



Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 07-Mar-2022 | Report No: PIDA33442

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

Country Pakistan	Project ID P176786	Project Name Punjab Resilient and Inclusive Agriculture Transformation	Parent Project ID (if any)
Region SOUTH ASIA	Estimated Appraisal Date 28-Feb-2022	Estimated Board Date 25-May-2022	Practice Area (Lead) Agriculture and Food
Financing Instrument Investment Project Financing	Borrower(s) Islamic Republic of Pakistan	Implementing Agency Agriculture Department, Government of Punjab	

Proposed Development Objective(s)

To enhance equitable access to, and productivity of, agricultural water, and improve incomes of farmers supported by the project.

Components

Component 1: Community-driven Improvement of Water Conveyance and Application

Component 2: Promotion of Climate Smart Production, Diversification, Value Addition, and Inclusive Access to Markets

Component 3: Project Management, Monitoring and Learning

Component 4: Contingent Emergency Response Component

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

Total Project Cost	404.00
Total Financing	404.00
of which IBRD/IDA	300.00
Financing Gap	0.00

DETAILS**Private Sector Investors/Shareholders**



Equity	Amount	Debt	Amount
Government Contribution	300.00		
IDA (Credit/Grant)	300.00		
Non-Government Contributions	104.00		
Private Sector Equity	104.00		
Total	404.00		0.00

Payment/Security Guarantee

Total	0.00
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Environmental and Social Risk Classification

Moderate

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **Pakistan has made significant progress over the last two decades towards reducing poverty.** Over 47 million Pakistanis escaped poverty between 2001 and 2018, making Pakistan one of the most successful South Asian countries in reducing poverty. Nonetheless, challenges remain. Human capital outcomes are poor and stagnant, with high levels of stunting at 38 percent and learning poverty at 75 percent. Per capita GDP growth has also been low, averaging around 1.8 percent annually. Economic growth has historically been fueled by private and government consumption, with productivity enhancing investment and exports contributing relatively little. Consumption-led growth has been associated with frequent macroeconomic imbalances. Achieving sustained economic growth is important to reduce inequality and increase shared prosperity.

Sectoral and Institutional Context

2. **Agriculture plays a major role in the economy of Pakistan in general, and of Punjab in particular, but agricultural growth has been stagnant.** Nationally, agriculture accounts for 20 percent of GDP, employs 40 percent of the labor force, and directly and indirectly delivers nearly 80 percent of the total value of Pakistan's exports, of which about 60 percent



is contributed by Punjab. Agriculture in Punjab is central to the country's economy and food security. Punjab encompasses 73 percent of the national cropped area and 78 percent of the national irrigated area. The province provides large shares of the country's primary crops: maize (78 percent), wheat (77 percent), cotton (73 percent), sugarcane (63 percent), and rice (52 percent). Agricultural growth in Punjab has, however, stagnated and even decreased since 2008, standing now at under 3 percent per year.

3. **Improving agricultural growth, especially among small farmers, would be essential to achieving poverty reduction and shared prosperity.** Poverty in Pakistan has increasingly become concentrated among rural households relying on agriculture. In Punjab, rural poverty is prevalent among the landless and small farmers with landholding of less than three acres who represent 78 percent of the total rural population in the province. Agricultural production is characterized by its bimodal farm structure. Some 85 percent of farms have less than five hectares and collectively make up 47 percent of the farm area. Technology adoption and innovation have also been bimodal, with the 15 percent of larger-sized farms showing greater per-hectare yields through access to improved seeds, on-farm mechanization, and improved agricultural practices, much of which has been spurred by land consolidation and value chain linkages. Although smallholder farmers are a highly heterogeneous group, some key constraints are common to most small farmers, notably their (a) limited crop diversification; (b) limited market access; (c) low security of tenure; (d) poor access to credit; and (e) limited ability to adapt to climate change and water scarcity.

4. **Despite emerging market opportunities for productive diversification and increased value addition, on-farm and off-farm constraints are slowing down the modernization of the agri-food sector.** With rapid urbanization and fast income growth in the country, dietary patterns are changing in Pakistan. Demand for higher value, more nutritious food, such as fruits and vegetables, is growing, but domestic production is currently ill-equipped to meet this demand despite the country's versatile climate and rich genetic diversity. In addition, it is estimated that increasing domestic value addition could help Pakistan realize an untapped export potential of US\$2.6 billion, which would represent 40 percent of current exports of agriculture products according to the International Trade Center. Challenges preventing agri-food stakeholders from seizing these market opportunities fall under (a) on-farm productivity constraints; and (b) off-farm value addition and commercialization constraints. On farm, yield increases are not only slower in Pakistan than in neighboring countries, but most of the yield growth derives from higher levels of input use rather than growth in total factor productivity. This is mainly due to the absence of an enabling policy environment, poor agronomic practices, and low technology adoption. Crop diversification is also very limited with about 90 percent of cultivated land under five major crops: wheat, rice, cotton, sugarcane, and maize. The dominance of traditional crops at the expense of higher value produce owes its continuation in part to the distortionary impact of subsidies and the pricing of water, fertilizer, and wheat. Off-farm value addition and commercialization are constrained by the agri-food value chain's inefficiencies, such as aggregation failures (e.g., limited use of farmer aggregation models, poorly functioning wholesale produce markets), high transaction costs, inefficient postharvest practices, and poor infrastructure supporting storage and farm-to-market transport. Approximately 30 to 40 percent of all agricultural produce is lost before reaching markets as a result of poor post-harvest processes.

5. **On-farm and off-farm constraints are exacerbated by access to finance challenges.** Many farmers – especially small and medium farmers – lack the means to procure the working capital, productive assets, and technical assistance (TA) they would need to increase, diversify, add value to, and commercialize their production in a climate smart way. Commercial banks are the primary formal lender to the agriculture sector with an 82 percent market share of agriculture lending. Agriculture lending is also heavily skewed towards processing, with lending for food processing almost three times higher than lending for crop and animal production. In addition, loans to crop and animal production tend to go to larger farmers, as these account for more than 70 percent of disbursements. Financial institutions (FIs) are unable to meet all financing needs of small and medium farmers because of a mix of demand-side constraints on the part of farmers



and supply-side constraints on the part of FIs. Major demand-side constraints include a lack of understanding of the formal financial sector, perceived high cost of borrowing from the formal financial sector, low connectivity with formal value chains creating a reliance on middlemen, and the lack of transparency of the relationship between middlemen – who are also the local financiers – and commission agents in the wholesale markets. FIs are constrained on the supply-side due to broader economic issues, such as low private sector intermediation due to the crowding out effect of high public sector borrowing, and weak appetite for financing the agriculture sector because of high transaction costs, lack of collateral available to smaller farmers, weak understanding of the sector, and a propensity to largely finance short-term working capital of larger farms and agri-processing activities. Although disbursements have approximately doubled from 2016 to 2021 (Rs. 1.36 trillion in 2021), they still fall far short of the National Financial Inclusion Strategy targets set by State Bank of Pakistan. The market failure in lending to small and medium farmers is even more severe for the financing of technology and upgradations, as currently 93 percent of disbursements are for production inputs and less than seven percent for development, including for equipment and technology. Micro-finance providers (including banks and institutions) account for 11 percent of the lending to the agriculture sector and average loan size tends to be small and short-term, making it difficult to finance innovative machinery. As a result, small and medium farmers access finance predominantly from the informal sector that can capture up to 80 percent of the farmer's expected profit and provides only short-term seasonal loans oftentimes associated with pre-harvest purchase of the farmer's production at an under-market price.

6. Women farmers have assumed a growing share of responsibility for agriculture in Punjab and their position in agriculture production could be strengthened. In Punjab, approximately 74 percent of women depend on agriculture as a source of livelihood. However, the low participation of women in the farming-related decision-making process deprives women farmers (especially smallholder women farmers) from accessing innovations, extension services, entrepreneurship training, and technologies, which ultimately limits their potential to grow and increase their incomes in agriculture and livestock. Their participation in marketing activities faces cultural barriers that expose them to the risk of exploitation, which further reduces their profitability. Social factors have also led to a lack of voice and agency among women farmers regarding access to natural as well as financial resources. For example, a majority of the loans provided to women are used by male heads of households, making it difficult for women to enter agribusiness activities and to connect with formal value chains. Finally, the lack of sex disaggregated data within the agriculture sector contributes to the lack of practical recommendations and policies promoting gender equality in agriculture. This results in higher poverty prevalence, along with an increasing ratio of stunting in rural children in Punjab.

7. Punjab has recently improved the policy environment for the processing and marketing of agricultural products. With the support of the Punjab Agriculture and Rural Transformation P4R program (SMART, P162446), the Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act 2020 lifted some of the regulatory constraints that had been encumbering the agricultural marketing system for the past 80 years, notably by (a) mitigating the role of middlemen and changing the power structure of the market by reducing government intervention that had benefited vested interests at the expense of small and medium producers; (b) confining the role of market committees to governing and improving the efficiency of the market yards, with broader representation of key stakeholders, including farmers and brokers; (c) reducing market fees and regulating grading and packaging standards; (d) improving physical infrastructure and processing equipment for more reliable grading and inspections and for the recording of financial transactions; (e) allowing multiple marketing channels to exist in parallel, replacing the monopoly of the mandi system; and (f) helping expedite bulk warehousing services in the private sector and promoting the development of Electronic Warehouse Receipts, which could help producers improve their access to formal credit. Initial evidence suggests an enhanced economic efficiency in terms of market integration and price transmission after PAMRA's adoption.



8. **Inadequate management of water distribution within IBIS hampers progress towards a more productive and equitable use of the water.** Unreliable freshwater supplies from the canal system do not allow farmers to properly plan and optimize their irrigation. Farmers tend to over-irrigate when they receive canal water, not knowing when the next water turn will come. Farmers at the tail-end of the canals — typically small farmers — invariably do not receive their share of water due to the poor maintenance of existing canals, water theft by farmers upstream, and rent-seeking by the canal operators. Despite the increasing groundwater abstractions, there are still areas affected by waterlogging (those areas where the canal irrigation duties are highest, but also strips of land on the side of the canals affected by canal seepage). Groundwater table depletion is increasing the cost of pumping in tail-end areas, and groundwater quality is worsening, increasing the risk of soil salinization. As a result, the productivity of agriculture measured in terms of total productivity — productivity per unit of water, land, and other inputs — remains low by global and even regional standards.

9. **Adoption of innovative on-farm climate and water smart practices and technologies that could help increase agricultural water productivity has, however, been slow despite the profitability of some of these investments.** A wide range of innovative climate smart agricultural practices and technologies like laser land leveling, bed furrow irrigation, alternate wetting and drying of paddy fields, mulching and others, can be applied to increase crop yields and reduce non-beneficial evapotranspiration (ET) and thus contribute to increased agricultural water productivity. Over the past decade GoP has notably been supporting at scale the installation of high efficiency irrigation systems (HEIS) by individual farmers. Over 90,000 acres of HEIS equipment were subsidized under the Punjab Irrigated Agriculture Productivity Improvement Project (PIPIP, P125999). Roll out of HEIS, however, remains limited despite the profitability of this investment, as access to finance for such technology upgrading is very limited, particularly for small and medium farmers (see above), and farmers — even larger farmers who are facing reduced access to finance constraints — perceive investing in such innovative technologies as risky.

10. **Climate change creates further stress for the agriculture sector and on the availability and use of water.** Pakistan is ranked among the top ten most climate vulnerable countries in the world in the Global Climate Risk Index. The country has already seen a considerable increase in the frequency and intensity of extreme weather events and natural disasters. In 2010, 2011, and 2014, Punjab has experienced severe droughts, followed by devastating floods, causing huge losses in crop yields and livestock, damage to irrigation infrastructure, and food shortages. Climate change will contribute significantly to the increased demand for water, notably in the agriculture sector. Changes in the monsoon, winter precipitation, snow, and ice melt patterns have the potential to alter the spatial and temporal distribution of water and pose a considerable challenge to Pakistan's agri-food system. Drier and hotter climate conditions increase evapotranspiration and increase irrigation demand. Demographic factors and drier climate are projected to cause cumulative water demand to exceed supply in 2047, unless substantive sector reforms and investments are undertaken. The impact on crop yields may vary across agro-ecological zones but is likely to be significant without adequate adaptation and resilience building strategies. Wheat and rice yields, for example, are expected to decrease in all areas. Temperature increases of 0.5°C–2°C could lead to around an eight to 10 percent loss in yields. This kind of negative impact would notably be mitigated by the adoption of improved crop and irrigation practices and the use of enhanced technologies like drip irrigation.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

To enhance equitable access to, and productivity of, agricultural water, and improve incomes of farmers supported by the project.



Key Results

- a) Number of direct beneficiaries reached [of which female beneficiaries]
- b) Reduction of the differences in water availability among head, middle, and tail end users of watercourses (%)
- c) Increased agriculture output per unit of water used at farm level (Kgs/M3)
- d) Increased share of area under high-value crops (HVC) cultivation (%)
- e) Increase in agriculture incomes of households participating in project activities (%) [of which female headed households]

D. Project Description

11. **The proposed project will contribute to transforming Punjab's agriculture into a more inclusive, productive, sustainable, and market-oriented sector.** First, the project will continue the successful activities introduced under PIPIP, such as upgrading community water conveyance infrastructure (watercourse) and promoting adoption of efficient irrigation technologies. Second, the project will support greater market integration for producers by introducing a new market pull approach in Pakistan centered around productive alliances (PA) between buyers and producers organized in producer groups (PG). This approach will build on global experience regarding PA implementation as well as on the evidence emerging from the Sindh Agriculture Growth Project (SAGP, P128307, Credit 5494-PK) that shows improvements in market access and income from the aggregation of milk producers into PGs. Third, PRIAT will foster the adoption of innovative climate-smart solutions that could serve as new standards for Punjab as well as for other provinces, e.g., improved on-farm water management practices, community-level water resources accounting and budgeting, and irrigation advisory services. Finally, interventions under PRIAT will be community demand-driven, support to farmers will be market-driven and solutions will be private sector-led wherever possible. To ensure the demand-driven nature of project-financed activities, the Project Management Unit (PMU) will conduct comprehensive community and farmer consultations periodically so that all activities adequately reflect demands on the ground during the whole project implementation cycle. Through the PA approach, the project will support investments made by farmers to meet market specifications identified with buyers. Like for PIPIP, the private sector will play an indispensable role in watercourse improvement, HEIS installation, and value addition activities. The main beneficiaries of the project include Water User Associations (WUAs), individual producers, and PGs. Women will receive tailored support to improve their position in agriculture production, market integration, and access to climate-smart practices and technologies. The proposed project will undertake a study to document the role of women in Punjab's agriculture sector as a basis for targeted interventions. The project will have four components.

12. **Component 1: Community-driven Improvement of Water Conveyance and Application (US\$177 million, IDA US\$140 million).** This component has two objectives: (a) Improve the equity of water access within the watercourse command area by improving the conveyance efficiency; and (b) improve agricultural water productivity by promoting the adoption of climate smart water management practices at community and farm levels. These measures will strengthen climate resilience of the beneficiary households and irrigated agricultural systems.

13. **Component 2: Promotion of Climate Smart Production, Diversification, Value Addition, and Inclusive Access to Markets (US\$197 million, IDA US\$130 million).** This component seeks to support growth-oriented farmers to (a) diversify, intensify, and add value to their production through a market-driven and climate smart approach; and (b) establish and/or upgrade market linkages with off-takers in a sustainable and profitable way. Producers and PGs (i.e., farmers entrepreneur groups (FEGs)) will receive both TA from local service providers (LSPs) and direct financial support.



14. **Component 3: Project Management, Monitoring and Learning (US\$30 million, all IDA).** The objective of this component is to ensure that all project activities are implemented effectively and efficiently to achieve the PDO. In addition to traditional project management and monitoring and evaluation (M&E), PRIAT will make efforts to facilitate the implementation of some innovations under the project, such as market integration support through PAs and community water resource budgeting and farm level groundwater management. This component will also support a synergistic collaboration between Agriculture Department and Irrigation Department on the broader water resources management agenda.

15. **Component 4: Contingent Emergency Response Component (US\$0).** This component supports preparedness and rapid response to disaster, emergency, and/or catastrophic events, as needed. The provisional zero-cost for this component will allow for the rapid reallocation of credit proceeds from other components under streamlined procurement and disbursement procedures.

Project Beneficiaries

16. **The project's main beneficiaries are rural communities, including growth-oriented small and medium farmers and their groups.** The project will directly benefit over 420,000 farm families and over 2.5 million acres of irrigated area. About 400,000 families will benefit from investment in watercourse lining under Component 1. While the benefits will be proportional to each farmer's landholding's size, watercourse improvement will increase the reliability and availability of water for the farm households at the end of the watercourses, who tend to belong to more disadvantaged groups. About 20,000 of the families supported under Subcomponent 1.1 are also expected to adopt climate-smart agriculture (CSA) practices under Subcomponent 1.2. Under Component 2, 20,000 additional farm families will be supported. The project will provide support to commercially oriented small and medium farmers with the potential to achieve higher incomes through aggregation and more sustainable and climate resilient production. Farmers will be mobilized through PGs to achieve economies of scale from collective actions and investments. Building upon the experience of SMART, the project aims to encourage diversification toward higher-value crops. The project will also undertake dedicated sensitization and implementation support tailored to female farmers' needs to ensure their participation in the project. Based on the experience of PIP, the project is expected to generate 3 million person-day daily jobs resulting from the diversification toward high value crops thanks to HEIS implementation. Beneficiaries of these jobs are expected to be 30 percent women.

17. **Three other groups are expected to benefit from the project.** First, relevant government institutions will benefit from strengthened institutional capacity for managing Punjab's water resources and for providing higher quality public services. Second, domestic private sector companies will be able to benefit from the project by serving as suppliers of materials, equipment, and services that will be procured by the project to implement watercourse improvements under Component 1 and investments made by producers and PGs with financial support from the project under Component 2. The increase in demand for locally sourced goods and services will also create job opportunities for local skilled and unskilled laborers. Third, agri-processors and other off-takers will benefit from lower transaction costs in sourcing higher quality products from producers and PGs thanks to the project's support to these producers and PGs in diversifying their production and in investing in their ability to add value to and market their production.

Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes



Projects in Disputed Areas OP 7.60

No

Summary of Assessment of Environmental and Social Risks and Impacts

18. **The Environmental and Social Framework (ESF) applies to the project; and the environmental and social risk rating is assessed as Moderate.** Overall, the project would have positive environmental and social impacts in contributing towards resource efficiencies, livelihood improvements, crop productivity, targeting small farmers and farmers in underserved areas; and reducing conveyance and application water losses. Some environmental risks and impacts are however anticipated due to civil works (watercourse rehabilitation/improvement) under Component 1 and introduction of HEIS under Component 2. The adverse impacts are likely to occur during implementation / construction stage and mostly related to air, soil, and water pollution. Other risks and impacts likely to occur include the excessive use of synthetic fertilizers/pesticides by the farmers (due to crop intensification or cultivating the fallow land) despite the project does not finance the procurement of banned fertilizer/pesticides. In addition, there are risks associated with potential land conversion due to increased cultivation, threatening natural habitats. Most of these environmental risks and impacts are however temporary, site specific and largely reversible in nature and can be managed and mitigated through appropriate screening and mitigation measures. A negative list will also prohibit certain activities including land conversion, use of banned pesticides/fertilizers, etc. Social risks are primarily associated with exposure of farmers, labor, and communities to increased use of pesticides, elite capture in project interventions, exclusion of vulnerable/disadvantaged groups from project benefits and risks to women farm labor, such as gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH). A GBV/SEA/SH Action Plan will be prepared to identify risks associated with project activities and provide mitigation measures.

19. **Since the project is demand driven, there is a chance of elite capture and exclusion of the marginalized.** The project design will respond to this under Component 1 with at least 50 percent of watercourses to be improved in southern Punjab, and a focus on damaged, unimproved watercourses as a priority, which are most often areas that are historically neglected and remote. Also, lining of watercourses ensures availability of water at the tail ends, where land is mostly owned by disadvantaged communities. Similarly, activities to improve inclusive access to markets under Component 2 may also result in elite capture through the exclusion of vulnerable and disadvantaged groups and women farmers/producers. The project will respond to this risk by setting targets for small and medium farmers and responding to the challenges faced by small producers.

E. Implementation

Institutional and Implementation Arrangements

20. **The Director General On-Farm Water Management (DGOFWM) of the Government Punjab (GoP), reporting to the Secretary Agriculture, would be responsible for the implementation of the project and act as the Project Director (PD).** As the PD, the DGOFWM will be responsible for all aspects of the project, including implementation, procurement, financial management, social and environment safeguards, and oversight of the technical assistance and training program, among others.

21. **A Project Policy Committee (PPC)** chaired by the Chairman, Planning and Development Board, Punjab with Secretaries of Agriculture, Irrigation, Local Government & Community Development (LG) and Finance Department (FD) as its members would provide planning and strategic guidance for project implementation as well as facilitate interagency



coordination at the highest level. To improve coordination and support project management across all layers of the Government, a Project Steering Committee (PSC) under chairmanship of Secretary Agriculture will be constituted with membership from all concerned provincial Departments, particularly the Irrigation Department. Furthermore, a Project Implementation Committee (PIC), chaired by DGOFWM / PD, will also be established.

22. **The DGOFWM will be supported by** (a) one Deputy Project Director on value addition & marketing; (b) one Deputy Project Director (HEIS); (c) one Deputy Project Director (Watercourses) and (d) three Deputy Directors located at Headquarters responsible for watercourse improvement, on-farm water use efficiency and water saving, and value addition and agribusiness capacity building and investment, respectively. Other support services will also be established, including specialists in procurement, financial management, accounting, communication & public information, and environmental and social safeguards, and Project Implementation Supervision Consultants (PISCs), among others.

24. **The Agriculture Department commits to strengthening the capacity of the PMU in the area of supporting inclusive market integration activities, particularly through a PA approach.** First, the Department will appoint a Deputy Project Director specifically responsible for market integration activities. Second, the Department agreed to merge the team who worked on FEG support activities in the past five years into the PMU (including its district level implementation teams) so that PRIAT can mobilize and build on this existing capacity. This will be particularly needed to supervise the LSPs who will be supporting FEGs and buyers in establishing PAs. Third, the Department will recruit more staff from the market to fill identified capacity gaps during project implementation on an accelerated basis.

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APPROVAL

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