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APPRAISAL STAGE**

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I. Country Context

1. Pakistan has achieved continued GDP growth and substantially reduced poverty. GDP growth was 5.3% in FY16/17, largely owing to gains in the agricultural and services sectors. The national poverty headcount declined from 64.3% in FY02 to 29.5% in FY14.

2. Amid these gains, evidence is emerging that Punjab—a major driver of the national economy and an agricultural stronghold—is experiencing rising inequality. Punjab accounts for more than half of Pakistan’s GDP, and the majority (63%) of Punjab’s population of 110 million is rural. Although poverty declined even more within Punjab than nationwide over 2002–14 (from 61% to 25%), Punjab is the most unequal province in Pakistan, with a Gini coefficient of 29.7 in FY14. Four out of five of Punjab’s poor live in rural areas, where 8.7 million households earn an average of PKR 28,517 per month through farming alone (35%), a mix of farm and non-farm employment (31%), and non-farm employment (34%). The average rural household has 6.49 individuals but merely 1.66 income earners. Farm size continues to decline. Two-thirds of farms were smaller than 2 hectares in 2010 (versus less than half in 1990).

II. 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—crops, livestock, fisheries, forestry—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 (worth about US\$ 12 billion). Growth is evaporating in the sector; it was 3.3% over the last decade but 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, although the livestock subsector has exhibited encouraging signs. Punjab encompasses 72.6% of national cropped area and 77.7% of national irrigated area. Approximately 62% of Punjab’s area (20.63 million hectares) is cultivated, and about 60% of 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%). The factors limiting agricultural growth include poor adoption of modern technologies, poor service delivery, and poorly functioning agricultural markets.

4. Above all, however, flagging 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\$ 1.25 billion in FY17 (Table 1)—are largely regressive, generate significant negative environmental externalities, and focus almost exclusively on major crops rather than HVA. The provincial government (GoPunjab) pays more than 40% (US\$ 515 million) of these subsidies, which are about 2.5 times higher than the funding for agriculture in the provincial Annual Development Plan (ADP). Not all of this largesse reaches the producer; for example, a substantial share of fertilizer subsidies benefits fertilizer companies and the bulk of wheat subsidies goes to banks. Few subsidies target small-scale producers.

Table 1: Subsidies to agriculture in Punjab (US\$ m)

Item	Subsidies paid by the Federal Government in Punjab	Subsidies paid by the Government of Punjab	Total subsidies
Fertilizer gas subsidy	300 ^a	0	300
Reducing General Sales Tax (GST) on diammonium phosphate from PKR 400 to PKR 100/bag	92 ^b	0	92
Reducing GST on urea from PKR 400 to PKR 75/bag	78 ^c	0	78
Reduction in electricity tariff for tubewells from PKR 8.85 to PKR 5.35/kWh	219 ^d	41	260
Subsidy on imported fertilizer	34 ^e	0	34
E-voucher-based subsidy for potash fertilizer		19	19
Wheat procurement scheme		333	333
Wheat export subsidies	10 ^f	0	10
Interest-free loans to farmers		57	57
Irrigation maintenance and repair (M&R)		60	60
Cotton and wheat seed		3	3
Crop insurance through Crop Loan Insurance Scheme (CLIS)		2	2
TOTAL	733	515	1,248

Source: Federal and Provincial Budget Speech 2017–18, and Agriculture Department.

a Total gas subsidy to fertilizer manufacturers is US\$ 425 million, while Punjab accounts for approximately 70% of total fertilizer use in Pakistan. *b* Total subsidy is US\$ 131.5 million, of which 70% is in Punjab. *c* Total subsidy is US\$ 112 million, of which 70% is in Punjab. *d* Total subsidy on electricity for tubewells is US\$ 257 million, and 85% of tubewells are located in Punjab. *e* Total subsidy for imported fertilizer is budgeted at US\$ 48 million, of which 70% can be assigned to Punjab. *f* Total subsidy is US\$ 14.3 million, of which 70% is 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 (for instance, salinity, sodicity, and waterlogging from water pumping or overuse 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 (Box 1). Current policies and subsidies encourage farmers to produce more of the same surplus commodities rather than to provide a more diverse range of other products demanded by the market. Ninety percent of the cropped area in Punjab remains under major crops (dominated by wheat), while only nine percent is planted to higher-value crops. Significant benefits are sacrificed by this misallocation of resources: export earnings; the jobs that would otherwise be created downstream through value chains; the value added by agro-processing beyond milling alone; the higher incomes for producers; the production of nutrient-dense crops that reduce malnutrition; and the efficiencies in water use that promote diversification, sustainable use of scarce water (Box 2), and resilience to climate shocks and climate change.

Box 1: The high costs of wheat procurement in Punjab

Since the late 1950s, the government has purchased up to 25% of the wheat crop and up to 50% of the marketed wheat surplus. The costs of this procurement system are passed on to urban consumers and to the rural poor who are net buyers of wheat. Patronage and rent-seeking are endemic, particularly in the distribution of gunny bags, delivery of wheat to purchase points, and releases to flour mills). The system has other enormous costs. The direct costs of buying, storing, and releasing wheat at a fixed price over the year are estimated at US\$ 333 million per year, of which more than 90% consists of interest payments on current borrowing and accumulated debt. As of July 2017, the wheat debt of GoPunjab to the State Bank of Pakistan stood at US\$ 3.36 billion, against a collateral wheat stock worth half of that amount at best. Efforts to dispose of excess wheat stocks in export markets have been largely unsuccessful, despite generous export subsidies. Indirect costs include physical losses owing to poor storage, high spoilage, and pilferage; over-production of wheat and the consequent under-production of higher-value commodities; diversion of credit from the banking system; and a lack of incentives for private actors to build storage facilities that could also serve other crops. The high procurement price has caused wheat production to surpass domestic needs, even as annual average per capita consumption of wheat continues to decline.

Box 2: Irrigation price policy and inefficient water use in Punjab

Irrigation has delivered notable agricultural productivity gains to Punjab in the past, but the irrigation sector suffers from major financial deficits. Water charges (*abiana*) fail to reflect actual water use or cover maintenance and repair (M&R) costs. *Abiana* rates typically represent less than 0.2% of crop budgets. The flat water rate per acre implemented in 2003/04 gives farmers little reason to conserve water and use it more efficiently. At best, current M&R spending (about US\$ 65 million per year) is one-third of the minimum amount required.

7. Now that Pakistan has achieved self-sufficiency in wheat, it seeks to spur further agricultural growth and transformation, a process in which Punjab will have a major role.

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: (1) the rapid shift in domestic demand away from food grains to high-value agricultural products; (2) the significant yet largely unexploited comparative advantage for several of those products, which can provide opportunities to generate export revenue and jobs; (3) the exhaustion of options for new sources of irrigation water (productivity improvements depend on obtaining “more crop per drop”); and (4) 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 should 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 GDP, Pakistan's public expenditures on agricultural research are the lowest in a region that is already lagging others. Most agricultural research expenditures still go to food grains and other "major" crops (rice, maize, sugarcane, 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 potential pay-off is associated with redirecting public expenditures and associated policies toward the best potential investments for outcomes, with a focus on reforms in wheat, irrigation, fertilizers, and marketing, and concomitant investments to improve service delivery, agricultural R&D, 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). These farm households on average earn almost half of their income from non-farm activities, including agriculture value adding and agribusiness. But poor access to and high cost of finance, inefficient markets, limited skills, insufficient power (electricity), and a weak enabling environment hinder growth in the rural non-farm sector, including agribusiness. Most rural non-farm employment (77%) remains informal.

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 also 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 (labor force participation is 22% for women, compared to 68% for men). 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 (land, equipment), obtain credit, and exercise power in financial or economic decisions. Poor access to new farming technologies and techniques, the lack of female extension workers, and high illiteracy among rural women further discourage success in agriculture.

12. Punjab agriculture is increasingly feminizing. 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. It is vital to recognize how much of this agricultural work is unpaid (67% in 2014 based on Labor Force Survey data). The Punjab Livestock & Dairy Development Department recognizes women's primary role in livestock production and has invested in improving the capacity of female producers (including training and hiring 45,000 young extension assistants

who will work on a part time basis, half of them women), but often 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. Pakistan increasingly experiences droughts and cyclones; since 2010 floods have caused damages approaching US\$ 14 billion. Climate change heightens the pressure to manage water resources with utmost care. The melting Hindu Kush–Karakoram–Himalayan glaciers could affect water flows into the Indus River system, with implications for energy and food security. Agriculture produces approximately 41% of all GHG emissions in Pakistan, mostly through livestock production, and Pakistan has a growing population with an increasingly animal-based diet. 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 (particularly livestock systems), enhance resilience, and reduce GHG emissions.

14. The proposed SMART Punjab Program aligns with the World Bank objectives of private sector development and inclusion in the Country Partnership Strategy (CPS) (FY2015–19) and 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, particularly 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). The Pakistan Performance and Learning Review 2015–20 approved by the Board on June 15, 2017 also recognizes the need for additional attention to agricultural productivity and creating markets for high value commodities.

15. A 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 in the policy regime, stronger institutions in the agricultural 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 deepen and develop its own systems. The US\$300 m provided by the PforR will be co-financing a much larger government program of US\$1.6 billion. This PforR mobilizes experience from World Bank Global Practices and solution areas (Agriculture, Trade & Competitiveness, Water, Social Development, Environment & Natural Resources, disaster risk management/climate change) and the International Finance Corporation. Although the PforR is a comparatively new instrument, GoPunjab is familiar with it under the Bank-supported Jobs & Competitiveness PforR (P155963).

III. Program Scope

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 documents¹ 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), including US\$1.145 billion to agriculture and livestock. In addition, there is a recurrent budget allocation of US\$0.330 billion for irrigation 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. Recall that the GoPunjab also spends an estimated US\$515 million each year on agricultural subsidies including 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 a five-year period (Table 2). These selected parts will be referred to as the “PforR-supported Program” and consist of 14 out of the Government’s 25 focus areas with a focus on increasing crop and livestock productivity, research and extension policy, transition towards HVA and CSA, improving the functioning of crop as well as livestock markets including food safety, livestock breed and preventive care, agribusiness, and enhancing resilience and inclusiveness.

18. There are several GoPunjab investments that are part of the broader Government program but not part of the PforR-supported Program. These include the Extension 2.0 program; agricultural finance, mechanization and education; livestock census, feed, marketing, and women 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: (1) increased on-farm productivity and value of agriculture and livestock; (2) increased value addition and competitiveness of agriculture and livestock; and (3) enhanced resilience of smallholder farmers to climate change and natural disasters. Each Results Area involves a specific combination of policy reforms, institutional strengthening, and public investments.

¹ 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.

Table 2: Government of Punjab agriculture program and scope of proposed SMART Punjab Program for Results (PforR)

Government program	Scope of PforR	Activities	Responsible department(s)
Results Area 1: Increased on-farm productivity and value of agriculture and livestock			
(1) Providing farmers with access to quality inputs including seed and E-vouchers for fertilizer	(1) Targeted subsidy on fertilizer for small farmers through E-vouchers	<ul style="list-style-type: none"> Develop E-voucher-based subsidy scheme for fertilizer and gradually extend the scheme from 21,000 farmers in August 2017 to 200,000 smallholders with less than 5 ha by 2021 	Agriculture Department
(2) Improving agriculture and livestock research and extension services	(2) – Re-orientation of crop and livestock research and extension – Increased financial support for crop and livestock research	<ul style="list-style-type: none"> Review existing agriculture and livestock research and extension systems Approval of new research and extension policy and strategy by the Provincial Cabinet Gradual increase of allocation for agriculture and livestock research from 0.1% of AgGDP in FY17 to 0.4% in FY22 through Annual Development Plan (ADP) and recurrent budget 	– Agriculture Department – Livestock & Dairy Development Department – Planning & Development (P&D) Department
(3) ICT-based Extension system 2.0 in Agriculture, and 9211 Virtual Governance System in Livestock			
(4) Introduction and promotion of Hi-Tech Farm Mechanization Technologies			
(5) Agriculture land improvement and on-farm water management through high-efficiency irrigation systems (HEIS)			
(6) Strengthening agriculture and livestock education			
(7) Promoting micro-finance linkages and interest-free loans for small farmers			
(8) Improving livestock health	(8) Paradigm shift in public support to animal health from curative to preventive healthcare, disease surveillance and regular vaccination	<ul style="list-style-type: none"> Establishing separate head of account in the provincial budget for curative and preventive health allocations Gradually increasing the ratio of expenditures on curative and preventive animal health from 35:65 in FY17 to 10:90 in FY22 	Livestock & Dairy Development Department
(9) Enhancing productivity and improving livestock breeding through targeted progeny testing framework	(9) Improving livestock breeding of specific species	<ul style="list-style-type: none"> Increasing stocks of specific animal breeds, including Sahiwal cow, Cholistani cow, and Neeli Ravi buffalo Registration and development of verification database 	Livestock & Dairy Development Department
(10) – Rationalizing wheat procurement and reducing strategic wheat reserves – Moving storage of public wheat reserves from bags to bulk through	(10) – Phasing out government wheat procurement and reducing strategic wheat reserves to 1.0 million metric tons (MT) by 2021 – Construction of steel silos for 1.0	<ul style="list-style-type: none"> GoPunjab to develop and approve plan for withdrawal from wheat market and reduce strategic wheat reserves to 1.0 million MT in 2018 Gradual reduction of public wheat stocks to 1.0 million MT by 2021 	Food Department

Government program	Scope of PforR	Activities	Responsible department(s)
construction of modern bulk storage facilities	million MT	<ul style="list-style-type: none"> Development of modern silos for bulk storage of 1.0 million MT of wheat 	
(11) Promoting high-value agriculture (HVA)	(11) Transitioning to HVA	<ul style="list-style-type: none"> Ensure gradual increase in allocation for HVA in the ADP from 3.5% of total capital budget for Agriculture (ADP) in FY17 to 15% in FY22 	<ul style="list-style-type: none"> Agriculture Department P&D Department
Results Area 2: Increased value addition and competitiveness of agriculture and livestock			
(12) – Developing agricultural and livestock value chains – Promoting value addition through Agribusiness and Innovation Fund	(12) Providing incentives to agribusiness for investments in value addition through matching grant scheme, training, and capacity building	<ul style="list-style-type: none"> Establishing the Agribusiness and Innovation Fund Notifying the governance structure of the Fund Notifying the Operational Manual for the Fund, including the <i>modus operandi</i> of the matching grant component Approval of matching grants Training and capacity building 	Agriculture Department
(13) Deregulating and improving market conditions for livestock	(13) Improving market conditions for livestock through removal of price caps on meat and raw milk	<ul style="list-style-type: none"> Excluding meat and milk from GoPunjab’s pricing list for Essential Commodities from 2018 onward 	Industries Department
(14) Improving regulatory framework and institutions for agriculture produce marketing to enable private sector investment	(14) Modernizing agriculture produce markets by regulatory transition from the Punjab Agricultural Produce Markets Ordinance, 1978 to the Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act, 2017	<ul style="list-style-type: none"> Stakeholder consultation on proposed PAMRA Act Approval of PAMRA Act by GoPunjab Cabinet Approval of PAMRA Act by GoPunjab Provincial Assembly Enforcement of PAMRA Act Full transition to PAMRA Act by 2021 	Agriculture Department
(15) Revamping government livestock farms and experiment stations			
(16) Improving livestock feed systems			
(17) Revamping livestock markets and establishing eco marketing zones			
(18) Improving food safety	(18) Establishment of food safety testing infrastructure	<ul style="list-style-type: none"> Establishing and staffing of one (1) provincial food, agriculture, and drug testing reference laboratory Establishing and staffing of three (3) regional food testing labs Establishing and staffing of nine (9) divisional mobile food testing labs 	Food Department
(19) Poverty alleviation through provision of livestock and poultry to women			
Results Area 3: Enhanced resilience of smallholder farmers to climate change and natural disasters			
(20) Adapting to climate change for enhanced resilience of small farmers	(20) –Increasing public investment in climate-smart agriculture (CSA) – Rolling out of agricultural insurance scheme	<ul style="list-style-type: none"> Gradual increase of allocation for CSA from 3% of total capital budget for agriculture in FY17 to 15% in FY22 Preparation of Diagnostic Report for agricultural insurance 	<ul style="list-style-type: none"> Agriculture Department P&D Department

Government program	Scope of PforR	Activities	Responsible department(s)
		<ul style="list-style-type: none"> • Preparation of work plan based on the recommendations of Diagnostic Report • Piloting of agricultural insurance in two districts in Punjab • Rolling out of agricultural insurance to all districts 	
(21) Refurbishing small dams, barrages, rehabilitation and improvement of irrigation infrastructure, canal lining, improving flood works and irrigation drainage systems			
(22) Water conservation and institutional and regulatory reform	(22) Improving financial sustainability of irrigation maintenance and repair (M&R) and governance	<ul style="list-style-type: none"> • Modernizing the methods of assessing the area subject to water charges (<i>abiana</i>) and improving collection of the same • Approval and notification of Punjab Water Policy • Approval and notification of Punjab Groundwater Act • Improving water delivery performance ratio in seven (7) specific canals: Muzaffargarh, Abasia Link, Abasia, CRBC-III, Rangpur, Rangpur Lower and Upper Jhelum 	Irrigation Department
(23) Widening and construction of 15,000 km of rural roads			
(24) Enhanced implementation support for operationalizing sector plans	(24) Capacity building and institutional strengthening	<ul style="list-style-type: none"> • Preparation of annual work plans for training and capacity building including training for agribusiness and government departments • Approval of annual work plans by the government • Implementation of annual work plans 	Implementing departments
(25) Establishing ICT-based M&E systems in government departments	(25) Establishing ICT-based M&E systems in Agriculture and Food Departments	<ul style="list-style-type: none"> • Establishing of ICT-based M&E systems 	<ul style="list-style-type: none"> – Agriculture Department – Food Department
PforR geographic scope: Entire Punjab Province			
PforR implementation period: FY18–23			
Total investment plan: US\$ 3.8 billion, out of which agriculture and livestock is US\$ 1.145 billion, plus US\$ 300 million PforR			

IV. Program Development Objective

20. The development objective for the SMART Punjab Program (referred to here as 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*. Box 3 lists the PDO-level indicators by Results Area.

Box 3: PDO-level indicators for the SMART Punjab Program, by Results Area

Results Area 1—Increased on-farm productivity and value of agriculture and livestock

PDO Indicator 1: Farmers reached with agricultural assets or services

PDO Indicator 2: Annual increase in Punjab AgGDP

Results Area 2—Increased value addition and competitiveness of agriculture and livestock

PDO Indicator 3: Beneficiaries reached with financial services

PDO Indicator 4: Number of private wholesale markets and collection centers established

Results Area 3—Enhanced resilience of smallholder farmers to climate change and natural disasters

PDO Indicator 5: Number of farmers covered by agricultural insurance

PDO Indicator 6: Number of farmers adopting CSA packages

PDO Indicator 7: Improvement in irrigation water service delivery

21. To achieve the PDO, 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 subsidies through an E-voucher Scheme for smallholders (< 5 hectares), modernization of wheat marketing by phasing out public wheat procurement, reducing strategic wheat reserves from 4 million metric tons (MT) to 1 million 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 an area yield index-based crop insurance system, which could potentially leverage access to production credit.

22. Progress toward each of the three Results Areas that contribute to the PDO will be measured through 12 Disbursement Linked Indicators (DLIs). Each DLI involves one or more specific actions required for agricultural and rural transformation in Punjab. Each DLI was selected based on: (1) the criticality of the activity, output, or outcome in the results chain; (2) the need to introduce a financial incentive to deliver the activity, outcome, or output; (3) measurability and ease of verification; and (4) the capacity of GoPunjab to achieve the DLIs over the period that SMART Punjab is implemented. Table 4 represents the Results Area and brief description of DLI.

23. The four DLIs under Results Area 1 (increased on-farm productivity and value of agriculture 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, particularly for fertilizers, to small-scale farmers would increase overall production; it would also help smallholders to close the yield gap

with larger producers and reduce poverty. *This DLI will be measured by tracking the number of small farmers (<5 hectares) enrolled in the E-voucher Scheme for fertilizers.*

- **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. Over time, funding for public research would increase (*measured as the percentage of AgGDP spent on research*), along with the role of the private sector (*measured by the composition of the Punjab Agriculture 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 losses to disease. Good breeding stock is essential to improve productivity (*measured by the number of breeding animals*).
- **DLI 4: Modernizing the wheat marketing system and transitioning to high-value agriculture.** Deregulating 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 withdrawing from the wheat market, subsequent phasing out of government wheat procurement, and 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 agricultural policy.*

24. The four DLIs under Results Area 2 (increased value addition and competitiveness of agriculture 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.

- **DLI 5: Providing incentives to agribusiness for investment in value addition.** SMART Punjab will contribute US\$ 10 million to 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: Deregulating the livestock sector.** 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 margins taken by middlemen and commission agents and reduce the government's role in controlling these 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. This DLI will be *measured by tracking progress in establishing and operationalizing a provincial food testing reference laboratory as well as regional and mobile laboratories.*

25. 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 public investment in CSA.

- **DLI 9: Improving sustainability of irrigation M&R.** 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 in addressing the overexploitation of water, falling groundwater tables, and increasing salinization. This DLI would be *measured by approval of the Punjab Water Policy, notification of the 2017 Punjab Groundwater Act, improvements in the area assessed for abiana, tracking abiana collection rates, and water delivery performance ratios (defined as actual amount of water delivered divided by amount delivered as per canal design, measured at different points along the canal and relative to the delivery performance at the head of the canal).*
- **DLI 10: Rolling-out an agricultural insurance system.** Crop insurance can help crop producers stabilize incomes and sustain resilience when natural events deplete harvests. The World Bank submitted a feasibility report detailing a suitable crop insurance scheme to GoPunjab in July 2017. This DLI will be *measured by official government approval of the report, development and notification of a workplan aligned with the report's recommendations, piloting a crop insurance scheme in two districts, and rolling out the scheme in all districts.*

- **DLI 11: Increasing public investment in CSA.** 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, capacity building, and monitoring and evaluation (M&E).** A substantial communications strategy and capacity-building program will mobilize support for agricultural and rural transformation among stakeholders into the future. Strengthening M&E capacity in participating departments will facilitate monitoring of progress. This DLI will be *measured by development and implementation of annual capacity development plans.*

V. Environmental and Social Effects

26. An Environmental and Social Systems Assessment (ESSA) was prepared for SMART Punjab. The assessment incorporates feedback from all stakeholders (governmental, non-governmental, producers) and presents recommendations and actions to address environmental and social risks associated with the Program. The main actions are included in the PAP and some of these constitute dated legal covenants.

27. Environmental risks are Moderate. In general, the expected environment impacts from Program activities are assessed as medium to low. Environmental concerns include the possibility of increases in 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 promulgates 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 EIA preparation. The Program will involve no expansion of the irrigation network but rather promote water resource efficiency. The Program will also not support expansion of agricultural land but contribute to increased land productivity. Improvements in animal health combined with deregulation of livestock prices would benefit public health. Improvements in animal breeding will relieve pressure on rangelands. Crop residue burning and application of untreated wastewater for irrigation are important environmental issues related to agriculture but not targeted by the proposed Program.

28. Social risks are Substantial. The key social risks include (i) access to program benefits for vulnerable and marginalized groups, and (ii) potential social conflict. Smallholders and marginalized or vulnerable groups may find accessing some elements of SMART Punjab more challenging than other stakeholders — e.g. HVA, the E-voucher scheme, and matching grants. These groups may require special support, ranging from technical assistance, training, two-way communication, and social mobilization strategies. Phasing out of the wheat procurement system while lowering the wheat price thus benefiting the >90% of households who are net wheat buyers, may face strong opposition from large wheat growers. The Bank has agreed to provide significant technical assistance to assist the Food Department in mitigating social risk associated with wheat market reform. Attempts to improve *abiana* assessment and increase *abiana* collection are likely to meet resistance. Removal of price caps while having beneficial impacts on public health and incomes of livestock owners (most of them women), may also negatively impact 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. An

effective conflict mitigation and awareness strategy must be in place to ensure that reforms do not lead to marginalization and conflict. No significant land acquisition is envisioned under the Program.

29. With regard to **grievance redress mechanisms**, 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 program grievance redress mechanisms or the World Bank Grievance Redress Service. The Grievance Redress Service ensures that complaints are promptly reviewed to address pertinent concerns. Affected communities and individuals may submit their complaint to the Bank’s independent Inspection Panel, which determines whether harm occurred or could occur as a result of the Bank’s 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. To submit complaints to the World Bank’s corporate Grievance Redress Service, visit www.worldbank.org/grs. To submit complaints to the World Bank Inspection Panel, visit www.inspectionpanel.org.

30. In sum, although the proposed operation will undertake or support no activities of high risk from an environmental or social perspective, and although federal and provincial environmental and social management systems are appropriate, 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 P&D, having primary responsibility for coordinating and monitoring the Program, is in charge of environmental screening. For activities that require an Environmental Impact Assessment (EIA) or an Initial Environmental Examination (IEE), the relevant implementing agencies should coordinate with District Environment Officers.

VI. Financing

31. The financing framework for the activities under the three Results Areas includes two sources of finance: (i) GoPunjab budget; and (ii) SMART Punjab PforR (Table 3).

32. In addition, a significant portion out of GoPunjab’s spending on subsidies is expected to be diverted towards investment in agriculture and livestock when the program is fully implemented by 2021. The GoPunjab has already substantially increased the capital investment allocation for agriculture and livestock in anticipation of such savings becoming available.

Table 3: Financing of SMART program (US\$ m)

Source	Amount	% of total
Punjab Government	1290	81
PforR	300	19
Total Program financing	1,590	100

33. Budgetary allocations for agriculture and livestock are considered sufficient and together with acceptable historical budget execution rates provide enough confidence that the intended results of the SMART program will be achieved. The government’s expenditure framework is sufficiently aligned with the SMART program to achieve the intended results.

VII. Program Institutional and Implementation Arrangements

34. The Departments of Agriculture, Livestock & Dairy Development, Food, Irrigation, Industries, Finance, and P&D are responsible for implementing the SMART Punjab Program. Each department will have a dedicated Program Delivery Unit (PDU) or a Focal Person, depending upon the workload. Each PDU will include current departmental staff, supplemented by consultants as needed. Some departments have dedicated PDUs; others will establish them.² The Member Agriculture (P&D Department) will act as the Program Coordinator for SMART Punjab in the Program Coordination and Monitoring Unit (PCMU), assisted by the Chief Agriculture as Deputy Manager. The PCMU which has been established under the Punjab Resource Management Program in the P&D Department and also coordinates the Jobs & Competitiveness PforR, 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 Financing 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.

35. A SMART Steering Committee (SC) was established in September 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, other key stakeholders, and representatives from the Bank (including the Senior Director and Country Director) as observers. The SC will provide strategic guidance and direction, facilitate coordination between the seven implementing agencies, and oversee progress in all three Results Areas and 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.

36. SMART Punjab will coordinate and collaborate with other programs. It will create synergies with Bank projects in Punjab—including the Punjab Irrigated-agriculture Productivity Improvement Project (PIPIP) and the Jobs & Competitiveness PforR (P155963)—and operations of development partners.³ National entities with supporting roles include: (1) the Auditor

² The Agriculture Delivery Unit (ADU) 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 will establish PDUs or (in the case of the Industries and Finance Departments) Focal Persons before appraisal. 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, including: (1) an annual investment plan for their department; (2) Terms of reference (ToRs) for consultancy services; (3) an annual procurement plan; (4) reports on implementation progress for each DLI under the Program; (5) Program Financial Statements, including procurement, if any; (6) internal audit reports; and (7) implementation of the communications strategy.

³ 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

General of Pakistan for the annual external audit of the Program; (2) the Punjab Public Procurement Regulatory Authority, which will provide technical guidance on public procurement and monitor compliance with procurement standards and practices; and (3) the National Accountability Bureau, which will investigate complaints on fraud and corruption (if any) relating to the Program.

VIII. Contact points

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