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Report No: PAD4880

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT  
ON A  
PROPOSED CREDIT

IN THE AMOUNT OF SDR 148.8 MILLION  
(US\$200 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

PUNJAB RESILIENT AND INCLUSIVE AGRICULTURE TRANSFORMATION PROJECT

May 26, 2022

Agriculture And Food Global Practice  
South Asia Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective April 30, 2022)

Currency Unit = Pakistan Rupee (PKR)

PKR 185.68 = US\$1

US\$1.3443 = SDR 1

FISCAL YEAR  
July 1 – June 30

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## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	IFC	International Finance Corporation
ADP	Agriculture Department of Punjab	IUFR	Interim Unaudited Financial Report
AGP	Auditor General of Pakistan	LCP	Low Carbon Price
ATP	Agriculture Transformation Plan	LSP	Local Service Provider
BP	Business Plan	M&E	Monitoring and Evaluation
CAD	Current Account Deficit	M&EC	Monitoring and Evaluation Consultant
CBA	Cost-benefit Analysis	MTR	Mid-term Review
CE	Citizen Engagement	NGO	Non-governmental Organization
CERC	Contingent Emergency Response Component	NPV	Net Present Value
CSA	Climate Smart Agriculture	OFWM	On-farm Water Management
CSP	Climate Smart Production	PA	Productive Alliance
DA	Designated Account	PAMRA	Punjab Agricultural Marketing Regulatory Authority
DD	Deputy Director	PD	Project Director
DGAWM	Directorate General Agriculture Water Management	PDO	Project Development Objective
DGOFWM	Director General On-farm Water Management	PG	Producer Group
DIC	District Implementation Committee	PGS	Punjab Growth Strategy
DPCU	Divisional Project Coordination Unit	PIC	Project Implementation Committee
DPD	Deputy Project Director	PID	Punjab Irrigation Department
DRC	District Rate Committee	PIPIP	Punjab Irrigated Agriculture Productivity Improvement Program
ERR	Economic Rate of Return	PIS-TPVCs	Project Implementation Supervision and Third-party Verification Consultants
E&S	Environmental and Social	PMU	Project Management Unit
ESMF	Environmental and Social Management Framework	PPC	Project Policy Committee
FAO	Food and Agriculture Organization	PPSD	Project Procurement Strategy for Development
FEG	Farmers Enterprise Group	PRIAT	Punjab Resilient and Inclusive Agriculture Transformation Project
FHH	Female-headed Household	PSC	Project Steering Committee
FI	Financial Institution	RF	Results Framework
FM	Financial Management	RS	Remote Sensing
FY	Fiscal Year	SEA	Sexual Exploitation and Abuse
GBV	Gender-based Violence	SEP	Stakeholder Engagement Plan
GDP	Gross Domestic Product	SH	Sexual Harassment
GHG	Greenhouse Gas	SORT	Systematic Operational Risk-rating Tool
GoPunjab	Government of Punjab	tCO2e	Tons of Carbon Dioxide Equivalent

GRS	Grievance Redress Service	USAID	United States Agency for International Development
HCP	High Carbon Price	VA	Value Addition
HEIS	High-efficiency Irrigation System	VC	Value Chain
HH	Household	WB	World Bank
HVC	High Value Crop	WBG	World Bank Group
IBIS	Indus Basin Irrigation System	WMO	Water Management Officer
ICT	Information and Communication Technologies	WMS	Water Management Supervisor
IDA	International Development Association	WUA	Water Users' Association



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## DATASHEET

## BASIC INFORMATION

Country(ies)	Project Name	
Pakistan	Punjab Resilient and Inclusive Agriculture Transformation	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P176786	Investment Project Financing	Moderate

## Financing &amp; Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input checked="" type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
21-Jun-2022	30-Jun-2027

Bank/IFC Collaboration

No

## 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 Name	Cost (US\$, millions)
Component 1: Community-driven Improvement of Water Conveyance and Application	126.00
Component 2: Promotion of Climate Smart Production, Regenerative Agriculture, Diversification, Value Addition, and Inclusive Access to Markets	118.00
Component 3: Project Management, Monitoring and Learning	18.00
Component 4: Contingent Emergency Response Component	0.00

## Organizations

Borrower: Islamic Republic of Pakistan  
 Implementing Agency: Government of Punjab, Agriculture Department

## PROJECT FINANCING DATA (US\$, Millions)

### SUMMARY

<b>Total Project Cost</b>	262.00
<b>Total Financing</b>	262.00
<b>of which IBRD/IDA</b>	200.00
<b>Financing Gap</b>	0.00

### DETAILS

#### Private Sector Investors/Shareholders

Equity	Amount	Debt	Amount
Government Contribution	253.00		
Government Resources	53.00		
IDA (Credit/Grant)	200.00		
Non-Government Contributions	9.00		
Private Sector Equity	9.00		
<b>Total</b>	<b>262.00</b>		<b>0.00</b>

**IDA Resources (in US\$, Millions)**

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
<b>Pakistan</b>	200.00	0.00	0.00	200.00
National PBA	200.00	0.00	0.00	200.00
<b>Total</b>	<b>200.00</b>	<b>0.00</b>	<b>0.00</b>	<b>200.00</b>

**Expected Disbursements (in US\$, Millions)**

WB Fiscal Year	2022	2023	2024	2025	2026	2027
Annual	0.00	25.00	45.00	45.00	45.00	40.00
Cumulative	0.00	25.00	70.00	115.00	160.00	200.00

**INSTITUTIONAL DATA****Practice Area (Lead)**

Agriculture and Food

**Contributing Practice Areas**

Water

**Climate Change and Disaster Screening**

This operation has been screened for short and long-term climate change and disaster risks

**SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)**

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Moderate
7. Environment and Social	● Moderate



8. Stakeholders	● Moderate
9. Other	
10. Overall	● Moderate

## COMPLIANCE

### Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes    [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes    [✓] No

### Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not Currently Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Not Currently Relevant
Financial Intermediaries	Not Currently Relevant



**NOTE:** For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

## Legal Covenants

### Sections and Description

Section II.2 of Schedule 2 to the Financing Agreement: Mid-term Review: By not later than October 31, 2025, the Recipient shall, in conjunction with the Association and the Project Implementing Entity, carry out a mid-term review of the Project ("Mid-term Review"), covering the progress achieved in the implementation of the Project.

### Sections and Description

Section I.A.2 of the Schedule to the Project Agreement: Institutional Arrangements:

The Project Implementing Entity shall:

(a) establish by no later than two (2) months after the Effective Date, and thereafter maintain at all times during the implementation of the Project, with a mandate, composition, and resources satisfactory to the Association, a Project Policy Committee;

(b) establish by no later than two (2) months after the Effective Date, and thereafter maintain at all times during the implementation of the Project, with a mandate, composition, and resources satisfactory to the Association, a Project Steering Committee;

(c) establish by no later than two (2) months after the Effective Date, and thereafter maintain at all times during the implementation of the Project, with a mandate, composition, and resources satisfactory to the Association, a Project Implementation Committee;

(d) establish by no later than two (2) months after the Effective Date, and thereafter maintain at all times during the implementation of the Project, with a mandate, composition, and resources satisfactory to the Association, a District Implementation Committee at each district;

(e) establish by no later than two (2) months after the Effective Date, and thereafter maintain at all times during the implementation of the Project, with a mandate, composition, and resources satisfactory to the Association, a District Rate Committee, under each District Implementation Committee;

(f) at all times during the Project implementation, through the Project Steering Committee and the Project Implementation Committee, enable the recruitment and retainment of consultants as may be needed to support each of their functions in implementing the Project, including the third-party validation consultant, in adequate numbers and under the terms of reference satisfactory to the Association.

### Sections and Description

Section II.B of the Schedule to the Project Agreement: Mid-term Review: By not later than October 31, 2025, the Project Implementing Entity, in conjunction with the Recipient and the Association, carry out a mid-term review of the Project ("Mid-term Review") covering the progress achieved in the implementation of the Project.



### Sections and Description

Section I.B.1 of the Schedule to the Project Agreement: Project Implementation Manual: The Project Implementing Entity shall prepare and adopt, by not later than one (1) month after the Effective Date, a Project Implementation Manual, in form and substance satisfactory to the Association.

### Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	<p>Section 4.01 of the Financing Agreement: the Project Agreement has been duly executed and delivered and all conditions precedent to its effectiveness, other than the effectiveness of this Agreement, have been fulfilled.</p>
Type Disbursement	Financing source IBRD/IDA	<p>Description</p> <p>Section III.B.1(b) of Schedule 2 to the Financing Agreement:</p> <p>(b) for Emergency Expenditures under Category (2), unless and until all of the following conditions have been met in respect of said expenditures:</p> <p>(i) (A) the Recipient has determined that an Eligible Crisis or Emergency has occurred, and has furnished to the Association a request to withdraw Financing amounts under Category (2); and (B) the Association has agreed with such determination, accepted said request and notified the Recipient thereof; and</p> <p>(ii) the Recipient has adopted the CERC Manual and Emergency Action Plan, in form and substance acceptable to the Association.</p>



## I. STRATEGIC CONTEXT

### A. Country Context

**1. Pakistan has made significant progress over the last two decades towards reducing poverty.** The expansion of off-farm economic opportunities, and the increase in migration and associated remittances allowed over 47 million Pakistanis to escape poverty between 2001 and 2018. Nonetheless, challenges for inclusive growth remain, systematically related to spatial disparities and deficits in human capital endowment, and access to services and opportunities. Human capital outcomes are poor and stagnant, with high levels of stunting at 38 percent and learning poverty at 75 percent. Growth of per capita gross domestic product (GDP) has also been low, averaging only around 1.8 percent annually.<sup>1</sup> Economic growth in Pakistan has historically been fueled by private and government consumption, with productivity-enhancing investment and exports contributing relatively little. Furthermore, consumption-led growth has been associated with frequent macroeconomic imbalances. Achieving sustained higher economic growth is important for Pakistan to reduce inequality and increase shared prosperity.

**2. After rebounding in fiscal year (FY)21, growth is expected to moderate in FY22–23.** Due to low-base effects and recovering domestic demand, real GDP growth in 2015–16 factor prices rebounded to 5.6 percent in FY21 from a contraction of 1.0 percent in FY20. Surging commodity prices and safe-haven effects due to the war in Ukraine have been adversely impacting the country's current account balance, exchange rate, and inflation rate. Therefore, with the larger external imbalances and higher domestic inflation, monetary tightening has resumed. Output growth is therefore projected to moderate to 4.3 percent in FY22 and to 4.0 percent in FY23. Thereafter, economic growth is projected to recover to 4.2 percent in FY24. This recovery is predicated on continued macroeconomic stability and a narrowing of the fiscal and external deficits in the medium term. Inflation is estimated to rise to an average of 10.7 percent in FY22 but is then expected to decrease over the forecast horizon as world commodity prices ease. Following from the faster import than export growth in the first half of FY22, the current account deficit (CAD) is expected to widen to 4.4 percent of GDP in FY22. Easing demand pressures due to monetary tightening, lower commodity prices, and the weaker currency are expected to dampen imports in FY23. With the implementation of reforms to reduce import tariffs on relevant intermediates for the export sector and increased allocations for export refinance schemes, the CAD is expected to narrow to 3.0 percent of GDP in FY24. The fiscal deficit (excluding grants) is projected to widen slightly to 6.3 percent of GDP in FY22, and gradually narrow over the medium term as revenue mobilization measures, particularly the General Sales Tax Harmonization and Personal Income Tax reform, take hold. Public debt will remain elevated in the medium term, as will Pakistan's exposure to debt-related shocks. This outlook assumes that the International Monetary Fund Extended Fund Facility program will remain on track.

### B. Sectoral and Institutional Context

**3. 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

<sup>1</sup> World Bank. 2022. *Pakistan Development Update: Financing the Real Economy*. April. Islamabad: World Bank.



percent), and rice (52 percent). Agricultural growth in Punjab, however, has immense potential yet to be achieved.

**4. 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 (HH) 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.<sup>2</sup> Agricultural production is characterized by its bimodal farm structure. Some 85 percent of farms have less than 5 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 (VC) linkages. Although smallholder farmers are a highly heterogeneous group, some key constraints are common to most small farmers, notably their (i) limited crop diversification; (ii) limited market access; (iii) low security of tenure; (iv) poor access to credit; and (v) limited ability to adapt to climate change and water scarcity.<sup>3</sup>

**5. Despite emerging market opportunities for productive diversification and increased value addition (VA), 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 and 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 VA 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.<sup>4</sup> Challenges preventing agri-food stakeholders from seizing these market opportunities fall under (i) on-farm productivity constraints; and (ii) off-farm VA 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.<sup>5</sup> 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 VA and commercialization are constrained by the agri-food VC's inefficiencies, such as aggregation failures (e.g., limited use of farmer aggregation models, poorly functioning wholesale produce markets), high transaction costs, inefficient post-harvest practices, and poor infrastructure supporting storage and farm-to-market transport.<sup>6</sup> Approximately 30 to 40 percent of all agricultural produce is lost before reaching markets as a result of poor post-harvest processes.<sup>7</sup> There has been progress in recent years towards reducing regulatory constraints such as through the Punjab Agricultural Marketing

<sup>2</sup> Punjab Agriculture Department. 2018. "Punjab Agriculture Policy." Government of Pakistan, Lahore.

<sup>3</sup> World Bank. 2020. "Islamic Republic of Pakistan: Leveling the Playing Field (Systematic Country Diagnostic)." World Bank, Washington DC.

<sup>4</sup> International Finance Corporation. 2021. "Creating Markets in Pakistan: Country Private Sector Diagnostic." IFC, Washington DC.

<sup>5</sup> Ali, Mubarik, Jock R. Anderson, Derek Byerlee, and Hans G.P. Jansen. 2018. "Agricultural and Livestock Innovation System: Achievements, Constraints, and Ways Forward." Diagnostic Assessment of the Punjab, World Bank, Pakistan Country Office.

<sup>6</sup> IFC. 2021. "Creating Markets in Pakistan: Country Private Sector Diagnostic." IFC, Washington DC.

<sup>7</sup> Punjab Agriculture Department. 2018. "Punjab Agriculture Policy." Government of Pakistan, Lahore.



Regulatory Authority (PAMRA) Act 2020, supported by the Punjab Agriculture and Rural Transformation Program-for-Results (P162446).

**6. 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.<sup>8</sup> Agriculture lending is heavily skewed towards processing, with lending for food processing almost three times higher than lending for crop and animal production.<sup>9</sup> Loans to crop and animal production tend to go to larger farmers, as these account for more than 70 percent of disbursements.<sup>10</sup> 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 VCs 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 (PKR 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 7 percent for development, including for equipment and technology.<sup>11</sup> 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.<sup>12</sup> As a result, small and medium farmers access finance predominantly from the informal sector<sup>13</sup> that can capture up to 80 percent of the farmer's expected profit and provides only short-term seasonal loans often associated with pre-harvest purchase of the farmer's production at an under-market price.<sup>14</sup>

**7. Female farmers have assumed a growing share of responsibility for agriculture in Punjab, yet there are several factors leading to their lower productivity.** Approximately 74 percent of women depend on agriculture as a source of livelihood, but only 40 percent are formally employed.<sup>15</sup> Half of the rural women are engaged as farm and family labor and around 75 percent of these receive no payment for their work.<sup>16</sup> Although there is a large presence of women working in agriculture, there is a large

<sup>8</sup> Ministry of Finance 2021 Survey.

<sup>9</sup> State Bank of Pakistan. 2021. <https://www.sbp.org.pk/ecodata/By-type-of-finance.pdf>.

<sup>10</sup> State Bank of Pakistan. 2021. <https://www.sbp.org.pk/acd/PWS-Jul-Jun-2021.pdf>.

<sup>11</sup> State Bank of Pakistan. 2021. [https://www.sbp.org.pk/departments/stats/PakEconomy\\_HandBook/Chap-4.12.pdf](https://www.sbp.org.pk/departments/stats/PakEconomy_HandBook/Chap-4.12.pdf).

<sup>12</sup> Ministry of Finance 2021 Survey.

<sup>13</sup> Naqvi, Abbas. 2017. "Ricuit: Cutting Out the Middle Man." *Profit by Pakistan Today*, May 1, 2017.

<https://profit.pakistantoday.com.pk/2017/05/01/ricuit-cutting-out-the-conventional-middleman/>.

<sup>14</sup> Pakistan Institute of Development Economics. <https://pide.org.pk/wp-content/uploads/par-vol2i10-12-role-of-the-middle-man-and-neglected-aspects.pdf>.

<sup>15</sup> Punjab Agriculture Department. 2018. "Punjab Agriculture Policy." Government of Pakistan, Lahore.

<sup>16</sup> Samee, Durre, Farhana Nosheen, Haq Nawaz Khan, Imdad Ali Khawaja, Khalida Jamali, Parvez Iqbal Paracha, Shahnaz Akhtar, Zahira Batool, and Zohra Khanum. 2015. "Women in Agriculture in Pakistan." Food and Agriculture Organization of the United



income gap between men and women working in agriculture. Women earn an average of US\$47 per month compared to US\$102 for men.<sup>17</sup> The earning gap is due to several factors such as lack of access to the latest technologies and farming techniques, weak extension support, social norms resulting in being less likely to own income-generating assets such as land, machinery, or equipment, or have equal power in financial decision-making and illiteracy. Furthermore, empirical studies reveal that women farmers have relatively low rates of adoption of agricultural technologies associated with higher productivity,<sup>18</sup> due to factors such as women's insufficient bargaining power, the absence of extension services targeted at or tailored to women's needs, and the low level of literacy rate among rural women in Punjab.<sup>19</sup> Female-led Farmers Enterprise Groups (FEGs)<sup>20</sup> also face more constraints than male-led FEGs to participate in agricultural VCs. Some key constraints include lack of access to credit, information, and markets.<sup>21</sup>

**8. Punjab relies almost entirely on the extensive Indus Basin Irrigation System (IBIS) that abstracts and distributes the waters from Indus River and its tributaries for all its water usage.** Due to the predominantly arid and semi-arid climate, more than 75 percent of the cropped area is irrigated, and irrigated agriculture represents over 90 percent of the sector's VA.<sup>22</sup> While the agriculture sector accounts for more than 90 percent of water withdrawals, the irrigation system also supplies water to cities and industries and contributes 80 percent of the groundwater recharge. The groundwater reservoir is in turn used by farmers to complement the water supplies from the canal system.<sup>23</sup> This has helped resolve, to a large extent, the waterlogging issue that had become prevalent in the 1960s (before the expansion of groundwater use). The ever-increasing use of groundwater through private tube wells (now 1.3 million in number) is, however, causing over-abstraction and depletion of the groundwater table in areas of southern Punjab where the recharge from canal seepage and surface irrigation is proportionally lower due to their location at the tail-end of the canal system. Considering that seepage losses from canals and in-field irrigation all contribute to the groundwater recharge, and that there is no substantial drainage out of the Punjab Province, the main potential for real water savings while increasing production lies in the reduction of the non-beneficial consumptive use of the main crops and a shift to crops with higher water productivity.

**9. Punjab has strong experience in improving last-mile water distribution resulting in a more equitable access to water.** Within IBIS, the last-mile distribution is the responsibility of groups of farmers who have collectively built and are managing a watercourse irrigating an average of 280 acres. The Punjab Irrigation Department (PID) delivers the water at the watercourse outlet and farmers apply a rotational distribution called *warabandi* within the watercourse command. The Agriculture Department of Punjab (ADP) has been supporting improved water distribution at watercourse level through a four-decade-long

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Nations (FAO), Islamabad.

<sup>17</sup> World Bank. 2019. "Climate Smart Agriculture in Pakistan."

<sup>18</sup> Shibata, Rieko, Sarah Cardey, and Peter Dorward. 2020. "Gendered Intra-Household Decision-Making Dynamics in Agricultural Innovation Processes: Assets, Norms and Bargaining Power." *Journal of International Development* 32: 1101–25. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/jid.3497>.

<sup>19</sup> Literacy rate for rural women in Punjab is 47 percent compared to 67 percent among men.

<sup>20</sup> FEGs are producer groups that specialize in agribusiness development. This is a concept identified and used by the Planning Commission of Pakistan. See: Planning Commission of Pakistan, Ministry of Planning, Development & Reforms. 2020. "Agriculture Transformation Plan." [https://www.pc.gov.pk/uploads/report/Transformation\\_Plan\\_2020.pdf](https://www.pc.gov.pk/uploads/report/Transformation_Plan_2020.pdf)

<sup>21</sup> Aurat Publication. 2018. "Socio-Economic Rights of Women Working in Agriculture in Punjab." Policy Brief, European Union: Only 25 percent of agribusiness women sell their products in an open market while 11 percent were not involved in affairs of the market. Amongst these, most women claim that they do not receive suitable selling prices for their products.

<sup>22</sup> Agripunjab.gov.pk.

<sup>23</sup> About 60 percent of the water supply for irrigation is from groundwater.



program of watercourse lining and establishment of Water User Associations (WUA). As of today, up to 75 percent of all 58,000 watercourses in Punjab have been lined to some extent and the lined length is about 19 percent of the total length of watercourses against a target of 50 percent set by the Government of Punjab (GoPunjab). Watercourse lining has a demonstrated effect in improving water distribution equity between head, middle, and tail-end farmers of the watercourse command.<sup>24</sup> The GoPunjab has also been supporting small water conveyance schemes outside the canal command areas. These types of interventions typically favor small farmers who have limited access to groundwater due to the costs involved.

**10. 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 and thus contribute to increased agricultural water productivity. Over the past decade the GoPunjab 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.

**11. Climate change creates further stress for the agriculture sector and on the availability and use of water.** Pakistan is ranked among the top 10 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.<sup>25</sup> 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 0.5–2°C could lead to around an eight to 10 percent loss in yields.<sup>26</sup> Such impact would notably be mitigated by the adoption of improved crop and irrigation practices and the use of enhanced technologies like drip irrigation.

**12. The water resources management agenda the GoPunjab needs to embrace requires more effective interdepartmental coordination.** Owing to population growth and economic development, the

<sup>24</sup> PIPIP results show an increase of the flow available for tail-end farmers after lining from 45 to 82 percent of the flow available at the head of the watercourse.

<sup>25</sup> Litton, Lucy, Akthar Ali, Bill Garthwaite, Jehangir F. Punthakey, and Basharat Saeed. 2021. "Groundwater in Pakistan's Indus Basin: Present and Future Prospects." World Bank, Washington, DC.

<sup>26</sup> Dehlavi, Ali, Ashley Gorst, Ben Groom, and Farrukh Zaman. 2015. "Climate Change Adaptation in the Indus Ecoregion: A Microeconomic Study of the Determinants, Impacts and Cost Effectiveness of Adaptation Strategies." WWF-Pakistan. [https://d2ouvy59p0dg6k.cloudfront.net/downloads/110215\\_idrcstudy\\_1.pdf](https://d2ouvy59p0dg6k.cloudfront.net/downloads/110215_idrcstudy_1.pdf)



demand for water could increase by 50 percent over the next 30 years, significantly outstripping supply. Stringent demand management and efficiency improvements will be critical if Pakistan is to stay within its available water resource envelope. Investments to increase on-farm agricultural water productivity will need to be accompanied by off-farm modernization of the canal system to achieve better adequacy (i.e., matching demand with supplies) and equity of the irrigation service. The provision of surface water from canals would then move from a supply-driven service to a more demand-driven service, responding to farmers' actual water needs, which could in turn lead to improved water allocation / distribution and adequate water pricing and revenues. In addition to supporting on-farm water management (OFWM) investments, the proposed project will contribute to facilitating collaboration between the ADP and the PID for conjunctive water resources management at community level. A separate project called Improving Water Management and Irrigation Systems in Punjab (P176743) is under preparation and would support the modernization of the canal systems to improve the water supply service at the head of the watercourse outlet, thus complementing PRIAT.

### C. Relevance to Higher Level Objectives

**13. The project is consistent with the World Bank Group's Country Partnership Strategy (CPS) for Pakistan FY15–19 (Report No. 84645-PK) discussed by the Board of Executive Directors on May 1, 2014.** The CPS was extended to FY20 under the corresponding May 2017 Performance and Learning Review (Report No. 113574), to FY21 during the COVID-19 crisis, and remains in effect.<sup>27</sup> The Punjab Resilient and Inclusive Agriculture Transformation Project (PRIAT) will contribute to CPS Outcome 2.2—"increased productivity in farms in selected irrigation schemes"—through activities under both Component 1 and Component 2. All project activities will contribute to CPS Result Area 3 on addressing inclusion and reducing inequalities for vulnerable groups. Watercourse lining will, notably, enhance water access equity in rural Punjab. The project will also contribute to addressing the cross-cutting issue of climate resilience by supporting (i) preparedness towards climate-related risks; and (ii) water management by modernizing the irrigation network and installing HEIS systems. PRIAT's design is well aligned with the World Bank Strategic Country Diagnostic's identified pathways to achieving growth, poverty reduction, and shared prosperity by promoting the productivity and environmental sustainability of the agriculture water sector, and by strengthening agriculture competitiveness. PRIAT is consistent with the World Bank's (WB) overall development frameworks as well—Resilience, Inclusion, Sustainability, and Efficiency; and Green, Resilient, and Inclusive Development—in terms of addressing long-term development challenges and contributing to the post-pandemic building back better agenda on increasing climate resilience. Lastly, project activities are consistent with the Maximizing Finance for Development approach,<sup>28</sup> aiming at optimizing the allocation of limited public financial resources and creating opportunities for crowding-in private sector financing. PRIAT will leverage about US\$9 million in private capital mobilization from producer groups (PGs) and enable another US\$53 million from individual farmers for a combined total equivalent to about 31 percent of the public investment.

**14. The project is strongly aligned with the GoPunjab's development strategies.** PRIAT is consistent with the Punjab Growth Strategy (PGS) 2023, which recognizes the concept of "more crop per drop of water" to achieve the broader policy objective of water resources management in the province. The project will contribute to PGS 2023's key investment sectors in "Drip Irrigation" and "Fruits and Vegetables". The project also aligns with the objectives of the Punjab Agriculture Policy 2018, which

<sup>27</sup> The new Country Partnership Framework is currently under preparation and this operation is expected to be aligned with its objectives.

<sup>28</sup> See: World Bank. 2018. "Future of Food – Maximizing Finance for Development in Agricultural Value Chains."



promotes massive expansion of water conservation efforts, enhancing sustainability and resilience in the wake of climate change, and the enablement of private sector participation in agriculture VCs with increased investment, technology infusion, and management resources. Lastly, the project aligns with the Pakistan Vision 2025 and Agriculture Transformation Plan (ATP), which perceive a great potential for modernizing agriculture and enhancing its competitiveness through developing VCs.<sup>29</sup>

## II. PROJECT DESCRIPTION

### A. Project Development Objective

#### PDO Statement

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

#### PDO Level Indicators

**16.** The proposed PDO level indicators are:

- a) Direct beneficiaries reached (number) [of which female beneficiaries]
- b) Reduction of the differences in water availability among head, middle, and tail end users of watercourses (percentage)
- c) Increased agricultural output per unit of water used at farm level ( $\text{kg}/\text{m}^3$ ) for wheat (percentage)
- d) Increased agricultural output per unit of water used at farm level ( $\text{kg}/\text{m}^3$ ) for rice (percentage)
- e) Increased share of area under high-value crops (HVC) cultivation (percentage)
- f) Increase in agriculture incomes of HHs participating in project activities (percentage)
- g) Increase in agriculture incomes of female-headed households (FHH) participating in project activities (percentage)

### B. Project Components

**17.** The project will support four components, financed through an Investment Project Financing (IPF) instrument with US\$262 million, with US\$200 million from the International Development Association (IDA) and US\$62 million mobilized from local beneficiaries. Detailed component-wise fund allocation is provided in Table 1.

<sup>29</sup> Fifty-nine percent of ATP's initial investment will go towards developing Pakistan's value chain and processing infrastructure especially on small-scale value chain operations.

**Table 1. Cost Summary of PRIAT (US\$ million)**

<b>Components</b>	<b>Total Cost</b>	<b>Farmers' Share</b>	<b>World Bank</b>
<b>Component 1: Community-driven Improvement of Water Conveyance and Application</b>			
1.1: Upgrading Community Water Conveyance Infrastructure	116	29	87
1.2: Improving Community Water Management	10	0	10
<b>Sub-total</b>	<b>126</b>	<b>29</b>	<b>97</b>
<b>Component 2: Promotion of Climate Smart Production (CSP), Regenerative Agriculture, Diversification, VA, and Inclusive Access to Markets</b>			
2.1: Improving the Market Integration of Producer Groups for Increased Production, Diversification, and VA	34	9	25
2.2: Supporting Individual Producers for CSP and Diversification	84	24	60
<b>Sub-total</b>	<b>118</b>	<b>33</b>	<b>85</b>
<b>Component 3: Project Management, Monitoring and Learning</b>			
3.1: Providing Support for Project Supervision and Third-Party Verification Consultancy	5	0	5
3.2: Providing Support for Monitoring and Evaluation	3	0	3
3.3: Providing Support for Project Management and Implementation	10	0	10
<b>Sub-total</b>	<b>18</b>	<b>0</b>	<b>18</b>
<b>Component 4: Contingent Emergency Response Component</b>			
	<b>0</b>	<b>0</b>	<b>0</b>
<b>GRAND TOTAL</b>	<b>262</b>	<b>62</b>	<b>200</b>

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

**19.** This component has two objectives: (i) improve the equity of water access within the watercourse command area by improving the conveyance efficiency; and (ii) improve agricultural water productivity by promoting the adoption of climate smart water management practices at community and farm levels. Together, these measures will allow for improved water control and use and reduction of non-beneficial evapotranspiration on-farm, improved water conservation, and thereby strengthen climate resilience of the beneficiary households and irrigated agricultural systems.

**20.** The watercourses will be selected based on the following criteria: (i) priority will be given to poverty affected areas of Southern Punjab; (ii) farmers are willing to form a WUA and agree with the cost-sharing arrangements, namely communities will contribute labor cost (i.e., about 25 percent of the total cost) and the project will finance all materials related to watercourse improvement (i.e., around 75 percent of total cost); (iii) members of WUA must agree to reconstruct the *katcha* portion of the watercourse prior to the commencement of lining work; (iv) sections to be lined will be head reaches having maximum usage and flows, segments susceptible to leakage, over topping, and spillage sections having sandy/porous soils, and so on; (v) watercourses to be reconstructed will be selected among the oldest watercourses that were built 20 to 40 years ago using substandard engineering design, e.g., brick lining, and requiring an extension of the lining; (vi) WUA must commit to fulfilling maintenance and repairs responsibilities, as well as provide litigation-free right of way; and (vii) a climate risk and vulnerability assessment to prioritize most vulnerable, drought-prone watercourses.



**21. Subcomponent 1.1: Upgrading community water conveyance infrastructure** through: (i) improvement of unimproved watercourses; (ii) completion of partially improved watercourses to achieve the optimal lining for each watercourse; (iii) reconstruction and completion of outlived watercourses; (iv) improvement of irrigation conveyance systems outside canal command and riverine areas; and (v) training of WUAs on the maintenance of the conveyance system.

**22. Subcomponent 1.2: Improving community water management** through: (i) training of WUAs members on improved, climate smart irrigation and agronomic practices and provide the required farm implements; (ii) development and deployment of information and communication technologies (ICT)-based on-farm irrigation advisory services for better irrigation scheduling; (iii) installation of water monitoring devices (soil moisture meters, flow meters, piezometers), carrying out of water budgeting and accounting across selected watercourses for improved monitoring of water resources, and building of community-based awareness on groundwater management; and (iv) piloting of community-based groundwater recharge schemes.

**23. Component 2: Promotion of CSP, Regenerative Agriculture, Diversification, VA, and Inclusive Access to Markets.**

**24. This component will seek to support growth-oriented farmers<sup>30</sup> to (i) diversify, intensify, and add value to their production in a market-driven and climate smart approach, including through regenerative agriculture; and (ii) establish and/or upgrade their market linkages with off-takers in a sustainable and profitable way.** Producers and PGs (i.e., FEGs) will receive both TA from local service providers (LSPs) and direct financial support.

**25. To mitigate the risks of elite capture and to promote inclusion, this component will focus its support on small and medium farmers.** Project activities are designed to best suit the needs of small and medium farmers by providing dedicated support to the mobilization and market integration of FEGs through a productive alliance (PA) approach under subcomponent 2.1. In addition, support to individual producers for the adoption of on-farm climate and water-smart practices under Component 2 will uphold strict selection criteria for beneficiaries, which will include (i) restricting eligibility for support to farmers with less than 25 acres of arable land;<sup>31</sup> (ii) focusing support on small farmers (i.e., farmers with less than 12.5 acres of arable land) who will account for at least 90 percent of beneficiaries for the component;<sup>32</sup> (iii) enforcing a 12.5 acre ceiling per farmer for HEIS installation; and (iv) applying a lower cost sharing ratio of 25:75 for smaller on-farm HEIS investments of 0–7.5 acres versus a 40:60 ratio for incremental HEIS investments from 7.5–12.5 acres. Off-farm VA investments would be open only to FEGs and will benefit from a 30:70 cost sharing ratio. In addition, TA support will be provided to small and medium farmers to develop the business plan (BP) needed to receive financial support for PAs and to small farmers for HEIS implementation. Female farmers will also receive tailored support both to maximize their ability to receive support and to implement their investments.

**26. Subcomponent 2.1: Improving the market integration of producer groups for increased**

<sup>30</sup> Growth-oriented farmers are those interested in increasing the commercialization of marketable surplus. Global experience shows that market integration support tends to be most successful when targeting such types of farmers.

<sup>31</sup> The project will conduct an annual assessment of demand from producers as part of the project's M&E. After the first year of project implementation, the ceiling for the eligibility criterion may be reviewed and adjusted (not to exceed 35 acres of landholding) if the demand is deemed not sufficient to meet the objectives of the project. Such reviews can be done on an annual basis starting from the first year of project implementation.

<sup>32</sup> For beneficiaries owning between 12.5 and 25 acres, the Project Management Unit (PMU) will make efforts to encourage these producers to adopt and demonstrate new technologies not included under PIPIP (e.g., regenerative agriculture investments) alongside HEIS investments, particularly in lagging districts or areas not covered by PIPIP.



**production, diversification and VA** through: (i) the establishment/upgrading of market linkages between buyers and growth-oriented producers; and (ii) investments in productive assets, agricultural inputs, and TA to assist FEGs in intensifying, diversifying and adding value to their production in a water smart way.

**27. Subcomponent 2.2: Supporting individual producers for CSP and diversification** through: (i) sensitizing of farmers on the use of HEIS and to develop BPs; and (ii) investments in HEIS, agricultural inputs, and TA to promote the proper adoption of HEIS and climate smart agriculture (CSA) and water management practices.

**28. Component 3: Project Management, Monitoring and Learning.**

**29. Subcomponent 3.1: Providing support for Project supervision and third-party validation consultancy.** This subcomponent will support (i) supervision and spot checks by third-party consultants covering quality and quantity aspects; and (ii) activities identified in the Operational Risk Assessment Framework and governance and accountability measures.

**30. Subcomponent 3.2: Providing support for monitoring and evaluation (M&E).** This subcomponent will finance TA costs to carry out the project's M&E activities, including the introduction and implementation of an ICT-based participatory M&E system and a dedicated impact evaluation.

**31. Subcomponent 3.3: Providing support for Project management and implementation,** including capacity building, training, consulting services for the implementation of innovative activities, communities and other stakeholders' mobilization and awareness strengthening, strategic studies and research, and the development and implementation of a communication strategy.

**32. Component 4: Contingent Emergency Response Component.** Providing immediate response to an Eligible Crisis or Emergency, as needed.

## C. Project Beneficiaries

**33. The project's main beneficiaries are rural communities, including growth-oriented small and medium farmers and their groups.** The project will directly benefit about 190,000 farm families and 1.4 million acres of irrigated area. Farm families will benefit from investment in watercourse lining under subcomponent 1.1. 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 HHs at the end of the watercourses, who tend to belong to more disadvantaged groups. Farm families are also expected to adopt CSA practices under subcomponent 1.2. Under Component 2, 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. The project will also undertake dedicated sensitization and implementation support tailored to female farmers' needs to ensure their participation in the project.

**34. Three other groups are expected to benefit from the project:** (i) relevant government institutions will benefit from strengthened institutional capacity for managing Punjab's water resources and for providing higher quality public services; (ii) 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

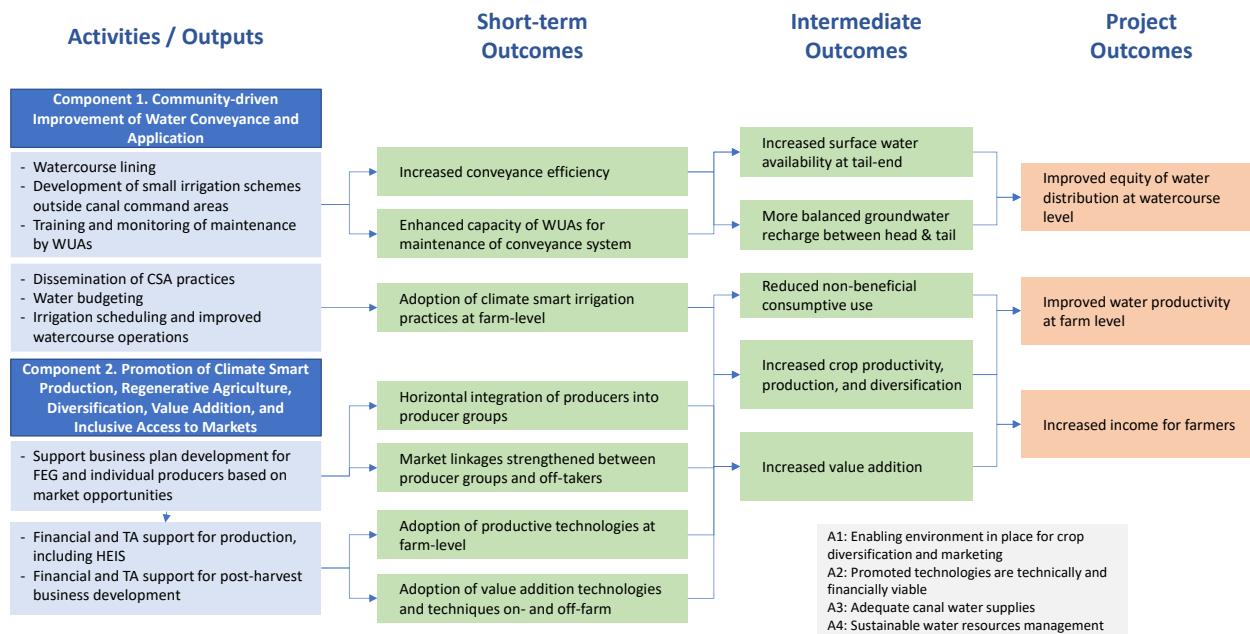


for locally sourced goods and services will also create job opportunities for local skilled and unskilled laborers; and (iii) agri-processors and other off-takers will benefit from lower transaction costs in sourcing higher quality products from producers and PGs thanks to the project's support to these producers and PGs in diversifying their production and in investing in their ability to add value to and market their production.

#### D. Results Chain

**35. The PDO will be achieved through the Theory of Change, illustrated in Figure 1.** Achievement of project outcomes rely on the critical assumptions that (i) the enabling policy environment exists to lift market barriers and motivate behavioral changes in crop diversification and marketing (i.e., mainly through the PAMRA Act 2020); (ii) promoted technologies such as HEIS are technically and financially viable to be adopted by small farmers for inclusive development; (iii) adequate canal water supplies are delivered to the improved watercourses; and (iv) the enabling environment is in place for sustainable water resources management.

**Figure 1. PRIAT's Theory of Change**



#### E. Rationale for Bank Involvement and Role of Partners

**36. The WB is uniquely placed to support Punjab in executing PRIAT because of its rich country and global experience, financial resources, and technical expertise.** First, the WB has a long (more than 25 years) engagement in the agriculture and water sectors in Pakistan, and particularly Punjab, through both lending and policy advisory programs. Second, the WB has accumulated rich global experience from its engagement across geographies in areas of agriculture, irrigation, rural development, VC development, and poverty reduction. The WB has successfully helped clients introduce market pull mechanisms for smallholder inclusion in agribusiness in multiple geographies and from varying baselines. Finally, the World Bank Group (WBG) includes the International Finance Corporation (IFC), whose investment and



advisory services have supported public reforms and private investments across the globe. In Pakistan, IFC is preparing an *Agro-processing Deep Dive* to inform its future investments in the agri-food sector (e.g., by supporting improvements in food safety practices) in synergy with other WBG initiatives such as PRIAT. This deep dive follows on the findings and recommendations of the *Creating Markets in Pakistan: Country Private Sector Diagnostic 2021*.

**37. The WB has the convening power to promote inter-department as well as inter-donor coordination.** In addition to ensuring adequate coordination and synergies between Bank-financed projects, the WB is well positioned to support the GoPunjab in coordinating multiple ongoing donor-supported projects. This coordination is crucial for ensuring coherent implementation aligned with provincial strategies, avoiding duplications, and achieving synergies. The WB team has been meeting regularly with development partners and donors (e.g., the Asian Development Bank (ADB), the United States Agency for International Development (USAID), the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development, among others) that are engaged in the Punjab agriculture and irrigation sectors. The WB team will explore the possibility of establishing a platform for coordination, including with private sector partners in applying disruptive technology to the sector.

#### F. Lessons Learned and Reflected in the Project Design

**38. PRIAT's design draws lessons learned from previous projects in Pakistan and similar projects from different parts of the world, and specific studies (e.g., study on solar pumping practices in Punjab being conducted by the International Water Management Institute).** The support to watercourse improvements and to the implementation of OFWM technologies and practices builds on projects like PIPIP and the Sindh Irrigated Agriculture Productivity Enhancement Project (P145813), among others, and reflects the following design principles: (i) a community-driven development approach in watercourse rehabilitation and construction of water storage tanks/ponds is needed to ensure participation and sustainability; (ii) effectively engaging the private sector in project implementation instead of relying solely on public finance provides an effective exit strategy for the government, and at the same time, supports the creation of functional private sector; (iii) autonomy in the selection of HEIS suppliers and installation by the suppliers themselves nurtures long-term relationships and enables early market uptake; (iv) combining watercourse improvements with the provision of a range of products such as HEIS, water storage tanks, and agriculture technologies helps achieve better results; (v) output-based operations with disbursement to be made on unit rates yield better results than traditional procurement and contracting of works and materials; Independent engineering supervisory consultants are to carry out technical audits (in addition to certification of works and goods) to ensure quality and targeting; (vi) supporting the PMU with monitoring and evaluation consultants (M&ECs) helps secure the monitoring of project activities and impacts; (vii) project management should be located as close to the focus of project activities as possible to ensure a sound understanding of the problems encountered and to give the ability to react to beneficiaries' demands more effectively; (viii) ensuring that the project management teams remain as stable as possible, particularly avoiding frequent Project Directors (PDs) changes, is crucial for the continuity of operations and for swift project implementation; (ix) an effective and streamlined procurement system that delivers goods and services to farmers in a timely manner, and at prices that are not inflated by the traditional bidding process, is essential. This is particularly important when farmers are making contributions toward the purchase of goods and services; (x) requiring contributions from



farmers toward the cost of productive investments is important to ensure commitment and ownership of project supported activities. Additionally, sustainability of outcomes is best achieved by including farmers directly in project activities; (xi) linking solar pumps with surface water (including water tanks and harvesting ponds) and limiting the pumps' horsepower can effectively mitigate groundwater abstraction;<sup>33</sup> (xii) solarization of HEIS is highly consistent with promoting high value agriculture;<sup>34</sup> and (xiii) emphasizing innovations so that Bank-financed projects can serve as a channel to test innovative approaches to address ever-changing development challenges. Successful innovations can then be mainstreamed through government programs for greater development impact as well as long-term sustainability.

**39. The support to crop intensification and diversification and to the market integration of producers and PGs through a PA approach under Component 2 reflects the lessons accumulated through the WB's solid experience in implementing PAs, with projects in more than 20 countries, starting from Latin America and progressively expanding to multiple continents.** Evaluations of these projects show that the objectives of improving access to markets for small producers are consistently met. Project examples and the associated literature show, however, that implementing PAs should not be considered a one-size fits all approach and that careful research and analysis are needed during preparation. As a result, PRIAT's design has been tailored to the conditions on the ground in Punjab, reflecting the main findings from the "Feasibility Study for Productive Partnerships in Pakistan" carried out through the Pakistan Agriculture Sector Review (P175667) and building on the Establishment of Model Farm Linked with Improved Supply Chains & VA Project (EMFP) implemented by the ADP throughout the province since 2017. Project design also reflects lessons being drawn from the recently closed Sindh Agriculture Growth Project (P128307) that show that supporting the aggregation of milk producers into Milk Producer Groups and their market access resulted in significant increases in milk yields and in volumes of marketed surpluses, in a reduction of the share of milk sold through middlemen, and in an increase in the price per liter of milk sold.

### III. IMPLEMENTATION ARRANGEMENTS

#### A. Institutional and Implementation Arrangements

**40. A Project Policy Committee (PPC) chaired by the Chairman, Planning and Development Board, Punjab with Secretaries of Agriculture, Irrigation, Local Government & Community Development and Finance Department 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 PID.

**41. A Project Implementation Committee (PIC), chaired by Director General On-farm Water Management (DGOFWM) (PD), will also be established.** The DGOFWM (PD) of the GoPunjab, reporting

<sup>33</sup> International Water Management Institute. 2022. "Lessons learned from global solar irrigation programs for the design of PRIAT."

<sup>34</sup> International Water Management Institute. 2022. "Lessons learned from global solar irrigation programs for the design of PRIAT."



to the Secretary Agriculture, will be responsible for the implementation of the project. The DGOFWM (PD) will be responsible for all aspects of the project, including implementation, procurement, financial management (FM), environmental and social (E&S) safeguards, and oversight of the TA and training program, among others.

**42. The DGOFWM will be supported by** (i) one Deputy Project Director (DPD) on VA and marketing; (ii) one DPD (HEIS & Solar); (iii) one DPD (watercourses) and (iv) three Deputy Directors (DDs) located at headquarters responsible for watercourse improvement, on-farm water use efficiency and water saving, and VA and agribusiness capacity building and investment, respectively. Other support services will also be established, including specialists in procurement, FM, accounting, communication and public information, and E&S safeguards, and project implementation supervision third-party verification consultants (PIS-TPVCs), among others.

**43. The ADP commits to strengthening the capacity of the PMU in supporting inclusive market integration activities, particularly through a PA approach.** First, the ADP will appoint a DPD specifically responsible for market integration activities. Second, the ADP agreed to mobilize a team to carry out FEG support activities following the government's regulations (including at district level). This will be particularly needed to supervise the LSPs who will be supporting FEGs and buyers in establishing PAs.

## B. Results Monitoring and Evaluation Arrangements

**44. Rigorous, effective, and efficient M&E is crucial for PRIAT's successful implementation.** Building upon the solid foundation of PIPIP, independent M&ECs will be hired to carry out the following M&E activities for the project's self-evaluation: (i) implementation progress monitoring, including spot checking of works and quality of construction; (ii) collection of project survey data to assess progress towards indicators listed in the Results Framework (RF); and (iii) E&S impact and implementation of the agreed program. The Directorate General Agriculture Water Management (DGAWM) will equip dedicated staff working in M&E activities and act as counterparts to guide the consultants. With the support from M&ECs, PD will be responsible for providing a consolidated quarterly report in an appropriate format to the government and the WB no later than 15 days after each quarter. The consolidated report will cover the overall project implementation status, outcomes, and detailed progress of all components activities, such as progress on physical constructions, progress on capacity building and training, progress and results of special studies, and other fiduciary and safeguard issues (e.g., issues related to E&S aspects, procurement, and FM aspects, and so on). The PD will also produce with support from M&ECs a Mid-term Review (MTR) report and a final evaluation report. The lessons learned during implementation will be used to continuously inform the design of project components and activities. This will notably apply to the PA approach under Subcomponent 2.1, which is designed to follow an iterative learning process from one call for proposals to the next and to the support to solarized HEIS to ensure their sustainable use and impact on water resources management.

**45. M&E will be based on the collection of field data including physical measurements and farmers survey on a representative sample of project interventions and on a control group, complemented with remote sensing (RS) data.** The project's RF also outlines data collection methods, timetable, and data sources (see the RF for a full description of these indicators). RS will be used to measure the actual evapotranspiration of the sampled fields and to complement the farmers survey data for the



measurement of cropping intensity and yields. In addition, at least three rounds of impact evaluation surveys will be conducted: baseline before project's roll-out, midline at MTR, and end line at project completion stage for both treatment and a carefully designed counterfactual/control group to assess the high-level project outcomes. All project interventions will be recorded in a Geographic Information System maintained by DGAWM with assistance from M&ECs. To strengthen the in-house capacity on M&E, especially on improving methodologies of measuring the agricultural water productivity, both internal (Irrigation Training Institute from PID and Pakistan Council of Research in Water Resources, PCRWR) and external partners (e.g., International Water Management Institute or FAO/Green Climate Fund) will be explored for TA.

**46. The project will also conduct a dedicated impact evaluation to assess two sets of key innovative project activities.** The impact evaluation will specifically assess (i) the effectiveness of the project's support to increasing small and medium farmers' market access through a PA approach; and (ii) the effectiveness of different activities in increasing agricultural water productivity (e.g., watercourse improvement, various CSA practices, and HEIS) across different delivery mechanisms (e.g., WUAs, FEGs, or individual farmers).

### C. Sustainability

**47. PRIAT is expected to demonstrate sustainability after its completion.** The operation and maintenance of watercourses will become much easier (saving 75 percent of labor time) and cheaper (materials will last longer, usually 25–30 years, and require less cleaning) as a result of project interventions. Further, community cooperation will be strengthened by creating a formal platform of WUAs that is recognized under national laws and will enable access to further public support. Likewise, while HEIS technology has a very high initial cost (which is co-shared between the project and farmers), such costs can be recovered fully in two to three years by growing HVCs. The success of the technology is evidenced by the rate of adoption in PIPIP and neighboring provinces, which is currently at 15,000 acres per year. In addition, PRIAT's support to greater market integration of producers and PGs under Component 2 builds on and incorporates lessons from EMFP that has been implemented by the ADP in the past five years. Similar WB supported projects in other geographies show that the market linkages fostered under Component 2 help create sustainable commercial relationships between PGs and off-takers that are likely to outlast project support.<sup>35</sup> Global experience shows that the systematic provision of technical support to PGs to install and maintain equipment and machinery for VA and marketing helps maximize the sustainability of such investments. The project will also support a graduation approach so that grant beneficiaries will eventually become users of the formal financial system. Lastly, the synergies pursued between watercourse improvements under Component 1 and on-farm improvements under Component 2 are expected to reinforce the impacts and sustainability of both types of activities.

<sup>35</sup> World Bank. 2016. "Linking Farmers to Markets through Productive Alliances. An Assessment of the World Bank Experience in Latin America." World Bank, Washington DC.



## IV. PROJECT APPRAISAL SUMMARY

### A. Technical, Economic and Financial Analysis

#### Technical

**48.** For most OFWM activities under PRIAT, the works will apply proven technologies not expected to be prone to implementation challenges. The ADP has carried these out successfully before as demonstrated by PIPIP. Some innovations will be introduced, such as community-level water resources accounting and budgeting, groundwater mapping and monitoring, soil moisture monitoring, and ICT-based irrigation advisory services, but the ADP has committed to mobilizing all necessary TA from other departments, academic institutions, and some international organizations to ensure quality design, piloting, and roll-out. The possible needs from the client have also been reflected in the WB's implementation support arrangement.

**49.** The main challenge in the project is the proper execution and management of VA and marketing activities, particularly through the PA approach. The ADP has already started a plan to strengthen the capacity of PMU in this area and will mobilize more expertise from the private sector as needed.

#### Economic and Financial Analysis

**50.** The project will have a transformational impact on Punjab's agriculture sector, by reducing inequality of water access, introducing improved and climate smart OFWM technologies, and promoting VA and market integration. The main tangible benefits generated by the project will include (i) increased productivity and diversification of production; and (ii) VA on- and off-farm. The project will also facilitate agribusiness investments and improve the resilience of the VC to production and commercial risks associated with climate change.

**51.** The project's Economic and Financial Analysis (EFA) follows the standard methodology and simplified approach for cost-benefit analysis (CBA) and is in line with the guidelines of the WB published on EFA. To carry out the economic analysis, crop budgets were developed for each crop and by type of orchards (fruit trees) that would be grown in the project area, for both with and without project scenarios. Also, crop models were prepared for each type of interventions (e.g., improvement/lining of unimproved watercourses, extension of watercourse lining up to optimal lining length of 50 percent, reconstruction of outlived watercourses, improvement of water conveyance systems outside canal commands and riverine areas, HEIS, and so on). Yield increases were estimated conservatively, based on the results achieved under PIPIP. Incremental benefits have been estimated over the useful life of the project assuming a 20-year period with applying a discount rate of 9 percent to reflect the opportunity cost of capital.

**52.** Under these assumptions, the project's economic CBA indicators were estimated using a lower carbon price (LCP) assumption and a higher carbon price (HCP) assumption. Under the LCP scenario, the economic rate of return (ERR) for the project is 21 percent and the net present value (NPV) is US\$176 million (PKR 31,260 million). Under the HCP scenario, the ERR is 23 percent and the NPV is US\$215 million (PKR 38,221 million). Without considering the economic benefits generated by the net reduction in greenhouse gas (GHG) emissions, the ERR is estimated at 19 percent with an NPV at around US\$136 million (PKR 24,280 million). The sensitivity analysis also confirmed the robustness of the ERR that remains above the social discount rate (9 percent) even under worst conditions with a simultaneous 20 percent reduction in benefits and increase in costs or delay in benefits by two years. These indicators strongly



suggest that PRIAT represents an economically worthwhile investment from the perspective of Pakistan's society.

**53. A financial CBA was also performed for representative productive activities to be promoted under the project.** Besides, the project will directly benefit more than 190,000 farm families. Annual incremental production is valued at PKR 9,133 million (about US\$51 million).

**54. Net carbon balance.** A GHG emissions balance was estimated using EX-ACT, which quantifies the net carbon balance with regard to tons of carbon dioxide equivalent (tCO<sub>2</sub>e), resulting from GHGs emitted or sequestered as a result of the project compared to the without-project scenario. The GHG balance calculation shows that the project has a positive impact leading to a decrease in GHG emissions. The project leads to estimated annual climate change mitigation benefits of 139,130 tCO<sub>2</sub>e, when compared to the baseline scenario. This is equivalent to annually reduced GHG emissions per hectare of 0.2 tCO<sub>2</sub>e. After 20 years (a period commonly used for project GHG accounting in agriculture), GHG mitigation benefits amounting to a reduction of 3,478,262 tCO<sub>2</sub>e will be generated.

## B. Fiduciary

### Financial Management

**55. The WB performed the FM assessment of a dedicated PMU within DGOFWM that will undertake the FM functions of PRIAT in accordance with the WB Guidance for FM dated February 28, 2017.** The assessment concluded that the PMU has the capacity to establish an adequate FM system for the project, which can provide with reasonable assurance, accurate and timely information on the status of the funds, as required by the WB. The PMU has substantial experience of having implemented Bank-financed PIPPIP, and staff is conversant with the GoPunjab's and the Bank's fiduciary requirements. However, due to delays in transfer of funds to districts and opening of WUA bank accounts, the risk is kept at Moderate.

**56. External audit:** The Auditor General of Pakistan (AGP) will conduct annual audit of the project's annual financial statements. For each financial year closing on June 30, audited financial statements for the project will be submitted to the Bank by December 31.

**57. Retroactive financing:** Retroactive financing of up to US\$10 million of the loan amount for payments made against eligible expenditures incurred from 12 months preceding the loan signing date shall be allowed, provided that the procurement procedures are acceptable to the Bank.

**58. There are no overdue audit reports or any ineligible expenditure in respect of implementing entity.**

### Procurement

**59. All project procurements financed through the IPF under the project shall be governed by the WB's Procurement Regulations for IPF Borrowers.** The project procurements shall be managed by the PMU within the OFWM Department, Punjab. All the project procurements shall be processed by a qualified procurement specialist employed by the PMU for that purpose. The project will involve a significant portion of financing under the community-driven development procurement arrangement. The implementation agency has adequate institutional memory and experienced staff from the execution of PIPPIP. The implementation unit of OFWM will use the WB's online procurement management system,



Systematic Tracking of Exchanges in Procurement, which will identify the procurements that are subject to financing from PRIAT and identify the review requirements either prior or post review based on the complexity and value of each procurement transaction. The WB will also conduct post procurement reviews on a sample basis.

**60. A Project Procurement Strategy for Development (PPSD) has been prepared by the PMU.** The PPSD and the Procurement Plan shall be updated during the project implementation period subject to an agreement with the WB.

#### C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

**61. OP 7.50:** Since the project is located on the Indus River, an international waterway, OP 7.50 on "Projects on International Waterways" (the Policy) applies to the project. The project involves rehabilitation and enhancements to existing watercourses and farm channels. Consistent with the Policy notification exception provisions, the project does not involve works and activities that would exceed the original scheme. In addition, the nature of the works will not (i) adversely affect the quality or quantity of water flows to other riparian countries; or (ii) be adversely affected by other riparian countries' water use. The exception to the notification requirement according to paragraph 7 (a) of the Policy was approved by the Regional Vice President on March 21, 2022.

#### D. Environmental and Social

**62. The Environmental and Social Framework applies to the project; and the E&S rating is assessed as Moderate.** Overall, the project would have positive E&S 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 the 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) even though 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, and so on.

**63. Social risks are primarily associated with exposure risks by farmers, labor, and communities.** Exposures include increased use of pesticides, elite capture in project interventions, exclusion of vulnerable/disadvantaged groups from project benefits and gender-based violence (GBV), sexual



exploitation and abuse (SEA), and sexual harassment (SH) risks to women farm labor. Since the project is demand driven, there is a chance of elite capture and exclusion of the marginalized. The project design responds to this risk under Component 1 with 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 responds to this risk by setting targets for small and medium farmers and responding to the challenges faced by small producers. Therefore, **the E&S risk rating is assessed as Moderate** and relevant Environmental and Social Standards (ESSs) include: ESS1, ESS2, ESS3, ESS4, and ESS10.

**64. GoPunjab through DGOFWM has prepared an Environmental and Social Management Framework (ESMF) in accordance with ESS1.** The ESMF has been consulted upon and was disclosed on the official website of DGOFWM, and on WB Image Bank on March 23, 2022. The ESMF sets out principles, rules, and procedures to assess the E&S risks and impacts of project activities and elaborates the applicable policies and regulatory framework under which the project would be implemented. The ESMF suggests E&S screening process of the subprojects/sites and guides/leads in identifying the methods, tools and instruments required to be prepared for managing E&S risks and impacts. It further suggests the generic mitigation measures for civil works that would guide on E&S management during subproject(s) execution. As part of the ESMF, an Integrated Pest Management Framework has been prepared for guiding diversifying the pest control practices; and minimizing environmental hazard and ensuring community health and safety. As part of the Stakeholder Engagement Plan (SEP) and ESMF, the vulnerable and disadvantaged among the affected people will be identified and a mechanism proposed for their involvement with preparation and implementation of the project activities. Also, an eligibility criterion will be developed to screen for landholding size, income from other sources, dependency on agriculture, among others. Further recommendations on reducing the risk of elite capture will be provided in the project ESMF. A GBV/SEA/SH Action Plan and Community Health and Safety Plan prepared under ESS4 will manage and mitigate risks associated with GBV/SEA/SH and community impacts on pesticide use. The WBG's Environmental, Health and Safety Guidelines are also annexed in the ESMF. Occupational health and safety risks for project-related labor will be addressed through the Labor Management Procedures prepared under ESS2.

**65. SEA/SH risks are moderate.** The use of women labor is common practice in agriculture in Punjab and arrangements are usually made by farm owners to ensure their safety. However, this may not be the case in remote areas or where women labor may be used by small farmers. A GBV/SEA/SH Action Plan has been prepared to identify risks associated with project activities and provide mitigation measures.

**66. Citizen Engagement (CE) mechanisms form an integral part of the project** to enable effective two-way interactions with citizens, including community and beneficiary consultations at all stages of the project, from design to implementation. The main target group of this activity will be rural communities (e.g., WUAs) and individual small and medium farmers and their groups who receive support from the project. The CE mechanisms will help design extension services based on the needs of beneficiaries, enabling all stakeholders to make informed decisions about public resource allocations. CE will include (i) the establishment of a real-time interaction platform between beneficiaries, non-governmental



organizations (NGOs), and the government; (ii) the creation of community participatory monitoring through social audits and other tools; and (iii) the establishment of a functional grievance redress mechanism, exploring ways to integrate this fully into the project. The SEP to be prepared under **ESS10** will include a mapping of all stakeholders and detailed plans for CE during the lifetime of the project.

**67. Gender:** The project will support women farmers adopting CSA and water management practices by providing trainings on (i) CSA, focusing on the diversification of their production and practices to increase their production in a climate smart way; and (ii) entrepreneurship, focusing on VC coordination and marketing of their production. Activities will include awareness raising activities and training sessions regarding new technologies, practices, and entrepreneurship. Furthermore, to eliminate social and cultural barriers, the project will work with women's groups and NGOs and offer women-only training led by female trainers where needed. To build capacity of female-led FEGs, the project will also assist with funding proposals developed by female-headed FEGs to invest in CSP, technology, and market access (under subcomponent 2.2). Tailored and targeted support, including business leadership networking support will be provided. Positive male role models (who value the contribution of women) will be promoted to support the female-headed FEGs. Informational trainings provided by male role models will expose women farmers to examples of the impact of technology on agriculture, benefits of CSA adoption, and of market integration into VCs. Female LSPs will help female-headed FEGs with formulating BPs to ensure they meet market requirements. Once the proposals are approved, female-headed FEGs will receive matching grants that will support them in investing in productive assets, working capital, and TA. Female LSPs and male role models will continue to provide support and mentorship in the implementation of these investments and usage of capital. All activities will be organized during convenient times of the day for women, and at safe locations.

**68. Beyond the above core gender actions, the project will carry out activities to address gender challenges across project implementation.** To address the lack of female professionals and employees working in the PMU, the project will set a target of 25 percent female staff in the PMU in support of the Government of Pakistan's commitment to increasing female labor participation across all sectors in all provinces and to address the lack of female professionals and employees working in the agriculture sector. This will be implemented through Gender Enhancement Plans prepared by the PMU. The project will conduct a study under Component 3 to contribute to the evidence base and address the lack of sex disaggregated data in the agriculture sector. The study will also examine as part of its research framework the relationship between women's economic status improvement under the project and the impact on incidence of GBV.

## V. GRIEVANCE REDRESS SERVICES

**69.** Communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB's corporate GRS, please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).

**VI. KEY RISKS**

**70.** **The overall risk of the project is rated Moderate.** The main risks and mitigation measures are described below.

**71.** **Political and Governance risk is rated Substantial.** The government continues to demonstrate strong interest in the proposed project, but the impetus for broader and deeper policy reforms may slow down particularly in the run up to the next general elections. Effectiveness of some project activities would benefit from stronger collaboration between ADP and PID. To address these issues, the project will explore more efficient measures of strengthening the PPC (chaired by the Chairman Planning & Development Department) to support broader policy reforms, promote inter-department collaboration, and ensure continuity of implementation.

**72.** **Macroeconomic risk is rated Substantial.** After contracting in FY20 due to the adverse impact of COVID-19, economic activity recovered in FY21 and FY22. In light of emerging external imbalances and higher domestic inflation, fiscal and monetary tightening is expected to continue. Public debt will remain elevated in the medium term, as will Pakistan's exposure to debt-related shocks. This risk is partially mitigated by the ongoing International Monetary Fund Extended Fund Facility program. At the project level, it is expected that the GoPunjab will prioritize PRIAT in allocating government financing given its potential to generate more community employment and increase farmer incomes through activities such as watercourse improvement and development of FEGs.

**VII. RESULTS FRAMEWORK AND MONITORING****Results Framework****COUNTRY:** Pakistan**Punjab Resilient and Inclusive Agriculture Transformation****Project Development Objectives(s)**

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

**Project Development Objective Indicators**

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
<b>Number of direct beneficiaries reached [of which female beneficiaries]</b>							
Direct beneficiaries reached (Number)		0.00	66,500.00	199,500.00	399,000.00	798,000.00	1,330,000.00
of which female beneficiaries (Percentage)		0.00	40.00	40.00	40.00	40.00	40.00
<b>Enhanced equitable access to agricultural water</b>							
Reduction of the differences in water availability among head, middle, and tail end users of watercourses (Percentage)		0.00	40.00	40.00	40.00	40.00	40.00
<b>Enhanced productivity of agricultural water</b>							
Increased agricultural output per unit of water used at farm level (kilograms/cubic meter) for wheat (Percentage)		0.00	0.00	0.00	5.00	10.00	15.00



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Increased agricultural output per unit of water used at farm level (kilograms/cubic meter) for rice (Percentage)	0.00	0.00	0.00	5.00	10.00	20.00	20.00
Increased share of area under HVC cultivation (Percentage)	0.00	0.00	5.00	10.00	20.00	30.00	30.00
<b>Improved incomes of farmers supported by the project</b>							
Increase in agriculture incomes of HHs participating in project activities (Percentage)	0.00	0.00	0.00	10.00	10.00	20.00	20.00
Increase in agriculture incomes of FHHs participating in project activities (Percentage)	0.00	0.00	0.00	10.00	10.00	25.00	25.00

### Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
<b>Community-driven Improvement of Water Conveyance and Application</b>							
Area provided with new/improved irrigation or drainage services (Hectare(Ha))	0.00	27,950.00	83,850.00	167,700.00	335,400.00	559,000.00	
Command area of watercourses improved/reconstructed, and of water conveyance schemes improved (Hectare(Ha))	0.00	27,150.00	81,450.00	162,900.00	325,800.00	543,000.00	



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Area equipped HEIS (Hectare(Ha))	0.00	800.00	2,400.00	4,800.00	9,600.00	16,000.00	
Watercourses improved (Number)	0.00	350.00	1,050.00	2,100.00	4,200.00	7,000.00	
New watercourses improved (Number)	0.00	50.00	150.00	300.00	600.00	1,000.00	
Watercourses partially improved (Number)	0.00	100.00	300.00	600.00	1,200.00	2,000.00	
Watercourses reconstructed (Number)	0.00	50.00	150.00	300.00	600.00	1,000.00	
Improved irrigation conveyance schemes completed outside canal command area (Number)	0.00	150.00	450.00	900.00	1,800.00	3,000.00	
Reduction in water conveyance losses in watercourses (Percentage)	0.00	20.00	20.00	20.00	20.00	20.00	
Increase in cropping intensity in project areas (Percentage)	140.00	140.00	145.00	150.00	155.00	165.00	
Increase in yield of major crops (Percentage)	0.00	0.00	0.00	5.00	5.00	10.00	
Increase in yield of orchards (Percentage)	0.00	0.00	0.00	10.00	10.00	25.00	
Increase in yield of vegetables (Percentage)	0.00	0.00	0.00	10.00	10.00	25.00	
Watercourses with water accounting and budgeting established and monitored (Number)	0.00	0.00	5.00	27.00	52.00	72.00	
Farmers adopted CSA and water management practice	0.00	0.00	0.00	9,000.00	18,000.00	30,000.00	



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
(Number)							
of which female beneficiaries (Percentage)	0.00	0.00	0.00	10.00	10.00	10.00	
<b>Promotion of CSP, Regenerative Agriculture, Diversification, VA, and Inclusive Access to Markets</b>							
PA proposals approved for financing (Number)	0.00	0.00	60.00	120.00	330.00	330.00	
of which PA proposals approved for female-headed FEGs (Percentage)	0.00	0.00	10.00	10.00	10.00	10.00	
Increase in marketed value through PAs in project areas (Percentage)	0.00	0.00	0.00	10.00	20.00	30.00	
<b>Project Management, Monitoring and Learning</b>							
OFWM workers, private sector, and service providers that have been trained (Number)	0.00	600.00	1,800.00	3,000.00	6,000.00	6,000.00	
of which female beneficiaries (Percentage)	0.00	25.00	25.00	25.00	25.00	25.00	
Project beneficiaries satisfied with project (Percentage)	0.00	0.00	0.00	60.00	60.00	85.00	

**Monitoring & Evaluation Plan: PDO Indicators**

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Direct beneficiaries reached	Beneficiaries reached estimated by average HH	Bi-annually	Progress reports	Data sources: (a) Warabandi register; (b)	OFWM through M&ECs



	size of seven. Breakdown by project activity provided by project M&E			WUA members list; (c) FEG members list; and (d) HEIS beneficiaries list	
of which female beneficiaries	Gender disaggregation	Bi-annually	Progress reports	Warabandi register; WUA members list; FEG members list; and HEIS beneficiaries list	OFWM through M&ECs
Reduction of the differences in water availability among head, middle, and tail end users of watercourses	Difference of volume delivered for head, middle and tail-end users, with Volume (,000 m <sup>3</sup> ) = A*60*B/1000, A = Irrigation Time (min/acre) and B = Water Delivery Discharge (liters/second)	Annually	Project annual survey	Physical measurement on selected watercourses. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Increased agricultural output per unit of water used at farm level (kilograms/cubic meter) for wheat	Subcomponent 1.2 outcome for CSA adoption for wheat. Kg per drop = Weight / Total water, with Total weight produced for wheat in project areas (kg) and Total water consumed (evapotranspiration) at farm level for wheat (m <sup>3</sup> )	Annually	Project annual survey plus RS for numerator	Sampled annual survey complemented by RS data. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Increased agricultural output per unit of water used at farm level (kilograms/cubic meter) for rice	Kg per drop = Weight / Total water, with Total weight produced for rice in project areas (kg) and Total water consumed	Annually	Project annual survey plus RS for numerator	Sampled annual survey complemented by RS data. Baseline collected from sample of beneficiaries identified	M&ECs



	(evapotranspiration) at farm level for rice (m <sup>3</sup> )			during implementation	
Increased share of area under HVC cultivation	Diversification outcome from Component 2. Gross irrigated area under HVCs in all sample HHs having cultivable land under irrigation / Total gross irrigated area of all sample HHs. Target measured as percentage point increase	Annually	Project annual survey and impact evaluation survey	Sampled annual survey and impact evaluation survey. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Increase in agriculture incomes of HHs participating in project activities	HH agricultural income increase measured by increase in net farm income per annum adjusted by inflation and measured in difference-in-difference approach comparing treatment group with control group	Baseline, Midline and End line	Impact evaluation survey	Sampled impact evaluation survey. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Increase in agriculture incomes of FHHs participating in project activities	Gender disaggregation	Baseline, Midline and End line	Impact evaluation survey	Sampled impact evaluation survey. Baseline collected from sample of beneficiaries identified during implementation	M&ECs



### Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Area provided with new/improved irrigation or drainage services		Bi-annually	Progress report	Progress report	OFWM / M&ECs
Command area of watercourses improved/reconstructed, and of water conveyance schemes improved	Measures watercourses in canal command area and conveyance schemes improved for equitable water distribution	Bi-annually	Progress report	Progress report	OFWM / M&ECs
Area equipped HEIS	Measures area equipped with HEIS under Component 2 for increased productivity and diversification	Bi-annually	Progress report	Progress report	OFWM / M&ECs
Watercourses improved	Measures completion of watercourse improvements under Subcomponent 1.1	Bi-annually	PIS-TPVC Progress Reports	PMU's progress report sent monthly	PIS-TPVCs
New watercourses improved	Completion of improvements of new watercourses	Bi-annually	PIS-TPVC Progress Reports	PMU's progress report sent monthly	PIS-TPVCs
Watercourses partially improved	Completion of partial improvements of watercourses	Bi-annually	PIS-TPVC Progress Reports	PMU's progress report sent monthly	PIS-TPVCs
Watercourses reconstructed	Completion of reconstruction of watercourses	Bi-annually	PIS-TPVC Progress Reports	PMU's progress report sent monthly	PIS-TPVCs



Improved irrigation conveyance schemes completed outside canal command area	Completion of improvements of irrigation conveyance schemes outside canal command area	Bi-annually	PIS-TPVC Progress Reports	PMU's progress report sent monthly	PIS-TPVCs
Reduction in water conveyance losses in watercourses	Flow measured at upstream and downstream of head, middle and tail sections of the watercourse	Annually	Annual survey	Flow measured on sample of watercourses using a flume/digital flow meter. Baseline collected from sample of watercourses identified during implementation	M&ECs
Increase in cropping intensity in project areas	Cropping Intensity = Total annual area cropped per unit command area. Cropped Area = sum of areas under crops during one agricultural year. Command area = nominal or design area to be irrigated (watercourse / scheme area for Component 1 and field area for HEIS under Component 2)	Annually	Annual survey and impact evaluation	Adequately sampled annual surveys and impact evaluation surveys	M&ECs
Increase in yield of major crops	Wheat, maize, rice, sugarcane, cotton (based on available crops in selected watercourse command)	Baseline, Midline and Endline	Impact evaluation survey complemented by	Sampled impact evaluation surveys and RS data. Baseline collected from sample of beneficiaries	M&ECs



			RS/other methods	identified during implementation	
Increase in yield of orchards	Citrus, mango, and so on (based on available crops in selected watercourse command)	Baseline, Midline and Endline	Impact evaluation survey complemented by RS/other methods	Sampled impact evaluation surveys and RS data. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Increase in yield of vegetables	Potato, chilies, and so on (based on available crops in selected watercourse command)	Baseline, Midline and Endline	Impact evaluation survey complemented by RS/other methods	Sampled impact evaluation surveys and RS data. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
Watercourses with water accounting and budgeting established and monitored	Measures efforts made in assessing the impact of watercourse improvements and CSA adoption on water balance to inform the approach for optimal water usage and crop optimization in a watercourse command	Endline	M&ECs' Annual Report	Includes inventory of surface flows, tube wells, installation of piezometers, measurement of tube well flows, and so on	M&ECs
Farmers adopted CSA and water management practice	Farmers who received full training for HEIS, CSA, or other water management practices / technologies and implemented it in one field	Annually	Project annual survey and impact evaluation	Adequately sampled annual surveys and impact evaluation surveys	M&ECs



	for at least two agricultural seasons		survey		
of which female beneficiaries	Gender disaggregation	Annually	Project annual survey and impact evaluation survey	Adequately sampled annual surveys and impact evaluation surveys	M&ECs
PA proposals approved for financing	Measures the number of PA proposals submitted by PGs and buyers and approved for financing by the project	Quarterly	Register of proposals received	Register tracking proposals received, reviewed, approved, and denied for financing	OFWM / PIS-TPVCs
of which PA proposals approved for female-headed FEGs	Measures approved PA proposals submitted by female-headed FEGs	Quarterly	Register of proposals received	Register tracking proposals received, reviewed, approved, and denied for financing	OFWM / PIS-TPVCs
Increase in marketed value through PAs in project areas	Value of produce sold only through PAs to assess access to high-end markets. Measured in increase in percentage points	Annually	Annual survey	Sampled annual surveys and impact evaluation surveys. Baseline collected from sample of beneficiaries identified during implementation	M&ECs
OFWM workers, private sector, and service providers that have been trained	Training and capacity development provided to	Quarterly	Progress report	Progress report	OFWM



	project service providers (e.g., OFWM and extension workers), excluding training to project beneficiaries				
of which female beneficiaries	Gender disaggregation	Quarterly	Progress report	Progress report	OFWM
Project beneficiaries satisfied with project	Beneficiaries satisfied with the project	Baseline, Midline and Endline	Survey	Sampled satisfaction survey	M&ECs

**ANNEX 1: Implementation Arrangements and Support Plan**

**COUNTRY: Pakistan**  
**Punjab Resilient and Inclusive Agriculture Transformation**

**1. The DGOFWM, reporting to the Secretary Agriculture, will be responsible for the implementation of the project and act as the PD.** DGOFWM will be responsible for all aspects of the project, including implementation, procurement, FM, E&S safeguards, and oversight of the TA and training program, among others. Detailed implementation arrangements are described below and presented in Figure A1.1.

**2. The DGOFWM will be supported by three headquarter-based DPDs responsible for (i) marketing and VA; (ii) HEIS and solar; and (iii) watercourse improvement, respectively.** Other support services will also be established, including specialists in procurement, FM, accounting, public information and communication, E&S safeguards, and PIS-TPVCs, among others. Some positions will be assigned to staff from within the department, and they will be provided with relevant training and assistance.

**3. The OFWM function, that is water management below *mogha* (outlet from the distributary canal and command area of community watercourse that is managed by farmers), has been devolved to district governments under the Devolution Plan of 2001.** Lately, on promulgation of the Punjab Local Government Act 2013, the offices of the District Officers (OFWM) have been redesignated to DD Agriculture (OFWM) in all 36 districts of the province for supervision of water management activities. The Tehsil is the lowest tier of the administration where the office of DD Agriculture (OFWM) carries out the execution of works through field staff comprising of (i) DD Agriculture (OFWM) and one Water Management Officer (WMO); (ii) two Water Management Supervisors (WMSs); and (iii) support staff. Out of 133 Tehsils in the province, offices of ADA (OFWM) have been established at 131 Tehsil headquarters. The remaining may be established under the project as needed.

**4. PRIAT aims to work with WUAs for Component 1 and farmers and FEGs for Component 2 across the project area.** The OFWM staff has been successfully carrying out a community-driven implementation approach in executing envisaged interventions for the last 45 years. They have organized over 50,000 WUAs under “On Farm Water Management & Water Users Association Ordinance [Act]-1981 (Amended 2001)” having membership of over 3 million farm families in the province for improvement of their watercourses. The execution of watercourse improvement works under PRIAT will be carried out through WUAs with the same cost sharing arrangements as in the original PIPIP.

**5. Divisional Project Coordination Unit (DPCU).** At each of nine divisions of the Punjab, Director of Agriculture (OFWM) offices will act as the DPCUs in Lahore, Gujranwala, Sargodha, D.G. Khan, Bahawalpur, Multan, and Rawalpindi to help coordinate and supervise the project activities at the district and Tehsil level. The DPCU will be headed by a Director Agriculture (OFWM), supported by one Assistant Director (Technical), FM staff, and other support staff.

**6. DD of Agriculture (OFWM) at district level will be responsible for supervision, coordination, and internal monitoring at the district level.** The DDA (OFWM) will have field staff, such as WMOs, WMS, rodman and field assistants, and office staff such as office assistants, computer operators and other



support staff. In districts/Tehsils where HEIS systems start off, the relevant capacity will be enhanced by posting HEIS experts. The incremental staff shall be recruited on a contract basis for the duration of the Project. In addition, incremental staff comprising of WMSs and rodmen will be provided to district and Tehsil offices as per workload/targets in various Tehsils.

**7. Project Supervision and Coordination.** Several committees have been established to ensure provincial oversight and coordination in implementation at various levels:

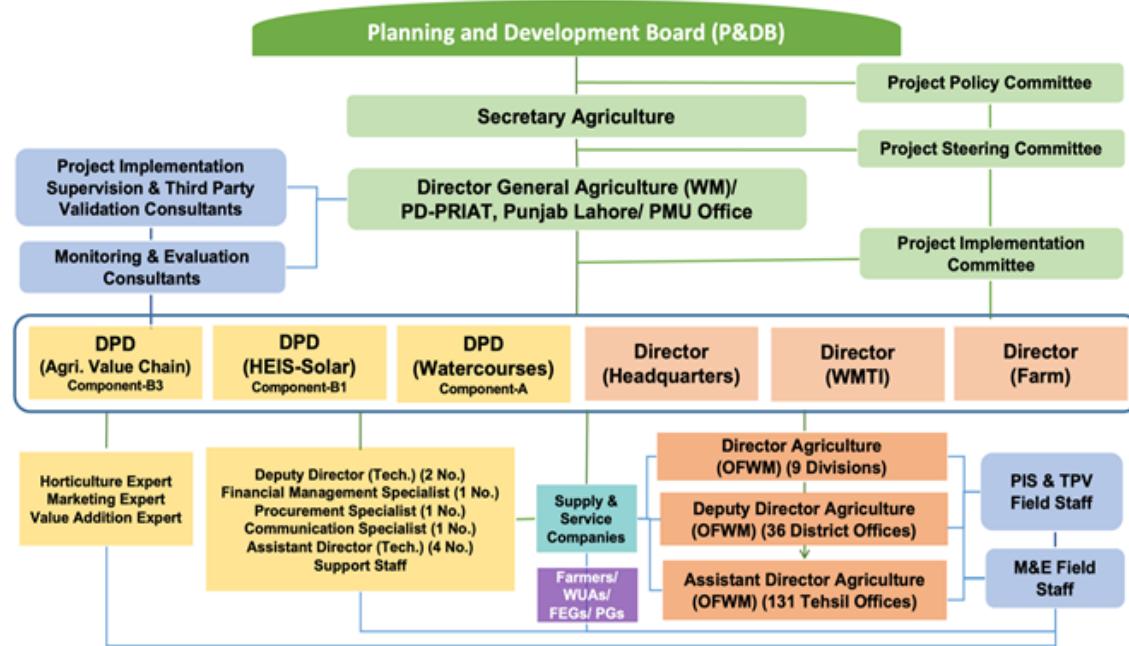
- a) **PPC.** The PPC will provide planning and strategic guidance for project implementation as well as facilitate interagency coordination at the highest level. The PPC will be chaired by the Chairman, Planning and Development Board, Punjab with Secretaries of Agriculture, Irrigation, Local Government & Community Development and Finance Department as its members. DGOFWM will be the Member-Secretary of the PPC. The PPC will initially meet quarterly or as often as required. The PPC will, among others: (i) provide planning and strategic guidance for project implementation as well as facilitate interagency coordination at the highest level; (ii) make policy decisions for smooth project execution; and (iii) constitute committee/s to resolve any policy-related issues.
- b) **PSC.** The PSC will be chaired by Secretary Agriculture, Government of Punjab with DGOFWM/PD-PRIAT as member/secretary; Chief (Agriculture) Planning and Development Department; Representatives of the Finance Department; and Irrigation Department as its members. The PSC will initially meet quarterly or as often as required. The PSC will, among others: (i) ensure coordination among all stakeholders; (ii) arrange bridge financing for local resources during any financial constraints from donors; (iii) modify implementation mechanisms for project interventions, if needed; (iv) annual work plans; (v) amend eligibility criteria of different project activities and project implementation mechanisms; (vi) make necessary modifications/improvements in project implementation and modalities including cost sharing, execution arrangements, equipment rate finalization mechanism, flow of funds; and (vii) resolve issues constraining the smooth implementation of the envisaged activities.
- c) **PIC.** The PIC will be chaired by DGOWM/PD-PRIAT with Director (Headquarters), Director (Training), three DPDs, concerned Divisional Directors, DDs (Headquarters), concerned DD Agriculture (OFWM), and Team Leaders of PIS-TPVCs and M&ECs as its members. The DPD will act as the Secretary of the Committee. The PIC will meet every month and/or as and when required to review physical and financial progress as well as to suggest means to overcome constraints faced in the execution of project activities. The major functions of the PIC will, among others, be as follows: (i) prepare an annual work plan; (ii) review physical and financial progress; (iii) coordinate and supervise project activities; (iv) ensure the implementation of decisions of the PSC; (v) formulate mechanisms for transparent external monitoring of project activities; and (vi) review monitoring reports and rectify shortfalls.
- d) **District Implementation Committee (DIC).** A DIC will be constituted in each district to implement the project at the district level and will include the following members: (i) Deputy Commissioner (DC) concerned (chairman); (ii) Additional Deputy Commissioner (F&P) concerned; (iii) Director Agriculture (OFWM) concerned; (iv) Representative of Revenue Department; and (v) DD



Agriculture (OFWM) concerned (Member/Secretary). The DIC is expected to meet every month to review the physical and financial progress, ensure effective project implementation, oversee the proper flow of funds to WUAs, arrange transparent internal monitoring of project activities, and make recommendations to the PIC for improving the pace of implementation.

- e) **District Rate Committee (DRC).** The DRC will be constituted under the DIC to decide the rates of construction materials for improvement of watercourses and irrigation schemes. The DRC will consist of (i) Director Agriculture (OFWM) of respective division (Chairman); (ii) XEN Building Department; (iii) Field Engineer (PIS-TPVCs); and (iv) DD Agriculture (OFWM) concerned (Member/Secretary). The DRC will periodically review rates of various construction materials and fix rates/prices for different materials for clusters on a geographical basis.
8. **PIS-TPVCs.** PIS-TPVCs will be selected through an international market approach quality- and cost-based selection method under subcomponent 3.2. The PIS-TPVCs will report to DGOFWM and check the implementation program, quality of works, delivery of works and certify the quantities of work carried out and the payments. They will also help the DGOFWM in project planning and management, quarterly progress reporting, procurement planning, FM, and overall project management.
9. **M&ECs.** The M&ECs, using resources allocated for Component 3 of the project, will help in: (i) monitoring physical progress of project activities; (ii) M&E of the project impact; and (iii) supervision of the E&S framework and the implementation of E&S management plans and will be selected through competitive procurement methods.
10. **Results M&E.** The DGOFWM will submit quarterly reports in an appropriate format to the PSC and the Bank no later than 45 days after the end of each quarter. The DGOFWM will be responsible for preparation of the quarterly report, which will cover the progress and expected completion dates for civil works and equipment supply contracts, progress on institutional components, implementation of Environmental and Social Management Plans, training and studies, and activities of the PIS-TPVCs, M&ECs, and so on. The reports will cover financial and procurement information, including (i) comparisons of actual physical and financial outputs with forecasts, and updated six-monthly project forecasts; (ii) project financial statements, including sources and application of funds, expenditures by category statement, and special accounts reconciliation statements; (iii) a procurement management report, showing status and contract commitments; (iv) progress in completion of works, and the distribution of works among various kinds of users compared with the targets; and (v) issues and alternative solutions, and so on.
11. **The DGOFWM will also prepare annual reports by no later than September 30 of each year of project implementation.** The report will cover (i) the progress of each component, implementation of key features of the social and environmental management plan, key performance indicators, operation of project facilities, and financial statements; and (ii) the Annual Work Plan for implementation, annual funds required for implementation with a breakdown by each co-financer, an updated disbursement profile, planned actions for mitigating negative effects during construction, and target indicators for the coming FY. An MTR of the project will be undertaken by October 31, 2025. An Implementation Completion Report will be submitted to the Bank no later than six months after the closing date.

### **Figure A1.1. Institutional Arrangement**



**12. Independent M&ECs will be hired to carry out the following M&E activities for the project's self-evaluation:** (i) implementation progress monitoring, including spot checking of works and quality of construction; (ii) collection of project survey data to assess progress towards indicators listed in the RF; and (iii) E&S impact and implementation of the agreed program. The DGAWM will equip dedicated staff working in M&E activities and act as counterparts to guide the consultants. With the support of M&ECs, the PD will be responsible for providing a consolidated quarterly report in an appropriate format to the GoPunjab and the WB no later than 15 days after each quarter. The consolidated report will cover the overall project implementation status, outcomes, and detailed progress of all components activities, such as progress on physical constructions, progress on capacity building and training, progress and results of special studies, and other fiduciary and safeguard issues (e.g., issues related to E&S aspects, procurement, and FM aspects, and so on). M&E activities will provide continuous feedback on the project's performance and impact of its various components to the GoPunjab, the PPC, the PSC, and the PMU so that corrective actions can be undertaken in a timely manner. The PD will also produce with support from M&ECs an MTR report and a final evaluation report.

## **Strategy and Approach for Implementation Support<sup>36</sup>**

**13.** The strategy for implementation support has been developed based on the nature of the proposed project. It will aim at making the support to the client for implementation more flexible and efficient and focus on the implementation of the risk mitigation measures as defined in the SORT.

<sup>36</sup> This is an indicative and flexible instrument which will be revised during implementation as part of the ISR and adjusted based on what is happening on the ground. The implementation plan should be consistent with the design and riskiness of the operation and should be adequately resourced.



**14. Procurement:** There will be thousands of small contracts procured by participating communities under this project, particularly under Components 1 and 2 of the project through community-driven development procurement arrangement. The WB team will be providing implementation support by (i) reviewing and refining implementation models of the various interventions as elaborated in the Operations Manual; (ii) providing detailed guidance on the WB's procurement guidelines to the procurement committee; and (iii) monitoring procurement progress against the detailed procurement plan developed by Directorate OFWM beside carrying out prior and post procurement reviews of the procurements under the project.

**15. FM:** Supervision will review the project's FM system, including but not limited to accounting, reporting, and internal controls. Supervision will also cover sub-projects on a random sample basis. The WB team will also work with the PIS-TPVCs to assist the PMU, District Offices and Tehsil-level Project Offices in improving coordination among different departments and units for FM and reporting.

**16. The project will leverage the existing FM and disbursement arrangements that are functioning effectively in PIPIP.** A dedicated Financial Management Specialist will be engaged/hired for the duration of PRIAT in accordance with terms of reference approved in the Project Implementation Manual and acceptable to the Bank. Government budgeting processes will apply, and PRIAT's budget will be a part of the GoPunjab's Annual Development Plan. The PMU will maintain separate books of accounts on cash basis of accounting to record PRIAT-related receipts and payments. Project transactions will be subject to compliance with the GoPunjab's internal control environment, that is the General Financial Rules, Accounting Policies and Procedures Manual, and Financial Management Manual. Quarterly Interim Unaudited Financial Reports (IUFRs) will be submitted to the Bank within 45 days of the close of each quarter. PRIAT's financial statements will be prepared in accordance with the Cash Basis International Public Sector Accounting Standards and audited by the AGP. The audited financial statements will be submitted to the Bank within six months of the close of the financial year. Two segregated Designated Accounts (DAs), one for transferring of funds from Account 1 of GoPunjab (to be treated as Designated Account) to districts and one for Component 2 and 3, will be opened for receipt and utilization of IDA Credit. The DA will be operated in accordance with the provisions of Revised Accounting Procedure for Revolving Fund Account (Foreign Aid Assignment Account) dated August 2, 2013, issued by the Finance Division. Disbursements will be report-based where advance equivalent to a six-month forecast will be provided to the DA and subsequent quarterly IUFRs will be the basis of documentation of expenditures.

**17. For Component 1 of the project, funds received against withdrawal application will be disbursed in Account 1 of GoPunjab for onward transfer to districts as per distribution of funds provided by PMU in respective district cost centers.** For accounting treatment at PMU level for Component 1, a procedure will be prepared by PMU in consultation with Finance Department Punjab. For Component 2 and 3, the PMU's DA will be used to make payments to supplier/contractors/consultants, and so on.

**18. E&S risk management monitoring:** The Bank team will supervise and provide guidance to the DGOFWM and field offices for the implementation of the agreed actions for E&S issues.

**19. Anti-corruption:** The Bank team will supervise the implementation of the agreed governance procurement and governance plan.

**20. Technical aspects:** During implementation support missions, the Bank will mobilize technical experts in the fields of HEIS expertise, agriculture, market access, VA, and irrigation agronomy, and so on to provide necessary assistance to the PMU.



**21. Coordination with development partners:** The Bank team will help the GoPunjab with coordination among the development partners, and help in addressing project management, procurement, disbursement, FM, and safeguard issues.

### **Implementation Support Plan**

**22. The Bank team will ensure timely, efficient, and effective implementation support to the client.**

Timely monitoring and support to the DGOFWM will be mainly provided by team members in the country offices of the region, especially for the first 18 months. Formal supervision and field trips will be carried out semi-annually. These supervision missions will be coordinated with the other development partners such as USAID and the ADB who are also involved in the water sector of Pakistan and Punjab.

**23. Detailed inputs from the Bank team are outlined below:**

- a. **Technical inputs.** Irrigation, agronomy, water engineering and drip electro-mechanical equipment expertise as well as expertise in PAs and market integration practices, promotion of climate smart practices and technologies, are required to review project plans, implementation, and specification of the goods, and so on. The task team will contract individual consultants for these skills. Specialists with high-level procurement skills are required for review of the major goods and works contracts as well as the two consulting services, PIS-TPVCs and M&ECs. During construction and commissioning, technical supervision is required to ensure that contractual obligations are met on technical grounds. Field visits by the team's irrigation, agriculturist, agriculture economist, and agribusiness specialist will be conducted on a semi-annual basis throughout project implementation.
- b. **Fiduciary requirements and inputs.** Training will be provided by the Bank's FM specialist and procurement specialist. The team will also help the DGOFWM identify capacity building needs to strengthen its FM capacity and to improve procurement management efficiency. Both FM and procurement specialists will be based in the country office to provide timely support. Formal supervision of FM will be carried out semi-annually, while procurement supervision will be carried out on a timely basis as required by the client beside the mandatory annual procurement post review of the project. The DGOFWM will be provided with consulting services in this area and assistance by PIS-TPVCs and M&ECs. In addition, under Component 3, funds are available to the DGOFWM for recruitment of specialized skills as needed for fiduciary input and compliance. The WB can help in identifying the consultants needed for these required skills.
- c. **E&S Standards.** This is a moderate risk project in terms of E&S aspects. Inputs from E&S specialists are required. Training is required on environmental monitoring and reporting, and the implementing agencies' capacity will be enhanced. On the social side, implementation support will focus on targeting project activities targeted at small farmers as agreed under the implementation plan. Field visits are required on a biannual basis. Both social development and environmental specialists are country office based. The M&E consultants will help in independent monitoring of the safeguard issues and highlighting to the WB team any issues and possible alternative solutions in a timely manner.
- d. **Operation.** An operations officer based in the country office will provide day-to-day supervision of all operational aspects and coordination with the client and among WB team members.