue be resolved? *(Probe for maintenance, required finances, conflict over water/water rights, interference by powerful/influential landowners)*

- Do WUAs have the capacity or capability to manage equitable distribution of water within the watercourse command area and address conflicts?
    - **IF YES;** How will this be ensured?
    - **IF NOT;** Why not? How could these issues be resolved? *(Probe for maintenance, conflict over water/water rights, interference by powerful/influential landowners)*
- Is the availability of required inputs and technical assistance (training) necessary to sustain increased agriculture and livestock production in the area ensured?
    - **IF YES;** How?
    - **IF NOT;** Why not? How could this issue be resolved?

7. In your opinion, what could make it more likely that the project infrastructure and the benefits farmers have achieved so far are sustained?

Halcrow Pakistan (Pvt) Ltd Discussion Guide

Halcrow Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

Because of Halcrow's role as a consultant to USAID for the Gomal Zam Command Area Development Project, you have a unique perspective on the project's design and implementation. We'd like to talk with you about the **challenges the project faced**, how these **contributed to the substantial delays in implementation**, and what, if anything, can be done to **mitigate current causes of delays** and prevent them in future similar projects.

1. Can you please describe Halcrow's role and how you conducted your tasks?

2. What triggered a site visit by your team? Did your verification team visit the field on a regular schedule or only as requested?

Design

3. Can you think of shortcomings in the way the project was designed that have contributed to delays in implementation? By "design" I mean the plan for implementing and managing the project specified in the PC-1.

   FOR EACH SHORTCOMING MENTIONED, ASK ABOUT:

   a. How, specifically, the shortcoming contributed to delays in implementation? *For example, the approach to verifying contractors' work delayed payment to contractors and slowed work on watercourse construction because contractors did not have the financial resources to continue work without being paid.*

   b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

   c. How PC-1s for future projects can be designed to mitigate the issue? Are these proposals feasible within government design guidance?

   IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

   - □ Three years was not a realistic amount of time to accomplish all the activities.
   - □ Did splitting management and implementation between a PMU and PIU contribute to delays?
   - □ Did the staff positions in the PC-1 include all positions necessary to manage and implement a large and complex project? For example, did the staffing plan include adequate expertise in supervision, monitoring and evaluation, or contracting/ procurement to implement the project well and on time?
   - □ Did deputing staff from government, as opposed to hiring from the market, attract staff with the skills and experience necessary to implement the project well and on time?
   - □ Were the procurement/contracting mechanisms specified in the PC-1 consistent with hiring qualified consultants or contractors in a timely manner?

Implementation

As someone who is very knowledgeable of the project implementation, we'd like to hear your views on the causes of delays in implementation.

Part 1—Implementation

15. As you know, the project is far behind schedule. In your opinion, what are the main causes of delays in the project? **FOR THIS AND ALL PROBES, CONTINUE ASKING "AND WHAT CAUSED THAT" TO GET TO ROOT CAUSES. USE THE PROBES BELOW FOR ALL SUBQUESTION**

    d. How, specifically, the issue contributed to delays.

    e. **IF RELEVANT** How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

    f. How future projects can mitigate the issue and the support they may need to do so.

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY. ASK AS RELEVANT TO THE INDIVIDUAL RESPONDENT.**

    - □ The Project Implementation Letter (PIL) was signed in September 2015 but project reports do not show substantial results on the ground until July 2016. What happened during this period and why did it take this long?
    - □ The feasibility study and master plan were not completed until early 2017—a year and a half after the project started. Why did this take longer than expected?
    - □ The project has completed 50 of a planned 393 watercourses. Why has this taken longer than expected?
    - □ The project has formed 264 of a planned 393 WUAs by the end of 2018. Why has this taken longer than expected?
    - □ The project has not completed any of the 20 kilometers of roads it planned to build. Why is this taking longer than expected?
    - □ The project is supposed to level 163,000 acres. Why is this activity taking longer than expected?
    - □ Components 2 (productivity enhancement), 3 (value-added agriculture and livestock), and 4 (marketing) were supposed to have started in 2016. Why have they not started yet?
    - □ Was three years a realistic amount of time in which to accomplish all the activities?
    - □ Did splitting management and implementation between a PMU and PIU contribute to delays?
    - □ Did the staff positions in the PC-1 include all positions necessary to manage and implement such a large and complex project? For example, did the staffing plan include adequate expertise in social mobilization, supervision, monitoring and evaluation, or contracting/procurement to implement the project well and on time?

- Did deputing staff from government, as opposed to hiring professionals from the market, attract staff with the skills and experience necessary to implement the project well and on time?

- Were the procurement/contracting mechanisms specified in the PC-1 consistent with hiring qualified consultants or contractors in a timely manner?

16. Did the project make any changes to the implementation/work plan because of the feasibility and master plan? **IF YES**; Explain. **IF NOT**; Why not?

17. Did the project used the grant, financial management, monitoring and evaluation, procurement, and branding manuals developed for the project? **IF YES**; How? **IF NOT**; Why not?

18. Did extending the project duration or increasing the project budget affect the pace of implementation in any way? **IF YES**: How and why?

Part 2—Sustainability

19. Do you think the canals built under the Gomal Zam Irrigation Project and the watercourses built under the Command Area Development Project will continue to provide irrigation water to farmers for years after the project ends?

    a. **IF YES**; How will the canals and watercourses (separately) be maintained? What are challenges to maintaining the canals and watercourses and how will they be addressed? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES.**

    b. **IF NOT**; Why not? What could improve the likelihood that the canals and watercourses will be maintained? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES.**

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY. ASK AS APPROPRIATE TO THE RESPONDENT'S ROLE IN THE PROJECT.**

    - Who is responsible for operation and maintenance of canals? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

    - Who is responsible for operation and maintenance of watercourses? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

    - What steps have you taken, or do you intend to take, to ensure sustainability of the watercourses? (probes: creating operation and maintenance manual, training WUA members in operation and maintenance of watercourses)? Do you believe these are enough? What are the remaining challenges?

20. If the project succeeds in enhancing crop and livestock productivity, do you think these benefits will continue after the project ends?

    a. IF YES; How?

    b. IF NOT; Why not?

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

a. Is the availability of required inputs and technical assistance (training) necessary to sustain increased agriculture and livestock production in the area ensured?

- **IF YES;** How?
- **IF NOT;** Why not? How could this issue be resolved?

b. Have the training targets (O&M, filed crops and horticulture, management of livestock) been achieved?

- **IF NOT,** Why?
- **IF YES,** How?

21. Do you think the WUAs can perform their responsibilities after project support ends? **IF YES**: How? **IF NOT**; Why not?

    Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

    □ Repair and maintenance

    □ Resolving conflicts over water

22. Do you think farmers will be able to maintain the watercourses and distribution of water within the watercourse command area without a WUA?

    a. **IF NOT:** Why not?

    b. **IF YES:** How will they manage the expense of maintaining the watercourse? How will they manage equitable distribution according to the warabandi? How have you managed these in the past, before the project—did you have WUAs?

23. Have you heard about, or observed, any resistance from farmers about transitioning to a regulated system for allocating irrigation water?

    a.

24. In your opinion, what could make it more likely that the project infrastructure and the benefits farmers have achieved so far are sustained?

PIU and Others Involved in Implementation Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

We want to discuss the design of the Gomal Zam Command Area Development Project. By this, I mean the plan and structure for implementing the project that is defined in the final PC-1. For example, the staffing plan, procurement processes, management structure, contracting mechanisms and processes, and payment processes.

1. Can you think of shortcomings in the project design that have contributed to delays in implementation?

   FOR EACH SHORTCOMING MENTIONED, ASK ABOUT:

   a. How, specifically, the shortcoming contributed to delays in implementation? *For example, the approach to verifying contractors' work delayed payment to contractors and slowed work on watercourse construction because contractors did not have the financial resources to continue work without being paid.*

   b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of the project; and

   c. How PC-1s for future projects can be designed to mitigate the issue? Are these proposals feasible within government design guidance?

   IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

   - □ Was three years a realistic amount of time to accomplish all the activities?
   - □ Did splitting management and implementation between a PMU and PIU contribute to delays?
   - □ Did the staff positions in the PC-1 include all positions necessary to manage and implement a large and complex project? For example, did the staffing plan include adequate expertise in supervision, monitoring and evaluation, or contracting/ procurement to implement the project well and on time?
   - □ Did deputing staff from government, as opposed to hiring from the market, attract staff with the skills and experience necessary to implement the project well and on time?
   - □ Were the procurement/contracting mechanisms specified in the PC-1 consistent with hiring qualified consultants or contractors in a timely manner?

2. Did the PC-1 contain any provisions for addressing time or cost overruns?

   a. **IF YES**; Explain.

3. Did the project adjust the design in any way based on the feasibility study and the master plan developed in July 2017?

   a. **IF YES:** How?

   b. **IF NOT:** Why not?

4. Did extending the project duration or increasing the project budget affect the pace of implementation in any way?

    a. **IF YES:** How and why?

Now I would like to talk about project implementation.

5. As you know, the project is far behind schedule. We'd like to ask you about the causes of delays. **FOR THIS AND ALL SUBQUESTIONS, CONTINUE ASKING "AND WHAT CAUSED THAT" TO GET TO ROOT CAUSES. USE THE PROBES BELOW FOR ALL SUBQUESTIONS.**

    a. How, specifically, the issue contributed to delays in implementation. *For example, challenges obtaining owners lists delayed work on forming WUAs and constructing watercourses.*

    b. **IF RELEVANT** How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

    c. How future projects can mitigate the issue and the support they may need to do so.

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - The Project Implementation Letter (PIL) was signed in September 2015 but project reports do not show substantial results on the ground until July 2016. Why did it take so long to begin implementation in the field?
    - The feasibility study and master plan were not completed until early 2017—a year and a half after the project started. Why did this take longer than expected?
    - The project has formed 264 of a planned 393 WUAs by the end of 2018. Why has this taken longer than expected?
    - The project is completed 50 of a planned 393 watercourses. Why has this taken longer than expected?
    - The project has not completed any of the 20 kilometers of roads it planned to build. Why is this taking longer than expected?
    - The project is supposed to level 163,000 acres. Why is this activity taking longer than expected?
    - Components 2 (productivity enhancement), 3 (value-added agriculture and livestock), and 4 (marketing) were supposed to have started in 2016. Why have they not started yet?

6. Did the project make any changes to the implementation/work plan because of the feasibility and master plan?

    a. **IF YES:** Explain?

    b. **IF NOT:** Why not?

7. ASP developed grant, financial management, monitoring and evaluation, procurement, and branding manuals for the project. Has the PIU used these manuals?

    a. **IF YES;** How?

    b. **IF NOT;** Why not?

8. Do you think the canals built under the Gomal Zam Irrigation Project and the watercourses built under the Command Area Development Project will continue to provide irrigation water to farmers for years after the project ends?

    a. **IF YES**; How will the canals and watercourses (separately) be maintained? What are challenges to maintaining the canals and watercourses and how will they be addressed? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES.**

    b. **IF NOT**; Why not? What could improve the likelihood that the canals and watercourses will be maintained? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES.**

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - Who is responsible for operation and maintenance of canals? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

    - Who is responsible for operation and maintenance of watercourses? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?

    - What steps have you taken, or do you intend to take, to ensure sustainability of the watercourses? (probes: creating operation and maintenance manual, training WUA members in operation and maintenance of watercourses)? Do you believe these are enough? What are the remaining challenges?

9. If the project succeeds in enhancing crop and livestock productivity, do you think these benefits will continue after the project ends?

    a. **IF YES;** How?

    b. **IF NOT;** Why not?

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - Will canals continue to deliver water equitably to the entire command area?

        - **IF YES**; How will this be ensured?

        - **IF NOT**; Why not? How could this issue be resolved? (Probe for maintenance, conflict over water/water rights, interference by powerful/influential landowners)

    - Do WUAs have the capacity or capability to manage equitable distribution of water within the watercourse command area and address conflicts?

        - **IF YES;** How will this be ensured?

- **IF NOT;** Why not? How could these issues be resolved? *(Probe for maintenance, conflict over water/water rights, interference by powerful/influential landowners)*

a. Is the availability of required inputs and technical assistance (training) necessary to sustain increased agriculture and livestock production in the area ensured?

- **IF YES;** How?
- **IF NOT;** Why not? How could this issue be resolved?

b. Have the training targets (O&M, filed crops and horticulture, management of livestock) been achieved?

- **IF NOT,** Why?
- **IF YES,** How?

10. In your opinion, what could make it more likely that the project infrastructure and the benefits farmers have achieved so far are sustained?

PMU and Others Involved in Design and Implementation Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

We'll be discussing the process of designing the Gomal Zam Command Area Development Project. By this, I mean the process of developing the final PC-1.

Part-1: Design Process

1. Did you contribute to the design of Gomal Zam Command Area Development Project? By design I mean from the concept phase to approval of the PC-1 by the Central Development Working Party (CDWP). **IF NOT**; Go to part 2.

READ EACH RESPONSE AND CIRCLE ALL THAT APPLY.

1. At the concept phase
2. Soliciting financial resources (USAID funding)
3. Preparation of the PC-1
4. Discussions and suggestions on the project design
5. Assessment of the project design
6. Recommending approval of the PC-1 by CDWP
7. Approval process of the PC-1
8. Amending the PC-1 in light of CDWP directions

2. **ASK FOR EACH STAGE MENTIONED IN THE PREVIOUS QUESTION.** Can you explain your part [in stage] and what you did? Who else was involved at [stage] and how were they involved?

3. Can you explain the reasons why each stage of the process of developing and approving the PC-1 took as long as it did? **FOR THIS QUESTION, AND FOR EACH PROBE BELOW, PROBE FOR THE FOLLOWING**

    a. Could this stage have progressed more quickly? **IF YES**; How? **IF NOT**; Why not? *(Probe for rigidities in government processes)*

    b. Is there anything USAID could have done to help this stage of the design process move more quickly? For example, could it have been more responsive; could it have provided any technical or other assistance?

IF NOT MENTIONED SPONTANEOUSLY, ASK SPECIFICALLY ABOUT EACH OF THE STAGES BELOW

Probes:

- □ Was the PC-1 developed because USAID funding was available?
- □ USAID obligated funds for the GZD-CADP in February 2013 but the PC-1 was approved by CDWP in March 2014. What factors contributed to this taking so long?
- □ The PC-1 was approved in March 2014 but the government signed the agreement with USAID in March 2015. Why did this take so long?

- The government signed the agreement with USAID in March 2015 but signed the Project Implementation Letter seven months later. Why did this take so long?

4. What guided the overall concept of the design? Did the design team review other similar projects, conduct an initial feasibility study, or conduct any other research or consultation?

   Probes: **ASK IF THESE DO NOT COME UP SPONTANEOUSLY**

   - RIPORT studies
   - Chashma Right Bank Canal/Irrigation Project (CRBP)

5. We heard that the project timeframe was reduced from five to three years during the design approval process. Do you know if this is correct? **IF YES**;

   - Why WAS the timeframe reduced?
   - Was the scope of the project scaled back at the same time?

6. **[DO NOT ASK P&D]** Did you engage with P&D during the design?

   a. **IF YES;** How?

7. Did the project design incorporate concerns/feedback/comments/requests from other departments?

   a. **IF YES**; With whom and how? Give examples

   b. **IF NO**; why not?

8. Did the project design incorporate concerns/feedback/comments/requests from farmers and other stakeholders in the command area?

   a. **IF YES**; How? Give examples.

   b. **IF NO**; Why not?

9. We understand that the Assessment and Strengthening Program (ASP) helped the government draft the PC-1. How did ASP support the work? Was the support useful? **IF YES**; How?

Part-2: Characteristics of the Design

Now I'd like to ask about the characteristics of the project's design that may have contributed to delays in implementation and determine potential strategies for improving future designs. By this, I mean the plan and structure for implementing the project that is defined in the final PC-1. For example, the activity and staffing plan, procurement processes, management structure, contracting mechanisms and processes, payment processes, etc.

10. Can you think of shortcomings in the way the project was designed that have contributed to delays in implementation?

    FOR EACH SHORTCOMING MENTIONED, ASK ABOUT:

    a. How, specifically, the shortcoming contributed to delays in implementation? *For example, the approach to verifying contractors' work delayed payment to contractors and slowed work on watercourse construction because contractors did not have the financial resources to continue work without being paid.*

    b. How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

    c. How PC-1s for future projects can be designed to mitigate the issue? Are these proposals feasible within government design guidance?

    IF THE FOLLOWING DO NOT COME UP NATURALLY ASK ABOUT THEM SPECIFICALLY USING THE THREE PROBES ABOVE

    □ Was three years a realistic amount of time in which to accomplish all the activities?

    □ Did splitting management and implementation between a PMU and PIU contribute to delays?

    □ Did the staff positions in the PC-1 include all positions necessary to manage and implement such a large and complex project? For example, did the staffing plan include adequate expertise in social mobilization, supervision, monitoring and evaluation, or contracting/procurement to implement the project well and on time?

    □ Did deputing staff from government, as opposed to hiring professionals from the market, attract staff with the skills and experience necessary to implement the project well and on time?

    □ Were the procurement/contracting mechanisms specified in the PC-1 consistent with hiring qualified consultants or contractors in a timely manner?

11. Did the PC-1 contain any provisions for addressing time or cost overruns? **IF YES**; Explain.

12. Did the project adjust the design in any way based on the feasibility study and the master plan developed in July 2017? **IF YES:** How? **IF NOT:** Why not?

13. Did extending the project duration or increasing the project budget affect the pace of implementation in any way? **IF YES**: How and why?

Part-3: Implementation
Now I'd like to learn about the implementation process, causes of delays in implementation, and strategies/approaches for mitigating causes of delay.

14. As you know, the project is far behind schedule. We'd like to ask you about the causes of delays. **FOR THIS AND ALL SUBQUESTIONS, CONTINUE ASKING "AND WHAT CAUSED THAT" TO GET TO ROOT CAUSES. USE THE PROBES BELOW FOR ALL SUBQUESTION**

    a. How, specifically, the issue contributed to delays in implementation. *For example, challenges obtaining owners lists delayed work on forming WUAs and constructing watercourses.*

    b. **IF RELEVANT** How the issue has been, or could be, addressed to avoid additional delays for the remainder of this project; and

    c. How future projects can mitigate the issue and the support they may need to do so.

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - □ The Project Implementation Letter (PIL) was signed in September 2015 but project reports do not show substantial results on the ground until July 2016. What happened during this period and why did it take this long?
    - □ The feasibility study and master plan were not completed until early 2017—a year and a half after the project started. Why did this take longer than expected?
    - □ The project has completed 50 of a planned 393 watercourses. Why has this taken longer than expected?
    - □ The project has formed 264 of a planned 393 WUAs by the end of 2018. Why has this taken longer than expected?
    - □ The project has not completed any of the 20 kilometers of roads it planned to build. Why is this taking longer than expected?
    - □ The project is supposed to level 163,000 acres. Why is this activity taking longer than expected?
    - □ Components 2 (productivity enhancement), 3 (value-added agriculture and livestock), and 4 (marketing) were supposed to have started in 2016. Why have they not started yet?

15. Did the project make any changes to the implementation/work plan because of the feasibility and master plan? **IF YES**; Explain. **IF NOT**; Why not?

16. ASP developed grant, financial management, monitoring and evaluation, procurement, and branding manuals for the project. Has the PIU used these manuals? **IF YES**; How? **IF NOT**; Why not?

Part-4: Sustainability

Now I'd like to discuss your views on the likely sustainability of infrastructure and outcomes, barriers to sustainability, and prospects for improving the likelihood of sustainable results.

17. Do you think the canals built under the Gomal Zam Irrigation Project and the watercourses built under the Command Area Development Project will continue to provide irrigation water to farmers for years after the project ends?

    a. **IF YES**; How will the canals and watercourses (separately) be maintained? What are challenges to maintaining the canals and watercourses and how will they be addressed? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES**

    b. **IF NOT**; Why not? What could improve the likelihood that the canals and watercourses will be maintained? **ASK SEPARATELY ABOUT CANALS AND WATERCOURSES**

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - □ Who is responsible for operation and maintenance of canals? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?
    - □ Who is responsible for operation and maintenance of watercourses? Will they be able to perform these tasks? What challenges will they face and how can these be resolved?
    - □ What steps have been taken, or are planned to be taken, to ensure sustainability of the watercourses? (probes: creating operation and maintenance manual, training WUA members in operation and maintenance of watercourses)? Do you believe these are enough? What are the remaining challenges?

18. If the project succeeds in enhancing crop and livestock productivity, do you think these benefits will continue after the project ends? **IF YES**; How? **IF NOT**; Why not?

    Probes: **ASK ONLY IF THESE TOPICS DO NOT COME UP NATURALLY**

    - □ Will canals continue to deliver water equitably to the entire command area?
        - **IF YES;** How will this be ensured?
        - **IF NOT;** Why not? How could this issue be resolved? *(Probe for maintenance, required finances, conflict over water/water rights, interference by powerful/influential landowners)*
    - □ Do WUAs have the capacity or capability to manage equitable distribution of water within the watercourse command area and address conflicts?
        - **IF YES;** How will this be ensured?
        - **IF NOT;** Why not? How could these issues be resolved? *(Probe for maintenance, conflict over water/water rights, interference by powerful/influential landowners)*

- Is the availability of required inputs and technical assistance (training) necessary to sustain increased agriculture and livestock production in the area ensured?
    - **IF YES;** How?
    - **IF NOT;** Why not? How could this issue be resolved?

USAID Discussion Guide
April 16, 2019

Design Process

1. Who initiated the project? Did USAID express interest in supporting the project or did the government approach USAID?

2. To your understanding, when did the government first conceive of the command area development project? Was it part of an overall plan as far back as the design of the Gomal Zam Dam? In other words, how integrated was the planning for the three components of the project—the dam, GZIP, and CADP?

3. Can you describe USAID's role or engagement with the design process. When did USAID first express interest and what happened after that and when?

4. We understand that USAID may have engaged ASP to develop manuals and assist with drafting the PC-1. Can you explain why you thought this was necessary and whether it was effective.

5. Did USAID have any role in approving the PC-1—or require tacit approval before signing the agreement?

    a. If yes, how carefully did USAID assess the design and did it provide any feedback or suggestions to government?

    b. Did government incorporate suggestions?

    c. Did USAID's engagement of ASP to support design give the Mission any direct input into the design? Explain.

6. We understand that the original PC-1 specified a five-year project that was eventually reduced to three years, with a reduced budget.

    a. Who reduced the timeframe and why?

    b. Was the project scope reduced accordingly?

    c. Did USAID have any input into the process of revising the timeframe and cost?

7. Do you know whether the government accepted the PC-1 ASP drafted without significant changes (other than the timeframe and budget)? If yes, did USAID have any input into the changes?

8. Why did it take seven months after signing the activity agreement to sign the PIL and begin work?

Implementation

9. What triggers a Halcrow site visit? Do they visit on a regular schedule or only when requested?

10. We've heard from the PIU and from contractors that the multiple layers of verification (NESPAK and Halcrow) significantly delayed payment to contractors? Can you describe the verification and payment process from your perspective?

11. What can USAID do within its own regulations and procedures to address causes of delays associated with verification and payment.

12. When does USAID transfer funds to the project to pay contractors or consultants? Is it based on completion of a contract or can USAID make partial payments against milestones?

13. Can USAID funds be used for any project expense or is it restricted to only some expenses (e.g., infrastructure, consultants)?

14. What is USAID's obligation to components 2, 3, and 4?

15. In the PSC meeting minutes (1), WAPDA stated that delays in receipt of funds from USAID slowed work on the Waran Canal, and thus delayed work on this area of CADP. Can you explain this situation and the length of the delay?

16. Several respondents mentioned that USAID "gave" them a contract specialist and a procurement specialist, but PMU turned them down. Do you know anything about this?

17. What role, if any, did USAID have in reviewing and approving consulting contracts (AAB, Taaleem, NESPAK)?

18. The PC-1 seemed to have a large role for the private sector that has not materialized in implementation. Is that your understanding as well?

Women's Interest Group Discussion Guide

Women Interest Group Discussion Guide
April 15, 2019

Interview Information

Interview date: DD/MM/YY	
Interview location	
Interviewer	
Note taker	
Respondent name	
Respondent designation/title	

Introduction

Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

Respondent Profile

RECORD RESPONSE FOR EACH RESPONDENT

	Respondent				
	1	2	3	4	5
Name					
Do you have a role in raising crops? 1. Yes 2. No					
Do you a role in keeping livestock? 1. Yes 2. No					
Are you a member of a women interest group? 1. Yes 2. No 3. Don't know					

1. Do you know about the projects that built the canals, watercourses, and link roads in this area during the past 8 years? When I talk about a "project" this is what I mean.

2. Who is doing this project? **DO NOT READ RESPONSES. RECORD RESPONSE FOR EACH RESPONDENT. MULTIPLE RESPONSES ALLOWED.**

	1	2	3	4	5
1 Government 2 USAID 3 Other donors 4 NGOs 5 Don't know					

3. How satisfied are you overall with the project? Would you say you are very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, or very dissatisfied?

	1	2	3	4	5
1 Very satisfied 2 Somewhat satisfied 3 Neither satisfied nor dissatisfied/no opinion 4 Somewhat dissatisfied 5 Very dissatisfied					

4. Were the women of your community consulted before the project began or since it has started to ensure that women's specific needs are considered? *(Probes: feasibility survey, engineering surveys, watercourse construction, washing pads, trainings, ponds, Halcrow site visits, PIU visits)*

Process of WIG Formulation

5. What was the process of formation? *(Probes: How were you contacted/selected and by whom?)*

Role and Functioning of WIGs

6. What are the roles and responsibilities of the WIG? Did you receive any orientation explaining the roles and responsibilities?

7. How often does your WIG meet? *(Probe: monthly, quarterly, based on activity, location)*

8. Since it was established, what activities has your WIG undertaken?

9. How does this WIG make decision? *(Probe: Are all members equally involved? Are the decisions of the WIGs completely independent, or are they influenced by others in the community?)*

10. Does your WIG face any challenges?

    a. **IF YES,** explain.

Training or Other Assistance to WIG members

11. Has your WIG received any training since it was established?

    a. **IF YES**, What was nature of the training, duration of the training, and who conducted it? *(Probes: livestock, poultry, farming, kitchen gardening OR organizational capacity building of the WIG)*

12. Have you benefitted from these trainings?

    a. **IF YES**; How? *(Probe for each type of training from previous question)*

13. Has your WIG received any other assistance from the project? *(Probes: poultry, seeds for kitchen gardens, goats)* Explain.

14. **IF YES TO QUESTION13** Has this benefitted you in any way?

    a. **IF YES;** How?

    b. **IF NOT;** Why not?

15. Are any of the members of this WIG also members of a water user association (WUA)?

Effects of the Project

16. Has water from the dam benefitted women in your community? **IF YES,** How?

    Probes: **ASK SPECIFICALLY ABOUT EACH IF IT DOES NOT COME UP NATURALLY IN THE DISCUSSION.**

    - □ Has it increased your crop yield? Give specific examples, i.e., crop and change in yield.
    - □ Do you cultivate or irrigate more land? Give examples.
    - □ Have you increased or started intercropping (multi-cropping)? Give examples.
    - □ Have you increased cropping intensity? Give examples.
    - □ Are you planting new or different crops? Give examples.

- □ Has it increased income for your household?
- □ Has it increased your household's access to education? How?
- □ Has it improved your family's health and nutrition? How?

17. Is there anything negative about the project?

    Probes: **ASK SPECIFICALLY ABOUT EACH IF IT DOES NOT COME UP NATURALLY IN THE DISCUSSION**

    - □ You lost cultivated area due to canal or watercourse construction. Explain.
    - □ Construction disrupted the flow of rainwater or floodwater. Explain.
    - □ Your crops of land were temporarily damaged by construction activities. Explain.
    - □ It increased conflicts over water. Explain.
    - □ It increased burden of work for women. Explain.
    - □ Restricted mobility of women. Explain.

18. You've mentioned so many benefits of the project. Do you have any worries that these benefits will stop when the project is finished? Explain. **PROBE FOR SUSTAINABILITY OF INFRASTRUCTURE AND OUTCOMES**

    Probes:

    - □ Canals/watercourses not maintained
    - □ Conflicts over water
    - □ WUAs/WIGs will not continue

END DISCUSSION

Water Users' Association/Farmer Group Discussion Guide

WUA/Farmer Group Discussion Guide
April 14, 2019

Interview date	
Interview location	
Interviewer name	
Note taker name	
District (Prefilled)	DI Khan/Tank
Tehsil (Prefilled)	
Place /village name (Prefilled)	
Location on canal (Prefilled)	Distance from head
Type of interview (Prefilled)	WUA/non-WUA/WIG
Watercourse (Prefilled)	Yes/no
Watercourse functioning (Prefilled)	Yes/no

Introduction
Greetings; my name is _____. I am part of a team conducting an evaluation of the Gomal Zam Command Area Development Project. The evaluation will assess the progress of work on the project and the project's effect on residents of the command area. I'd like to ask you some questions about your experience with the project.

This interview will take approximately 45 minutes and your participation is voluntary. There are no right or wrong answers – we are only interested in your own personal thoughts. You may refuse to answer any question, and you may end the interview at any time. All answers that you do provide are completely confidential and anonymous. Your answers will help improve the project, so please answer as truthfully as you can.

We will be recording this conversation, with your permission so that we do not miss any point that you may tell us.

Do you give permission to continue with this interview? (DO NOT READ, CIRCLE ONE NUMBER)

1. Yes
2. No

Respondent Profile

RECORD RESPONSE FOR EACH RESPONDENT

	Respondent				
	1	2	3	4	5
Name					
Do you raise crops? 1. Yes 2. No					
Do you keep livestock? 1. Yes 2. No					
Are you a member of the name water user association? 1. Yes 2. No 3. Don't know					
What is the status of the watercourse that serves your farm/land? 1. Completed and functioning 2. Not started or completed					
How much land do you own? (kanals)					
Number of acres cultivated (kanals).					
Number of acres irrigated (kanals).					
Position along the watercourse 1 Head 2 Middle 3 Tail					

Effects of the Project

2. As you know, the Gomal Zam Dam has been built. What is the purpose of the dam?

3. Do you know about the projects that built the canals, watercourses, and link roads in this area during the past 8 years? When I talk about a "project" this is what I mean. **MAKE IT CLEAR THAT WE MEAN BOTH THE IRRIGATION PROJECT AND THE COMMAND AREA DEVELOPMENT PROJECT**

4. Who is doing this project? **DO NOT READ RESPONSES. RECORD RESPONSE FOR EACH RESPONDENT. MULTIPLE RESPONSES ALLOWED.**

	1	2	3	4	5
1 Government of KP 2 USAID 3 Other donors 4 NGOs 5 Don't know					

5. How satisfied are you overall with the project? Would you say you are very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, or very dissatisfied?

	1	2	3	4	5
1 Very satisfied 2 Somewhat satisfied 3 Neither satisfied nor dissatisfied/no opinion 4 Somewhat dissatisfied 5 Very dissatisfied					

6. Do you irrigate your fields with dam water? **RECORD ANSWER FOR EACH PARTICIPANT IN THE TABLE BELOW**

	1	2	3	4	5
1 Yes (all fields) 2 Partially (some but not all fields) 3 Not at all 4 Don't know					

   a. **IF YES OR PARTIALLY**: How do you get the water? *(Probe for whether they get the water directly from the canal, from channels constructed by the project, or from channels they constructed themselves.)*

7. Do you face any challenges getting the water you need? Explain.

   Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   RECORD A RESPONSE FOR EACH PROBE AND EACH RESPONDENT

	1	2	3	4	5
Do you usually get the required amount of water you need. Explain. 1 Yes 2 No 3 No response					
Do you usually get water on the schedule according to the warabandi? Explain. 1 Yes 2 No 3 No response					

	1	2	3	4	5
Do you have frequent conflicts with others about the amount of water according to the warabandi? Explain. 1 Yes 2 No 3 No response					

8. Has the water benefited you? **IF YES**, What benefits and how? *(Probe for **how** project activities contributed to benefits. For example, if yields increased, why? Because of more water due to new canals/watercourses or regulation of water, land leveling, high-efficiency irrigation, etc.)*

PROBE FOR DIFFERENCES BETWEEN SITUATION BEFORE THE GZIP PROJECT BUILT CANALS AND NOW

Probes: **ASK SPECIFICALLY ABOUT EACH IF IT DOES NOT COME UP NATURALLY IN THE DISCUSSION**

RECORD A RESPONSE FOR EACH PROBE AND EACH RESPONDENT

	1	2	3	4	5
Has it increased your yield? Give specific examples, i.e., crop and change in yield. 1 Yes 2 No 3 Don't know					
Are you cultivating or irrigating more land? Give examples. 1 Yes 2 No 3 Don't know					
Have you increased or started intercropping (multi-cropping)? Give examples. 1 Yes 2 No 3 Don't know					
Have you increased cropping intensity? Give examples. 1 Yes 2 No 3 Don't know					

	1	2	3	4	5
Have you planted new or different high-value crops? Give examples. 1 Yes 2 No 3 Don't know					
Has the project increased income for your household? 1 Yes 2 No 3 No response					

9. In your opinion, how could the benefits be improved?

   Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

   - □ Precision land leveling
   - □ High-efficiency irrigation systems
   - □ Other

10. Has the water project produced any other types of benefits in the area? **IF YES**, What and how?

    Probes: **ASK SPECIFICALLY ABOUT EACH IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

    - □ New businesses/shops started
    - □ Increased or new employment (skilled and unskilled)
    - □ Increased use of farm machinery in the area
    - □ Improved crop or livestock techniques
    - □ Improved access to markets
    - □ Other development projects started working in the area
    - □ Increased other development in the area (e.g., schools, BHUs, etc.) Explain.
    - □ Increased stability of the population in the area

11. Is there anything negative about the project?

    Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

    RECORD A RESPONSE FOR EACH PROBE AND EACH RESPONDENT

	1	2	3	4	5
Did you lose some cultivated land due to canal or watercourse construction? Explain. 1 Yes 2 No					
Did construction disrupt the flow of rainwater or floodwater? Explain. 1 Yes 2 No 3 No response					
Did construction activities temporarily damage your land or crops? Explain. 1 Yes 2 No 3 No response					
Did the project cause conflicts over water? Explain. 1 Yes 2 No 3 No response					

12. You've mentioned so many benefits of the project. Do you have any worries that these benefits will stop when the project is finished? Explain. **PROBE FOR SUSTAINABILITY OF INFRASTRUCTURE AND OUTCOMES**

    Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

    - □ Canals/watercourses not maintained
    - □ Conflicts over water
    - □ WUA will not continue
    - □ WUA may not be able to perform its duties

13. **ASK ONLY TO WUA MEMBERS** What are the duties and responsibilities of the WUA?

14. Do you think the WUA can perform these responsibilities? **IF YES**: How? **IF NOT**; Why not?

    Probes: **ASK SPECIFICALLY ABOUT EACH OF THE FOLLOWING IF THEY DO NOT COME UP NATURALLY IN THE DISCUSSION**

    - □ Repair and maintenance
    - □ Resolving conflicts over water

END DISCUSSION

Annex 6: List of Interviews

Table 6 summarizes the number of individual and group interviews by respondent and interview type and the modules used in each discussion guide.[70]

TABLE 6: NUMBER OF INTERVIEWS BY MODULE AND TYPE

Respondent Type	Modules					Interview Type		Total Number of Interviews
	Design Process	Design	Implementation	Benefits	Sustainability	Group	Individual	
Department of Agriculture	✓	✓	✓		✓	1		1
WUAs (CRBC)				✓	✓	2		2
WUAs				✓	✓	14		14
WIGs				✓	✓	4		4
Consultants			✓		✓	1	5	6
Contractors			✓				4	4
Farm Services Centers				✓	✓		2	2
Irrigation Department		✓	✓		✓		1	1
Directorate Livestock and Dairy Development (Extension)		✓	✓		✓		1	1
Directorate of OFWM		✓	✓		✓		3	3
P&D Department		✓	✓		✓		3	3
PIU		✓	✓		✓		6	6
PMU	✓	✓	✓		✓		1	1
USAID	✓	✓	✓		✓		1	1
WAPDA		✓					1	1
Grand Total						**22**	**28**	**50**

Note: Group interviews generally consisted of three to five individuals.

[70] The evaluation team sometimes customized modules to suit a specific interview subject.

TABLE 7: INTERVIEW SUBJECTS

Respondent Affiliation	Details	Interview Type	Number of Participants	Location
WUA	Kot Atal, April 26	Group interview	5	Kulachi tehsil
WUA	Shada, April 28	Group interview	5	Kulachi tehsil
WUA	Kulachi Sherki, April 26	Group interview	5	Kulachi tehsil
WUA	Kot Doulat, April 27	Group interview	5	Kulachi tehsil
WUA	Chaderr, April 25	Group interview	4	D.I. Khan tehsil
WUA	Manji Khel, April 25	Group interview	5	Kulachi tehsil
WUA	Atal Sharif (1), April 27	Group interview	4	Kulachi tehsil
WUA	Atal Sharif (2), April 27	Group interview	5	D.I. Khan tehsil
WUA	Yara Manji Khel, April 24	Group interview	4	D.I. Khan tehsil
WUA	Gara Mohabat, April 27	Group interview	5	Tank tehsil
WUA	Chekkan, April 23	Group interview	5	D.I. Khan tehsil
WUA	Sheikh Sultan, April 27	Group interview	5	Tank tehsil
WUA	Kot Allah Dad, April 25	Group interview	5	Tank tehsil
WUA	Potha, April 24	Group interview	5	D.I. Khan tehsil
WIG	Kot Essa, April 28	Group interview	4	D.I. Khan tehsil
WIG	Siya, April 25	Group interview	5	Kulachi tehsil
WIG	Zaini Khel, April 26	Group interview	4	Kulachi tehsil
WIG	Kot Allah Dad, April 25	Group interview	4	Kulachi tehsil
WUA (CRBC)	Fazal Elahi Shaheed Farm, April 29	Group interview	5	D.I. Khan district
WUA (CRBC)	Kot Fateh, April 29	Group interview	2	D.I. Khan district
Consultant	Resident engineer – NESPAK	Individual interview	2	D.I. Khan city
Consultant	Taaleem Foundation field representative	Individual interview	4	D.I. Khan city/ Islamabad
Contractor	Civil contractor – 1	Individual interview	1	D.I. Khan city
Contractor	Civil contractor – 2	Individual interview	1	D.I. Khan city
Contractor	Civil contractor – 3	Individual interview	1	D.I. Khan city
Contractor	Civil contractor – 4	Individual interview	1	D.I. Khan city
Farm Services Center	Director Farm Services Centers	Individual interview	1	D.I. Khan city

Respondent Affiliation	Details	Interview Type	Number of Participants	Location
Farm Services Center	Director Farm Services Centers	Individual interview	1	Tank city
Irrigation Department	Sub-divisional officer Irrigation – D.I. Kahn and Tank	Individual interview	2	D.I. Khan city
Directorate Livestock and Dairy Development (Extension)	District director livestock – D.I. Kahn	Individual interview	1	D.I. Khan city
Directorate of OFWM	District director OFWM – D.I. Kahn	Individual interview	2	D.I. Khan city
Directorate of OFWM	District director OFWM – Tank	Individual interview	1	Tank city
PIU	Component lead (CAD) – PIU	Individual interview	2	D.I. Khan city
PIU	Component lead (productivity enhancement) – PIU	Individual interview	1	D.I. Khan city
PIU	Component lead (value addition) – PIU	Individual interview	1	D.I. Khan city
PIU	M&E officer – PIU	Individual interview	1	D.I. Khan city
PIU	Gender mainstreaming officer	Individual interview	1	D.I. Khan city
PIU	Account officer	Individual interview	1	D.I. Khan city
WAPDA	Superintendent engineer/executive engineer – WAPDA Gomal Zam	Individual interview	1	D.I. Khan city
P&D	Assistant chief agriculture P&D	Individual interview	1	Peshawar city
P&D	Assistant chief foreign aid P&D	Individual interview	1	Peshawar city
P&D	Chief planning officer P&D	Individual interview	1	Peshawar city
Directorate of OFWM	Ex-project director – Gomal Zam Dam Command Area Development Project	Individual interview	1	Peshawar city
Department of Agriculture	Secretary agriculture; project director (director general Livestock)	Group interview	2	Peshawar city
Consultant	Team lead, AAB Consultants	Individual interview	1	Islamabad
PMU	Senior program officer – PMU	Individual interview	1	Peshawar city
USAID	Representatives of the Economic Growth and Agriculture Office	Individual interview	2	Islamabad

Respondent Affiliation	Details	Interview Type	Number of Participants	Location
Consultant	Design consultant	Individual interview	1	Islamabad
Consultant	Halcrow Pakistan representatives	Group interview	6	Islamabad
Consultant	Taaleem Foundation team leader	Individual interview	3	Islamabad
	50		**137**	

Annex 7: Data Analysis Plan

Table 8 summarizes how the evaluation team analyzed collected data to answer the evaluation questions.

TABLE 8: DATA ANALYSIS PLAN

Evaluation Question	Data Sources	Analysis
1. How did the project design contribute to, or detract from, achieving anticipated results within the original life of the project?	Key informant interviews with individuals involved in design (e.g., P&D, DoA, USAID, design consultants)	• Documented the design process and timeline; • Determined the causes of a prolonged process; • Assessed the effect of the prolonged process on the project startup or duration; and • Used qualitative data on the implementation process to associate delays in implementation to issues with the design.
2. How did the project's implementation/operation/ management contribute to, or detract from, achieving anticipated results within the original life of the project?	Review of design documents (e.g., PC-1, master plan, work plans); key informant interviews with PMU and PIU staff	• Documented the implementation process and timeline; • Determined the causes of delays; • Assessed the effect of delays on overall project duration; and • Used evidence of potential (from secondary data) and actual (from question three) benefits to determine the effects of delays on benefits and harms.
3. Has the project achieved anticipated outcomes (e.g., productivity, job creation, income), and how?	Review of progress and monitoring reports; key informant interviews with knowledgeable stakeholders; group interviews with WUA and WIG members; and review of CRBC impact assessment reports.	• Used interviews to document benefits and harms associated with GZIP and CADP interventions; • Approximated potential benefits of a mature system from the experience of CRBC farmers; • Determined causes and consequences of delays in implementation; and • Gauged the likely benefits forgone, and harms extended, due to delays.
4. Are project results likely to be sustainable beyond the end of the project and how?	Key informant interviews with knowledgeable stakeholders and experts; interviews with WUA members; review of CRBC reports.	• From all data sources, assessed the likelihood of sustainable outcomes and identified the barriers to sustainability and • Determined the extent to which completing CADP addresses barriers.

Annex 8: Design Milestone Dates

TABLE 9: DESIGN PROCESS MILESTONE DATES

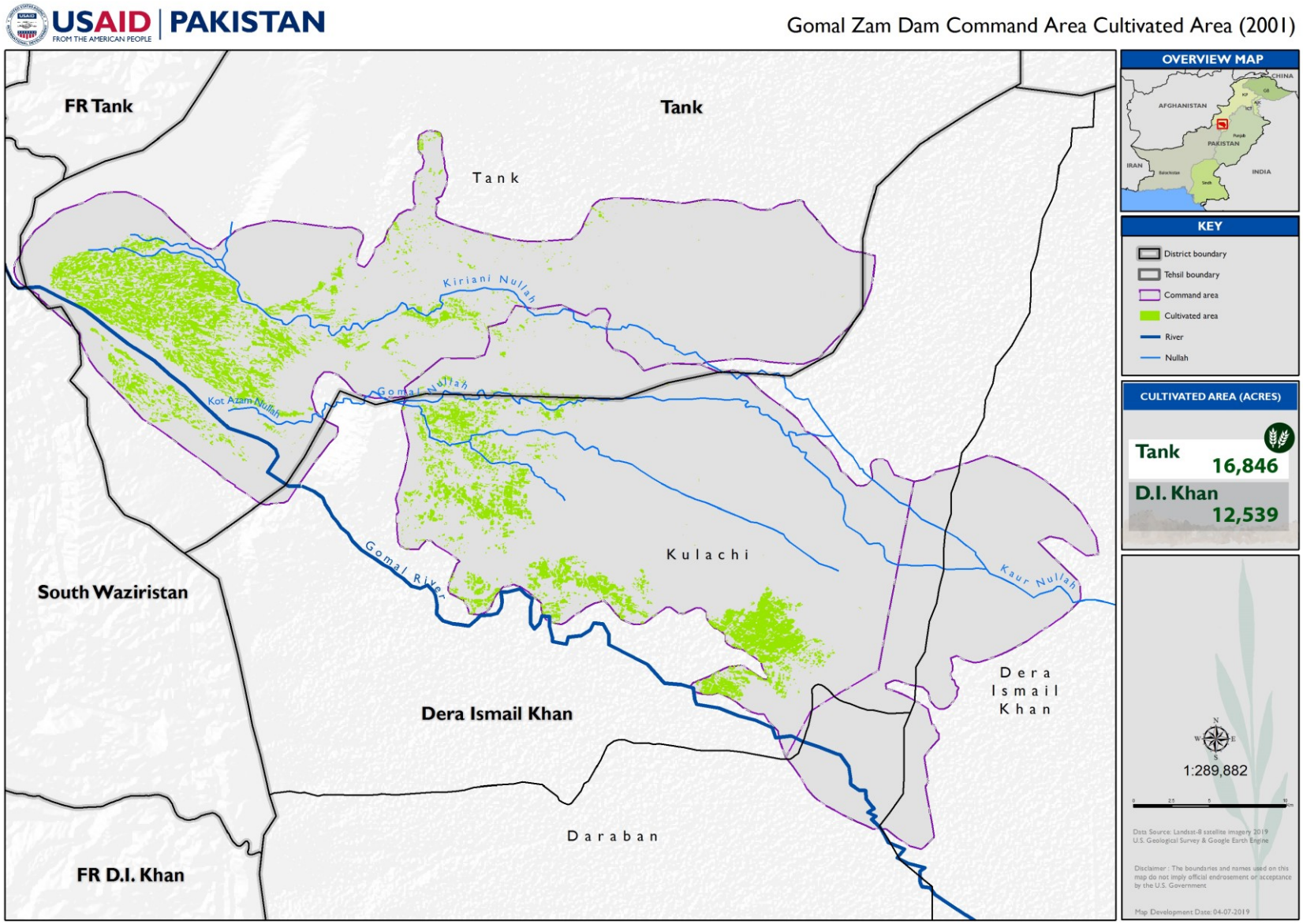
Date	Milestone
09-Jun-11	USAID finalizes Project Appraisal Document (PAD)
27-Sep-11	DoA begins preparing the PC-1
10-Sep-12	USAID submits final PC-1 to DoA
01-Feb-13	DoA accepts PC-1
06-Mar-13	PDWP approves PC-I
15-Aug-13	PC-1 submitted to ECNEC
04-Oct-13	ECNEC returns PC-1 with comments
24-Jan-14	DoA and USAID respond to ECNEC comments
06-Mar-14	CDWP approves PC-1
18-Mar-15	USAID and GoKP sign Activity Agreement
08-Sep-15	USAID issues Project Implementation Letter (PIL)

Annex 9: CADP Budget Reallocation

TABLE 10: CADP BUDGET REALLOCATION (RS. MILLIONS)

Description	Original PC-I Cost	Cost Recommended by CDWP	Restructured/ Rationalized Cost Post-ECNEC Decision
Establishment cost	105.151	50.000	50.000
Operational cost	331.260	30.000	30.000
Transport vehicles	30.300	15.000	15.000
Office equipment	20.000	5.000	5.000
Command area development and on-farm water management	2,708.600	2,708.600	2,311,052.000
Social trainings and agricultural activities	552.630	100.000	480.000
Consultancy assignments	261.125	0.000	190.000
Program audit	10.000	0.000	10.000
Project review and impact evaluation	20.000	0.000	20.000
Base cost	4,038.966	2,808.600	3,111.520
Physical and price contingencies	40.390	28.086	40.390
In-kind support of GoKP over and above base cost	221.440	62.310	221.440
Total cost	**4,300.796**	**3,000.000**	**3,373.350**

Annex 10: Cultivated Area Maps



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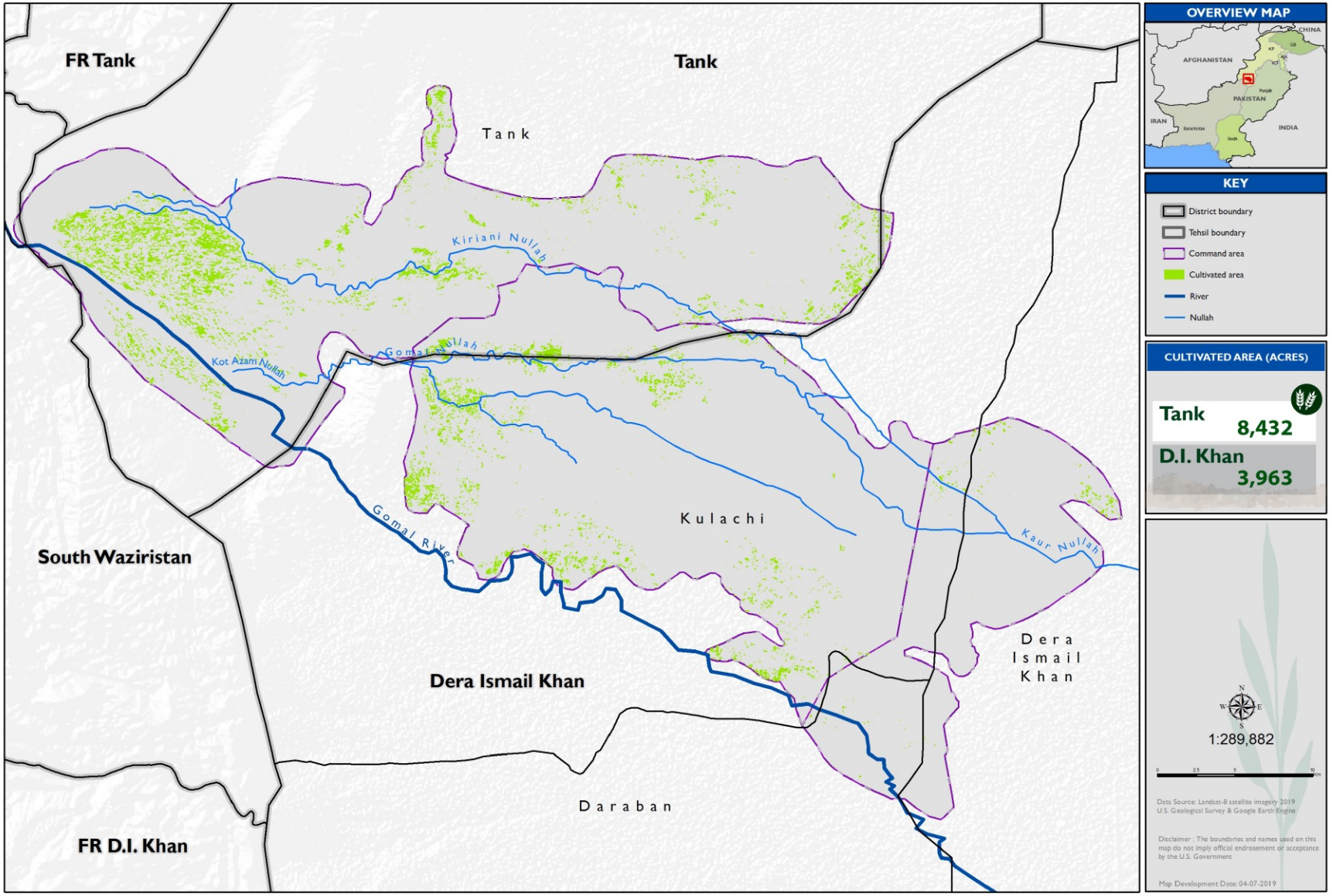
FROM THE AMERICAN PEOPLE

Gomal Zam Dam Command Area Cultivated Area (2014)



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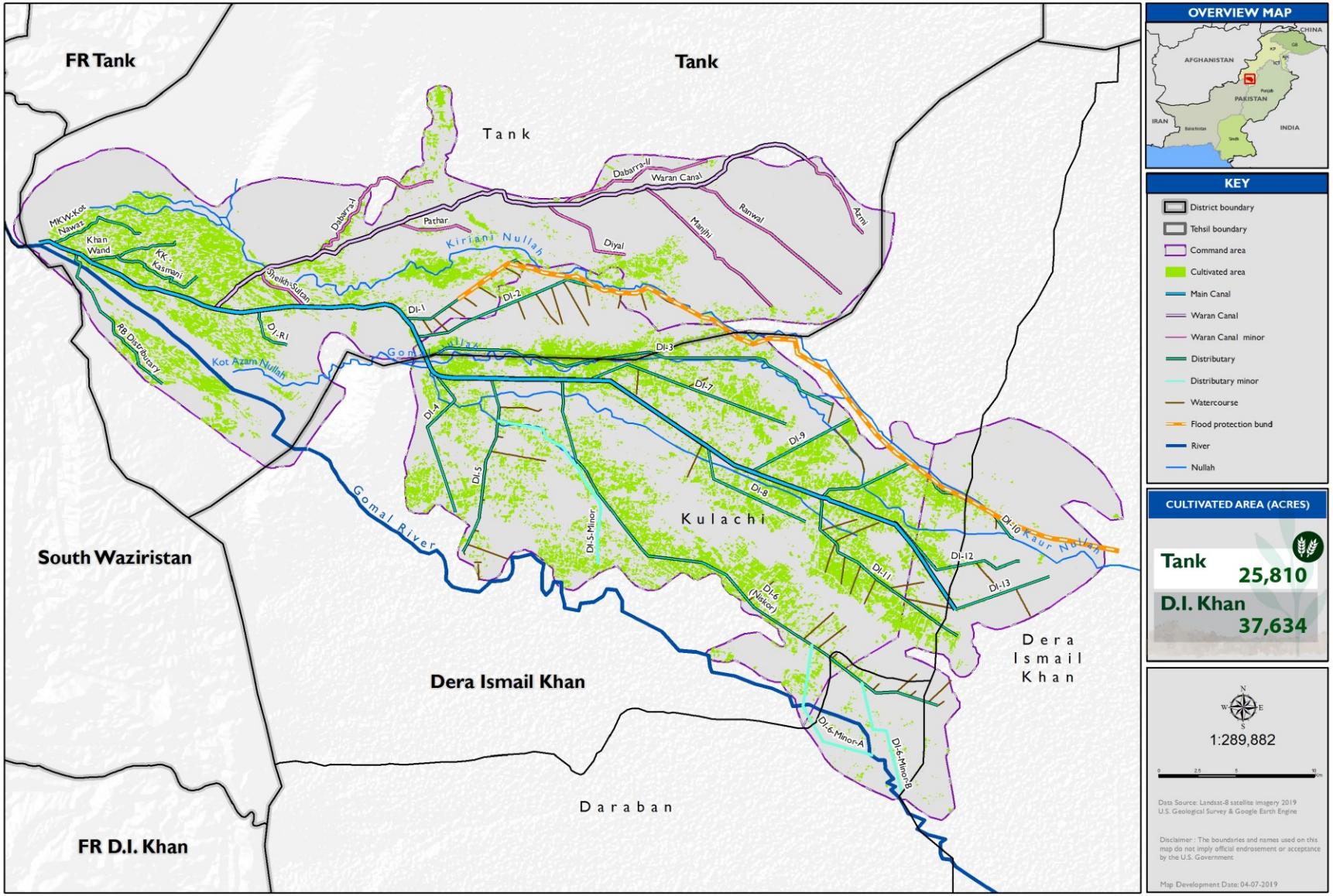
Gomal Zam Dam Command Area Cultivated Area (2017)



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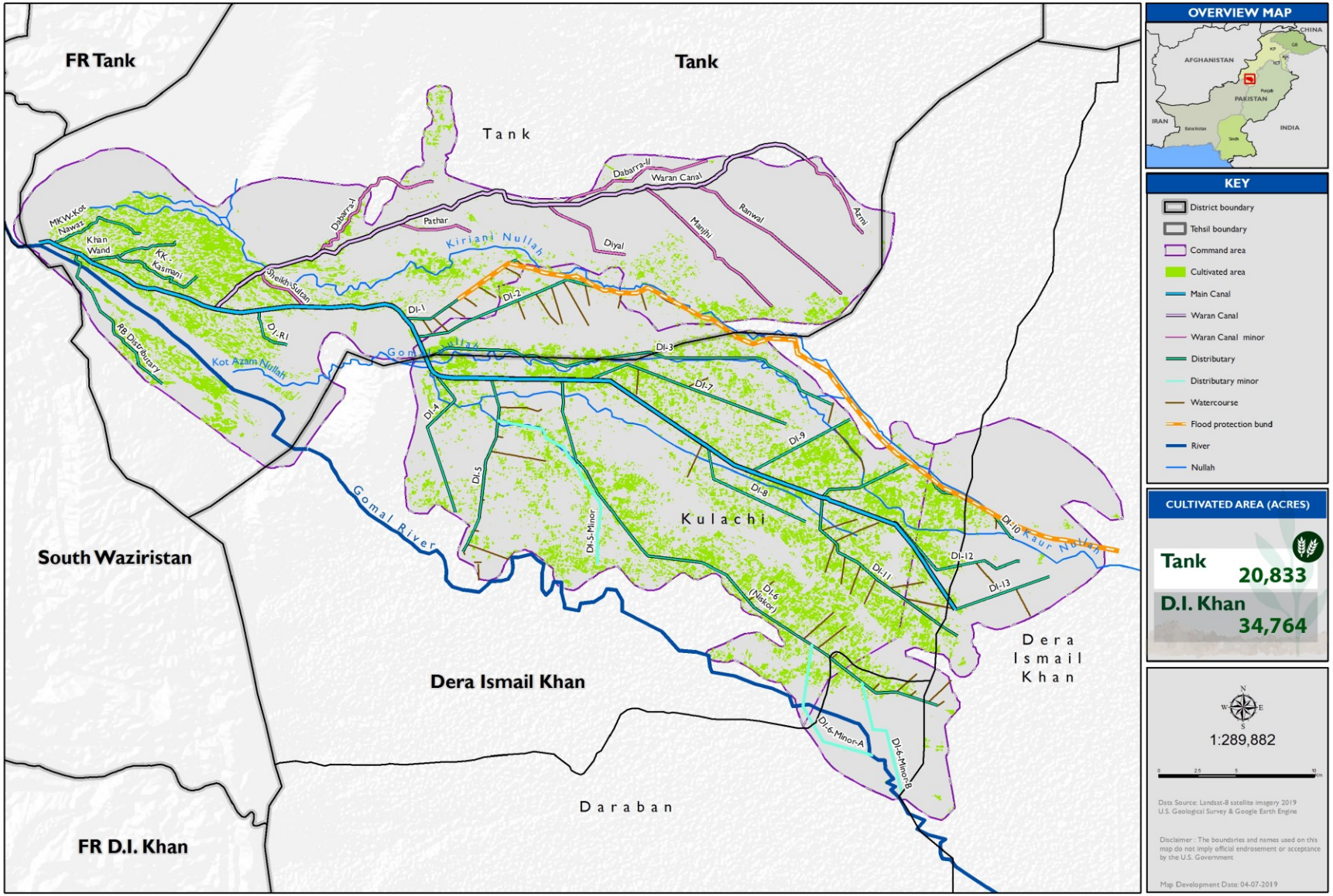
Gomal Zam Dam Command Area Cultivated Area (2018)



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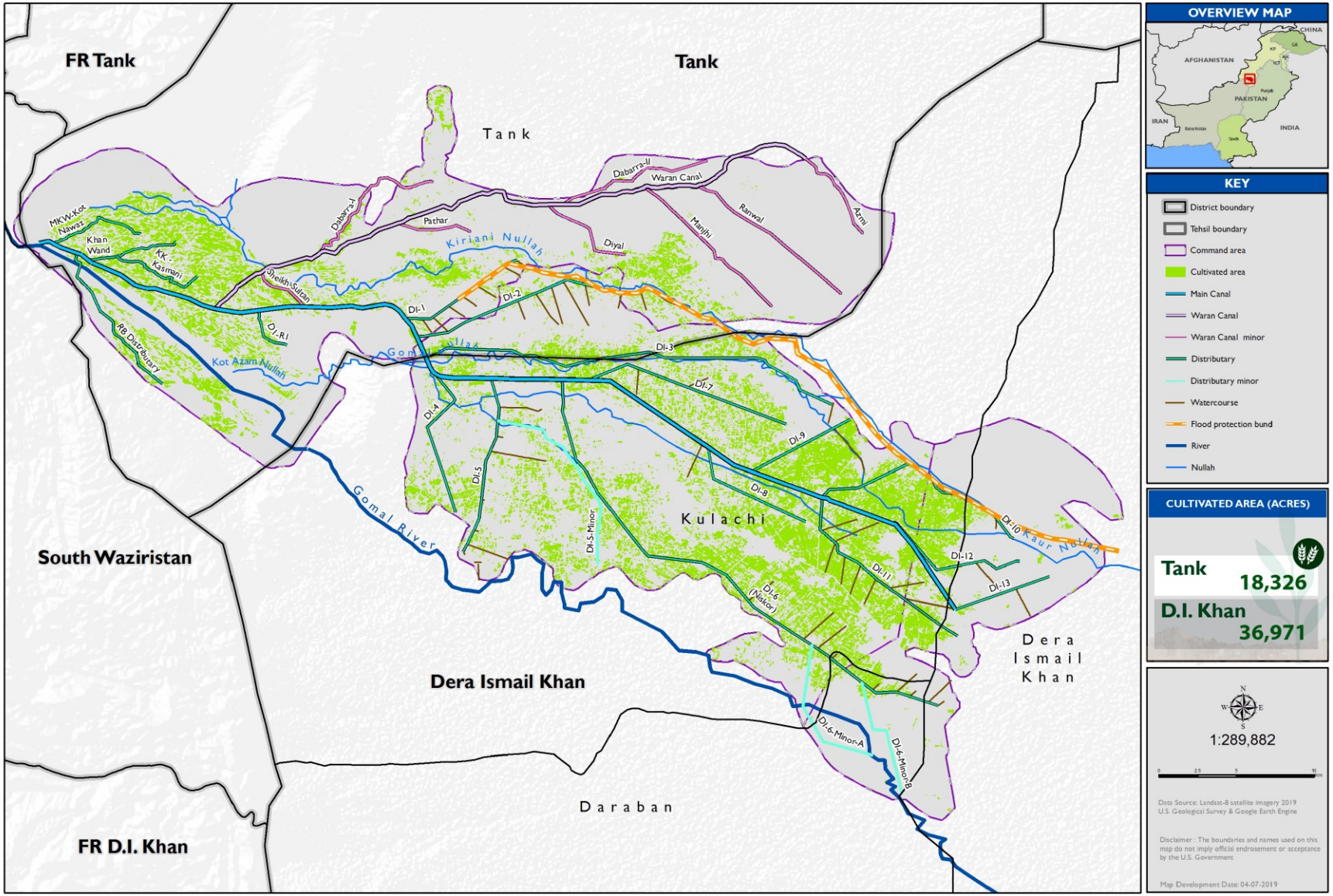
FROM THE AMERICAN PEOPLE

Gomal Zam Dam Command Area Cultivated Area (2019)



Annex 11: Chashma Right Bank Canal Impact Evaluation Data

TABLE 11: CHANGES IN YIELD IN CRBC COMMAND AREA (KG/HA)

Crop	Kharif			Rabi		
	Pre-CRBC	Post-CRBC	% Change	Pre-CRBC	Post-CRBC	% Change
Rice	1,495	2,815	88%	--	--	--
Sugarcane	29,871	42,440	42%	--	--	--
Cotton	1,243	2,519	103%	--	--	--
Maize	988	1,847	87%	--	--	--
Millet	349	635	82%	--	--	--
Sorghum	308	616	100%	--	--	--
Pulse	457	647	42%	90	408	353%
Oilseed	230	333	45%	370	354	-4%
Wheat	--	--	--	416	1,531	268%
Barley	--	--	--	322	692	115%

TABLE 12: CHANGE IN LAND VALUES IN CRBC COMMAND AREA (RS.)

Community	Agricultural Land		Cultivable Waste		% Change	
	Pre-CRBC	Post-CRBC	Pre-CRBC	Post-CRBC	Agricultural	Cultivable Waste
Jarra	79,000	790,700	19,800	296,500	901%	1397%
Gomal	158,152	691,915	39,500	296,500	338%	651%
Buchari	98,845	1,581,620	59,300	395,400	1500%	567%
Chera	39,538	296,535	29,600	237,000	650%	701%
Khudaka	19,769	59,300	15,800	59,300	200%	275%

TABLE 13: CHANGE IN LAND USE IN CRBC COMMAND AREA, KHARIF (% OF TOTAL AREA)

Community	Period	Sugar-cane	Rice	Maize	Sorghum	Millet	Oilseed	Fodder	Pulses	Fruit	Fallow
Jarra	Pre-CRBC	4.4%	19.3%	0.2%	0.2%	0.0%	0.0%	3.7%	0.0%	0.6%	71.7%
	Post-CRBC	20.7%	17.4%	0.2%	0.2%	0.0%	0.0%	0.8%	0.0%	2.5%	58.3%
Gomal	Pre-CRBC	0.1%	3.9%	0.3%	1.1%	0.0%	0.0%	1.4%	0.0%	0.0%	93.2%
	Post-CRBC	0.2%	4.4%	1.3%	0.2%	0.0%	0.0%	1.4%	0.1%	0.0%	92.4%
Buchari	Pre-CRBC	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	98.9%
	Post-CRBC	21.5%	14.4%	5.3%	2.4%	0.0%	0.0%	0.0%	3.1%	0.0%	53.5%
Chera	Pre-CRBC	0.0%	0.0%	0.0%	12.6%	4.4%	0.8%	3.6%	0.0%	0.7%	77.9%
	Post-CRBC	8.1%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	35.0%	0.0%	53.9%
Khudaka	Pre-CRBC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Post-CRBC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Rahman, Attaur and Amir Nawaz Khan. Impacts of the Chashma Right Bank Canal on Land Use and Cropping Pattern in D.I. Khan District (Pakistan). XVIIth World Congress of the International Commission of Agricultural and Biosystems Engineering, 2010.
Note: Khudaka is the control community.

TABLE 14: CHANGE IN LAND USE IN CRBC COMMAND AREA, RABI (% OF TOTAL AREA)

Community	Period	Wheat	Barley	Pulses	Oilseed	Fodder	Fruit	Fallow
Jarra	Pre-CRBC	50.4%	0.4%	3.1%	0.2%	3.9%	0.0%	42.1%
	Post-CRBC	52.7%	0.0%	0.0%	0.0%	5.0%	2.5%	39.8%
Gomal	Pre-CRBC	18.2%	0.1%	0.1%	0.1%	1.2%	0.0%	80.4%
	Post-CRBC	29.4%	0.2%	3.3%	0.6%	2.3%	0.1%	64.2%
Buchari	Pre-CRBC	3.6%	0.2%	0.0%	0.5%	0.0%	0.0%	95.6%
	Post-CRBC	49.1%	0.0%	7.3%	0.0%	2.9%	0.0%	40.7%
Chera	Pre-CRBC	4.1%	0.0%	1.2%	3.4%	0.0%	0.0%	91.2%
	Post-CRBC	48.1%	0.0%	9.0%	0.6%	0.0%	0.0%	42.3%
Khudaka	Pre-CRBC	35.3%	2.5%	10.0%	10.0%	0.0%	0.0%	42.2%
	Post-CRBC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Rahman, Attaur and Amir Nawaz Khan. Impacts of the Chashma Right Bank Canal on Land Use and Cropping Pattern in D.I. Khan District (Pakistan). XVIIth World Congress of the International Commission of Agricultural and Biosystems Engineering, 2010.
Note: Khudaka is the control community.

Annex 12: Evaluation Team Biographies

Douglas Krieger, team lead

Douglas Krieger holds a doctorate in Agricultural and Natural Resource Economics and has over 25 years of experience in the development sector. His work focuses on evaluating development projects, designing and implementing monitoring and evaluation systems, and conducting economic analyses and other research for clients including USAID, the World Food Program, the Food and Agriculture Organization of the United Nations, Harvard Institute for International Development, and local governments and NGOs in the United States. Dr. Krieger has participated in, supervised, or led more than 60 evaluations, assessments, or studies in the Middle East, Africa, Latin America, and South Asia and has 12 years of experience in Pakistan—much of it in the agricultural sector.

Jamshed Ul Hasan, subject matter specialist (program management)

Jamshed Ul Hasan holds a master's degree in civil engineering and has more than 40 years of professional experience including senior management positions in the government of KP (e.g., project director, director general, and secretary to the commissioner). Mr. Hasan also has extensive experience managing, planning, designing, monitoring, evaluating, and implementing small-scale development projects and programs and has headed large-scale projects funded by organizations such as USAID, the Asian Development Bank, the World Bank, UNHCR, UNDP, and the Swiss Cooperation Office. In the past 10 years his work has been primarily of an advisory/expert and consultancy nature. Mr. Hasan also served as the chief engineer in USAID's KP Office of Engineering from 1987 to 1994 managing large multi-sector area development projects.

Muhammad Qasim Jan, subject matter specialist (agriculture)

Muhammad Qasim holds a master's degree in agriculture and an MBA in project management. In his 22 years as a professional consultant, Mr. Qasim has worked in the social and agricultural sectors throughout Pakistan, providing a diverse set of services including training and consulting in project design, monitoring (including process monitoring), evaluation, social assessment, baselines and feasibility studies, participatory rural/rapid appraisal, value chain analysis, organizational capacity assessment and organizational development, strategic planning, and needs assessment. Mr. Qasim has contributed to evaluations of USAID-funded agricultural programs and also has experience with other international donors including GIZ, World Vision, WaterAid, IRD, IUCN, World Bank, and UNDP and number of Pakistani development organizations.

Samar Erum Nadeem, subject matter specialist (gender)

Ms. Samar Erum Nadeem is currently MSI's gender advisor for the Performance Management Support Contract – PERFORM. She is a seasoned development professional with 19 years of diverse development sector experience as a gender specialist, activist, researcher, evaluator, and advocate. Ms. Nadeem has designed, managed, and evaluated a variety of development programs and projects across Pakistan, working with USAID, UNDP, UN Women, and ADB. She holds a master's degree in international relations and Bachelor of Laws (LLB) and certifications on gender and international humanitarian law from National Women's Education Center Japan and the University of Norway.

Zia Ur Rehman, subject matter specialist (agriculture)

Zia ur Rehman is a seasoned monitoring and evaluation professional with over 14 years of experience in program management. His areas of expertise include long- and short-term strategic and operational planning, performance management, impact assessment, qualitative and quantitative data collection, data analysis, reporting, and quality assurance and accountability, among others. Zia has participated in, facilitated, and managed several USAID-funded agriculture program evaluations including the final

evaluation of The Agribusiness Project and a midterm review of the Satpara Development Project, and conducted value chain assessments and a data quality assessment of the Gomal Zam Command Area Development Project.

Annex 13: Conflict of Interest Declarations

MSI removed the conflict of interest declarations from the final report to protect the personal information of team members. They are available from MSI on request.

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