



Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 30-Apr-2018 | Report No: PIDISDSC21925

**BASIC INFORMATION****A. Basic Project Data**

Country Pakistan	Project ID P163474	Parent Project ID (if any)	Project Name Khyber Pakhthunkhwa Irrigated Agriculture Improvement Project (P163474)
Region SOUTH ASIA	Estimated Appraisal Date Oct 31, 2018	Estimated Board Date Feb 20, 2019	Practice Area (Lead) Agriculture
Financing Instrument Investment Project Financing	Borrower(s) The Islamic Republic of Pakistan	Implementing Agency Department of Agriculture, Government of Khyber Pukhthukhwa, Department of Irrigation, Government of Khyber Pukhthunkhwa	

Proposed Development Objective(s)

To enhance water management, productivity and climate resilience of irrigated agriculture in project areas

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	183.00
Total Financing	183.00
of which IBRD/IDA	165.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	165.00
IDA Credit	165.00

Non-World Bank Group Financing

Counterpart Funding	18.00
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LOCAL: BENEFICIARIES

18.00

Environmental Assessment Category

A - Full Assessment

Concept Review Decision

Track II-The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

Country Context

- Pakistan, the world's sixth most populous country, is a lower-middle-income country which has made significant progress towards macroeconomic and financial stability.** Pakistan's per capita income has almost doubled and the share of the population living in poverty has decreased by two-thirds over the last decade. Gross domestic product (GDP) growth reached 4.7 percent in 2016 and is expected to reach 5 percent in 2017, supported by construction and manufacturing activities, increased private sector credit growth, increased reserves, low inflation, continuing strong remittances, and an upturn in foreign direct investment related to the China-Pakistan Economic Corridor.
- Nevertheless, Pakistan faces serious development challenges, mostly in rural areas.** GDP growth has been slower than needed to provide for the level of jobs required for a young and growing population. Inadequacy in the private sector environment, public sector management, and implementation capacity will continue to hamper service delivery performance. Thus, human development indicators continue to lag. In fact, Pakistan did not meet the targets of most of the Millennium Development Goals (MDGs) by 2015. Rural poverty remains about double the urban poverty (35 percent versus 18 percent in 2014) and decreases less rapidly, given low growth of the agriculture sector, inadequate rural infrastructure and connectivity to markets, weak governance and institutions, and limited access to finance.
- Khyber Pakhtunkhwa (KP) has faced a number of crises in the past decade.** With geographical proximity and community-level ties to Afghanistan, KP has suffered from the fallout of the conflict in Afghanistan, which has given rise to a precarious security situation as well as prolonged political and social instability. Related hostilities and extremist violence have caused far-reaching disruption to economic activity and inflicted extensive damage on private property, livelihoods, and public infrastructure.



4. **KP is also one of Pakistan's less developed regions, with some economic and social development indicators lagging behind the national averages.** The province of KP accounts for an estimated 10.5 percent of the country's GDP and about 14.6 percent of the population (approximately 30.5 million). The per capita income in KP is estimated to be 33 percent below the national average, and despite a sharp and consistent decline in poverty, 27 percent of households are estimated to be living below the national poverty line. Another relevant indicator is the household size, which is strongly correlated with poverty in Pakistan. KP households comprise 7.2 members on average, well above the national average of 6.3 members. Most of KP's population (85 percent) also lives in rural areas, where access to public services and income generation opportunities is lower than in urban centers.

5. **Climate change is expected to exacerbate extreme weather events in KP, thereby increasing the vulnerability of people and assets to climate induced disasters.** Since 2010 extreme events such as cloudburst over the catchment areas of Indus and its tributaries, have frequently occurred during the annual monsoon season. This often leads to flash floods and landslides, causing damages across several sectors, including agriculture, livelihoods, infrastructure, transport and communications, and housing. Since 2010, KP has been facing extreme precipitation events, in the Indus catchment areas, particularly during the annual monsoon season. This results in swelling of rivers, causing localized and major floods in low-lying areas. KP is also facing an increased number of glacial lake outburst floods (GLOF) due to increased temperatures and intense precipitation. Being an upper riparian province in Pakistan, KP receives the shortest lead times for early warnings on climate induced hydro-meteorological disasters. As a result of the 2010 floods, KP suffered US\$ 1.1 billion in damages, which included damages and losses of US\$ 96 million¹ to the agriculture sector in the province.

B. Sectoral and Institutional Context

6. **Agriculture is important for Pakistan and the Government has placed agriculture development and water efficiency at the forefront of its development agenda.** Agriculture² remains the second largest economic sector in Pakistan, contributing about 21 percent to the national GDP and employing approximately 42 percent of the labor force. The sector is also the largest contributor to export revenues with about 75 percent share from exports of primary and processed (mostly cotton textile) goods. The Government acknowledges that sustaining an annual GDP growth rate of 6 percent or more will require greater focus on agriculture and improved water resources planning, governance, and resilience. The Government is pursuing multiple initiatives to boost efforts to increase agricultural and water productivity, promote efficient use of its scarce water and precious land resources, and incentivize private sector investment in these areas for economic growth and shared prosperity.

7. **The contribution of agriculture in the KP economy, however, is less prominent, although it employs a high percentage of its labor force.** KP's contribution to the country agriculture GDP

¹ Pakistan Floods 2010 Preliminary Damage and Needs Assessment (2010) report, p. 154

² Includes crops, livestock, forestry, and fisheries.



is the smallest of all provinces at 7 percent, compared to its share in total GDP of 11 percent. Also within KP, agriculture accounts for only 14 percent of the provincial GDP, representing the smallest share of all provinces. The sector accounts for 37 percent of labor force employment³ and 11 percent of the total household income. The total cultivated area of the province is 1.6 million ha (7 percent of the country's total), half of which is rain fed. It produces about 5 percent of the country's total wheat, 2 percent of rice, 17 percent of maize, 8 percent of sugarcane, 16 percent of barley, 4 percent of gram, 3 percent of rapeseed and mustard, and 75 percent of tobacco. Its share in the country's total livestock population is about 6 percent in cattle, 2.5 percent in buffalo, 2 percent in sheep, and 8 percent in goats. KP is currently facing a food deficit and depends heavily on imports from other provinces, especially from Punjab, for important commodities like wheat (64 percent), rice (74 percent), milk, meat, sugar (80 percent), and vegetables (90 percent) to complement its production. The answer to this conundrum of agriculture may lie in the under exploitation of its natural resources, as the sector grew at a decent rate of 3.1 percent to 7.3 percent in the 2010–2015 five-year period, especially after the active insurgency period ended.

8. **KP's land and water resources are under exploited.** Of the total culturable⁴ land of 2 m ha., 1/3rd is irrigated, 1/3rd is rainfed and 1/3rd is culturable waste. Water allocated to KP under the National Water Apportionment Accord (WAA) of 1991 is 8.78 million acre feet (MAF) but due to current carrying capacity of the aging infrastructure and lack of new infrastructure the province is only able to withdraw about 68 percent (5.97 MAF) of its share. Also, 14 percent in floodwater, under the accord, is not fully used. Additionally, all water resources freed up from the WAA's ambit, for the province, are not yet fully used. These include waters from schemes not exceeding 5,000 acres above elevation of 1200 ft. (Survey of Pakistan Datum [SPD]) and waters from Kurum/Gomal/kohat basins located in the highly-underserved areas of Kohat, Hangu, Karak, Bannu, Lakki Marwat, and D.I. Khan Districts. Thus, one-third of KP's arable land depends on rainfall in a climate that is semiarid to arid. Another one-third (1.08 million ha) of KP's arable land, called culturable waste land, is out of cultivation due either to water logging, non-availability of irrigation water, salinity, unlevel land, lack of manpower, funds shortages, and so on. Thus, more land and water resource development is desperately needed for KP's food security, import substitution, and economic development especially of the lagging areas. That's why feasibility studies are included in the project design to prepare future investments in water resources development.

9. **The irrigation infrastructure in KP suffers from deferred maintenance⁵.** KP canals are aging. Some are older than 100 years. As an upper riparian province with hilly terrains and steep slopes, KP's canals suffer from frequent bank breaches, bed erosion and scouring due to floods,

³ 28 percent of male and 77 percent of female (mostly rural); 44 percent of rural and 6 percent of urban labor force is engaged in agriculture. The labor force participation is 80 percent male and 20 percent female (21 percent in rural and 12 percent in urban areas).

⁴ According to bureau of statistics-Pakistan, culturable land includes cultivated and culturable waste lands and cultivated area includes rainfed and irrigated lands.

⁵ De-siltation; oiling & greasing; repairing leakages, damaged sections of canal prism, cross drainage structure and outlets



sliding and high velocities in addition to the normal wear and tear of a canal. Due to the poor condition of the canals, the system's delivery performance is poor and the leakages/wastages (estimated at 25%) are causing water logging. Unlike Punjab, the reliance on ground water is minimal in irrigated areas, therefore water lost would be wasted and even would cause water logging and salinity. The silt deposition raises the level of the command area for which canal bed needs to be raised to continue providing the required volumes of water.

Besides the canals, there are some 4,000-km long surface and subsurface drainage system in KP that was built to flush out the excess water to keep the fertile land in production in the central districts. However due to lack of funds, this infrastructure is also suffering and, the carrying capacity of the drainage system has diminished and large tracts of precious fertile lands are becoming water logged and saline again.

To keep pace with the exceptional level of O & M needs of the KP irrigation and drainage system, larger amounts of funds are needed. However, according to the KP Irrigation Department, only 1/3rd (Pkr 500 m vs Pkr. 12,00 m for the last 10 years) of the needs are provided. Water charges (*Abiana*) collections in the province has been low at 30% of the total assessed, mainly because of the limited paying capacity of the large number of small landholders and low flat rates - Pkr 300/year/acre. Besides, its own system, the department also must, at times, shoulder the rehabilitation of civil canals which are community owned and do not pay any water charges.

This practice of 'build neglect rebuild' costs the exchequer dearly⁶ which are oftentimes met from the development budget.

Removing this backlog of rehabilitation as well as modernization is important to improve the system service capability, reduce water wastages/leakages and water logging and safeguard the system sustainability.

10. In KP, as reported by the Irrigation Department, 10-15 percent of the canal outlets are tampered and /or illegal. This creates in-equity among growers in the system and affects the productivity of the farmers mainly at the tail end. An understanding has been reached with the Department to resolve such in-equities during the rehabilitation of the system.

11. Historically, the collaboration between Irrigation and Agriculture Departments, in KP, is weak. Irrigation Department is responsible for development of dams, canals and drains, its functionality and O&M; delivering water to farmers at the outlet/farmgate (in watercourses); and assessment and collections of water charges. The Agriculture Department is responsible for development and rehabilitation of watercourses, promoting water conservation technologies and training farmers in good agriculture practices. Due to poor coordination, the benefits of up and down stream investment do not consolidate at the farm level. The Baizai Irrigation scheme is a good example. The Irrigation Department constructed the upstream delivery system with capacity for 25,000 acres but since no provision was made in the scheme budget for the

⁶ According to a global estimate, a dollar deferred maintenance costs US\$7 in repair/rehabilitation



construction of watercourses, the agriculture department could not do so and after more than 2 years the farmers are unable to utilize the water fully. This collaboration has started to improve in some very new schemes and this project will contribute to improving this collaboration further.

12. In KP, as in the rest of the country, O & M of the watercourses, that brings water from canals to the farms, is a challenge on the daily basis. These are earthen structures owned and managed by farmers. The average length of a watercourse (including branches) is about 3 km, serving an average area of 150 acres with an average number of 75 shareholder farmers. Every farmer has a turn, once a week, to take his share in proportion to his landholding from the watercourse. Every time a farmer diverts his/her share, loose earth/mud and stone mixture are gathered from the surrounding fields to plug and unplug the farm gate and watercourse at the turnouts. Preventing leakage from these structure is a continuous battle for the farmer. Since this channel must pass near each farm, there are many turns and branches through which water passes. This is an important cause of spillage and leakage for water. Being earthen, many different weeds/shrubs/trees start growing on the banks of the watercourse. These often become a source of blockage due to its own biomass and capturing silt load causing the water to overflow and causing ponding near the watercourse-sometimes becoming mosquito breeding points. Another source of damage are rodents and grazing animals. This necessitates recurrent seasonal cleaning by farmers. Since farmers are poor and cannot afford to hire labour, they do it mostly themselves. This O & M of the watercourse draws heavily on the farmers' time and labour -and also cause wastage of his precious water estimated up to 40%. Being earthen, it is easier to cut and steal other farmer's share that can become source of heavy rifts in relations. Therefore, it is important to support farmer with watercourse improvement i.e. lining of 50⁷% length, installing all turnout structures, construction of crossing culverts, washing pads, and animal drinking wallows. It is estimated that this investment helps the farmer save 75% labour time, 15 percentage point of water wastage, water travel time by 50%, in-equity, theft control which results in 15-20% crop yield increase, 30% cropping intensity and ultimately increased net incomes. In addition to these benefits it also helps in saving energy costs and precious ground water on tube-well water courses.

13. Field application of water is highly in-efficient in KP as in other parts of the country. Due to the widespread practice of flood irrigation and insufficient knowledge of good irrigation agronomy practices, water losses are highest at the field level where application efficiency is as low as 65–70 percent. Resultantly, crop yields and cropping intensities are low. Investments to promote water conservation technologies such as high-efficiency irrigation systems (HEIS) and laser-based precision land leveling (PLL) on-farm are of paramount importance for saving losses on-farm. HEIS is estimated to increase field application efficiency by 25 percentage points to 95% and PLL helps save water by about 30% resulting in increased yields and incomes.

14. In KP, farmers' productivity is generally low. Most crop yields in KP are low compared to other provinces and progressive growers. This could be attributed to large number of (80%) small

⁷ So far the department lined 30% but the new findings and demand from the farmers suggest to increase it to 50%



landholdings lacking scale and purchasing power; labour shortage due to out migration to cities and abroad and insufficient mechanization to off-set this shortage; shortage of skilled labour; insufficient private sector participation and services; lack of financial services; weak public sector research and extension services.

15. KP has pockets with unique agro-climatic conditions, ideal for horticulture production.

These include, among others, citrus, dates, pome fruits, potato, tomato, and onions. However, the current share of the subsector in the total cropped area is only 6 percent. With improved access roads to the main domestic markets and neighboring Afghanistan and air links to the Gulf and Central Asian countries, KP could potentially further capitalize on this comparative advantage.

16. Postharvest losses are high. Lack of postharvest technology and management and modern cool chain infrastructure and inappropriate storage, packaging, and transportation facilities are major bottlenecks specially for perishable commodities in KP. Postharvest losses of 35 percent to 40 percent for fruits and vegetables remain one of the most pressing problems, mostly given the lack of farmer's awareness about scientific handling of farm produce. Inappropriate storage facilities, both in the public and private sector, register the highest losses during handling operations. Horticulture products are mostly stored in shallow pits covered with farm wastes without ventilation, without proper sanitation, and without preventive measures for insect and disease control. The concept of a cool chain network is in its infancy and integrated cool chain networks are mostly lacking. The existing cold storage facilities are unevenly distributed across the country with Punjab dominating with 512 units, while KP only had 16 units in 2009 (Planning Commission 2009). The cold storage facilities are based on old technology that do not differentiate for unique temperature requirements of crop species. Moreover, most of the existing packing facilities do not measure up to international standards. The types of containers used for transporting and storing products vary from place to place, but a common practice is to use whatever container is available. This causes the produce to be pressed hard in the crates or carried in oversized containers, causing huge loss.

17. In addition, the agricultural marketing infrastructure and system is inadequate and lacks market responsiveness. Many wholesale markets (mandis) were built years ago, and are unable to cope efficiently with increased transactions. Serious traffic congestion, insufficient space for efficient movement of products in and out, inadequate storage, and improper management are some of the major factors for increased marketing costs and physical losses of farm products. Hygiene conditions, particularly in the case of fruits, vegetables, and livestock, are quite dismal. Excessive domination of commission agents, lack of physical and allied facilities, non-involvement of growers and consumers in market committees, and an ineffective market information system are some of the inherent problems of these markets and are putting farmers at a disadvantageous situation while selling their produce. In addition, the lack of planning and communication between demand and supply result in gluts at one time and shortages at other times, causing severe price fluctuations and loss of farmer incomes.



18. **The level of processing and value addition of agricultural products is very low in Pakistan.** Only 3 percent of the total production of fruits and vegetable and less than 10 percent of milk are processed in the country (Planning Commission 2009). There exists enormous potential of adding value to various fruits and vegetable, such as freezing, drying, dehydrating, or crushing into powder, juice, pulp, oil, paste, sauce, chips, pickles, chutney, and jam. The culture of value addition through processing and diversification is still at infant stages in Pakistan. This small amount of processing leaves large opportunities and could also absorb some of the seasonal glut and extend the life of the raw material.

19. **The new government has increased the budget allocation to the sector and shifted its policy from higher productivity to higher profitability for smallholder farmers.** The KP Government increased the budget for its annual development plans to US\$62 million for agriculture and US\$71 million for irrigation in FY17, which is still well below the needs. Key priority areas of the new government, as highlighted in the KP Integrated Development Strategy of 2014–18 and the KP Agriculture Policy and Strategy—a ten-year perspective (2014–24), are improving, among others, production, processing, and marketing, thus improving extension services; diversification into high-value agriculture (horticulture, livestock, dairy, and aquaculture); adaptation to climate change; on-farm water management (OFWM); development of new water resources; rehabilitation/modernization of the existing irrigation and drainage infrastructure; and governance.

20. **The World Bank's last engagement with KP** in the sector was for about six years from 2001 to 2007 for a total of US\$21 million made mainly in restoration/rehabilitation of the irrigation network from the secondary to the tertiary level. Major efforts were also made, in support of the national drainage program (NDP), in devolving the management to farmers, with powers to collect water charges and keep 40 percent for managing the operation and maintenance of the system from the secondary level downward. However, this outcome could not be sustained for long and has been rolled back by the Government.

C. Proposed Development Objective(s)

21. To enhance water management, productivity and climate resilience of irrigated agriculture in project areas.

Key Results (From PCN)

22. The project outcomes will be measured with the following indicators:

- a) Area provided with improved irrigation and drainage services;
- b) Increase in agriculture productivity (yield);
- c) Increase in areas cultivated for High-Value Agriculture;
- d) Area under climate-resilient technologies and practices (resilience);
- e) Total number of project beneficiaries (including number of female beneficiaries)



D. Concept Description

23. The project will contribute to the development of the agriculture sector by working on (a) water as an important input and limiting factor to productivity and overall production (b) training and technology for improving productivity, post-harvest management and value addition. More specifically, it will support six key priority areas of the government strategy for the sector, that is, improving performance/functionality of the delivery system and reducing water wastages; making water allocation/distribution equitable; increasing financial sustainability of the irrigation system management; increasing climate resilience; increasing productivity and promoting high value agriculture (production, processing and marketing); and strengthening the department for improved service delivery and governance.

24. To consolidate the benefits of the project, priority will be given to schemes where all the three components' interventions can happen together. In this way, the two departments of agriculture and irrigation will work in close collaboration, hitherto weak.

25. The project will provide climate change co-benefits derived from: (a) adaptation, by changing irrigation management systems and practices to reduce vulnerability to climate change, by reducing water wastages and its negative externalities during delivery and by reducing losses during field application and crop growth stages; and by promoting innovative resource management practices to increase resilience, expanding the use of crops and crop mixes/rotations less vulnerable to climate variability, and expanding the use of protected agriculture and drought/heat resistant varieties; and (b) mitigation, by promoting sustainable water management practices that promote water use efficiency and by promoting agricultural intensification using higher yielding varieties, carbon sequestration species and cropping patterns, and replacing traditional sources of energy.

26. Woman will be particularly encouraged and targeted to derive maximum benefits of the project and play role in the implementation of the project. The project will also ensure to safeguard the interest and needs of woman and marginalized groups e.g. providing for protected washing pads and animal drinking willows, and avoiding technologies and practices that increases drudgery for woman. Further, contractors, consulting firms and implementing partners of the project will be sensitized on gender issues and encouraged to achieve gender balance in their teams. The operational manual will spell out gender aspects and protocols for mainstreaming gender within project interventions.

27. The project will be open to the entire province and will be completed in six years. The project will have the following components:

Component A: Irrigation System Management (IDA \$52 m US)

This component will have the following three sub-components.



28. *Sub-component-A1: Rehabilitation and reduction in in-equities:* This sub-component would support the Irrigation Department to overcome the backlog of rehabilitation to fully restore the functionality/performance of the irrigation system; reduce the excessive and wasteful losses estimated at 25% by 7 percentage points; and increase economic/service life by at least 10-15 years. This will include support to both the government and civil (community owned) canals systems. The government has prepared a prioritized list of 22 schemes, costing about USD140 million, for rehabilitation. The project, during the preparation, will conduct a diagnosis of the KP irrigation system, including the list provided by the government to, identify the schemes to be support by the project. The criteria for selection would include: vulnerability to climate change impacts; acreage and number of beneficiaries; potential for high value agriculture; poverty levels in the area served; and cost effectiveness (cost per unit area served). A Project Preparation Facility (PPF) has been discussed with the client for preparing detail designs and bidding documents for the selected schemes. The rehabilitation works would, usually, include flood eroded beds and banks; sunken earth filled sections; and damaged hydraulic structures like 100ft up and down stream of the fall structures, off-taking points of minors and sub-minors, footings of overhead bridges; passages through settlements and deep cut areas; and catchwater drains for flushing flood water. Before rehabilitation work begins, any outlets tampered and/or illegally installed will be removed.

29. *Sub-component-A2: Institutional strengthening & Reform:* To avoid buildup of further backlog, an understanding with the GoKP will be developed to increase allocation of recurrent budget for the O&M of the system by lifting the current cap that is in place for the last 10 years. This could be informed by conducting a study on the cost of neglecting (under funding) the O&M of the system. However, to make it sustainable in the long run, support will be provided to the department to improve its revenue generation capacity by improving collection of the water charges. The investments of component C, should help increase the farmers' capacity to pay water charges by improving their crop productivity and switching to high value crops.

Further support will be provided for training of staff; developing asset management plan; and developing water budgets and water balances estimates for the six-major government canal systems.

The KP government has planned to develop the Provincial Integrated Water Resources Management Policy with support from the Bank managed MDTF funded Governance and Policy Support project. Support under this sub-component will be re-aligned with the directives of this policy.

30. *Sub-component-A3: Future investments preparation:* To increase availability of water for irrigation, households and livestock; support ground water recharge; reduce intensity of floods, siltation downstream by tapping hill torrents and splash floods in the rainfed areas, the project will finance preparation of feasibilities, detailed designs, and bidding documents for selected dams and irrigation schemes. The scheme selection will be based on criteria of number of farmers and acreage benefiting and cost effectiveness and poverty levels in the area served.



Component B: On-farm Water Management (IDA \$51 m US)

This component will enable the Agriculture Department to support farmers including woman, to rehabilitate/improve existing and construct new watercourses; adopt water conservation technologies on their farms; and in training its staff. The component design benefits from lessons drawn from Sindh and Punjab Irrigated Agriculture Improvement projects. These include a) developing good database of watercourses with information for length, no. of shareholders, legal status; inclusion of tube-well watercourse; lining 50% length and all turnouts; seasonal work windows; monitoring dashboards; estimation of average costs; openness to the entire province b) empowerment of the farmers to select and negotiate price of the HEIS and PLL equipments with suppliers; training of farmers in crop agronomy; fixing maximum cap on project support per unit, c) ensuring geographical spread for laser land leveling promotion etc. The component will also finance the extended presence of consultants/firm for engineering supervision of activities to be implemented by the field teams of the Department. This component will have the four sub-components, as follows;

31. *Sub-component-B1: Rehabilitation of existing watercourses:* The rehabilitation/improvement works will be done on existing watercourses on government and civil canals; springs and tube-well irrigated areas. This work will include lining of 50% length from the offtake point including selected critical sections; alignment; desilting; re-sectioning; installing all turn out structures; crossing culverts, washing pads and animal drinking willows. Farmers will contribute 20% of the total cost in the shape of skilled and unskilled labour and form themselves into water users' associations with at least 70% farmers' representation.

32. *Sub-component-B2: Construction of watercourses network:* Construction of new watercourses network will be done in some new schemes areas where the Irrigation Department has already completed the upstream irrigation infrastructure but not the watercourses due to which farmers are unable to utilize water. The project support will include farmer's mobilization and their formation of WUAs; engineering design, BOQ & cost estimates for construction of the full length of earthen watercourse; lining of 50% length preferably from the off-taking point and other critical sections; construction of all turn out structures, crossing culverts, washing pads and animal drinking points. Here again farmers will contribute 20% of the total cost in the shape of skilled and unskilled labour and form themselves into a water users' association where at least 70% farmers become members.

33. *Sub-component-B3: Promote water conservation technologies:* To promote on-farm water conservation, technologies like HEIS and precision laser land leveling (PLL) will be supported on a cost sharing basis. These technologies will particularly suit at the tail end and tube-well irrigated areas. Farmers will be trained in growing high value crops under HEIS to make the use of technology economically viable.

34. *Sub-component-B4: Capacity building & institutional strengthening:* The project will finance training of staff in new improved methods of on-farm water management and data and studies on the watercourses network.



Component C: Agriculture Productivity Enhancement and Value-Addition (IDA \$50 m US)

The objective of this component is to improve the productivity, diversification, harvest and post-harvest management and processing & value addition in agriculture (crops, horticulture, fisheries and livestock sub-sectors). This objective will be achieved by i) strengthening public sector institutions (e.g., research and extension institutions) to solidify the foundation for sustained sectoral growth; ii) investing in capacity building and iii) introducing modern technologies to farmers; and iv) support agribusinesses/ag-entrepreneurs for higher value addition through agro-processing and commercialization services. This component addresses the climate change vulnerabilities to the agriculture sector, as set out in the project's vulnerability context. All the activities under the Component will adequately reflect important CSA areas of productivity, adaptation and mitigation as highlighted in Pakistan CSA profile important for agriculture in Northern Pakistan. Considering that more than 70% of Pakistan's female workforce is employed in agriculture, there is a special need to ensure all services provided by the Component will be more gender sensitive. The lessons drawn from similar projects, for example, the Sindh Agriculture Growth Project, have been incorporated to the Component design. The component will also finance the extended presence of technical consultants/firm to assist with planning and management of the Component.

35. Subcomponent C.1: Modernizing public extension service and agricultural research (US\$14 m).

The sub-component will finance modernizing and rehabilitating extension and research facilities which have been identified as critical for the KP agriculture sector, such as the agricultural research centers, training centers and laboratory facilities etc. The subcomponent will also finance information and communication (ICT)-based technologies and services for delivery of agricultural extension and marketing for farmers and value chains, such as developing mobile phone APPs and other ICT tools (e.g., 24/7 call center, interactive websites, mobile training and demonstration centers etc.). The subcomponent will also support studies and data on the sector and training of staff.

36. Subcomponent C.2: Capacity building of farmers (US\$6 million). The project will finance training and capacity building for farmers, which will be based on training needs assessment carried out by the departments and their technical assistance providers. Training topics will include, but not limited to, good agricultural practices (including those specifically related to CSA), agribusiness management, negotiating in the market, basic accounting, and business plan development skills, etc. This will be done through demonstration plots, public information campaign, face-to-face training (farmers field school), domestic study tours and exposure visits etc. Special attention will be given to climate smart agriculture related knowledge.

37. Subcomponent C.3: Introducing modern technologies to farmers (US\$20 million). The project will finance investments to increase productivity, climate resilience and on-farm pre-and post-harvest management of crops, horticulture, fisheries and livestock sub-sectors through technology (e.g., farm machinery, equipments, seeds, breeds, and infrastructure etc.). This



support will be provided on a cost sharing basis with 70% paid by the Project and 30% by beneficiaries on a first come first serve basis, with ensuring regional equity.

38. *Subcomponent C.4: Support agribusinesses (US\$10 million)*. This sub-component will support agribusinesses (SMEs)/agro-entrepreneurs for improved services, commercialization and processing & value addition. This will include businesses like seed companies, nursery growers, fish hatcheries, animal semen producers, farm machinery & equipments providers; reefer transporters, chillers, ventilated & cold storages, pack-houses including graders, sorter; slaughter houses, pulpers, oil extractors, de-hydrators, tanners; trading centers like rehabilitation of fruit, vegetable, livestock and grain wholesale markets; introducing digital trading platforms and contract growing etc. The project will provide a competitive grant program with a transparent and efficient review and selection process. The grant size will be up to US\$100,000, with 30% matching fund from applicants. The grant will be released in three tranches based on verified progress of proposal implementation.

39. The component will provide climate change co-benefits derived from: (a) adaptation, by promoting innovative resource management practices to increase resilience, expanding the use of crops and crop mixes/rotations less vulnerable to climate variability, and expanding the use of protected agriculture and drought/heat resistant varieties; and (b) mitigation, by promoting agricultural intensification using higher yielding varieties, carbon sequestration species and cropping patterns, and replacing traditional sources of energy..

Component D: Project Management and Implementation Support (IDA US\$12 million)

40. This component will support the establishment of the project management structure. This will include project administration, human resources including woman staff, procurement, and financial management; monitoring and evaluation (M&E); communications management; social and environmental safeguards management; and grievance redress and community feedback mechanisms particularly channeling the voices of woman beneficiaries.

41. Citizen Engagement (CE): The populations targeted in the citizen engagement mechanism of the proposed project will be farmers and agribusiness owners receiving support to increase their yield/productivity and the commercialization of their products. The CE mechanism will assist the extension service and government officials in making more informed decisions about resource allocations, training and technology needs of farmers and agribusiness owners. Overall, the CE mechanism will enhance the successful implementation of the project, and guide the government in preparing better programs for farmers. A detailed citizen engagement mechanism and grievance redressal mechanism will be elaborated during the preparation phase of the project, and will be included in the project implementation manual.

42. Gender. The project design and approach will reflect the need for taking account of the gender dimension and risks associated with knowledge and technology transfer. Project will be designed to ensure that it provides equal opportunities for women to participate in project



activities. Climate-resilient agricultural technologies will be screened to ensure that they are gender-neutral. A comprehensive social assessment has been initiated as part of project preparation and is expected to result, among others, in a Gender Action Plan.

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The project will be implemented in various districts of KP. The land cover of KP changes from north to south. The Province sits primarily on the Iranian plateau and comprises the junction where the slopes of the Hindu Kush mountains on the Eurasian plate give way to the Indus-watered hills approaching South Asia. Geographically, the province could be divided into four agro-ecological zones on the basis climatic conditions covering temperature, rainfall, altitude and topography as developed by Environmental Protection Agency of KP:

- (a) Zone A – Northern Mountains covering districts of Buner, Shangla, Upper and Lower Dir, Swat and Chitral.
 - (b) Zone B – Sub Humid Mountain covering districts of Haripur, Batagram, Mansehra, Abbottabad, Kohistan and Torghar.
 - (c) Zone C – Central Valley Plains covering districts of Peshawar, Mardan, Charshada and Nowshera.
 - (d) Zone D – Piedmont Plains (including Suleiman) covering districts of Bannu, karak, Lakki Marwat, Tank and DI Khan.
- The snowcapped mountains of Chitral and Swat have low vegetative cover above 4,000 meters. Mountains having altitude less than 4,000 meters have alpine forests (up to 3,300 meters). Altitudes between 3,000 meters to 1,500 meters have conifer and between 1,500 up to 900 meters have sub-tropical forests. These forests and plains provide habitat to 98 species of mammals and birds including endangered species of snow leopard, brown bear, ibex, etc. The protected areas notified in KP includes 6 national parks, three wildlife sanctuaries, 38 game reserves, 90 community game reserves, 16 private game reserves, 2 wildlife refuges and 8 wildlife parks. The combined area of all protected areas is 666,340 ha. The project activities are located in parts of Zone C valley plains and Zone D piedmont plains, which are mostly used for agriculture and livestock grazing. Indus River and its tributaries are the main source of water for agriculture in the Province. Other major rivers that crisscross the province are Kabul, Swat, Kunar, Siran, Panjkora, Bara, Kurram, Dor, Haro, Gomal and Zhob.

B. Borrower's Institutional Capacity for Safeguard Policies

The KP Government will be the implementing agency. The last time these two departments, Agriculture Department and Irrigation Department implemented a World Bank project was in 2001-2007, and there the Irrigation Department had a secondary role. This leaves much desire for familiarity with and improvement in the understanding of the Bank safeguard policies. Therefore, safeguards capacity support, handholding and training will be provided throughout the project implementation to ensure that they have adequate capacity to respond to project safeguard issues.

A Project Coordination & Management Unit (PCMU)—led by the Agriculture Department, will be established to manage implementation and coordination. Project Implementation Units one each in Agriculture (or two in its sub departments) and Irrigation Departments will be established to supervise technical implementation in the field. The PCMU will have a senior Safeguards Specialist as part of the PCMU Team. PIUs at the two departments level will be supported by individual environment & social safeguards consultants. These consultants will work closely with the engineering supervision consultants, and will provide input into the project design as per safeguards instruments (such as ESMF, RPF, RAP, etc.). The senior Safeguards Specialist at the PCMU level will be responsible for the overall implementation and performance of the safeguards documents, while the day-to-day screening, monitoring and implementation will be the responsibility of



the safeguard specialists at the PIU levels. The project will have a Project Implementation Committee (PIC) co-chaired by Secretary Agriculture and Secretary Irrigation and membered by heads of the PIUs, Chiefs of Water, Agriculture & Livestock from P & D, to review the progress of project components. The senior Safeguards Specialist at the PCMU level will be a part of the PIC. All project implementation and supervision consultant firms will be required to have adequate social and environmental safeguards specialists. The contractors for civil works will implement Contractor ESMP, including all necessary guidelines on labor health, safety and environment.

Project launch workshop will be organized by the task team once the project becomes effective and will include a detailed session on safeguard implementation arrangements.

C. Environmental and Social Safeguards Specialists on the Team

Javaid Afzal, Environmental Safeguards Specialist
Babar Naseem Khan, Social Safeguards Specialist

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The project activities involve irrigation infrastructure improvement, on farm water management schemes and production and post-production support to farmers and market actors. These activities are expected to cause some adverse environmental and social impacts. Overall, most of the impacts are expected to be during the construction phase and are likely to be temporary and reversible. Consequently, the policy has been triggered. Since project will also finance feasibility studies for dams, the scale and capacity of which is currently unknown. Based on existing information, the project has been categorized as Category A.</p> <p>The irrigation infrastructure improvement will overall improve irrigation efficiencies and help in ensuring availability of designed water flows at the tail-end of watercourses. However, improved infrastructure will not change the designed water allocations. Typical negative impacts associated with civil works financed by the project include land acquisition and resettlement; noise, air, soil and water pollution due to dust and exhaust emission and other wastes; vegetation clearance; damage to the existing infrastructures such as rural road, temporary water stoppages for irrigation, community and worker health and safety risks, etc. During operation, some potential</p>



adverse impacts are forecasted such as water pollution and spreading diseases by human and animal wastes, pesticides use potentially causing water and soil pollution, excessive application of irrigation water causing leaching of soil nutrients and changes in soil characteristics, etc.

Since the exact location of subprojects are not known at present and will be identified during project preparation and implementation, framework approach has been adopted. Environmental and Social Management Framework (ESMF) along with Environmental and Social Management Plans (ESMPs) for the known priority projects will be developed by project appraisal. The ESMF will also include assessment of regional impacts on water quality, analysis of any possible changes in groundwater and downstream surface water availability. The ESMF will also include Terms of Reference for environmental and social impact assessment (ESIA) for the feasibility studies of small dams and environmental and social screening checklists/procedures for competitive grant program (project component C).

Performance Standards for Private Sector Activities OP/BP 4.03	No	
Natural Habitats OP/BP 4.04	No	Most of physical infrastructure investments financed by the project are rehabilitation and improvement of the existing infrastructures. Some new construction activities such as construction of watercourses in new command areas and small-water storage tanks will take place on the existing agricultural lands. These activities are not expected to convert or degrade natural habitat. Therefore, the policy is not triggered. It is important to mention here that the project is supporting preparation of feasibility studies for 5 small dams or irrigation schemes. The studies will include EIAs.
Forests OP/BP 4.36	No	The project is not expected to impact forests and associated ecosystems as envisaged in the policy. Therefore, the policy is not triggered.
Pest Management OP 4.09	Yes	The project will not support purchase of pesticides. However, the policy is triggered because the project interventions may lead to substantially increased use of pesticides and subsequent environmental problems. Thus, to mitigate this impact the project will apply an IPM approach with an IPMP prepared.



Physical Cultural Resources OP/BP 4.11	TBD	At this stage, it is not possible to identify potential impacts on physical cultural resources (PCRs). However, final determination would be made by QER. Chance find procedures will be included in ESMF.
Indigenous Peoples OP/BP 4.10	Yes	<p>The project area extends across KP, including Chitral district which is home to the Kalash who are recognized as Indigenous People (IP); hence, OP 4.10 is triggered. An Indigenous Peoples Planning Framework (IPPF) for interventions in Chitral district will be prepared, consulted upon, and disclosed publicly on the client's website (in-country) and by the Bank prior to appraisal. Indigenous Peoples Plans (IPPs), if required, will be prepared for specific project locations.</p> <p>Given the cultural sensitivity and tribal nature of the area, the social assessment will carefully assess potential project impacts on IPs and mitigation measures including grievance redress mechanism will be developed through free prior and informed consultation as required under OP4.10.</p>
Involuntary Resettlement OP/BP 4.12	Yes	<p>Small parcels of land will be required for project interventions. In most cases land needs will be met through Community or Voluntary Land Donations (VLD), the procedures for which will be laid out in the ESMF. In few cases small parcels may need to be acquired e.g. watercourses construction in new command areas (e.g. Bazai etc.). Certain interventions e.g. rehabilitation of existing water courses, may involve minor temporary impacts on livelihoods (due to restricted access; temporary dislocation) which could require small scale compensation. However, the impacts are not expected to be large scale. Hence OP 4.12 on Involuntary Resettlement has been triggered. A Resettlement Policy Framework (RPF), and Resettlement Action Plans (RAPs) for actual sites that may have been identified, will be prepared, consulted upon, and disclosed publicly on the client's website (in-country) and by the Bank prior to appraisal.</p>
Safety of Dams OP/BP 4.37	Yes	<p>The project will not directly finance rehabilitation of existing dams or construction of new dams. The project activities especially investments for improvements in irrigation infrastructure may rely on performance of the existing dams such as Warsak Dam on Kabul River or Munda dam on Swat River. However, the exact location of schemes are not known at present. The project will also finance feasibility studies</p>



		for dams, scale and capacity of which is currently unknown. The policy is therefore triggered to ensure due diligence and for adequate coverage of environmental and social aspects/impacts.
Projects on International Waterways OP/BP 7.50	Yes	The proposed project activities are located in the command area of tributaries of Indus river, which is an international water way (river). The proposed project activities under component 1 and 2 qualify to trigger this policy. The task team will consult LEGEN to determine whether waiver to notification to riparian is applicable.
Projects in Disputed Areas OP/BP 7.60	No	There are no disputed areas as defined in the Policy where project interventions are to be undertaken and therefore this policy is not triggered.

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Sep 17, 2018

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

1. ESMF by 30 August, 2018
2. ESMP for first year schemes by 30 August, 2018
3. IPMP by 30 August, 2018
4. A Resettlement Policy Framework (RPF) will be prepared to provide guidelines for project interventions that could require land acquisition, and which may lead to resettlement and impact on livelihood. RPF will be completed by 30 August, 2018.
5. RAP for first year schemes by 30 August, 2018
6. Ingenious Peoples Planning Framework (IPPF) will be prepared by 30 August, 2018. IPPs (Indigenous Peoples Plans) for the first year schemes will be prepared by 30 August, 2018, where required.
7. Assessment of regional impacts on water quality, groundwater availability and downstream water availability will be a part of the overall ESMF, as well as the social assessment. Moreover, given the cultural sensitivity and tribal nature of the area, all assessments will carefully assess consultations/GRM/FPIC requirements.
8. All feasibility studies will include a TOR on E&S screening and social and environmental impacts analyses.



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APPROVAL

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