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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROGRAM APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$300 MILLION

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

STRENGTHENING MARKETS FOR AGRICULTURE AND RURAL TRANSFORMATION
IN PUNJAB PROGRAM

NOVEMBER 22, 2017

Agriculture Global Practice
South Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective: November 16, 2017)

Currency Unit = Pakistani Rupee (PKR)

PKR 105.44 = US\$1.00

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS, ACRONYMS, and SPECIAL TERMS

<i>abiana</i>	Irrigation water charge
ACE	Anti-Corruption Establishment
ACG	Anti-Corruption Guidelines
ADP	Annual Development Plan
AgGDP	Agricultural gross domestic product
CPS	Country Partnership Strategy
CSA	Climate-smart agriculture
DLI	Disbursement linked indicator
DLR	Disbursement linked result
DoAg	Department of Agriculture
DoF	Department of Food
EIA	Environmental Impact Assessment
ESSA	Environmental and Social Systems Assessment
FSA	Fiduciary Systems Assessment
FY	Fiscal year
GDP	Gross domestic product
GoPunjab	Government of Punjab
ha	Hectare
HVA	High-value agriculture
IBRD	International Bank for Reconstruction and Development
ICT	Information and communication technology
IEE	Initial Environmental Examination
IFC	International Finance Corporation
Kissan	Farmer
M&E	Monitoring and evaluation
MIS	Management information system
M&R	Maintenance and repair
MT	Metric ton (1,000 kilograms)
MTDF	Medium Term Development Framework
P&D	Planning and Development
PAFDA	Punjab Agriculture, Food and Drug Authority
PAMRA	Punjab Agricultural Marketing Regulatory Act
PAP	Program Action Plan
PARB	Punjab Agricultural Research Board
PCMU	Program Coordination and Monitoring Unit
PDO	Program Development Objective
PDU	Program delivery unit
PforR	Program-for-Results
PID	Punjab Irrigation Department
PIPIP	Punjab Irrigated Agriculture Productivity Improvement Project
PKR	Pakistani rupee
PMIS	Procurement Management Information System
PPRA	Public Procurement Regulatory Authority
SC	Steering committee

SMART
US\$
WB

Strengthening Markets for Agriculture and Rural Transformation
United States dollar
World Bank

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PAKISTAN

Strengthening Markets for Agriculture and Rural Transformation in Punjab

Table of Contents

I. STRATEGIC CONTEXT	1
A. COUNTRY CONTEXT	1
B. SECTORAL AND INSTITUTIONAL CONTEXT.....	1
C. RELATIONSHIP TO THE CPS AND RATIONALE FOR USE OF INSTRUMENT	3
II. PROGRAM DESCRIPTION	4
A. THE GOVERNMENT PROGRAM AND SCOPE OF THE PROPOSED SMART PUNJAB PROGRAM	4
B. PROGRAM DEVELOPMENT OBJECTIVE/s (PDO) AND KEY RESULTS.....	5
C. DISBURSEMENT LINKED INDICATORS AND VERIFICATION PROTOCOLS.....	6
D. CAPACITY BUILDING AND INSTITUTIONAL STRENGTHENING	8
III. PROGRAM IMPLEMENTATION.....	8
A. INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS.....	8
B. RESULTS MONITORING AND EVALUATION	10
C. FUNDS FLOW AND DISBURSEMENT ARRANGEMENTS	10
IV. ASSESSMENT SUMMARY.....	10
A. TECHNICAL	10
B. FIDUCIARY.....	12
C. ENVIRONMENTAL AND SOCIAL EFFECTS.....	13
D. RISK ASSESSMENT.....	14
E. PROGRAM ACTION PLAN.....	15
ANNEX 1. RESULTS FRAMEWORK	16
ANNEX 2. DISBURSEMENT-LINKED INDICATORS, VERIFICATION PROTOCOLS, AND DISBURSEMENT ARRANGEMENTS	18
ANNEX 3. SUPPLEMENTARY DETAILS FROM THE TECHNICAL ASSESSMENT	31
ANNEX 4. SUMMARY OF FIDUCIARY SYSTEMS ASSESSMENT	37
ANNEX 5. SUMMARY OF ENVIRONMENTAL AND SOCIAL SYSTEMS ASSESSMENT	41
ANNEX 6: SYSTEMATIC OPERATIONS RISK RATING	42
ANNEX 7: PROGRAM ACTION PLAN	43

PAD DATA SHEET

ISLAMIC REPUBLIC OF PAKISTAN

STRENGTHENING MARKETS FOR AGRICULTURE AND RURAL TRANSFORMATION IN PUNJAB

PROGRAM APPRAISAL DOCUMENT

**SOUTH ASIA REGION
AGRICULTURE GLOBAL PRACTICE (GFA12)**

Basic Information			
Date:	15 December 2017	Sectors:	ICT Services, Agriculture Markets Commercialization, Agri-Business, Other Agriculture, Fishing & Forestry, Livestock, Crops
Country Director:	Patchamuthu Illangovan	Themes:	Private Sector Development, Jobs, Finance, Financial Infrastructure & Access, MSME Finance, Agriculture Finance, Human Development, Gender, Urban & Rural Development, Rural & Non-Farm Income Generation, Climate Change, Adaptation, Disaster Risk Management, Disaster Preparedness, Environment & Natural Resource Management, Rural Infrastructure
Practice Manager	Kathryn Hollifield		
Global Practice Vice President:	Laura Tuck		
Program ID:	P162446		
Team Leader(s):	Johannes Georges Pius Jansen		

Program Implementation Start Date: 15 March 2018 End Date: 30 June 2023
Period:

Expected Financing
Effectiveness Date: 15 March 2018

Expected Financing
Closing Date: 30 June 2023

Program Financing Data

<input checked="" type="checkbox"/> Loan	<input type="checkbox"/> Grant	[IBRD]
<input type="checkbox"/> Credit		

For Loans/Credits/Others (US\$M): US\$300 million

Total Program Cost US\$1590 million Total Bank Financing: US\$300 million

Total Cofinancing: US\$1290 million Financing Gap: US\$0

Financing Source	Amount
IBRD	US\$300 million
BORROWER/RECIPIENT	Islamic Republic of Pakistan
Total	US\$300 million

Borrower: Economic Affairs Division, Islamabad, Pakistan

Responsible: Mr. Arif Ahmed Khan

Contact: Block C, Pak Secretariat, Islamabad, Pakistan Title: Secretary

Telephone No.: 92-51-9212769 Email: secretary@ead.gov.pk

Responsible Agency: Planning and Development Department, Government of Punjab

Contact: Mr. Iftikhar Sahoo

Title: Secretary

Telephone No.: 92-42-9910109

Email: secretary@pndpunjab.gov.pk

Expected Disbursements (in USD Million)									
Fiscal Year	2018	2019	2020	2021	2022	2023			
Annual	40	38	45	72	78	27			
Cumulative	40	78	123	195	273	300			

Program Development Objective(s)	
To increase the productivity of crop and livestock farmers, improve their climate resilience, and foster agribusiness development in Punjab.	

Compliance	
Policy	
Does the program depart from the CAS in content or in other significant respects?	Yes [] No [X]
Does the program require any waivers of Bank policies applicable to Program-for-Results operations?	
Yes [] No [X]	
Have these been approved by Bank management?	Yes [] No []
Is approval for any policy waiver sought from the Board?	Yes [] No []
Overall Risk Rating: Substantial	

Legal Covenants			
Name	Recurrent	Due Date	Frequency
Overall Coordination	Yes	N/A	Throughout Program implementation
Description of Covenant GoPunjab to vest in the P&D Department the overall responsibility for coordinating the participating departments' implementation of Program activities.			
Name	Recurrent	Due Date	Frequency
Steering Committee	Yes	N/A	Throughout Program implementation
Description of Covenant GoPunjab to maintain a Steering Committee to provide policy guidance and direction to PCMU and PDUs on Program implementation, and oversee the progress of Program activities and the achievement of DLIs.			
Name	Recurrent	Due Date	Frequency
Implementation Units	Yes	1 month after effectiveness	Throughout Program implementation
Description of Covenant GoPunjab to: (a) establish: (i) a Program coordination and monitoring unit (PCMU) within the P&D Department to carry out the overall coordination of the participating departments' implementation of Program activities, as well as the DLIs verification and reporting requirements; (ii) Program delivery units (PDUs) in each of the Agriculture, Livestock & Dairy Development, Irrigation, and Food Departments, responsible for the carrying out of Program activities within the respective Departments; and (b) designate a focal person within each of the Finance Department and the Industry, Commerce and Investment Department to be responsible for the implementation of Program activities falling under the purview of these two Departments.			
Name	Recurrent	Due Date	Frequency
Internal Audits	Yes	3 months after effectiveness	Throughout Program implementation
Description of Covenant GoPunjab to hire (through the PCMU) a firm of chartered accountants to carry out the internal audit function for each of the participating departments in respect of activities and resources administered under the Program.			

Name	Recurrent	Due Date	Frequency
Program Action Plan	Yes	N/A	Throughout Program implementation
Description of Covenant GoPunjab to implement the Program Action Plan agreed with the Bank.			
Name	Recurrent	Due Date	Frequency
Verification Protocols	Yes	1 month after effectiveness	Semi-annually (April 30 th and Oct. 31 st of each year)
Description of Covenant GoPunjab to engage an independent third party entity or entities to undertake the verification process of DLIs/DLRs pursuant to the verification protocol agreed with the Bank.			
Name	Recurrent	Due Date	Frequency
Communications focal point	Yes	1 month after effectiveness	Throughout Program implementation
Description of Covenant GoPunjab to appoint a focal person in each participating department responsible for the carrying out of the Program's communication strategy.			
Name	Recurrent	Due Date	Frequency
Anti-Corruption Guidelines/Protocol	Yes	N/A	Throughout Program implementation

Description of Covenant			
GoPunjab to discharge its responsibilities under the Anti-Corruption Guidelines pursuant to the anti-corruption protocol agreed with the Bank.			
Name	Recurrent	Due Date	Frequency
Mid-Term review	No	August 31, 2020	N/A
Description of Covenant			
GoPunjab to prepare and furnish to GoP and the Bank a mid-term review reports and take all measures required to ensure efficient completion of the program and achievement of the objective thereof based on the conclusions and recommendations of said report and the Bank's views on the matter.			
Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Johannes Georges Pius Jansen	Senior Agriculture Economist	Agriculture & Rural Development	GFA12
Martien Van Nieuwkoop	Director	Agriculture	GFADR
Madhur Gautam	Lead Economist	Agriculture	GFA12
Martin Serrano	Senior Counsel	Legal	LEGES
Akram Abd El-Aziz Hussein El-Shorbaji	Senior Financial Specialist	Finance	GGO24
Haider Raza	Senior Procurement Specialist	Procurement	GGO06
Marcelo Hector Acerbi	Senior Environment Specialist	Environment	GEN06
Vijayasekar Kalavakonda	Senior Financial Sector Specialist	Finance & Markets	GFM06
Anwar Ali Bhatti	Financial Analyst	Disbursement	SACPK
Victor Manuel Ordonez Conde	Senior Finance Officer	Disbursement	WFALA

Bradford L. Roberts	Senior Private Sector Specialist	IFC	GTCAA
Moazzam I. Ahmad	Senior Country Officer	IFC	CMEPK
Ama Esson	Program Assistant	Agriculture	GFA12
Najmul Sahr Ataullah	Senior Social Development Specialist	Social	GSU06
Suiko Yoshijima	Environment Specialist	Environment	GEN06
Elena Karaban	Senior Communications Officer	Communication	SAREC
Kanta Kumari. Rigaud	Lead Environment Specialist	Environment	GCCRA
Uzma Quresh	Gender Specialist	Gender	GSU06
Rubina Geizla Quamber	Program Assistant	Agriculture	CMU
Mehreen Saeed	Communications Officer	Communication	SAREC
William Young	Lead Water Resource Management Specialist	Water	GWA09
Silvia Redaelli	Senior Economist		GPV06
Non-Bank Staff			
Name	Title	City/Country	
Abdul Wajid Rana	Consultant Institutions	Islamabad	
Daud Khan	Consultant Agriculture Policy	Rome	
Safiya Aftab	Consultant Social Safeguards	Islamabad	
Naveed Saeed	Consultant Financial Management	Islamabad	
Azhar Ahmed	Consultant Environmental Safeguards	Islamabad	
Charles Stutley	Consultant Insurance	United Kingdom	

Michael Turner	Consultant Seed Policy	United Kingdom
Adriaan Vernooij	Consultant Livestock	The Netherlands
Steven Watkins	Consultant Agribusiness	Rome
Blanca Amado	Consultant Economist	Rome
Takayuki Hagiwara	Chief TCIB FAO	Rome
Mohammad Afzal	Consultant Livestock	Islamabad
Jock Anderson	Consultant Agricultural Extension	United States
Derek Byerlee	Consultant Agricultural Research	United States
Mubarik Ali	Consultant Agricultural Research & Extension	Islamabad
Dan Petrescu	Consultant Communications	Brazil

I. STRATEGIC CONTEXT

A. Country Context

1. **Pakistan, with a population of over 207 million people, is the world's sixth most populous country.** In recent years, it has achieved continued gross domestic product (GDP) growth and substantially reduced poverty. GDP growth was 5.3% in fiscal year (FY)17 and is expected to continue accelerating, reaching 5.8 percent in FY19. Growing fiscal and external imbalances may, however, erode these gains if not addressed. The national poverty headcount declined from 64.3% in FY02 to 29.5% in FY14. Nevertheless, inequality persists and the country continues to rank low on the human development index, at 147th out of 188 countries. Macroeconomic, political, and security conditions, natural disasters, and continuing unreliable power supply continue to constrain the country's achievement of poverty reduction and shared prosperity goals.

2. Punjab accounts for more than half of Pakistan's GDP, and 63% of Punjab's population of 110 million is rural.¹

B. Sectoral and Institutional Context

3. **Agriculture is a key contributor to the economy in Pakistan in general and Punjab in particular, yet agricultural growth is languishing.** Nationally, agriculture accounts for 21% of GDP, employs 44% of the labor force, and directly and indirectly delivers nearly 80% of the total value of Pakistan's exports. Sector growth fell from 3.3% over the last decade to nearly zero in FY16 (0.3%). Crop and livestock productivity are lower than in other Asian countries. Except for maize, crop yields have barely risen in decades. In Punjab, where agriculture contributes 26% of GDP and provides 40% of employment, growth in agriculture has been highly erratic as well as low. Punjab encompasses 72.6% of national cropped area and 77.7% of national irrigated area. Approximately 60% of the cultivated area lies within the Indus Basin Water System. The province provides large shares of the country's primary crops: maize (78%), wheat (77%), cotton (73%), sugarcane (63%), and rice (52%).² The factors limiting agricultural growth include poor adoption of modern technologies, poor service delivery, and poorly functioning agricultural markets.

4. **Above all, however, lagging agricultural and economic growth in Punjab can be traced to current agricultural and irrigation policies.** Ample evidence confirms that subsidies, agricultural support prices, caps on meat and milk prices, low investment, and weakening institutions support investment in traditional crops at the expense of high-value agriculture (HVA), discourage efficient water use, and ultimately suppress agricultural growth.

5. **Subsidies dominate public spending on agriculture in Punjab.** These subsidies — US\$1,248 million in FY17 — are largely regressive, generate significant negative environmental externalities, and focus largely on major crops rather than HVA³. The government of Punjab (GoPunjab) pays more than 40% of these subsidies, 2.5 times more than the funding for agriculture in the provincial Annual Development Plan (ADP). Few subsidies target small-scale producers.

¹ Punjab Development Statistics, 2015.

² Punjab Agriculture Sector Plan 2015, p.12.

³ The Punjab government pays over \$330 million in wheat procurement subsidies per year. See Table 1 in the Technical Assessment for a breakdown of federal and provincial subsidies in Punjab.

6. **The costs of current policies and subsidies extend beyond their fiscal cost.** Because most subsidies are embodied in inputs or input prices, they promote excessive or imbalanced use of inputs such as water and fertilizer, resulting in negative externalities and sustainability issues (salinity, sodicity, and waterlogging have degraded about 25% of formerly fertile land in Punjab). Wheat subsidies are embodied in the wheat price, which is governed by a procurement price set far above import parity, to the detriment of net wheat buyers. Current policies and subsidies encourage farmers to produce more of the same surplus commodities. 90% of the cropped area in Punjab remains under major crops (dominated by wheat), while only 9 percent is planted to higher-value crops. This misallocation of resources sacrifices significant benefits: export earnings; jobs that would otherwise be created downstream through value chains; value added by agro-processing beyond milling alone; higher incomes for producers; production of nutrient-dense crops that reduce malnutrition; and efficiencies in water use that promote diversification, sustainable use of scarce water, and resilience to climate shocks and climate change.

7. **Now that Pakistan has achieved self-sufficiency in wheat, it seeks to spur further agricultural growth and transformation.** The goal of becoming self-sufficient in food grain (especially wheat) production has long underpinned policies, investment priorities, and public expenditures in agriculture, but now Pakistan must evaluate options for future growth in light of several factors: (a) the rapid shift in domestic demand for HVA products; (b) the largely unexploited comparative advantage for several of those products, which can provide opportunities to generate export revenue and jobs; (c) lack of options for new sources of irrigation water; and (d) the need for production systems to become more resilient as climate change progresses.

8. **Agriculture requires a paradigm shift in Punjab to unlock opportunities for future growth.** Punjab could restore its agricultural competitiveness through innovations that renew growth in on-farm productivity and improve efficiency and quality throughout the post-harvest value chain. At 0.18% of agricultural gross domestic product (AgGDP), Pakistan's public expenditures on agricultural research are the lowest in a region that is already lagging behind others. Most agricultural research expenditures still go to food grains, sugarcane and cotton, rather than to high-value crops and livestock products. Few resources are dedicated to post-harvest management, including value addition, quality, food safety, and nutrition. A high pay-off could be gained by redirecting public expenditures and associated policies toward the best potential investments for outcomes, with a focus on reforms in wheat, irrigation, subsidies, and marketing, and concomitant investments to improve service delivery, agricultural research and development, and insurance.

9. **The rural non-farm sector is a neglected source of overall economic growth for Punjab.** Half of Punjab's 14.6 million households are classified as agricultural (5.3 million farm households and 2 million livestock households)⁴. But poor access to and high cost of finance, inefficient markets, limited skills, electricity shortages, and a weak enabling environment hinder growth in the rural non-farm sector, including agribusiness. Most rural non-farm employment (77%) remains informal.

⁴ The latest Agriculture Census (2010) defines agricultural households to include farm households as well as households that own only livestock and do not operate any farm area to grow crops.

10. **Lack of funds limits the size of most rural enterprises and 30-40% of them make very small fixed investments.** Lack of credit at reasonable interest rates and appropriate maturities, is a key constraint for most rural enterprises including agribusinesses. Major barriers to institutional credit include lack of collateral, poor financial records and an inability to prepare business plans.

11. **In assessing sources of economic and agricultural growth, the issues of gender and climate change cannot be overlooked.** Agriculture in Pakistan suffers from serious gender inequality and discrimination. According to the Global Gender Gap Report 2016, Pakistan ranks 143rd out of 144 countries for women's economic participation. Agriculture is the main source of income for 75% of economically active women in Pakistan, yet women are less likely than men to own income-generating assets, obtain credit, and exercise power in financial or economic decisions.

12. **The share of female employment in agriculture has grown steadily as male employment has shifted to more productive sectors.** In 2014, women accounted for 47% of agricultural employment. Anecdotal evidence suggests that women work mostly on small farms and engage predominantly in horticultural and livestock production, of which over half is unpaid. Women's significant contributions to agriculture are poorly reflected in plans and programs.

13. **Pakistan's climate change risk is magnified by growing water scarcity, uncontrolled urbanization, and rapid population growth.** The Global Climate Risk Index places Pakistan among the top 10 most climate-vulnerable countries. Climate change heightens the pressure to manage water resources with the utmost care.⁵ Agriculture produces approximately 41% of all greenhouse gas emissions in Pakistan, mostly through livestock production. To continue to reduce poverty and increase shared prosperity, Pakistan requires technologies and practices for climate-smart agriculture (CSA), which will sustainably improve productivity in agricultural systems, enhance resilience, and reduce greenhouse gas emissions.

C. Relationship to the CPS and Rationale for Use of Instrument

14. **The proposed Strengthening Markets for Agriculture and Rural Transformation (SMART) Punjab Program aligns with the World Bank objectives of private sector development and inclusion, set out in the Country Partnership Strategy (CPS) (FY2015–20), and with the twin goals of ending extreme poverty and promoting shared prosperity.** The CPS recognizes that proper water resource management is the next key development challenge in Pakistan, and particularly in Punjab. The SMART Punjab Program specifically supports CPS Outcomes 2.2 (Increased Productivity in Farms), 3.1 (Increased Financial Inclusion for Micro, Small and Medium Enterprises and Women), 3.2 (Reduced Vulnerability for Groups at Risk), 4.1 (Improved Public Resources Management), and 4.4 (Adoption of Performance and Transparency Mechanisms in Selected Institutions).

15. **The Program-for-Results (PforR) is the most suitable instrument for the SMART Punjab Program.** A coherent package of policy change, institutional strengthening, and reorientation of public investments in agriculture is required to attain fundamental improvements

⁵ Winston Yu, Yi-Chen Yang, Andre Savitsky, Donald Alford, Casey Brown, James Wescoat, Dario Debowicz, and Sherman Robinson (2013), *The Indus Basin of Pakistan: The Impacts of Climate Risks on Water and Agriculture* (Washington, DC: World Bank).

in the policy regime, stronger institutions in the agriculture sector, and improved post-harvest value addition through increased private investment in agribusiness. The PforR instrument appears uniquely suited for delivering this kind of package through a clearly articulated results chain, while further building the GoPunjab's capacity and helping it deepen and develop its own systems. The US\$300 million provided by the PforR will co-finance a much larger government Program of US\$1.59 billion. This PforR will mobilize experience from World Bank Global Practices and cross-cutting solution areas (Agriculture, Trade & Competitiveness, Water, Environment & Natural Resources, Poverty and Equity, Social, Urban, Rural & Resilience, gender, and climate change) as well as the International Finance Corporation.

II. PROGRAM DESCRIPTION

A. The Government Program and Scope of the Proposed SMART Punjab Program

16. **The GoPunjab program for agriculture and rural transformation (the “broader Government program”) emphasizes enabling productivity, increasing competitiveness in agricultural marketing and trade, and enhancing resilience** as reflected in planning documents⁶ and the Medium-Term Development Framework (MTDF). The broader Government program is supported by a capital investment for agriculture, livestock, farm to market roads, and irrigation of US\$3.797 billion over five years (FY18–22), of which US\$1.145 billion is for agriculture and livestock. In addition, there are recurrent budget allocations of US\$0.330 billion for irrigation maintenance and repair (M&R) and US\$0.115 billion for human resources, bringing the size of the expenditure framework of the broader Government program to US\$4.242 billion (see Table in Annex 3 for details). The GoPunjab also spends an estimated US\$515 million each year on agricultural subsidies including for wheat (US\$333 million) as part of its recurrent expenditures.

17. **The SMART Punjab PforR will support selected parts of the broader Government program over five years.** These selected parts, the “PforR-supported Program” will consist of 14 of the Government's 25 focus areas with a focus on increasing crop and livestock productivity, research and extension policy, transition toward HVA and CSA, livestock breeding and preventive care, agribusiness, enhancing resilience and inclusiveness, and improving the functioning of crop and livestock markets including food safety. See Technical Assessment, Table 2 for further details.

18. **Several GoPunjab investments are part of the broader Government program but are not part of the PforR-supported Program:** the Extension 2.0 program; agricultural finance, mechanization and education; livestock census, feed, marketing, and women's programs; government farms and experiment stations; the on-going rural roads program; development and rehabilitation of irrigation infrastructure; and on-farm water management (including high-efficiency irrigation systems) which is already funded by the Bank through the Punjab Irrigated-agriculture Productivity Improvement Project (PIPIP – P125999).

19. **The SMART Punjab PforR will help the government promote transformational change in the crop and livestock subsectors by focusing on activities contributing to three Results Areas:** (a) increased on-farm productivity and value of crops and livestock; (b) increased

⁶ Punjab Growth Strategy 2015, Private Sector Development Strategy for the Punjab 2010, Livestock Sector Strategy of Punjab 2010, Livestock Policy of Punjab 2016, Punjab Agriculture Action Plan 2015, Punjab Skills Sector Plan 2018, Punjab Industries Sector Plan 2018.

value addition and competitiveness of crops and livestock; and (c) enhanced resilience of smallholder farmers to climate change⁷ and natural disasters. Each Results Area involves a specific combination of policy reforms, institutional strengthening, and public investments. The rationale underlying each Results Area is explained in Annex 3.

20. Activities under the three Results Areas in the PforR-supported Program will be supported by two sources of finance: GoPunjab budget and SMART Punjab PforR (Table 1).

21. In addition, a significant portion of GoPunjab's spending on subsidies is expected to be diverted towards investment in agriculture and livestock when the PforR-supported Program is fully implemented by 2023. GoPunjab has already substantially increased the capital investment allocation for agriculture and livestock in anticipation of such savings becoming available.

Table 1. Financing of PforR-supported Program

Source	Amount (US\$ m)	% of total
Punjab Government ^a	1290	81
PforR	300	19
Total Program financing	1,590	100

^a For details see Annex 3.

22. Budgetary allocations for agriculture and livestock in the PforR-supported Program are considered sufficient; together with acceptable historical budget execution rates they provide confidence that the intended results will be achieved. The government's expenditure framework (Table 9, Annex 3) is sufficiently aligned with the PforR-supported Program to achieve the intended results.

B. Program Development Objective/s (PDO) and Key Results

23. The development objective for the SMART Punjab Program (the "Program Development Objective" - or PDO) is *to increase the productivity of crop and livestock farmers, improve their climate resilience, and foster agribusiness development in Punjab*. The SMART Punjab PforR supports the implementation of a coherent package of policy reforms, institutional change, and reorientation of public resources toward productive public investments and smart subsidies. Specific key reforms include a shift from universal to targeted agricultural input subsidies through an E-voucher scheme for smallholders, modernization of wheat marketing by phasing out public wheat procurement, reducing strategic wheat reserves from more than 4 million to not more than 2 million metric tons (MT), removing distortions in output markets for crops and livestock products, and reforming provincial crop and livestock research. SMART Punjab will also improve the financial sustainability and efficient use of irrigation systems, promote agribusiness, and improve the resilience of producers by designing and implementing a crop insurance system, which could potentially leverage access to production credit.⁸ The PDO indicators are as follows:

Results Area 1: Increased on-farm productivity and value of crops and livestock. Indicators include: Indicator 1: Farmers reached with agricultural assets or services (gender disaggregated); Indicator 2: Area under high value agriculture (HVA).

⁷ The SMART Punjab PforR will not support investments in water storage infrastructure and thus does not address climate variability.

⁸ Supporting an area yield index-based crop insurance system for subsistence farmers (as a social protection cover) and small progressive farmers, as well as individual grower multiple-peril crop insurance for large-scale farmers, and named-peril crop insurance for farmers producing horticultural crops.

Results Area 2: Increased value addition and competitiveness of crops and livestock. Indicator 3: Beneficiaries reached with financial services (gender disaggregated); Indicator 4: Private wholesale markets and collection centers established.

Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters, Indicator 5: Farmers covered by agricultural insurance (gender disaggregated); Indicator 6: Farmers adopting CSA packages; Indicator 7: Improvement in irrigation water service delivery.

C. Disbursement Linked Indicators and Verification Protocols

24. **Progress will be measured through 12 disbursement linked indicators (DLIs),** each involving one or more specific actions required for agricultural and rural transformation in Punjab. DLIs were selected on the basis of: (a) the criticality of the activity, output, or outcome in the results chain; (b) the need to introduce a financial incentive to deliver the activity, outcome, or output; (c) measurability and ease of verification; and (d) the capacity of GoPunjab to achieve the DLIs over the period that SMART Punjab is implemented.

25. **The four DLIs under Results Area 1 (increased on-farm productivity and value of crops and livestock)** will be achieved by supporting SMART reforms in the policy regime for agriculture (crops and livestock) and reorienting public expenditures from subsidies toward targeted investments to improve crop and livestock productivity.

- **DLI 1: Improving access to quality farm inputs.** Better targeting of subsidies for agricultural inputs to small-scale farmers would increase overall production and would reduce poverty by helping smallholders close the yield gap with larger producers. *Measured by tracking the number of small farmers (<5 hectares (ha)) enrolled in the E-voucher scheme for agricultural inputs.*
- **DLI 2: Revitalizing provincial crop and livestock research and extension systems.** A comprehensive, strategically relevant policy for agricultural and livestock research and extension will be designed. Funding for public research would increase (*measured as the percentage of AgGDP spent on research*), as would the role of the private sector in agricultural research (*measured by the composition of the Punjab Agricultural Research Board and the percentage of research grants awarded on a competitive basis*).
- **DLI 3: Improving livestock health and breeding.** Resources will shift from curative to preventive animal healthcare (*measured by the ratio of expenditures on preventive and curative medicine*) to reduce productivity losses to disease. Good breeding stock is essential to improve productivity (*measured by the number of breeding animals of selected species*). These interventions are in line with the recommendations of the Performance of Veterinary Services pathway diagnostic for Pakistan undertaken by the World Organization for Animal Health in 2014 (for details see Technical Assessment, Box 2).
- **DLI 4: Modernizing the wheat marketing system and transitioning to high-value agriculture.** Modernizing the wheat market would reduce wheat and flour prices and free land for HVA, substantially raising farm incomes and employment. *Measured by the official notification that GoPunjab is gradually withdrawing from the wheat market and the subsequent maintaining of a strategic wheat reserve of no more than 2 million MT, and by tracking the percentage of the agriculture allocation in the ADP to HVA schemes. An additional measure is approval of the Punjab Agriculture Policy, which is expected to provide further strategic directions for the agriculture sector.*

26. **The four DLIs under Results Area 2 (increased value addition and competitiveness of crops and livestock)** will be achieved through policy and institutional reforms, as well as by marshalling public support for private investors, mainly through a matching grant scheme (see Technical Assessment, Annex 3).

- **DLI 5: Providing incentives to agribusinesses for investment in value addition and agricultural technology.** SMART Punjab will support an Agribusiness and Innovation Fund to be set up by GoPunjab. The fund will award matching grants, with particular consideration for women and young people, on a competitive basis. *Measured by the number of matching grants awarded for agribusiness.*
- **DLI 6: Improving market conditions for meat and raw milk.** Removing meat and raw milk price caps (*measured by the discontinuation of notification of meat and milk prices*) would stimulate production and marketing of better quality and safer livestock products, raising producers' incomes and increasing supplies for urban areas.
- **DLI 7: Modernizing agricultural markets.** Reforming wholesale market legislation to allow greater private sector participation and enhance transparency (*measured by approval and notification of the Punjab Agricultural Marketing Regulatory Authority Act*) would reduce the margins taken by middlemen, reduce the government's role in controlling these markets, allow the private sector to set up markets and provide farmers with alternatives markets.
- **DLI 8: Improving food safety.** Better food and agricultural standards, backed by testing and enforcement mechanisms, would improve the quality of food products and public health, and address concerns about contaminated or adulterated products. *Measured by tracking progress in establishing and operationalizing a provincial food testing reference laboratory and regional and mobile laboratories.*

27. **The four DLIs under Results Area 3 (enhanced resilience of smallholder farmers to climate change and natural disasters)** will be achieved by improving the management and sustainability of water resources, designing and extending the coverage of improved agricultural insurance products for different kinds of producers, and increasing public investment in CSA.

- **DLI 9: Improving sustainability and efficiency of irrigation.** More equitable access to water and better assessment and collection of *abiana* would encourage producers to use water more efficiently with no increases in overall water use, and increase funds for M&R. Adoption of a provincial water policy and groundwater act are important first steps toward addressing the overexploitation of water, falling groundwater tables, and increasing salinization. *Measured by approval of the Punjab Water Policy, notification of the Punjab Groundwater Act, improvements in the area assessed for abiana, tracking abiana collection rates, and tracking water delivery performance ratios (defined as actual amount of water delivered divided by amount delivered according to canal design, measured at different points along the canal) in selected canals.*
- **DLI 10: Rolling-out an agricultural insurance system.** Crop insurance can help crop producers stabilize incomes and sustain resilience when natural events deplete harvests. A feasibility report detailing a suitable crop insurance scheme was completed in July 2017. *Measured by official GoPunjab approval of the report, development and notification of a*

workplan aligned with the report's recommendations, piloting of a crop insurance scheme in at least two districts, and roll out of the scheme in other districts.

- **DLI 11: Increasing public investment in climate-smart agriculture.** Enhancing public investment in CSA would help farmers adopt new technologies and approaches and reduce potential losses related to climate change. *Measured by tracking the percentage allocation of agriculture in the ADP for CSA schemes.*
- **DLI 12: Communications, beneficiary feedback, capacity building, and monitoring and evaluation.** A substantial communications strategy (including a beneficiary feedback protocol) and capacity-building program will mobilize support for agricultural and rural transformation among stakeholders into the future. Strengthening monitoring and evaluation (M&E) capacity in participating departments will facilitate progress monitoring. *Measured by development and implementation of a communications strategy and annual capacity development plans.*

D. Capacity Building and Institutional Strengthening

28. **Institutional change and strengthening accompany the new policy directions and reallocation of public investment under SMART Punjab.** SMART Punjab will strengthen the institutional capacity and cross-sectoral linkages of the relevant public institutions and agencies, and as appropriate will help to reorient the functions of public institutions away from direct market intervention and toward control and enforcement. The Program provides technical support to build capacity and strengthen institutional processes and government systems, as specified in the DLIs and dated legal covenants. Capacity and technical support will be based on Annual Training and Capacity Development Plans, prepared by the participating GoPunjab departments.

29. **Skills training for the agricultural labor force will include vital but overlooked topics and explore innovative ways of reaching people (especially women).** Topics will include drip irrigation; laser land leveling; milk production for formal dairy chains; grading, packaging, and merchandizing of crop and livestock products; and small business accounting and management. SMART Punjab will seek collaboration with the Punjab Skills Development Fund (through the Punjab Skills Development Program—P130193) and other agencies as appropriate. It will test models with a focus on accessibility (especially for women), revised teaching methods and improved resource materials.

30. **GoPunjab has started to develop and implement a strategic communications plan to reach the diverse stakeholders and affected external and internal parties.** The Bank is supporting the GoPunjab to design the strategy and train government officials in stakeholder mapping, messaging, and stakeholder engagement. The plan will encourage broad-based public support for the proposed reforms; develop public awareness of the benefits of SMART; foster transparent two-way communication and consultation; and work with selected stakeholders to reduce the risk of opposition to the proposed reforms.

III. PROGRAM IMPLEMENTATION

A. Institutional and Implementation Arrangements

31. **The Departments of Agriculture, Livestock & Dairy Development, Food, Irrigation, Finance, P&D, and Industries, Commerce & Investment will be responsible for**

implementing the SMART Punjab Program. (Annex 3, Table 10 describes implementation responsibilities by agency and Results Area). Each department will have a dedicated program delivery unit (PDU) or a focal person, as appropriate. Each PDU will include current departmental staff, supplemented by consultants as needed. Some departments have dedicated PDUs; others will establish them.⁹ The Program Coordination and Monitoring Unit (PCMU) will be headed by a Program Director assisted by qualified support staff, all hired on a competitive basis. The PCMU will coordinate with the seven implementing agencies, monitor and evaluate implementation, and report to the Bank in accordance with the terms and conditions of the Loan and Program Agreements. It will consolidate reports of all implementing agencies and communicate them to the Bank; to do so, it will develop a standard template for monitoring and reporting progress. The PCMU will also coordinate with the independent verification agency for verifying achievement of DLIs and reporting, and will establish an Assignment Account to manage technical assistance funding supported by the PforR. The Finance and P&D Departments will ensure that PforR resources are adequately budgeted for in their annual budget and disbursed in line with the expenditure framework to accomplish the DLIs.

32. A SMART Steering Committee (SC) was established on November 25, 2016. The SC has played a constructive role throughout preparation, especially in guiding and confirming policy reforms and institutional changes. Headed by the Chief Minister, Punjab, it includes administrative heads from all implementing agencies, and other key stakeholders. The SC will provide strategic guidance and direction, facilitate coordination among the seven implementing agencies, and review progress in all three Results Areas and on all DLIs on a quarterly basis as reported by the PCMU. To ensure effective implementation, the SC may refer any major implementation challenge or matter requiring a policy decision for guidance to the three high-level committees (Secretaries' Committee, Commissioners' Conference, and DCO Committee) chaired by the Chief Secretary. On October 27, 2017, the Chief Minister established two sub-committees of the SC, respectively dealing with *abiana* reform and wheat marketing reform.

33. SMART Punjab will coordinate and collaborate with other programs. It will create synergies with on-going Bank projects in Punjab and the operations of development partners.¹⁰ National entities with supporting roles include: (a) the Auditor General of Pakistan for the annual external audit of the Program; (b) the Punjab Public Procurement Regulatory Authority for technical guidance on public procurement and compliance; and (c) the National Accountability Bureau, which will investigate any complaints of fraud and corruption related to the Program.

⁹ The Agriculture Delivery Unit will act as PDU in the Agriculture Department; the Statistical Planning and Reform Unit will act as PDU in the Irrigation Department; and the Food and Livestock & Dairy Development Departments have established PDUs or (in the case of the Finance Department and the Department of Industries, Commerce & Investment) appointed focal persons. At a minimum, PDUs will be staffed by a Procurement Specialist, Financial Specialist, Communications Specialist, M&E Specialist, and Internal Audit Specialist, aside from the appropriate technical specialists. PDUs are responsible for procurement (tender documents, advertising, bid evaluation and award of contracts), FM, internal audit, communications, M&E, and environmental and social management. PDUs will report as required to the PCMU, providing at least the following: (a) an annual investment plan for their department; (b) terms of reference for consultancy services; (c) an annual procurement plan; (d) reports on implementation progress for each DLI under the Program; (e) Program Financial Statements, including procurement, if any; (f) internal audit reports; and (g) implementation of the communications strategy.

¹⁰ For example, the Food and Agriculture Organization (with the recently approved Technical Cooperation Project—Support for the formulation of projects for Strengthening Markets and Rural Transformation (SMART) Initiatives in Punjab, Pakistan), USAID (particularly the Punjab Enabling and Environment Project), IFPRI (in the policy arena), and the Australian High Commission (which facilitated financial support from the Government of Australia for technical assistance).

B. Results Monitoring and Evaluation

34. **Implementing a new results-based approach requires support for M&E.** The PCMU, supported by competitively recruited staff and an information and communication technology (ICT)-based management information system (MIS), will have overall responsibility for coordinating, monitoring, and reporting on the Program's results indicators. All participating departments, particularly key implementing departments (Agriculture, Livestock & Dairy Development, Food, Irrigation) will be properly equipped and staffed by competent professionals responsible for implementing the DLIs within the agreed timelines. The PCMU will recruit an independent verification agency to verify achievement of DLIs, operating in accordance with agreed protocols.

C. Funds Flow and Disbursement Arrangements

35. **International Bank for Reconstruction and Development (IBRD) funds of SMART Punjab will be channeled to the Government of Punjab Non-Food Account-1 through the State Bank of Pakistan.** Program funds will be disbursed twice yearly, upon achievement of DLIs. Upon achievement of indicators, the PCMU will report to the World Bank and provide evidence, as per the Loan and Program agreements, to justify that results for DLIs are met. For a scalable DLI, the amount to be disbursed will be determined according to the formula in the verification arrangement. A notification will be sent to the Borrower stating the amount to be disbursed against progress achieved toward the results of the scalable DLI. Disbursement requests will be submitted to the Bank using its standard disbursement forms signed by the authorized signatories. Details of key disbursement issues will be spelled out in the Disbursement and Financial Information letter. Although PforR operations do not link disbursements to individual expenditure transactions, the aggregate disbursements under such operations must not exceed the total expenditures by the Borrower under the Program over its implementation period, after other sources of funds have been deducted e.g. other Bank-financed projects. If by program completion the IBRD financing disbursed exceeds total Program expenditures, the Finance Department of GoPunjab is required to refund the difference to the Bank. Critical first steps for the Program are recognized as prior results. Withdrawal of up to US\$10 million may be made against prior results achieved on or after April 5, 2017 and before the date the Loan Agreement is signed, for the DLIs indicated in Annex 2, Table 3. In addition, withdrawal of up to 10% of the Loan amount (excluding the front end fee) may be made as an advance for the purpose of achieving one or more DLIs. If the results associated with the DLIs are not achieved by the end of the Program, these funds would be reimbursed to the Bank.

IV. ASSESSMENT SUMMARY

A. Technical

36. **The Government Program adopts a credible strategic approach toward agricultural and rural transformation.** It moves Punjab from the traditional paradigm based on price support and blanket subsidies toward a market-oriented development paradigm with liberalization of output and input markets, government withdrawal from the wheat market, and better targeting of subsidies. It redirects government spending to technology innovation, preventive animal healthcare, crop insurance, and strengthening supply chains, and sharpens the focus on HVA, sustainability, water resource management, and CSA. These changes place no further fiscal burden

on GoPunjab; indeed, they should enhance the effectiveness of public expenditure and may reduce fiscal outlays.

37. **The governance structure, institutional arrangements, and operational arrangements of the SMART Punjab implementing entities are adequate.** Several implementing departments (Agriculture, Irrigation, P&D, Finance, and Industries, Commerce & Investment) have experience with Bank-supported projects and programs, including PforR operations. The line departments, in conjunction with the PCMU located in P&D, have appropriate capacity to carry out policy reforms and manage institutional change, and most have adequate capacity for Program implementation. For the Food Department, the Bank will provide technical assistance to help implement the wheat marketing modernization program and help the Department assume its new food safety responsibilities. P&D has already establishing the PCMU, including hiring dedicated M&E and communications staff.

38. **The PforR-supported Program is backed by an adequate expenditure framework,** detailed in Annex 3, Table 9. Briefly, during the five-year PforR period, the planned core allocation for the PforR-supported Program in the provincial ADP is US\$1,590 million, including support from the Bank-financed PforR to the extent of US\$300 million.

39. **The SMART Punjab PDO will be achieved through a logical results chain.** The PforR focuses on three Results Areas to support the government program and contribute to key outcomes for attaining the PDO. Those outcomes will be achieved through a series of intermediary outcomes or outputs (each reflecting a specific change in the current situation), which are related to the actions specified in and measured through the DLIs (Annex 3, Table 8).

40. **The economic and social rationale for SMART Punjab is compelling; the Program is expected to add US\$2.2billion to AgGDP, provide 350,000 jobs, lift 1.7 million people out of poverty over five years, reduce inequality, and expand opportunities for women and youth.** Most of the income and employment gains stem from modernizing the wheat marketing system and shifting to HVA, and others from improvements in crop and livestock productivity. Given that agriculture supports half or more of the workforce in 14 of Punjab's 17 poorest districts, rural transformation has the potential to reduce inequality by creating jobs, building capacity, supporting entrepreneurship, and economically empowering women and youth. Details can be found in the Technical Assessment.

41. **The Program is expected to contribute to narrowing the gender earnings gap** through the following mechanisms: (a) diversification into HVA that will lead to higher productivity with positive impact on wages, and low levels of mechanization in vegetable production and the need for careful handling of produce often create a specific demand for female labor; (b) increasing opportunities for post-harvest value-addition, including agribusiness matching grants which will aim to focus on women entrepreneurs; and (c) removal of price caps in the livestock sector and breeding of more productive animals that will benefit small livestock producers, many of whom are women.

42. **Climate co-benefits are calculated at 51.6% of the total loan amount (see Technical Assessment, Table 7 for details).**

- **Adaptation co-benefits** are calculated to be US\$105.68 million mainly through increased funding to climate resilience-oriented agricultural research (DLI#2); improved animal resilience through better livestock health, making animals less susceptible to climate change (DLI#3a); improved wheat storage through construction of steel silos compared to the dilapidated go-downs where most wheat is currently stored (DLI#4a); reduction in farmers' vulnerability to climate change through increases in high-value crop production, diversity of vegetable crops, short growing cycles, and efficient use of irrigation (DLI#4b); matching grants to the extent that they would finance improved storage facilities to improve the resilience of commodity stocks to climate change (DLI#5); improved sustainability and efficiency of irrigation (DLI#9); agricultural insurance (DLI#10); and climate-smart agriculture (DLI#11).
- **Mitigation co-benefits** are calculated at US\$49.13 million and mainly result from (i) improved animals lessening pressure on rangelands, and farmers with access to improved animals reducing their herd size - both these effects result in better maintenance of carbon pools in rangeland areas (DLI#3b); and (ii) high-value crops require less fertilizer per unit value of production, hence the overall emission intensity of production will be reduced (DLI#4b).

B. Fiduciary

43. **A Fiduciary Systems Assessment (FSA)** of the SMART Punjab Program (Annex 4), undertaken in accordance with Bank Policy and Bank Directive Program for Results Financing, concluded that **overall fiduciary risk** was **Substantial**. The Program Action Plan (PAP) (Annex 7) specifies fiduciary actions to mitigate risks identified in the FSA. The Financial Management (FM) risks involve capacity shortages and control weaknesses in implementing entities; it remains challenging to develop professional FM capacity for a program on the scale of SMART Punjab. Vacant positions in the PCMU need to be filled, and an internal audit function must be established. Each year the Program will be audited by the Auditor General of Pakistan as the country's supreme audit institution. Audited financial statements will be furnished to the Bank within six months after the end of each year.

44. **Procurement** of consultancies, goods, works and non-consulting services for SMART Punjab will be undertaken by five departments (Agriculture, Food, Irrigation, Livestock & Dairy Development, and Industries, Commerce & Investment), with the P&D Department playing a coordination and monitoring role and the Finance Department a financial role. All procurement will comply with the Public Procurement Regulatory Authority (PPRA) Rules 2014 and any updates. A comprehensive online Procurement Management Information System (PMIS) will be developed to implement procurement risk mitigation measures identified in the FSA (Annex 4).

45. **The Borrower will implement the SMART Punjab Program in accordance with provisions of the Anti-Corruption Guidelines (ACG) applicable to PforR operations.** The modalities for implementing the ACG are stated in Annex 4. Several interventions—property tax registry, the PMIS, and automated service delivery—directly address corruption. The Bank team reviewed the debarment list and found no firms in the region with experience in the technical areas of the proposed program. The Bank has large engagements in Punjab for which national systems are deemed satisfactory. An anti-corruption assessment found that systems to counter corruption

were adequate. GoPunjab will ensure that any person or entity debarred or suspended by the Bank is not awarded a contract under or otherwise allowed to participate in, the Program during the period of debarment or suspension.

C. Environmental and Social Effects

46. **An Environmental and Social Systems Assessment (ESSA) was prepared for SMART Punjab.** The assessment incorporates feedback from all stakeholders (governmental, non-governmental, producers), including comments received at a stakeholder workshop in Punjab on October 23, 2017. The ESSA was disclosed on November 17, 2017. The Program follows the principles of the Citizens Engagement Strategic Framework developed by the World Bank.

47. **Environmental risk is rated as Moderate.** In general, environment impacts expected from Program activities are assessed as Medium to Low. Environmental concerns include the possibility of increases in the use of chemicals due to the shift from conventional crops to HVA; institutional capacity for effective environmental management; and environmental compliance by micro and small enterprises and food safety testing laboratories. SMART Punjab supports reforms and related actions that promote balanced fertilizer use, improved water resource regulation and efficiency, increased land productivity, agricultural insurance, and CSA. The Program is not expected to support large infrastructure except wheat storage facilities which are subject to Environmental Impact Assessment (EIA) preparation. It will promote resource water efficiency instead of expansion of the irrigation network, and will contribute to increased land productivity instead of expansion of agricultural land. Improvements in animal health combined with deregulation of livestock prices would benefit public health. Improvements in animal breeding will relieve pressure on rangelands.

48. **Social risk is rated as Substantial.** The key social risks include (a) access to program benefits for vulnerable and marginalized groups, and (b) potential social conflict. Smallholders and marginalized or vulnerable groups may find accessing some elements of SMART Punjab — for example, HVA, the E-voucher scheme, and matching grants — challenging and may require special support, such as technical assistance, training, two-way communication, and social mobilization strategies. Phasing out the wheat procurement system while lowering the wheat price thus benefiting the large majority of households who are net wheat buyers, may face opposition from large wheat growers who are the main beneficiaries of the wheat procurement program. The SC, chaired by the Chief Minister, has endorsed a policy note that sets out the major contours of the proposed reform, including a targeted income transfer program for wheat growers and an incentive program for farmers to diversify, to be financed from the freed-up fiscal resources. The Food Department in finalizing the detailed design of the wheat reform program will put into place the measures required to mitigate the social risk associated with the program. In recognition of the sensitive nature of the wheat market reform, the latter would be of a gradual nature and start only in 2019. The strong communications program that is currently being finalized by the GoPunjab with support from the Bank will further mitigate social risks. Attempts to improve the *abiana* assessment and increase *abiana* collection also may meet resistance. Removing price caps, while having beneficial impacts on public health and the incomes of livestock owners (most of them women), may negatively affect the consumption of fresh milk in low-income households, unless preceded by an engagement strategy in which stakeholders are informed of the benefits of deregulation well in advance and milk producers can move towards increasing supply capacity in

anticipation of better prices. The Program includes an effective engagement and awareness strategy (DLI#12) that includes citizen engagement, to ensure that reforms do not lead to marginalization and social conflict. No significant land acquisition is envisioned under the Program.

49. **Communities and individuals who believe that they are adversely affected as a result of a Bank supported PforR operation**, as defined by the applicable policy and procedures, may submit complaints to the existing program grievance redress mechanism or the Grievance Redress Service (GRS) of the World Bank (WB). The GRS ensures that complaints received are promptly reviewed in order to address pertinent concerns. 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 World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

50. **Although the proposed operation will undertake or support no activities of high risk from an environmental or social perspective**, social management procedures require strengthening with respect to gender and the poor, conflict management, and two-way public engagement. Certain departments need to strengthen their grievance redress systems. The Environmental Section of P&D should be strengthened because with primary responsibility for coordinating and monitoring the Program, P&D is in charge of environmental screening. For activities that require an EIA or an Initial Environmental Examination (IEE), the relevant implementing agencies should coordinate with District Environment Officers.

D. Risk Assessment

51. **Political and governance risks are substantial.** Most policy reforms touch on vested interests that may attempt to undermine the success of reforms. To mitigate this risk, GoPunjab at the highest level (the Chief Minister as Chairman of the SC) has confirmed full commitment to the reforms and is supporting a communication strategy to reach all stakeholders. Importantly, GoPunjab understands the need to finance (partial) compensation for individuals whose circumstances temporarily worsen owing to reforms (such as phasing out wheat procurement). In addition, recent political events may slow down implementation. Changes in the provincial cabinet or a decision by GoPunjab to reverse policy could also affect the Program. This risk is mitigated by the Program's design; critical first steps are part of prior results with some appropriate measures designed to start implementation after the elections.

52. **Fiduciary and social risks are substantial.** Mitigating measures have been outlined in the PAP for the former. A comprehensive outreach and feedback program (DLI#12) will help prevent possible marginalization of key vulnerable stakeholders.

53. **Stakeholder and other risks.** Although the capacity of implementing agencies appears sufficient, the Food Department will require special attention to build capacity to assume its new role in emergency reserve management and food safety, and the Bank is fully committed to provide the required support.

54. **GoPunjab and the Bank are fully aware of the transformational nature of SMART Punjab and the associated implementation challenges.** A dedicated PCMU in the P&D Department will undertake Program coordination, monitoring, and evaluation, and the SC (charged with implementation oversight) is led and constituted by government representatives at the highest levels.

E. Program Action Plan

55. **Assessments during preparation of the SMART Punjab PfoR (technical, fiduciary, and environmental and social) evaluated the capacity of the executing and implementing entities, identified and rated risks, and specified key actions that GoPunjab should undertake to enhance Program systems and mitigate risks.** Some of those risks and actions have been highlighted in the foregoing discussion. All key actions are detailed in the PAP (Annex 7).

ANNEX 1. RESULTS FRAMEWORK

Table 2. Results Framework SMART Punjab PforR

Results Areas	PDO/Outcome Indicators	Intermediate Results Indicators	DLI #	Unit of Meas.	Baseline (Year))	End Target (Year)
Results Area 1: Increased on-farm productivity and value of crops and livestock	PDO Indicator 1 – Farmers reached with agricultural assets or services (gender disaggregated)			Number of farmers, in thousands	25	200
		E-voucher scheme for agricultural inputs subsidy extended to 200,000 farmers with land holdings less than 5 ha	1	Number of farmers, in thousands	25	200
		Punjab Agriculture Policy notified	2		N	Y
		Punjab Crops and Livestock Research and Extension Policy and Strategy notified	2		N	Y
		Budgetary allocation for agricultural research in ADP increased	2	% of AgGDP	0.2	0.4
		Budgetary allocation ratio for animal preventive and curative healthcare increased	3(a)	Spending ratio	65:35	90:10
		Animals of selected species registered in progeny testing programs increased	3(b)	Number of animals, in thousands	7	30
	PDO Indicator 2 – Area under HVA			Hectares, in thousands	1,040	1,440
		Government wheat reserves reduced	4(a)	Million tons	6	2
		Farmers encouraged to adopt HVA through increased allocation for HVA in ADP	4(b)	% of total allocation for agriculture	3.5	15
Results Area 2: Increased value addition and competitiveness of crops and livestock	PDO Indicator 3 – Beneficiaries reached with financial services (gender-disaggregated)			Number of agribusinesses supported through matching grant scheme	0	240
		Agribusiness and Innovation Fund established and Operational Manual for the Fund notified	5		N	Y

Results Areas	PDO/Outcome Indicators	Intermediate Results Indicators	DLI #	Unit of Meas.	Baseline (Year))	End Target (Year)
	PDO Indicator 4 - Private wholesale markets and collection centers established			Number of private wholesale markets and collection centers	0	5
		Price caps on milk and meat removed	6		N	Y
		PAMRA (Punjab Agricultural Marketing Regulatory Authority) Act approved and enforced	7		N	Y
		Agricultural produce and food testing laboratories established at provincial, regional, and divisional levels	8	Number of laboratories	0	13
Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters	PDO Indicator 5 - Farmers covered by agricultural insurance (gender-disaggregated)			Number of farmers, in thousands	0	500
		Operational Manual governing agricultural insurance approved and notified	10		N	Y
		Pilot agricultural insurance system rolled out in two districts	10		N	Y
	PDO Indicator 6 - Farmers adopting climate-smart agriculture (CSA) packages (gender-disaggregated)			Number of farmers, in thousands	813	978
		Increased investment in CSA	11	% of total allocation for agriculture in ADP	3	15
	PDO Indicator 7 – Improvement in water service delivery	Measurement and monitoring of water delivery improved in each of 6 canals: Muzaffargarh, Abasia Link, Abasia, CRBC-III, Rangpur, and Upper Jhelum	9	Water delivery performance ratio	0.61	0.85

ANNEX 2. DISBURSEMENT-LINKED INDICATORS, VERIFICATION PROTOCOLS, AND DISBURSEMENT ARRANGEMENTS

Table 3. Disbursement-linked Indicators and Indicative Timeline for Achievement

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
DLI 1 - Improving access to quality farm inputs			No E-voucher system in place.	Department of Agriculture (DoAg) has extended the coverage of E-vouchers providing subsidies for agricultural inputs to at least 25,000 farmers with less than 5 ha of farm land in FY17.	DoAg has extended the coverage of E-vouchers providing subsidies for agricultural inputs to at least 50,000 farmers with less than 5 ha of farm land in FY18.	DoAg has extended the coverage of E-vouchers providing subsidies for agricultural inputs to at least 100,000 farmers with less than 5 ha of farm land in FY19.	DoAg has extended the coverage of E-vouchers providing subsidies for agricultural inputs to at least 150,000 farmers with less than 5 ha of farm land in FY20.	DoAg has extended the coverage of E-vouchers providing subsidies for agricultural inputs to at least 200,000 farmers with less than 5 ha of farm land in FY21.	
Allocated amount (US\$ m):	16.00	5%		1.00	2.00	3.00	4.50	5.50	
DLI 2 - Revitalizing provincial crop and livestock research and extension systems			0.1% of AgGDP allocated to research in FY16/17 of which 4% allocated to competitive research grants.			(a) Punjab's Cabinet has approved and notified in the Gazette a new Agriculture and Livestock Research and Extension Policy (1.00) (b) Punjab's Assembly has amended (as notified in the Gazette) the Punjab Agricultural Research Board Act (1997), to reconstitute the Board with a majority of professionals from related fields in the private sector, and to revise its mandate in line with the Review Team Report (1.00) (c) (i) Punjab's Assembly has approved aggregate budgetary allocations for agriculture and/or livestock research for	(i) Punjab's Assembly has approved aggregate budgetary allocations for	(i) Punjab's Assembly has approved aggregate budgetary allocations for	(i) Punjab's Assembly has approved aggregate budgetary allocations for

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
						FY19 equivalent to 0.2% of Punjab's AgGDP, of which 8% has been channeled through competitive research grants, including to the private sector; and (ii) DoAg. and DoL&DD have spent at least 60% of the FY19 allocated budgetary resources (5.00).	agriculture and/or livestock research for FY20 equivalent to 0.25% of Punjab's AgGDP, of which 12% has been channeled through competitive research grants, including to the private sector; and (ii) DoAg. and DoL&DD have spent at least 70% of the FY20 allocated resources.	agriculture and/or livestock research for FY21 equivalent to 0.3% of Punjab's AgGDP, of which 16% has been channeled through competitive research grants, including to the private sector; and (ii) DoAg. and DoL&DD have spent at least 80% of the FY21 allocated resources.	agriculture and/or livestock research for FY22 equivalent to 0.4% of Punjab's AgGDP, of which 20% has been channeled through competitive research grants, including to the private sector; and (ii) DoAg. and DoL&DD have spent at least 80% of the FY22 allocated resources.
Allocated amount (US\$ m):	23.00	8%				7.00	4.00	4.00	8.00
DLI 3 (a) - Improving livestock health			Preventive to curative ratio 65:35 in FY17 under the same head of account in the budget.		(a) DoL&DD has established in its recurrent budget separate heads of account for the allocation of budgetary resources to preventive and curative animal healthcare; and (b) DoL&DD's budgetary allocations for FY19 for preventive vs. curative animal healthcare have achieved a 3:1 ratio.		DoL&DD's budgetary allocations for FY21 for preventive vs. curative animal healthcare have achieved a 4:1 ratio.		DoL&DD's budgetary allocations for FY23 for preventive vs. curative animal healthcare have achieved a 9:1 ratio.
Allocated amount (US\$ m):	15.00	5%			5.00		5.00		5.00
DLI 3 (b) - Improving livestock breeding			7,000 animals registered in progeny testing program of Sahiwal cow, Neeli Ravi buffalo, and Cholistani cow.		DoL&DD has registered at least 12,000 animals in its progeny testing program for Sahiwal cow, Nili-Ravi buffalo, and Cholistani cow.		DoL&DD has registered at least 22,000 animals in its progeny testing program for Sahiwal cow, Nili-Ravi buffalo, and Cholistani cow.		DoL&DD has registered at least 30,000 animals in its progeny testing program for Sahiwal cow, Nili-Ravi buffalo, and Cholistani cow.
Allocated amount (US\$ m):	15	5%			3.00		5.00		7.00

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
DLI4 (a) – Modernizing the wheat marketing system			GoPunjab procures an annual quantity of approximately 4 million MT of wheat at US\$310/MT.		Punjab's Cabinet has approved the PFD's plan for the governmental withdrawal from the wheat market, and the gradual reduction of strategic wheat reserves.	Punjab has reduced the procurement of wheat in FY19 to not more than 3 million tons.	Punjab has reduced the procurement of wheat in FY20 to not more than 2 million tons.	Punjab has: (a) fully phased out from the wheat market; (b) reduced its strategic wheat reserves to not more than 2 million tons; and (c) developed silos for bulk storage of wheat for up to 2 million tons, under PPP arrangements.	
Allocated amount (US\$ m):	70.25	23%			4.25	10.00	10.00	46.00	
DLI4 (b) - Transitioning to high-value agriculture			Punjab Agriculture Policy under preparation 3.5% of agriculture Annual Development Plan (ADP) allocated for FY17 to high-value agriculture (HVA).	Punjab's Assembly has allocated at least 6% of the amounts budgeted for DoAg. under the ADP for FY18 towards HVA.	(a) Punjab's Cabinet has approved and notified in the Gazette an Agricultural Policy (1.00) ; and (b) (i) Punjab's Assembly has allocated at least 8% of the amounts budgeted for DoAg. under the ADP for FY19, towards HVA; and (ii) DoAg. has spent at least 60% of the FY18 allocated budgetary resources. (5.00)	(i) Punjab's Assembly has allocated at least 10% of the amount budgeted for DoAg. under the ADP for FY20 towards HVA; and (ii) DoAg. has spent at least 70% of the FY19 allocated budgetary resources.	(i) Punjab's Assembly has allocated at least 12% of the amount budgeted for DoAg. under the ADP for FY21 towards HVA; and (ii) DoAg. has spent at least 80% of the FY20 allocated budgetary resources.	(i) Punjab's Assembly has allocated at least 14% of the amount budgeted for DoAg. under the ADP for FY22 towards HVA; and (ii) DoAg. has spent at least 80% of the FY21 allocated budgetary resources.	(i) Punjab's Assembly has allocated at least 15% of the amount budgeted for DoAg. under the ADP for FY23 towards HVA; and (ii) DoAg. has spent at least 80% of the FY22 allocated budgetary resources.
Allocated amount (US\$ m):	36.00	12%		6.00	6.00	6.00	6.00	6.00	6.00
DLI 5 - Providing incentives to agribusinesses for investments in value addition and agricultural technology			No matching grants in ADP.		Punjab has: (a) through the FD, approved and notified in the Gazette the operations manual for the Agribusiness and Innovation Fund; and (b) through the DoAg., set in place the implementation mechanism.	The Agribusiness and Innovation Fund has awarded at least 20 Matching Grants to agribusinesses, of which at least 4 have been awarded to women or young adults in FY19.	The Agribusiness and Innovation Fund has awarded at least 50 Matching Grants to agribusinesses, of which at least 15 have been awarded to women or young adults in FY20.	The Agribusiness and Innovation Fund has awarded at least 70 Matching Grants to agribusinesses, of which at least 28 have been awarded to women or young adults in FY21.	The Agribusiness and Innovation Fund has awarded at least 100 Matching Grants to agribusinesses, of which at least 50 have been awarded to women or young adults in FY22.
Allocated amount (US\$ m):	10.00	3%			1.00	2.00	3.00	3.00	1.00

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
DLI 6 – Improving market conditions for meat and raw milk			Prices of meat and raw milk are on the list of Essential Commodities subject to price caps.			Punjab has publicly announced and implemented market-based pricing for meat and raw milk in FY19.			Punjab has implemented market-based pricing for meat and raw milk in FY20 through FY22.
Allocated amount (US\$ m):	10.00	3%				2.50			7.50
DLI 7 - Modernizing agricultural markets			Punjab Agriculture Produce Marketing Ordinance, 1978.		Punjab's Assembly has approved and notified in the Gazette the Punjab Agricultural Marketing Regulatory Authority Act ("PAMRA Act").			DoAg. has ensured that all agricultural produce marketing operates exclusively under the PAMRA Act.	
Allocated amount (US\$ m):	22.00	7%			2.00			20.00	
DLI 8 - Improving food safety			No food testing laboratories.			DoAg has established and operationalized a provincial reference agriculture and food testing lab, in accordance with the ISO/IEC 17025:2005 standard.	Department of Food (DoF) has established and operationalized one (1) regional food testing lab and two (2) divisional mobile foods testing labs, all in accordance with the ISO/IEC 17025:2005 standard.	DoF has established and operationalized a second regional food testing lab and three (3) divisional mobile foods testing labs, additional to those of Year 3, all in accordance with the ISO/IEC 17025:2005 standard.	DoF has established and operationalized a third regional food testing lab and four (4) divisional mobile foods testing labs, additional to those of Years 3 and 4, all in accordance with the ISO/IEC 17025:2005 standard.
Allocated amount (US\$ m):	10.00	3%				1.00	2.25	3.00	3.75
DLI 9 - Improving sustainability and efficiency of irrigation			Punjab Water Policy and Ground Water Act under preparation. <i>Abiana</i> assessment = Pakistani Rupee (PKR) 1 billion in FY16/17, of which 61% is collected. Equity of water distribution in		(a) Punjab's Cabinet has approved and notified in the Gazette a Punjab Water Policy (1.00) ; (b) Punjab Irrigation Department (PID) has improved the <i>abiana</i> assessment for FY18, based on irrigated cultivated area (perennial or not), to at	(a) Punjab's Assembly has approved and notified in the Gazette the Punjab Groundwater Act (1.00) ; (b) PID has increased the <i>abiana</i> collection in FY19 to reach 75% of the improved assessment (1.00) ; and (c) PID has improved the equity of water	(a) PID has: (i) demarcated the critical groundwater areas of Punjab; and (ii) notified and published the groundwater zoning and map thereof (1.00) ; (b) PID has increased the <i>abiana</i> collection in FY20 to reach 80% of the improved assessment (1.00) ; and	(a) PID has: (i) established an electronic geo-referenced database for tube wells; and (ii) registered all existing tube wells in Punjab including their geographical coordinates (2.00) ; and (b) PID has increased the <i>abiana</i> collection in FY21 to reach 85% of	PID has increased the <i>abiana</i> collection in FY22 to reach 90% of the improved assessment.

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
			accordance with entitlements with delivery performance ratio of 0.70.		least PKR 2 billion (1.00) ; and (c) PID has improved the equity of water distribution in accordance with entitlements, with a delivery performance ratio of 0.75 in FY19 for targeted canals (1.00) .	distribution in in selected canals in accordance with entitlements, with a delivery performance ratio of 0.80 in FY19 (2.00) .	(c) PID has improved the equity of water distribution in in selected canals in accordance with entitlements, with a delivery performance ratio of 0.85 in FY20 (1.00) .	the improved assessment (2.00) .	
Allocated amount (US\$ m):	16.00	5%			3.00	4.00	3.00	4.00	2.00
DLI 10 - Rolling-out an agricultural insurance system			Crop loan insurance scheme is mandatory for all seasonal crop credit borrowers – but protects lenders, not farmers.	DoAg. has approved the Diagnostic Report assessing the crop loan insurance scheme and analyzing options for an agricultural insurance coverage.	(a) DoAg. has developed and adopted a five-year work plan for the roll out of an agricultural insurance scheme, based on the recommendation of the Diagnostic Report (0.50) ; and (b) DoAg. has piloted an agricultural insurance scheme in at least 2 districts, one each in Punjab's cotton and rice belt, with an insurance take-up reaching 50,000 policies sold in FY18 (0.245) .	DoAg. has implemented the agricultural insurance scheme in districts additional to those covered in FY18, with an insurance take-up reaching 250,000 policies sold in FY19.	DoAg. has implemented the agricultural insurance scheme in districts additional to those covered in FY18 and FY19, with an insurance take-up reaching 500,000 policies sold in FY20.	DoAg. has implemented an agricultural insurance scheme in districts additional to those covered in FY18 though FY20, with an insurance take-up reaching 750,000 policies sold in FY21.	DoAg. has implemented an agricultural insurance scheme in districts additional to those covered in FY18 though FY21, with an insurance take-up reaching 1,000,000 policies sold in FY22.
Allocated amount (US\$ m):	14.00	5%		1.00	0.74	1.23	2.45	3.68	4.90
DLI 11 - Increasing public investment in climate-smart agriculture			3% of allocation for agriculture in FY17 ADP for climate-smart agriculture (CSA). 50% of total allocation for agriculture spent.	Punjab's Assembly has allocated at least 6% of the amount budgeted for agriculture under the ADP for FY18 to investments in CSA.	(a) Punjab's Assembly has allocated at least 8% of the amount budgeted for agriculture under the ADP for FY19 to investments in CSA; and (b) DoAg. has spent at least 60% of	(a) Punjab's Assembly has allocated at least 10% of the amount budgeted for agriculture under the ADP for FY20 to investments in CSA; and (b) DoAg. has spent at least 70% of	(a) Punjab's Assembly has allocated at least 12% of the amount budgeted for agriculture under the ADP for FY21 to investments in CSA; and (b) DoAg. has spent at least 80% of	(a) Punjab's Assembly has allocated at least 14% of the amount budgeted for agriculture under the ADP for FY22 to investments in CSA; and (b) DoAg. has spent at least 80% of	(a) Punjab's Assembly has allocated at least 15% of the amount budgeted for agriculture under the ADP for FY23 to investments in CSA; and (b) DoAg. spent at least 80% of the

Disbursement linked indicator (DLI)	Total financing allocated (US\$ m)	As % of total financing amount	DLI Baseline	Prior results	Indicative timeline for DLI achievement				
					2018 (Year 1)	2019 (Year 2)	2020 (Year 3)	2021 (Year 4)	2022 (Year 5)
					the resources allocated therefor in FY18.	the resources allocated therefor in FY19.	the resources allocated therefor in FY20.	the resources allocated therefor in FY21.	resources allocated therefor in FY22.
Allocated amount (US\$ m):	32.00	11%		2.00	6.00	6.00	6.00	6.00	6.00
DLI 12 – Communications, beneficiary feedback, capacity building, and monitoring and evaluation			Technical assistance provided during Program preparation including series of policy notes, assessment of communications capacity, review of agricultural research and extension.		P&DD has developed a communications strategy for the Program, including beneficiary feedback, and started its implementation.	The participating departments have prepared and implemented the FY19 annual capacity building plan, in a manner and substance acceptable to the Bank.	The participating departments have prepared and implemented the FY20 annual capacity building plan, in a manner and substance acceptable to the Bank.	The participating departments have prepared and implemented the FY21 annual capacity building plan, in a manner and substance acceptable to the Bank.	The participating departments have prepared and implemented the FY22 annual capacity building plan, in a manner and substance acceptable to the Bank.
Allocated amount (US\$ m):	10.00	3%			1.00	2.25	2.25	2.25	2.25
Total financing allocated:	299.25	99.75%		10.00	36.49	42.48	53.45	103.43	53.40
Front end fee	0.75	100%							

Table 4. DLI verification protocol

DLI no.	DLI title	Definition/description of achievement	Scalability of disbursement (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/ agency	Verification entity	Procedure
1	Improving access to quality farm inputs	E-voucher system for agricultural inputs in place and reaching targeted farmers.	No	Agriculture Department	Firm competitively recruited by GoPunjab	- Ag. Department to maintain records of farmers provided with E-vouchers for agricultural inputs subsidy with unique numbers and provide this information to WB. - Firm to verify records and conduct random authentication.
2	Revitalizing provincial crop and livestock research and extension systems	Sequence of: (a) agricultural and livestock research and extension strategy and policy developed and approved, in line with recommendations of World Bank review and including (i) review of the current structure, conduct and performance of the Punjab agricultural research and extension (R&E) system, (ii) recommendations regarding restructuring of the Punjab agriculture R&E system and redefining its mandate, and (iii) recommendations regarding organizational structure including role of private sector; (b) Punjab Agricultural Research Board Act 1997 amended, including reconstitution of Board with majority of members from private sector and revised operational procedures in line with recommendations of World Bank review; (c) increased allocation to research (ADP & Recurrent) expressed as a percentage of AgGDP and spending against allocation; and (d) resource allocation for competitive grants.	Yes	- MTDF ^a - Punjab Budget Civil Accounts - Agriculture, Livestock & Dairy Development, Finance, P&D Departments	Same firm	- Ag. Department to communicate approved Crops and Livestock Research and Extension Policy - Ag. Department to provide Gazette notification of Punjab Agricultural Research Board (PARB) Act amendment and reconstitution of its Board of Directors. - Ag. Department and Livestock & Dairy Development Department to notify WB of final allocations at the beginning of each FY (July) - Firm to verify approved allocations, spending against approved allocations and all of above.
3 (a)	Improving livestock health	Heads of account for preventive and curative care separated in the recurrent budget Gradual reallocation of resources from curative care to preventive care until 90% of the budget is apportioned to preventive care.	No	- Livestock & Dairy Development, Finance Departments - Punjab Budget Civil Accounts	Same firm	- Livestock & Dairy Development Department to notify WB notification of Finance Department regarding separation of heads of account in the budget and final allocations for preventive and curative care at the beginning of each FY (July). - Firm to verify separation of heads of account in the budget, annual allocation and spending.
3 (b)	Improving livestock breeding	Progress in registering Sahiwal cow, Neeli Ravi buffalo, and Cholistani cow in progeny testing program.	No	Livestock & Dairy Development Department	Same firm	- Livestock & Dairy Development Department to maintain ICT-based database for each species and notify WB of progress in registration of animals in progeny testing program. - Firm to verify registration records.
4 (a)	Modernizing the wheat marketing system	GoPunjab plan for withdrawal from official wheat procurement program in 2018 and gradual	No	Food, Finance Departments	Same firm	- Food Department to notify public and WB of phasing out of official wheat procurement system and reducing wheat reserve to not more than 2 million MT by <i>rabi</i> 2021.

DLI no.	DLI title	Definition/description of achievement	Scalability of disbursement (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/ agency	Verification entity	Procedure
		downscaling of wheat strategic reserve to not more than 2 million MT by <i>rabi</i> 2021 approved.				- Firm to (a) verify documentary evidence that GoPunjab has formulated and disseminated policy to phase out official wheat procurement system, (b) verify Food Department records regarding quantities of wheat procured, (c) verify that GoPunjab has phased out its wheat procurement program in which farmers can offer their wheat to government procurement centers, and (d) verify that arrangements have been developed for bulk storage facilities for 2 million MT under public-private partnership.
4 (b)	Transitioning to high-value agriculture	<ul style="list-style-type: none"> - Agriculture Policy focusing on increasing productivity, modernizing agricultural markets, promoting high-value agriculture (HVA), addressing price distortions, and promoting resilience, approved and notified. - Increased percentage points of ADP allocation for agriculture invested in helping farmers transition from traditional crops to HVA.^b - Increased area under HVA. 	No	<ul style="list-style-type: none"> - MTDF - Punjab Budget Civil Accounts - Agriculture, P&D Departments - Crop Reporting Service (Agriculture Department) 	Same firm	<ul style="list-style-type: none"> - Ag. Department to communicate to WB approved and notified Agriculture Policy. - Ag. Department to notify WB of final allocations at the beginning of each FY (July). - Firm to verify approved allocations and spending - Firm to verify area under HVA.
5	Providing incentives to agribusinesses for investments in value addition and agricultural technology	<ul style="list-style-type: none"> - Setting up Agribusiness and Innovation Fund. - Operational Manual for Agribusiness and Innovation Fund satisfactory to WB approved and notified. - Total amount of funds (in US\$) awarded every year as matching grants to agribusinesses. 	Yes	Agriculture Department	Same firm	<ul style="list-style-type: none"> - Finance Department to notify establishment and operationalization^c of Fund. - Approved Operation Manual for Matching Grants component of Agribusiness and Innovation Fund communicated to WB. - Financial progress reports submitted to WB on agreed template each quarter. - Firm to review documentation of grants awarded and conduct interviews with awardees.
6	Improving market conditions for meat and raw milk	Price caps on meat and milk prices removed (GoPunjab discontinues official notification of prices).	No	Livestock & Dairy Development, and Industries, Commerce & Investment Departments	Same firm	<ul style="list-style-type: none"> - Departments of Livestock & Dairy Development, and Industries, Commerce & Investment to notify WB of decision of GoPunjab each year. - Firm to verify discontinuation of price notifications at provincial and district levels.
7	Modernizing agricultural markets	- Draft Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act, enabling private sector and farmers' participation, encouraging modern quality and grading standards, encouraging value chain development and time-bound transition from	No	Agriculture Department	Same firm	- Agriculture Department to inform WB of Gazette Notification of PAMRA Act and Notification saying that crop marketing system has fully transitioned to PAMRA Act and that Punjab Agricultural Produce Markets Ordinance, 1978 is no longer valid

DLI no.	DLI title	Definition/description of achievement	Scalability of disbursement (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/ agency	Verification entity	Procedure
		existing Ordinance to new legal regime, approved and notified. - GoPunjab fully transitioned to PAMRA Act by 2021.				- Firm to verify documents and do ground check.
8	Improving food safety	Progress in establishing and operationalizing provincial reference food testing lab, regional labs, divisional labs, mobile labs.	Yes	- Food, Agriculture, P&D Departments - PAFDA ^d - PFA ^e - MTDF - Punjab Budget Civil Accounts	Same firm	- Agriculture Department to notify WB of the establishment and operationalization ^f of PAFDA Reference Lab. - PFSA and Food Department to notify WB of establishment and operationalization of regional, divisional, and mobile labs. - Firm to verify PC-Is ^g of the relevant schemes, corresponding resource allocations in the budget, and operationalization of laboratories.
9	Improving sustainability and efficiency of irrigation	- Progress in ensuring sustainability of irrigation systems, technically (Punjab Water Policy and Punjab Groundwater Act) and financially (water charges or <i>abiana</i> assessment improved and collection increased), delivery performance ratio (DPR) improved in command areas of 6 canals. - Approval and notification of Punjab Groundwater Act that (a) establishes Integrated Water Resources Commission with the power and responsibility to prepare and implement policies and plans for the sustainable use and management of water resources, (b) requires the demarcation of “critical areas” of groundwater over-extraction, (c) requires the registration of existing tubewells, (d) requires a permitting process to be established for any new tubewells, and (e) establishes and enforces a licensing regime for tubewell drillers. - Approval and notification of Punjab Water Policy with clear policy directions on the sustainable use, management and development of water from all sources, for all sub-sectors across the entire province, to halt or reverse environmental and water resource degradation, while maintaining beneficial uses of water that support socio-economic outcomes, and specifying appropriate and realistic key policy actions for five priority areas: (a) water governance, (b) water allocation,	No	- Irrigation, Finance Departments - Punjab Board of Revenue - MTDF - Punjab Budget Civil Accounts	Same firm	- Irrigation Department to share Gazette notification for approved Water Policy and Groundwater Act with WB. - Irrigation Department to share data regarding improvements in <i>abiana</i> assessment and collection duly verified by Finance Department and Board of Revenue. - Water theft (measured by DPR ^h) at the beginning of each financial year (August) notified for each of selected canals - Notification and map of critical areas of groundwater and data of existing tubewells. - Firm to verify policy notification, improved assessment and collection rate, improved DPR and groundwater critical areas map and database.

DLI no.	DLI title	Definition/description of achievement	Scalability of disbursement (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/ agency	Verification entity	Procedure
		(c) water quantity and water-related disaster management, (d) water quality management, and (e) water management outside irrigation command areas.				
10	Rolling-out an agricultural insurance system	Steps towards rolling out an agricultural insurance system include (a) approving a diagnostic study, (b) formulating a workplan in line with the recommendations of the Diagnostic Report, (c) piloting agricultural insurance in two districts, and (d) rolling out to all districts.	Yes	- Agriculture, Livestock & Dairy Development, P&D, Finance Departments - MTDF - Punjab Budget Civil Accounts	Same firm	- Agriculture Department to communicate five-year workplan to roll out agricultural insurance. - Resource allocation by P&D/Finance Departments. - Agriculture Department to provide financial progress reports to WB each quarter. - Firm to validate the above and collect information from insurance firms, survey.
11	Increasing public investment in climate-smart agriculture	Increased percentage of ADP allocation for agriculture invested in climate-smart agriculture technologies. ⁱ	Yes	- Agriculture, P&D Departments - MTDF - Punjab Budget Civil Accounts	Same firm	- Agriculture Department to notify WB of final allocations at the beginning of each FY (July) for CSA and spending against that allocation. - Firm to verify approved allocations and spending.
12	Communications, beneficiary feedback, capacity building, and monitoring and evaluation	- Communications strategy developed and implemented; beneficiary feedback obtained; annual plans for capacity-building in agribusiness and institutional strengthening of implementing departments, and other government organization developed and implemented. - ICT-based monitoring and evaluation (M&E) system developed in key implementing departments.	No	- P&D, Agriculture, Livestock & Dairy Development, Food, Irrigation Departments - MTDF - Punjab Budget Civil Accounts	Same firm	- Approved communication strategy and implementation workplan shared with WB. - Annual capacity-building plans ^j that include specification of types of trainings offered, and numbers of participants to be trained. - Resource allocation for capacity building, training, and ICT-based M&E. - Firm to verify.

^a MTDF (Medium Term Development Framework). ^b Any capital expense on HVA financed through the recurrent budget or capital budget will be included while computing capital expenditure on HVA as % of total ADP allocation for agriculture. ^c Operationalization will be confirmed upon the Fund's entering into a contract with the private sector administrator of the funds, constituting the Fund Board, and appointing the CEO. ^d PAFDA (Punjab Agriculture, Food and Drug Authority). ^e PFA (Punjab Food Authority). ^f Operationalization will be confirmed upon the lab/s having successfully carried out its/their first food test(s). ^g PC-1 (Planning Commission Pro-forma 1). ^h Delivery performance ratio (DPR) - defined as actual amount of water delivered divided by amount delivered according to canal design, measured at different points along the canal - is a measure of equity of water distribution. The DPR tends to deteriorate moving downstream, mainly because upstream water users take too much water (water theft) at the expense of water users at the tail of the system. ⁱ Any capital expense on CSA financed through the recurrent budget or capital budget will be included while computing capital expenditure on CSA as % of total ADP allocation for agriculture. ^j Types of training will need to include training of all agribusiness recipients of matching grants; degree training of GoPunjab staff (2 PhDs each year for a total of 8 by 2022; 10 MScs each year for a total of 40 by 2022; 200 staff trained each year on M&E, public procurement, ICT etc., for a total of 800 by 2022); and farmer training in HVA (1,500 farmers in 2019 and 3,500 farmers in each of the years 2019-2022).

Table 5. World Bank disbursement table

DLI no.	DLI title	Bank financing allocated to the DLI (US\$ m)	Of which financing available for prior results (US\$ m)	Deadline for DLI achievement	Minimum DLI value to be achieved to trigger disbursements of Bank financing	Maximum DLI value(s) expected to be achieved for Bank disbursements purposes	Determination of financing amount to be disbursed against achieved and verified DLI value(s)
1	Improving access to quality farm inputs	16.00	1.00	31 December 2022	E-voucher subsidy for agricultural inputs extended to 25,000 farmers with less than 5 ha of farm land	E-voucher subsidy for agricultural inputs extended to 250,000 farmers with less than 5 ha of farm land	E-voucher subsidy for inputs extended to 25,000 small farmers (< 5 ha) is subject to pass/fail and achievement of prior result triggers disbursement of US\$1.0 million. If missed before loan effectiveness, the indicator can be made up for in year 1. Further delays would result in cancellation of the DLI amount allocated to this partial target. Similarly, subsequent targets for the E-voucher scheme can be made up for with a maximum delay of one year, otherwise the corresponding DLI amount would be cancelled.
2	Revitalizing provincial crop and livestock research and extension systems	23.00	-	31 December 2022	0.2% of AgGDP allocated to research, of which 8% channeled through competitive research grants, including private sector	0.4% of AgGDP allocated to research, of which 20% channeled through competitive research grants, including private sector	For year 2, an amount of US\$7.0 million is allocated against three specific targets with disbursements subject to pass/fail. For years 3–5, US\$800,000 will be disbursed per 0.01% Punjab AgGDP equivalent increase in budgetary allocation for agriculture and/or livestock research, over and above the Punjab's AgGDP equivalent allocation to that end in the previous year.
3 (a)	Improving livestock health	15.00	-	31 December 2022	Ratio of expenditures on preventive vs. curative health care 3:1	Ratio of expenditures on preventive vs. curative health care 9:1	Indicator in year 1 is subject to pass/fail and can be made up for only up to the end of the following year. Further delays would result in cancellation of the DLI amount allocated. Indicator in year 3 is also subject to pass/fail and can be made up for only up to the end of the following year.
3 (b)	Improving livestock breeding	15.00	-	31 December 2022	12,000 animals registered in progeny testing programs of Sahiwal, Neeli Ravi, and Cholistani	30,000 animals registered in progeny testing program of Sahiwal, Neeli Ravi, and Cholistani	Indicator is subject to pass/fail and year 1 and 3 targets can be made up for only up to the end of the following year. Further delays would result in cancellation of the DLI amount allocated for the targets in years 1 and 3.
4 (a)	Modernizing the wheat marketing system	70.25	-	31 December 2021	-	-	Year 1 target is subject to pass/fail and can be made up for only up to the end of the following year. Further delays would result in cancellation of the DLI amount allocated to this target. For year 2, year 3 and year 4 targets, a fixed amount is allocated, disbursement is subject to pass/fail, and cannot be made up in subsequent years.
4 (b)	Transitioning to high-value agriculture	36.00	6.00	31 December 2022	At least 6% of annual ADP of agriculture (crops) allocated to transition to high-value agriculture (HVA) Agriculture ADP allocated to transition toward HVA in each year not below the level of the previous year	20% of annual ADP of agriculture (crops) allocated to transition toward HVA	Prior result and years 1-5 are pass/fail and cannot be made up in subsequent years.

DLI no.	DLI title	Bank financing allocated to the DLI (US\$ m)	Of which financing available for prior results (US\$ m)	Deadline for DLI achievement	Minimum DLI value to be achieved to trigger disbursements of Bank financing	Maximum DLI value(s) expected to be achieved for Bank disbursements purposes	Determination of financing amount to be disbursed against achieved and verified DLI value(s)
5	Providing incentives to agribusinesses for investments in value addition and agricultural technology	10.00	-	31 December 2022	20 matching grants awarded	-	Indicator in year 1 is subject to pass/fail and cannot be made up for in following years. For year 2, an amount in USD equivalent to 80% of the aggregate amounts of the awarded Matching Grants but not to exceed USD 2,000,000, provided that at least 4 Matching Grants have been awarded to women or young adults. For years 3 and 4, an amount in USD equivalent to 80% of the aggregate amounts of the awarded Matching Grants but not to exceed USD 3,000,000, provided that at least 15 (in year 3) and 28 (in year 4) Matching Grants have been awarded to women or young adults. For year 5, an amount in USD equivalent to 80% of the aggregate amounts of the awarded Matching Grants but not to exceed USD 1,000,000, provided that at least 50 Matching Grants have been awarded to women or young adults.
6	Improving market conditions for meat and raw milk	10.00	-	31 December 2022	-	-	For years 1 and 5, fixed amounts are allocated. Disbursement is subject to pass/fail and targets cannot be made up for in subsequent years.
7	Modernizing agricultural markets	22.00	-	31 December 2022	-	-	Disbursements in years 1 and 4 are subject to pass/fail and targets and can be made up for only up to the end of the following year. Further delays would result in cancellation of the DLI amount allocated.
8	Improving food safety	10.00	-	31 December 2022	1 testing lab	-	For year 2, a fixed amount of US\$1 million is allocated and is subject to pass/fail. For years 2-5, a fixed amount of US\$750,000 per laboratory established is allocated.
9	Improving sustainability and efficiency of irrigation	16.00	-	31 December 2022	-	-	A fixed amount is allocated to all targets and disbursement subject to pass/fail. Targets cannot be made up for in subsequent years.
10	Rolling-out an agricultural insurance system	14.00	1.00	31 December 2022	25,000 insurance policies in year 1, 125,000 in year 2, 200,000 in year 3, 250,000 in year 4, 300,000 in year 5	1,000,000 insurance policies	Prior result is subject to pass/fail and cannot be made up in subsequent years. Partial target in year 1 is subject to pass/fail and can be made up in year 2. Further delays would result in cancellation of the DLI amount allocated to this partial target. For years 1-5, an amount equivalent to US\$4.90 per every insurance policy sold would be paid, subject to the yearly minimum number of policies sold.
11	Increasing public investment in climate-smart agriculture	32.00	2.00	31 December 2022	At least 6% of annual ADP of agriculture (crops) allocated to transition to climate-smart agriculture (CSA) Percentage of Agriculture ADP	25% of Agriculture ADP allocated to investments in CSA in year 5	Amount disbursed to be calculated pursuant to the following formulas, provided that the amounts are >0: Prior result: {[(% of CSA allocation under FY18's ADP / % of CSA allocation in FY17's ADP) -1] / 0.50} x USD 2,000,000 Year 1: {[((CSA allocation under FY19's ADP / CSA allocation in FY18's ADP) -1] / 0.33} x USD 6,000,000 Year 2: {[((CSA allocation under FY20's ADP / CSA allocation in FY19's ADP) -1] / 0.25} x USD 6,000,000

DLI no.	DLI title	Bank financing allocated to the DLI (US\$ m)	Of which financing available for prior results (US\$ m)	Deadline for DLI achievement	Minimum DLI value to be achieved to trigger disbursements of Bank financing	Maximum DLI value(s) expected to be achieved for Bank disbursements purposes	Determination of financing amount to be disbursed against achieved and verified DLI value(s)
					allocated to transition toward CSA in each year does not fall below the level of the previous year		Year 3: $\{[(\text{CSA allocation under FY21's ADP} / \text{CSA allocation in FY20's ADP}) - 1] / 0.20\} \times \text{USD } 6,000,000$ Year 4: $\{[(\text{CSA allocation under FY22's ADP} / \text{CSA allocation in FY21's ADP}) - 1] / 0.17\} \times \text{USD } 6,000,000$ Year 5: $\{[(\text{CSA allocation under FY23's ADP} / \text{CSA allocation in FY22's ADP}) - 1] / 0.07\} \times \text{USD } 6,000,000$
12	Communications, beneficiary feedback, capacity building, and monitoring and evaluation	10.00	1.00	31 December 2022	-	-	Prior result and indicators in years 1-5 are subject to pass/fail.

ANNEX 3. SUPPLEMENTARY DETAILS FROM THE TECHNICAL ASSESSMENT

1. **The main points of the Technical Assessment are covered in the main text.** This annex provides supplemental information on the results chain, expenditure framework, rationale for the Results Areas, and implementation responsibilities by Results Area.
2. **The results framework (Table 2) is supported by a logical results chain (Table 8).**
3. **The budgeted resources for the PforR-supported Government Program on agriculture and rural transformation are adequate.** GoPunjab increased the core allocation for agriculture and livestock in its investment budget for FY18 by more than 40% (from US\$137 million in FY17 to US\$195 million in FY18), with further (smaller) increases planned in the next four years. The Kissan package adds another US\$95 million to the FY18 agriculture budget and will be sustained in coming years. The planned allocation for agriculture and livestock in the ADP during the five-year PforR period is US\$1,145 million (US\$1,718 million including the Kissan package), and an additional US\$0.330 billion for irrigation M&R and US\$0.115 billion for implementing human resource expenditure would be financed through the recurrent budget, bringing the total size of the PforR-supported Program to US\$1,590 million (Table 6). Table 7 presents the Government and PforR investment allocations by Results Area, and Table 9 shows the detailed break-down of the expenditure framework of the broader Government program.

Table 6. Budget for PforR-supported Program and broader Government program (US\$ million)

Subsector	2017/18	2018/19	2019/20	2020/21	2021/22	Total
	Allocated	Projected ^a	Projected ^a	Estimated ^b	Estimated ^b	FY18-FY22
Agriculture	200	237	235	245	260	1,177
Livestock	91	100	110	116	124	541
Subtotal	291	337	345	361	384	1,718
o/w Ag: Kissan package	95	106	117	124	131	573
Estimated expenditure of human resources involved	20	23	23	24	25	115
Irrigation M&R	60	63	66	69	72	330
Subtotal for PforR-supported Program, w/o Kissan package	276	317	317	330	350	1,590
Irrigation	391	430	473	501	531	2,326
Rural Roads Program	163	163	0	0	0	326
Broader Government program	830	910	790	831	881	4,242

Source: Bank staff calculations based on Medium Term Development Framework (MTDF) and Budget Documents, Development Budget Volumes I and II. ^a Projected by the MTDF of GoPunjab. ^b Estimated by Bank staff.

Table 7. Investment allocations by Results Area in PforR-supported Government Program and PforR

	Results Area 1: Increased on-farm productivity and value of crops and livestock	Results Area 2: Increased value addition and competitiveness of crops and livestock	Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters
PforR-supported Program	US\$673 million, including US\$61 million for HVA	US\$162 million	US\$755 million, including US\$62 million for CSA
SMART Punjab PforR	US\$176 million Enhancing Agriculture GDP of Punjab, improving farmers' access to quality inputs, revitalizing provincial research system for crops and livestock, improving livestock breeding and health, and transition to high-value agriculture (HVA)	US\$52 million Modernizing wheat marketing system, modernizing agricultural produce markets, deregulating wheat markets, matching grants for agribusiness and investment in value addition and agricultural technology, and improving agriculture produce and food safety in the province	US\$72 million Improving sustainability and efficiency of irrigation, increasing investment in CSA, and rolling out agricultural insurance

Table 8. Results chain for SMART Punjab PforR

Activity/action	Outputs	Intermediate outcomes	Outcomes	Disbursement Linked Indicator (DLI)
Results Area 1: Increased on-farm productivity and value of crops and livestock				
Launch and implement E-voucher scheme for agricultural inputs over 5 years	E-voucher scheme extended to 200,000 farmers with land holdings less than 5 ha	Improved access to and use of quality farm inputs by small farmers through targeted subsidy	Increased crop productivity	DLI 1: Improving access to quality farm inputs
<ul style="list-style-type: none"> – Prepare series of background papers for Agricultural Policy document – Conduct stakeholder consultation regarding main recommendations – Produce review of existing crop and livestock research and extension policy and strategy – Restructure Punjab Agricultural Research Board (PARB) Act 1997 – Gradually increase financial support to crop and livestock research 	<ul style="list-style-type: none"> – Punjab Agriculture Policy notified – Punjab Crops and livestock Research and Extension Policy and Strategy notified – PARB Act 1997 amended – Increased budgetary allocation for agricultural research from 0.1% of AgGDP in 2017 to 0.4% in 2022 – Competitive grants for research 	<ul style="list-style-type: none"> – Adoption of strategic policy framework for agriculture sector, including research and extension – Strengthened coordination between responsible agencies for implementation of policy framework – Improved links between agricultural research and extension – Increased private sector participation in agricultural research 	<ul style="list-style-type: none"> – Improved efficiency of public investment in agriculture and livestock (including agricultural and livestock research) and increased private sector investment in agricultural research – Improved functioning of crop and livestock research system – Increased crop productivity 	DLI 2: Revitalizing provincial crop and livestock research and extension systems
<ul style="list-style-type: none"> – Separate heads for curative and preventive health allocation in the budget – Tilt financial support for animal health toward preventive care – Promote breeding of high-value stock 	<ul style="list-style-type: none"> – Budgetary allocation ratio for animal preventive and curative healthcare increased from 65:35 in FY17 to 90:10 by FY22 – 80% of previous year's allocation for animal health spent – Registration of selected species of livestock in progeny testing programs 	<ul style="list-style-type: none"> – Public sector resources moved from curative to preventive animal healthcare – Improved animal care and better breeding practices in the province – Increased private sector participation in curative healthcare 	Increased livestock productivity	DLI 3a: Improving livestock health DLI 3b: Improving livestock breeding
<ul style="list-style-type: none"> – Gradually phase out the public wheat procurement system – Tender for construction of bulk wheat storage facilities for up to 2.0 million MT 	<ul style="list-style-type: none"> – Wheat strategic reserves reduced to no more than 2.0 million MT by 2021 – Steel silos for bulk storage for up to 2.0 million MT of wheat established under public-private partnership 	Wheat subsidy cost substantially reduced	Wheat market distortions eliminated	DLI 4a: Modernizing the wheat marketing system
Promote high-value agriculture (HVA) in the province	Increased capital investment in HVA from 3% in FY17 to 15% of the agriculture ADP allocation by FY22	Discouragement of wheat production and increased adoption of HVA by farmers	Shift from wheat to HVA	DLI 4b: Transitioning to high-value agriculture
Results Area 2: Increased value addition and competitiveness of crops and livestock				
<ul style="list-style-type: none"> – Establish Agribusiness and Innovation Fund – Develop matching grant manual – Attract interest of investors in agribusiness through calls for proposals – Evaluate proposals and extend grants to successful applicants 	<ul style="list-style-type: none"> – Agribusiness and Innovation Fund established – Operational Manual for the Fund notified 	Matching grants promote private sector engagement in value addition and agribusiness	<ul style="list-style-type: none"> – Increased value addition of agri-products – Increased employment opportunities 	DLI 5: Providing incentives to agribusinesses for investments in value addition and agricultural technology
Refraining from announcing price caps for meat and raw milk	Market-based pricing for meat and raw milk	Increased competition and improved transparency in livestock markets	Livestock market partially deregulated	DLI 6: Improving market conditions for meat and raw milk

Activity/action	Outputs	Intermediate outcomes	Outcomes	Disbursement Linked Indicator (DLI)
Submit Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act for approval	<ul style="list-style-type: none"> – PAMRA Act approved and enforced – Relevant rules notified 	<ul style="list-style-type: none"> – Increased private sector participation and investment in agricultural produce marketing – Gradual phasing out of public sector control over agricultural markets – Transition to new legal regime by 2021 for agricultural markets 	Modern and more competitive agricultural produce markets	DLI 7: Modernizing agricultural markets
Establish food safety testing laboratory infrastructure	Agricultural produce and food testing infrastructure established at provincial, regional, and divisional level	Agriculture and food safety standards enforced	Improved food safety	DLI 8: Improving food safety
Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters				
<ul style="list-style-type: none"> – Submit Punjab Water Policy for approval followed by notification – Submit Punjab Groundwater Act for approval followed by notification – Improve assessment of <i>abiana</i> by introducing modern assessment methods – Improve collection of <i>abiana</i> – Improve measurement and monitoring of water delivery in 7 canals 	<ul style="list-style-type: none"> – Punjab Water Policy approved and notified – Groundwater (Protection, Regulation, and Development) Act approved and notified – <i>Abiana</i> revenues increased to PKR 1.8 billion – Delivery performance ratio in 6 canals brought to 90% 	<ul style="list-style-type: none"> – More equitable water distribution – Improved financial sustainability of maintenance and repair of surface irrigation – Better management of groundwater resources 	Improved sustainability and efficiency of irrigation system	DLI 9: Improving sustainability and efficiency of irrigation
<ul style="list-style-type: none"> – Prepare diagnostic report for agricultural insurance – Prepare Operational Manual for agricultural insurance – Pilot agricultural insurance system in at least two districts – Roll out agricultural insurance system to other districts 	<ul style="list-style-type: none"> – Gradual roll-out of crop and livestock insurance – Operational Manual governing agricultural insurance approved and notified 	Affordable and accessible agricultural insurance products available for all farmers	Improved resilience of farmers through enhanced access to crop and livestock insurance	DLI 10: Rolling out an agricultural insurance system
– Increased investment in climate-smart agriculture (CSA) including technologies and projects from 3% of total capital allocation to agriculture sector in FY17 to 15% in FY22	Farmers reached with government-supported CSA programs	Adoption of CSA technologies	Enhanced resilience of small farmers to climate change	DLI 11: Increasing public investment in climate-smart agriculture
<ul style="list-style-type: none"> – Develop and implement communications strategy, including beneficiary feedback – Develop and implement series of annual capacity development plans in agribusiness, institutional strengthening in key participating GoPunjab Departments and other government organizations over five years 	<ul style="list-style-type: none"> – Communications strategy developed and implemented, beneficiary feedback obtained – Annual work plans for capacity building/training and institutional training developed – Projects approved for improved monitoring and evaluation (M&E) systems in key participating departments 	<ul style="list-style-type: none"> – Stakeholders well informed about policy reforms – Institutional training and capacity building in participating departments strengthened – Improved quality of proposals submitted to agribusiness fund – Strengthened ICT-based M&E systems in Agriculture, Food, and Livestock & Dairy Development Departments 	<ul style="list-style-type: none"> – Improved buy-in of stakeholders – Improved planning and delivery systems in participating departments – Improved M&E capacity in participating departments 	DLI 12: Communications, beneficiary feedback, capacity building, and monitoring and evaluation

Table 9. Expenditure framework of the broader Government program (US\$ million)

Subsector	Budget Head	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Development Fund PC22036		BE^a	MTDF^b	MTDF	Estimated	Estimated	FY18–22
Agriculture allocation (Major Head)	0421	105	131	118	121	129	604
Of which high-value agriculture	042103	6	9	10	12	14	51
Of which climate-smart agriculture	042103	6	9	10	11	13	49
Ag. Education	042103	15	16	18	15	17	81
Ag. Extension	042103	7	7	8	9	9	40
Ag. Information	042103	1	0	0	0	0	1
Ag. Mechanization	042103	2	2	2	2	2	10
Ag. Research	042103	7	8	9	9	10	43
Economics and Marketing	042103	3	3	3	3	4	16
Floriculture	042103	0	1	1	1	1	4
Punjab Agricultural Research Board	042103	2	2	2	2	2	10
Ag. Water Management	042103	48	63	75	80	84	350
Other Programs	042103	20	29	0	0	0	49
Livestock & Dairy Development	0421	91	100	110	116	124	541
Government Farms	042106	4	4	4	5	5	22
Livestock Census	042106	1	1	1	1	2	6
Livestock Education	042106	18	20	22	23	24	106
Livestock Research	042106	3	3	3	3	3	15
Livestock Breed Improvement	042106	5	5	6	6	7	29
Livestock Feed	042106	1	1	1	1	1	5
Livestock Extension	042106	6	13	14	15	16	65
Rural Poverty Alleviation	042106	17	8	9	9	10	54
Veterinary Health	042106	4	4	5	5	5	24
Livestock Productivity	042106	28	31	35	38	39	170
Livestock Marketing	042106	3	4	4	4	5	20
Livestock Value Chain	042106	1	6	6	6	7	25
Estimated expenditure of human resources involved in Agriculture and Livestock & Dairy Dev. Departments	PC21018 042103 042106	20	23	23	24	25	115
Irrigation M&R-PC21009	042203-A13 And A134	60	63	66	69	72	330
Subtotal of Agriculture and Livestock		276	317	317	330	350	1,590
Irrigation-PC12037	042203	391	430	473	501	531	2,326
Rural Roads Program-PC12041	045202-6132	163	163	0	0	0	326
Total projected investment		830	910	790	831	881	4,242

^a BE (Budget Estimates). ^b MTDF.

4. **As discussed in the main text, activities supported under SMART Punjab are mapped to three Results Areas.** The following paragraphs provide details on the rationale for each Results Area. Table 110 presents detailed implementation responsibilities for each Results Area.

5. **Results Area 1 (increased on-farm productivity and value of crops and livestock, encompassing DLIs 1–4)** is based on evidence that improving the productivity, profitability, and sustainability of smallholder farming is the main path out of rural poverty when agriculture is mobilized for development. A clear poverty reduction impact stems from targeted, smart subsidies that increase the quantity and quality of inputs for smallholders and from larger investment in research and extension (including animal health and breeding). On the other hand, the poverty impact of reforming the wheat procurement system is not determined *a priori*, but depends on whether the rural poor are net wheat producers (negative impact) or net wheat consumers (positive

impact). No data are directly available to test these hypotheses, but empirical evidence from the 2007–08 food price crisis suggests that the vast majority of the rural poor are net consumers of wheat and hence likely to benefit from reforming wheat pricing and procurement.

Table 10. Implementation responsibilities by Results Area

Main responsibilities in each Results Area	Responsible/sponsoring department	Procuring agency	Implementing and/or partnering agencies
Results Area 1: Increased on-farm productivity and value of crops and livestock			
Access to quality inputs through E-vouchers	Agriculture Department	Agriculture Department	Agriculture, P&D, Finance Departments
Provincial crops and livestock research and extension system	Agriculture, Livestock & Dairy Development Departments	Agriculture, Livestock & Dairy Development Departments	Agriculture, Livestock & Dairy Development, Finance, P&D Departments
Animal healthcare and breeding and establishing separate heads of account	Livestock & Dairy Development Department	Livestock & Dairy Development Department	Livestock & Dairy Development Department P&D Department
Modernizing wheat marketing system and resource allocation	Food Department	Food Department	Food, Finance, P&D Departments
Enhanced allocation for transition to high-value agriculture	Agriculture Department	None	Agriculture, P&D Departments
Agriculture Policy	Agriculture Department	None	Agriculture, P&D Departments Provincial Cabinet
Results Area 2: Increased value addition and competitiveness of crops and livestock			
Establishing Agribusiness and Innovation Fund	Agriculture Department	Agriculture Department	Agriculture, Finance, P&D Departments
Market-based pricing for meat and raw milk	Livestock & Dairy Development Department	None	Industries, Commerce & Investment Department Deputy Commissioners
Modernizing agricultural markets	Agriculture Department	None	Agriculture, Law Departments Agriculture Commission Provincial Cabinet
Improving food safety	Agriculture, Food Departments Food Safety Authority	Agriculture, Food Departments Food Safety Authority	Agriculture, Food, P&D Departments Food Safety Authority
Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters			
Financial sustainability of maintenance and repair	Irrigation Department	Irrigation Department	Irrigation, Law Departments
Rolling out agricultural insurance system	Agriculture Department	Agriculture Department	Agriculture, Finance, P&D Departments
Public investment in climate-smart agriculture	Agriculture Department	Agriculture Department	Agriculture, P&D Departments
Communications strategy	Agriculture Department	P&D, Agriculture Departments	P&D Department
Independent Verification Agency	P&D Department	P&D Department	P&D Department
PCMU	P&D Department	P&D Department	P&D Department
PDU	Food, Agriculture, Livestock & Dairy Development Departments	Food, Agriculture, Livestock & Dairy Development Departments	Food, Agriculture, Livestock & Dairy Development, P&D Departments

6. **Results Area 2 (increased value addition and competitiveness of crops and livestock, encompassing DLIs 5–8)** rests on the notion that agriculture in Punjab has significant unexploited potential to generate income and employment through value addition in crop and livestock production, processing, and other agribusiness ventures. The rural non-farm sector in general—and agribusiness in particular—are currently underdeveloped but of great importance to Punjab’s overall economic growth. Further development of this potential requires policy and institutional

reforms (deregulation of farm and non-farm markets, including modernization of crop markets and agricultural marketing, and market-based pricing for meat and fresh milk), combined with public support for private investors to alleviate financing constraints.

7. **Results Area 3 (enhanced resilience of smallholder farmers to climate change and natural disasters, encompassing DLIs 9–11)** reflects the conviction that specific actions are warranted to protect agriculture (and especially the poor) from Pakistan’s increasing vulnerability to climate change. For rural households, exposure to uninsured risks has high efficiency and welfare costs, especially for the poorest segment of the rural population. For instance, to manage exposure to uninsured risks, farmers may forgo activities with higher expected incomes. Poorer households that lack the ability to cope with shocks might be forced into distress sales of land and livestock. Child education and health can suffer long-term consequences when children are taken out of school in response to shocks or are exposed to early periods of malnutrition, leading to intergenerational transfers of poverty.¹¹ In Punjab, poverty reduction depends critically on improving risk management and reducing vulnerability to shocks. Data from the 2013–14 Household Integrated Economic Survey (HIES) indicate that 13.3 million individuals in Punjab are vulnerable to falling in and out of poverty if they experience even a small income shock.¹² In this context, investments to improve the efficiency of irrigation systems, increase access to insurance, and promote adoption of CSA technologies are likely to reduce vulnerability to poverty and intergenerational poverty transmission.

¹¹ See *World Development Report 2008: Agriculture for Development* (Washington DC., World Bank, 2007).

¹² Individuals are vulnerable when their consumption falls within a 20 percent band around the poverty line.

ANNEX 4. SUMMARY OF FIDUCIARY SYSTEMS ASSESSMENT

1. **This annex provides supplementary information on the FSA that is not included in the main text.** Full details are available in the Fiduciary Assessment report.
2. **Budgeting and planning.** The provincial government annual budget will fund SMART Punjab, and resources will flow through the Treasury system. IBRD resources under SMART Punjab will be part of the GoPunjab annual budget (ADP). The total budget for the Bank-financed, five-year SMART Punjab PforR is US\$300 million, including support of up to US\$10 million for technical assistance and a similar amount for matching grants through capitalization of the Agribusiness and Innovation Fund (not yet reflected in the government budget). As the main text specified, GoPunjab estimates that US\$1,590 million will be required to implement the Program over the five years starting in FY18. The Governance Roadmap and expenditure framework specify expenditures to be incurred by the implementing entities.
3. **Accounting and reporting.** All line departments have access to the Government Financial MIS to track the availability and use of resources. Each implementing department will maintain its own books of accounts for program-related activities on a cash basis, following government accounting policies and procedures. The PCMU will prepare program-level annual consolidated financial statements (reflecting budget vs. actual program expenditures) which will be produced from the government accounting system. The annual consolidated financial statements will be audited by the Department of the Auditor General of Pakistan.
4. **Internal controls and internal audits.** The FSA recommends actions for improving internal controls: establish an effective internal audit function; improve reporting and reconciliation controls with periodic review by senior management; strengthen asset management; and establish a plan for periodic payroll audit across the Program. The PCMU will engage a qualified (CA/ICMA/ACCA) accountant with relevant experience as an internal auditor, to be responsible for conducting internal auditing of the Program in accordance with the ToRs and under the approved semi-annual internal audit plan for this Program.
5. **External audit.** The Department of the Auditor General of Pakistan, which is acceptable to the Bank, will express an opinion on the Program's annual financial statements and issue a management letter highlighting any internal control, compliance, and other weaknesses. Audited financial statements for each financial year will be submitted to the Bank within six months after the close of the financial year. The Bank in accordance with its Access to Information policy will request public disclosure of the audit report.
6. **Financial management (FM) risks and mitigation measures** are listed in Table 11 at the end of this annex.
7. **Procurement regulatory framework.** All public procurements are subject to the Punjab Procurement Rules 2014, which will apply to SMART Punjab. The Rules are comprehensive; they stipulate open competition as the default method of procurement and require pre-disclosed evaluation criteria, limitations on post-bid negotiations, disclosure of evaluation prior to award,

and complaint redressal. However, the Punjab Public Procurement Rules Assessment finds that compliance with the Rules is deficient. Table 2 lists the key areas of concern and corresponding recommendations.

8. **Procurement risks and mitigation measures.** All seven departments are expected to follow PPRA Rules 2014 framed under the Public Procurement Regulatory Authority Act 2009. The Bank's regular procurement assessments consistently find delays in procurement and subsequent contract implementation. In addition, the PPRA Annual Report (2014–15) indicates that increased procurement quantities and expenditures have created opportunities for abuse of power and waste of public funds.

9. Table 3 summarizes the key risks and mitigation measures. A comprehensive online PMIS should be developed to help implement the proposed mitigation measures.

10. **Anti-Corruption Guidelines.** The following legal regime is in place to address Governance and Anti-corruption: (i) The Prevention of Corruption Act 1947, (ii) Criminal Law Amendment Act 1958, (iii) Anti-Corruption Establishment Ordinance 1961, (iv) Punjab Employees Efficiency, Discipline, and Accountability Act 2006.

11. The first three laws relate to criminal offences for corruption and the last to departmental inquiry and proceedings against inefficiency, misconduct and corruption. Fraud is a criminal act covered under Sections 415-425 of the Pakistan Penal Code. In addition, the National Accountability Ordinance is applicable to federal and provincial government employees and public office holders. The Anti-Corruption Establishment (ACE) is an attached department of the Services and General Administration Department. The implementing agencies of the Program are using a manual system by which complaints are registered. The ACE has applied a system at the provincial level that is updated each day and through which complaints are registered and monitored. Even though there is no hotline for corruption complaints in the GoPunjab, the ACE has previously allocated phone numbers for complaints relating to the wheat procurement program of the Food Department.

12. The borrower has agreed to comply with the Bank's Anti-Corruption Guidelines applicable to PforR operations, as follows:

- (a) Under the Program, the GoPunjab will undertake criminal and administrative investigations of all material and credible allegations of fraud and corruption, keep the Bank abreast of their progress and findings, and make public the conclusions.
- (b) Annually or more frequently as warranted, the GoPunjab will provide the Bank with reports of allegations of fraud and corruption under the Program received and registered, as well as related investigations and, as needed, the actions taken. Reciprocally, if the Bank finds evidence of corrupt practices, the Bank will, to the extent consistent with Bank policy, refer the case to the Punjab Government for investigation under the relevant criminal and civil laws.
- (c) If the Bank decides to conduct an administrative review into allegations or other indications of fraud and corruption in connection with the Program—whether alone, jointly with the government, or in parallel with a government investigation—the GoPunjab will cooperate fully with representatives of the Bank and take all appropriate measures to ensure the full

cooperation of relevant persons and entities subject to the government jurisdiction in such investigation, including, in each case, allowing the Bank to meet with relevant persons and to inspect all of their relevant accounts, records and other documents and have them audited by or on behalf of the Bank. If the Bank finds evidence of corrupt practices, the Bank will refer the case to the GoPunjab for investigation under the relevant criminal and civil laws. The Bank may, however, debar private individuals and firms on its own.

- (d) The Bank's right to investigate or conduct reviews does not extend to criminal investigations, which is the exclusive jurisdiction of the GoPunjab.
- (e) The GoPunjab will ensure that any person or entity debarred or suspended by the Bank is not awarded a contract under or otherwise allowed to participate in, the Program during the period of such debarment or suspension.
- (f) The bidding documents will serve as bidders' source of information regarding the applicability of the ACG to the Program. Compliance will be verified through the Program's annual audits.

Table 11. Financial management risks and proposed mitigation measures

Risk area	Proposed mitigation	Baseline	Significance	Monitoring benchmark
Funds flow	Funds committed for Program activities in annual budget released to the implementing entities in time.	Nil	Moderate	Quarterly Budget Execution Reports.
Accounting and reporting	Process of preparing Program-level financial reports and entities to be included in the reports to be finalized.	Nil	Moderate	Program-level financial reporting arrangements to be agreed with the Bank. Periodic Program-level financial reports prepared and reviewed by management.
Internal controls	Establishing an effective internal audit function.	Nil	High	Plan to establish Internal Audit Function agreed with the Bank.
	Internal audit to prioritize reviews aimed at (a) improving reporting and reconciliation controls and (b) strengthening asset management and payroll systems.	Nil	High	Internal Audit reports on priority areas to be finalized.
Program audit	Program external audits carried out in a timely manner.	Nil	Moderate	Program audited financial statements available within 6 months after the close of the financial year.

Table 12. Main procurement deficiencies and recommended improvements

Area of concern	Recommended improvement
Procurement planning	Procurement plans are uploaded to the PPRA website, but they are not updated and provide no progress status. Procurement plans and progress status on each procurement activity should be regularly updated on the websites of each procuring entity.
Formulation of specifications	Formulation of specifications should be broader and not attempt to provide an advantage to a specific party.
Delegation of powers to create approval mechanism	The committees formulated to manage public procurements should be properly constituted and notified, including publishing on the relevant websites.
Blacklisting of suppliers and contractors	A fair trial mechanism should be developed and posted on the relevant websites. The outcomes of all fraud and corruption cases should also be posted on these websites.
Announcement of evaluation results	The 2014 PPRA Rules require that the bid/tender evaluation results should be posted on the relevant website, but the limited information currently available on the websites is not meaningful. It is recommended that a template be developed for all information regarding bids that are not commercially sensitive to bidders. The Bid Evaluation Report should include bid opening records, information on bid securities, bid price at the time of bid opening, arithmetic corrections, corrected bid prices, qualification status, compliance status to the technical qualification criteria, bidder ranking, any deviations observed during the bid evaluation process, and clarifications sought.
Selection of appropriate procurement procedures and use of alternative methods of procurements	This is important to develop a procurement strategy in which fundamental questions about the selection and use of most appropriate method of procurement and market approach are decided. This requires additional training of professionals who are responsible for managing public procurements.
Publication of evaluation/bids and award of contracts	This would require the development of a modified Bid Evaluation Report suitable for publication on the website.
Procurement performance	Procurement performance indicators need to be developed and procurement performance needs to be measured by monitoring each activity within the procurement plans.
Procurement related grievance redressal committee	An impartial procurement provenience redressal system and appropriate committees need to be developed and constituted for independent and impartial settlement of procurement process-related complaints.

Table 13. Main procurement risks and proposed mitigation measures

Risks	Proposed mitigation measure
Lack of transparency	<ol style="list-style-type: none"> 1. Publication of Procurement Plans with timeline of each activity. 2. Publication of bid opening record immediately after the bid opening activity. 3. Publication of bid evaluation result along with the bid evaluation report. 4. Procurement complaint redressal mechanism posted on the website with updates on any procurement related complaints. 5. Publication of Procurement Report capturing all the procurements carried out in each FY.
Delay in procurement actions	<ol style="list-style-type: none"> 6. Updating of each procurement activity capturing the actual compliance/action date. 7. Setting up of procurement performance Indicators. 8. Measuring each procurement activity against the performance indicators.
Delay in contract implementation	<ol style="list-style-type: none"> 9. Setting up of contract implementation plan and its monitoring system. 10. Monitoring each contract against the contract implementation plan.

ANNEX 5. SUMMARY OF ENVIRONMENTAL AND SOCIAL SYSTEMS ASSESSMENT

1. **Specific recommendations and actions have been put forth to address economic and social risks associated with the SMART Punjab Program** (Box 1). Section 7 of the ESSA describes the scope and indicative costs of these recommendations.

Box 1. Recommendations and actions to address environmental and social risks in SMART Punjab

DLI 1. Environmental: Agriculture Department to expand training for farmers on integrated pesticide management and balanced fertilizer use, monitor impacts on surface water from agricultural runoff, and monitor impacts on groundwater. **Social:** Target the agricultural inputs subsidy to benefit small farmers; develop a strong stakeholder mobilization and engagement strategy to encourage poor farmers to use the subsidy.

DLI 2. Environmental: Agriculture Department to conduct a technical study on optimal fertilizer use based on international environmental best practices under different cropping patterns, including potential to decrease fertilizer use. **Social:** PARB to emphasize research benefitting small/medium farmers and female farm workers.

DLI 4. Environmental: Agriculture Department to establish a baseline of fertilizer application for high-value crops and monitor application levels. **Social:** The PCMU and Food and Agriculture Departments to design and implement a two-way consultation and outreach strategy to engage relevant groups as the wheat procurement program is gradually phased out; the PCMU and PDUs should build the capacity to implement this strategy. Agriculture Department to ensure that vulnerable groups (small and landless farmers, agricultural laborers, women) receive technical knowhow, skills, market linkages, and so on required to transition to HVA. Dedicated staff in the Agriculture Delivery Unit to assess the hurdles that these groups encounter while making that transition. Agriculture Department to develop and implement a strategy to mobilize farmers to adopt HVA.

DLI 5. Environmental: When EIAs / IEEs are not required, environmental and social risk management guidelines already used by the Agriculture Department and its affiliated project activities (such as PIPIP) to be customized, adopted, and implemented by the Agriculture Department. EPA to monitor agribusiness for its compliance with National Environmental Quality Standards. **Social:** While designing the matching grant scheme, to assess the means and ability of marginalized groups, including women and the poor, to access and benefit from the scheme. Grant eligibility criteria to be tailored toward overcoming hurdles (such as lack of credit and immoveable assets) faced by marginalized groups, particularly women. Support to be provided to marginalized groups to benefit from matching grants.

DLI 6. Social: Assess the possible impact of removing milk and meat price caps on rural and urban household and intra-household consumption (women, children); and mitigate the risk of consumer agitation. Develop early engagement strategy to inform stakeholders about the benefits of deregulation and encourage milk producers to increase supply in anticipation of better prices.

DLI 8. Environmental & Social: PAFDA to raise consumer awareness of food safety.

DLI 11. Environmental: Establish a Climate Change Extension Cell (Agriculture Department) to sensitize all development departments on climate change impact, adaptation, mitigation, and resilience.

DLI 12. Environmental: Provide training for all relevant institutions (especially the P&D Department) on environmental and social risk management. Relevant implementing agencies should coordinate with District Environment Officers during implementation of SMART Punjab. Continue strengthening the Environmental Protection Agency under the Jobs & Competitiveness PforR.

ANNEX 6: SYSTEMATIC OPERATIONS RISK RATING (SORT)

Pakistan: Strengthening Markets for Agriculture and Rural Transformation in Punjab (SMART Punjab)

Stage: Negotiations

Table 14. Systematic Operations Risk-Rating Tool (SORT)

Risk Category	Rating (H, S, M, L)
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Substantial
9. Other	Substantial
OVERALL	Substantial

ANNEX 7: PROGRAM ACTION PLAN

GoPunjab should undertake key activities (legal dated covenants) below in support of achieving the DLIs and the PDO. These are budgeted for as part of the Government's Planning Commission Pro-forma 1s.

Action description	Due date	Responsible party	Completion measurement
Develop, and thereafter disseminate, the operational procedures and regulatory framework for crop insurance, in a manner and substance satisfactory to the Bank.	April 30, 2018	Department of Agriculture	Copy of approved regulatory framework, supporting documents and operational plan.
Develop, and thereafter implement, a five-year operational plan for resource allocation in Punjab's annual development plan consistent with SMART Punjab's disbursement linked indicator requirements, including agricultural research, high-value agriculture, agricultural insurance, and climate-smart agriculture, all in a manner and substance satisfactory to the Bank.	May 31, 2018 (for approval)	Punjab's Department of Agriculture, Department of Livestock & Dairy Development, Department of Food, Irrigation Department, and Planning & Development Department	Five-Year Plan approved by the Planning & Development Department and implemented each year during the Program.
Design, and thereafter implement, a capacity-building program for women and small and medium enterprises in: (a) business development strategy; (b) project management; and (c) entrepreneurship and marketing through Punjab Skills Development Fund (PSDF), and/or other organizations, for the Agribusiness and Innovation Fund, all in a manner and substance satisfactory to the Bank.	June 30, 2018	Department of Agriculture	Memorandum of Understanding signed with PSDF and/or other organizations, work plan for training developed and implementation started.
Provide training to farmers on integrated pest management and balanced use of fertilizers in a manner and substance satisfactory to the Bank.	June 30, 2018 (start)	Department of Agriculture	Trainings started.
Establish Climate Change Cell with staff, functions and resources acceptable to the Bank.	June 30, 2018	Department of Agriculture	Cell established and staffed.
Carry out a study on effects of removal of livestock price caps, in a manner and substance satisfactory to the Bank.	June 30, 2018	Department of Livestock and Dairy Development	Study conducted and recommendations considered.
Develop and implement a monitoring and evaluation (M&E) framework and establish an ICT-based M&E system in key departments with their respective resource allocation, all in a manner and substance satisfactory to the Bank.	December 31, 2018	Department of Agriculture, Department of Livestock & Dairy Development, Department of Food, and Irrigation Department	M&E system in place and operational.
Punjab's Environment Protection Agency (EPA) to conduct training on environmental risk management for the Departments of Agriculture, Livestock & Dairy Development, Food, Industry, Irrigation, and Planning and Development, all in a manner and substance satisfactory to the Bank.	December 31, 2018	EPA, Department of Agriculture, Department of Livestock & Dairy Development, Department of Food, and Irrigation Department	Trainings conducted.
Develop, and thereafter implement, a workplan for targeting inputs subsidies through Kissan Card, including the resource allocation required for the implementation thereof, all in a manner and substance satisfactory to the Bank	December 31, 2018 (approval)	Department of Agriculture	Approval and implementation of work plan.
Establish a reliable monitoring system for water delivery with adequate spatial and temporal coverage, in a manner and substance satisfactory to the Bank.	December 31, 2018	Irrigation Department	Evidence demonstrating establishment of monitoring system.
Launch of Kissan Card.	March 31, 2019	Department of Agriculture	Kissan Card launched.