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INTERNATIONAL DEVELOPMENT ASSOCIATION
PROGRAM APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 137.6 MILLION (US\$200 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

PUNJAB GREEN DEVELOPMENT PROGRAM

MAY 4, 2018

Environment and Natural Resources Global Practice
South Asia Region

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CURRENCY EQUIVALENTS
 (Exchange rate effective March 31, 2018)
 Currency unit = Pakistani Rupee (PKR)
 US\$1 = PKR 115.71
 SDR 1 = US\$1.45

FISCAL YEAR
 July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADP	Annual Development Plan
AFD	French Development Agency (<i>Agence Française de Développement</i>)
CETP	Common effluent treatment plant
CO ₂	Carbon dioxide
CPS	Country Partnership Strategy
CRG	Credit risk guarantee
DLI	Disbursement-linked indicator
DLR	Disbursement-linked result
E&S	Environmental and social
EEF	Environmental Endowment Fund
EIA	Environmental Impact Assessment
EMC	Environmental Monitoring Center
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPC	Environmental Policy Center
EPD	Environmental Protection Department
ESSA	Environmental and Social Systems Assessment
ETC	Environmental Technology Center
EU	European Union
FD	Finance Department
FM	Financial management
FSA	Fiduciary Systems Assessment
GDP	Green Development Program
GHG	Greenhouse gas
GoPunjab	Government of Punjab
GSP+	Generalized Systems of Preferences
IDA	International Development Association
IEE	Initial Environmental Examination
IFC	International Finance Corporation
JICA	Japan International Cooperation Agency
LWG	Leather Working Group
M&E	Monitoring and evaluation
MFD	Maximizing Finance for Development
MSMEs	Micro, small, and medium enterprises
MTDF	Medium-term Development Framework
OHS	Occupational health and safety

P&D	Planning and Development
PAP	Program Action Plan
PDO	Program Development Objective
PCU	Program Coordination Unit
PDU	Program Delivery Unit
PEECA	Punjab Energy Efficiency and Conservation Agency
PforR	Program-for-Results
PM	Particulate matter
PM2.5	PM with a diameter of less than 2.5 micrometers
PMIS	Procurement Management Information System
PPP	Public-private partnership
PSC	Program Steering Committee
REACH	Registration, Evaluation, Authorisation, and Restriction of Chemicals Regulation
RECP	Resource-efficient and cleaner production
RF	Results Framework
SBP	State Bank of Pakistan
SMEs	Small and medium-sized enterprises
SORT	Systematic Operations Risk Rating
SPIU	Strategic Planning and Implementation Unit
STAGL	Sialkot Tannery Association (Guarantee) Ltd.
STZ	Sialkot Tannery Zone
TA	Technical assistance
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNIDO	United Nations Industrial Development Organization
VICS	Vehicle Inspection and Certification System

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PAKISTAN
Punjab Green Development Program

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PAD DATA SHEET

Pakistan

Punjab Green Development Program

PROGRAM APPRAISAL DOCUMENT

South Asia Region

Environment and Natural Resources Global Practice

Basic Information

Date:	May 4, 2018	Sectors:	Subnational Government, Manufacturing, Other Energy and Extractives, Sanitation
Country Director:	Patchamuthu Illangovan	Themes:	Environmental Policies and Institutions; Environmental Health and Pollution Management; Transparency, Accountability and Good Governance; Climate Change; Enterprise Development; Energy Efficiency
Practice Manager:	Kseniya Lvovsky		
Global Practice Vice President:	Laura Tuck		
Program ID:	P165388		
Team Leader:	Jiang Ru		
Program Implementation Period:	Start Date:	July 1, 2018	End Date: June 30, 2023
Expected Financing Effectiveness Date:	July 1, 2018		
Expected Financing Closing Date:	June 30, 2023		

Program Financing Data

Loan Grant Other
 Credit

For Loans/Credits/Others (US\$, millions):

Total Program Cost: 273	Total Bank Financing: 200
Total Cofinancing: 73	Financing Gap: 0

Financing Source	Amount (US\$, millions)
BORROWER	73
IDA	200
Total	273

Borrower: Islamic Republic of Pakistan

Responsible Agency: Planning and Development Department, Government of Punjab

Contact: Iftikhar Sahoo Title: Secretary
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Responsible Agency: Environmental Protection Department, Government of Punjab

Contact: Saif Anjum Title: Secretary
Telephone No.: +92-429 910 109 Email: anjum_saif@yahoo.com

Expected Disbursements (in US\$, millions)

Fiscal Year	2019	2020	2021	2022	2023
Annual	38	57	45	38	22
Cumulative	38	95	140	178	200

Program Development Objective(s)

Strengthen environmental governance and promote green investments 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 [X]

Overall Risk Rating: Substantial

Legal Covenants

Legal Covenants

Name	Recurrent	Due Date	Frequency
Overall Coordination	Yes	N/A	Throughout Program implementation

Description of Covenant

Government of Punjab (GoPunjab) to vest in the Planning and Development (P&D) Department and Environmental Protection Department (EPD) the overall responsibility for coordinating the Participating Departments' implementation of Program activities.

Name	Recurrent	Due Date	Frequency
Implementation Units I: Steering Committee, Program Coordination Unit (PCU), and Program Delivery Units (PDU)	Yes	1 month after effectiveness	Throughout Program implementation

Description of Covenant

GoPunjab to establish and thereafter maintain: (a) Steering Committee to provide policy guidance and direction to PCU and PDUs on Program implementation, and oversee the progress of Program activities and the achievement of disbursement linked indicators (DLIs); (b) a PCU within the P&DD to carry out the overall program coordinating; and (c) a PDU within the relevant provincial departments (other than EPD) to serve as program delivery units for the carrying out of their respective activities.

Name	Recurrent	Due Date	Frequency
Implementation Units – II	Yes	3 months after effectiveness	Throughout Program implementation

Description of Covenant

GoPunjab to establish and thereafter maintain a strategic planning and implementation unit within the EPD to implement EPD's activities under the Program including recruitment of the independent verification agent(s) and coordinating the verification of DLIs/disbursement linked results (DLRs).

Name	Recurrent	Due Date	Frequency
Environmental Endowment Fund	No	Prior to capitalization	N/A

Description of Covenant

GoPunjab to: (a) establish the fund's legal and institutional framework, including governance arrangements, capital structure, operational policies and procedures, including criteria and terms and conditions for the provision of financing for environmental protection proposals; (b) appoint the fund's board of directors and essential staff; and (iii) hire a professional fund manager.

Name	Recurrent	Due Date	Frequency
Investments to resource efficiency and cleaner production (RECP) Technology	Yes	N/A	Throughout Program implementation

Description of Covenant

GoPunjab to: (a) screen the RECP investment proposals and beneficiary small and medium enterprises (SMEs) to ensure compliance with applicable laws and regulation on child and force labor; and (b) enter into written commitment with beneficiary SME for it to: (i) abide by, and comply with, the applicable laws and regulations on child and forced labor; (ii) attain full compliance with social and environmental standards applicable to the respective investments, accept random unannounced physical and documentary inspections by GoPunjab and/or the Association.

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 Association.

Name	Recurrent	Due Date	Frequency
Verification Protocols	Yes	6 months after effectiveness	Simi-annually (February 28 th and August 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 Association, as well as verification of SME compliance with the legal requirements of the RECP technology investments.

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 Association.

Name	Recurrent	Due Date	Frequency
Mid-Term review	No	June 30, 2020	N/A

Description of Covenant

GoPunjab to prepare and furnish to GoP and the Association a mid-term review report 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 Association's views on the matter.

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Jiang Ru	Sr. Environmental Specialist	Task management	GEN06
Marcelo Acerbi	Sr. Environmental Specialist	Environmental management	GEN06
Ahmad Imran Aslam	Environmental Specialist	Environmental management	GEN06
Kiran Afzal	Sr. Private Sector Specialist	Private sector development	GFCSN
James Monday	Sr. Environmental Engineer	Environmental assessment	GEN06
Babar Naseem Khan	Social Development Specialist	Social and gender assessment	GSU06
Akram El-Shorbagi	Sr. Financial Management Specialist	Expenditure and IFSA	GGO24
Haider Raza	Sr. Procurement Specialist	Procurement	GGO06
Martin Serrano	Sr. Counsel	Program lawyer	LEGES
Antoine Coste	Young Professional	Green competitiveness	GFPCPN
Namoos Zaheer	Sr. Financial Sector Specialist	Subnational financing	GFCSN

Mihasonirina Andrianaivo	Sr. Financial Sector Specialist	SME financing	GFCSS
Victor Ordonez	Sr. Finance Officer	Disbursement	WFACS
Anwar Ali Bhatti	Financial Analyst	Disbursement	SACPK
Mohammad Yasin	Sr. Program Assistant	Program support	SACPK
Poonam Rohatgi	Sr. Program Assistant	Program support	GEN06
Abdul Qadir	Sr. Executive Assistant	Program support	SACPK

Non-Bank Staff

Name	Title	City
Azher Uddin Khan	Consultant, Resource efficient and cleaner production	Lahore
Sohail Younas Moghal	Consultant, Private sector development	Lahore
Simon Bell	SME financing	DC

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 economic growth and substantially reduced poverty. Provisional official estimates suggest that the gross domestic product grew by 5.8 percent for FY17/18, up from 5.4 percent in FY16/17, and the government growth target for FY19 is 6.2 percent. Fiscal and external imbalances may, however, erode these gains in future if not addressed. The national poverty headcount declined from 64.3 percent in FY02 to 29.5 percent in FY14, however, inequality persists and the country continues to rank low on the human development index, at 147th out of 188 countries.

2. **Several factors, including rapid population growth, industrialization, urbanization, and motorization, have resulted in growing environmental degradation and pollution.** On Yale's 2018 Environmental Performance Index, Pakistan ranked 169 out of 180 countries. It ranked 177 on the environmental health subindex (air quality, water and sanitation, and exposure to heavy metals), ahead of only India, Nepal, and Bangladesh. Pollution is estimated to cause around 340,000 deaths per year in Pakistan, over 70 percent of which are due to air pollution.¹ This represents a quarter of total annual deaths in the country, making Pakistan one of the world's most affected countries. A recent World Bank study estimated that in 2013 air pollution alone caused welfare losses and foregone labor output equivalent to 5.9 percent and 0.8 percent of gross domestic product, respectively.² Furthermore, energy consumption in Pakistan has grown rapidly, contributing to increased emissions of both greenhouse gases (GHGs) and associated air pollutants, such as particulate matter (PM). In addition to air pollution, the quality of Pakistan's water resources has deteriorated due to water pollution, which has become a major public health threat and has further exacerbated water scarcity in the country. Improving Pakistan's air and water quality will have positive impacts on public health and contribute to both climate mitigation and adaptation.

3. **Addressing pollution is key to reducing poverty and improving gender equality.** As in many other countries, poor people in Pakistan generally bear the brunt of pollution, as they are more likely to live and work in polluted areas and have less capacity to pay for access to cleaner air or water.³ While gender-informed analysis on the impact of pollution is lacking in Pakistan, women and children are known to be disproportionately affected by pollution and environmental degradation in low- and middle-income countries, notably because of rising PM concentrations in cities. Improving gender equality has been identified as an indirect benefit of reducing pollution, as women and girls experience higher exposure to indoor air pollution and spend time fetching clean water that they could otherwise use for productive work and education.⁴ Children are highly sensitive to air and water pollutants, and even very low exposure to some toxins during pregnancy or early infancy can have lifetime consequences in terms of birth defects, diseases, disability, cognitive impairment, and death.⁵ This again affects women, who are often the primary caretakers for children and other particularly vulnerable groups, such as the elderly.

¹ Lancet Commission on Pollution and Health, 2017. <http://www.thelancet.com/commissions/pollution-and-health> (see <https://www.pollution.org> for country-level data).

² World Bank. 2016. *The Cost of Air Pollution: Strengthening the Economic Case for Action*.

³ World Bank. 2014. *Cleaning Pakistan's Air*.

⁴ Lancet Commission on Pollution and Health, 2017, op. cit.

⁵ Lancet Commission on Pollution and Health, 2017, op. cit.

B. Sectoral and Institutional Context

4. **Punjab, Pakistan’s second-largest and most populous province, is particularly affected by pollution.** Air quality in the province’s cities, including Lahore (the country’s second-largest city, with over 11 million inhabitants) has deteriorated in recent years, notably because of increasing pollutant emissions from industries,⁶ vehicles, power generation, and open trash and crop burning. This has resulted in increasingly severe smog episodes in the fall months each year, which—depending on weather patterns—can extend throughout Punjab. Moreover, Punjab’s surface water and groundwater are seriously polluted by untreated municipal, agricultural, and industrial wastewater. In the absence of adequate facilities, solid waste, including increasing volumes of plastic waste, is disposed of with minimum sanitary measures. Current trends, including industrialization and urbanization, suggest that issues related to air, water, and soil pollution in Punjab will worsen unless the institutional and technical capacity of the organizations responsible for pollution management is strengthened, and unless targeted interventions are made to promote a greener growth trajectory and eliminate or control such pollution releases.

5. **Ambitious efforts are needed in Punjab to reduce the rising social and economic costs of environmental degradation.** Pollution is responsible for major health costs and risks (for example, recent increases in traffic accidents due to smog) for residents of the province. It is also slowing productivity in sectors such as leather, transport, and agriculture.⁷ Likewise, growing energy demand and erratic energy supply contribute to pollution because small diesel electric generators are commonly used. In industries, studies have shown significant potential to introduce cost-effective technologies and practices for more resource-efficient and cleaner production (RECP) that would foster firms’ competitiveness while reducing their environmental footprint and energy consumption. There is also clear scope for progress in sectors such as waste management, transport, and agriculture. Over the last 20 years Punjab has implemented several policies, regulations, and interventions to address environmental challenges—for example, establishment of Cleaner Production Centers, a ban on the burning of agricultural and municipal solid wastes, closing of polluting steel mills, and increased vehicle emission inspections. However, the lack of effective environmental governance and comprehensive green growth strategies and of instruments to promote green investments is an obstacle to reducing pollution discharges from all sectors and promoting the sustainable development of the province.

6. **Environmental management is decentralized in Pakistan, and provincial authorities in Punjab are committed to improving their capacity to address environmental degradation.** The 18th Constitutional Amendment, adopted in 2010, devolved the responsibility for environmental planning, pollution control, and pollution prevention to the provinces, which still have very limited capacity to carry out such responsibilities. In 2015, the Government of Punjab (GoPunjab) adopted an Environment Policy laying out its vision and priorities for environmental management in the province.⁸ Since then, GoPunjab has been under increasing pressure to curb the growing smog crisis, which has made national and

⁶ Many industrial units of all sizes use furnace oil with high sulfur content. Moreover, small and medium-sized enterprises (SMEs) such as brick kilns and steel reolling mills often use “waste” fuels such as old tires, paper, wood, and textile waste.

⁷ World Bank. 2014. *Revitalizing Industrial Growth in Pakistan*.

⁸ <http://epd.punjab.gov.pk/system/files/Draft%20Punjab%20Environment%20Policy%202015.pdf>.

international headlines,⁹ with citizens vocal on social media and presenting their cases in courts.¹⁰ To improve environmental governance and promote the sustainable development of its economy, GoPunjab has requested the World Bank’s support to address the environmental challenges facing the province.

7. **Under the proposed Punjab Green Development Program (GDP), the provincial authorities will step up their efforts to strengthen environmental management and mainstream green development.** The scope and priorities of the Program, developed through extensive stakeholder consultations organized during Program preparation, include strengthening the technical and administrative capacity of the provincial Environmental Protection Department (EPD) and its Environmental Protection Agency (EPA) to provide better services to the population and the private sector, modernizing the legal and regulatory framework, and promoting investments in cleaner technologies at the provincial level to reduce air and water pollution releases from priority sectors.

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

8. **The proposed Punjab GDP is aligned with the World Bank Group’s Country Partnership Strategy (CPS) (FY15–20)¹¹ and with the twin goals of ending extreme poverty and promoting shared prosperity.** Improving environmental governance and promoting sustainable private sector development, notably for small and medium-sized enterprises (SMEs), will support growth and benefit the poor. The Program will contribute to making industrial and urban development more compatible with environmental sustainability in Punjab, as promoted in the World Bank Group’s Environment Strategy (2012–2022). It is consistent with all four strategic themes of the CPS—energy, private sector development, inclusion, and decentralized service delivery—and with the latest adjustments to the CPS following the May 2017 Performance and Learning Review, with a greater emphasis on energy efficiency, financial inclusion, urban management, and growth of micro, small, and medium enterprises (MSMEs). Specifically, it will directly contribute to CPS Outcomes 2.1 (Improved Business Environment for Private Sector) by improving environmental governance and promoting green technologies, 3.1 (Improved Financial Inclusion for MSMEs and Women) by developing green financing schemes, and 4.4 (Adoption of Performance and Transparency Mechanisms in Selected Institutions) by promoting information disclosure and citizen engagement in environmental management. It will also contribute to the CPS’s second cross-cutting area (strengthen provinces’ capacity for service delivery and clarify articulation with the federal government) and third cross-cutting area (climate change adaptation and mitigation by supporting low-carbon development).

9. **The World Bank is well positioned to support green development in Punjab through this Program-for-Results (PforR) operation.** The proposed Punjab GDP was prepared by a team that included the Environment and Natural Resources, Water, Urban and Finance, and Competitiveness and Innovation Global Practices, in close cooperation with the International Finance Corporation (IFC). It builds on the World Bank Group’s recent and ongoing engagements on environmental management, urban

⁹ For instance: “Is Punjab ready to tackle smog this year?” (*Dawn*, October 14, 2017); “In Lahore, Pakistan, Smog Has Become a ‘Fifth Season’” (*New York Times*, November 10, 2017); “Up in Smog” (*The News on Sunday*, November 12, 2017).

¹⁰ On October 21, 2017, GoPunjab introduced a “Policy and Action Plan for Control, Mitigation, Advisory and Protective Measures in Extreme Weather Conditions of Dense Smog in the Punjab,” after the Lahore High Court set a deadline for the adoption of such a smog policy. (<http://epd.punjab.gov.pk/system/files/Policy%20on%20Controlling%20Smog%20%28Final%29.pdf>).

¹¹ Report No. 84645-PK, discussed at the Board on May 1, 2014.

development, and green industrial development in Pakistan and Punjab, including analytical work,¹² advisory services and technical assistance (TA),¹³ and lending operations. The Program complements interventions supported by such ongoing projects as (a) the Punjab Agriculture and Rural Transformation Program (P162446), approved in December 2017, supporting the development of surface water and groundwater policy, better fertilizer management, and sound pesticide use; (b) the Punjab Cities Program (P156972), under preparation, focusing on service provision in selected urban areas; (c) the Pakistan Punjab Jobs and Competitiveness Program (P155963), under implementation, supporting capacity building for EPA and the development of common effluent treatment plants (CETPs) in industrial estates; and (d) the Sustainable Energy Financing Program (IFC), providing financing in US dollars to commercial banks to support investments in energy efficiency and renewable energy. The World Bank's global experience on these topics will help GoPunjab to learn from international best practices through this operation.

10. **GoPunjab has substantial experience with the PforR instrument and is keen to extend its use to the environment sector and green development.** This instrument is appropriate for the proposed engagement given the Government's need to take prompt actions and deliver concrete results in addressing its environmental challenges to respond to mounting public pressure. Technically, GoPunjab has been using a solid multisectoral program of reforms and investments—the Medium-Term Development Framework (MTDF)—to promote social and economic development. The latest MTDF (2017–2020) includes concrete activities on environmental governance and green development (discussed in the following sections), which provide a good foundation for developing a PforR to provide timely support, as requested by GoPunjab. The proposed Program will enable an integrated design and implementation for these activities, and its strong focus on institutional capacity building and transparent environmental governance through information disclosure and citizen engagement will ensure lasting results.

II. PROGRAM DESCRIPTION

A. Government Program

11. **GoPunjab has developed a broad program to address environmental issues and promote green development in Punjab in the short, medium, and long term.** This program is presented in recent strategic documents adopted by GoPunjab, such as the Punjab Environment Policy 2015, the Punjab Smog Policy 2017, and the Punjab Climate Change Policy (under preparation). The objectives of these policies are to improve environmental quality in the province and reduce air, soil, and water pollution; address deforestation, floods, and land degradation; manage surface water and groundwater resources; conserve natural resources and protect biodiversity; promote sustainable urbanization and industrialization; develop public transportation and other alternatives to private motorized vehicles; integrate environmental considerations in public policymaking and private investments; comply with international standards and enhance green competitiveness; and promote resource and energy efficiency. The EPD is

¹² Including the World Bank studies *Green Industrial Growth: Mainstreaming Environmental Sustainability in Pakistan's Industrial Sector* (2012); *Cleaning Pakistan's Air* (2014); *Revitalizing Industrial Growth in Pakistan* (2014); and *Baseline Assessment for Resource Efficient Cleaner Production in Punjab, Pakistan* (2018), and the IFC report *Cleaner Production in Pakistan* (2016). Additionally, a new *Pakistan Country Environmental Analysis*, now under preparation, will cover Punjab.

¹³ IFC Punjab Energy (ID 599497), *Resource Efficiency and Cleaner Production in South Asia* (P161784).

the main department responsible for ensuring the implementation of these policies, in coordination with relevant line departments.

12. **These environmental and developmental priorities are translated into concrete activities and expenditures in the Government’s MTFD.**¹⁴ The MTFD for FY18–20 and the linked annual development plans (ADPs) for each sector detail yearly budget allocations for the different activities, which are to be financed through domestic resources and donor support.¹⁵ Overall, the MTFD plans expenditure in social sectors, infrastructure development, production sectors, services sectors, and others amounting to over US\$20 billion for these three fiscal years. A cross-sectoral subset of these resources (found mainly in the ADPs for Environment, Industries, Energy, Transport, Forestry, Irrigation, Water and Sanitation, Urban Development, and Local Government and Community Development) is allocated to activities directly contributing to GoPunjab’s environmental and green development objectives, with a budget of about US\$2 billion. This subset of the MTFD is treated as GoPunjab’s program for the development of the proposed PforR operation.

13. **The Punjab GDP is a subset of GoPunjab’s planned environmental expenditures, encompassing ongoing activities and key new priorities.** On the basis of GoPunjab’s strategies for environmental management and green development, a review of budget items under GoPunjab’s program, stakeholders’ recommendations, the EPD restructuring studies supported by the World Bank’s Jobs and Competitiveness Program, and international best practices, GoPunjab and the World Bank determined the scope for the Punjab GDP, including both existing budget items and a number of new activities. Several environmental and sustainable development priorities of GoPunjab—such as agriculture, forestry, public transportation, water supply and sanitation, and flood control—were not included in the Program’s scope, because they are already supported by other donor operations (including those of the World Bank Group) or require investments that are best supported by Investment Project or Development Policy Financing.

B. Program Development Objectives (PDOs) and Key Results

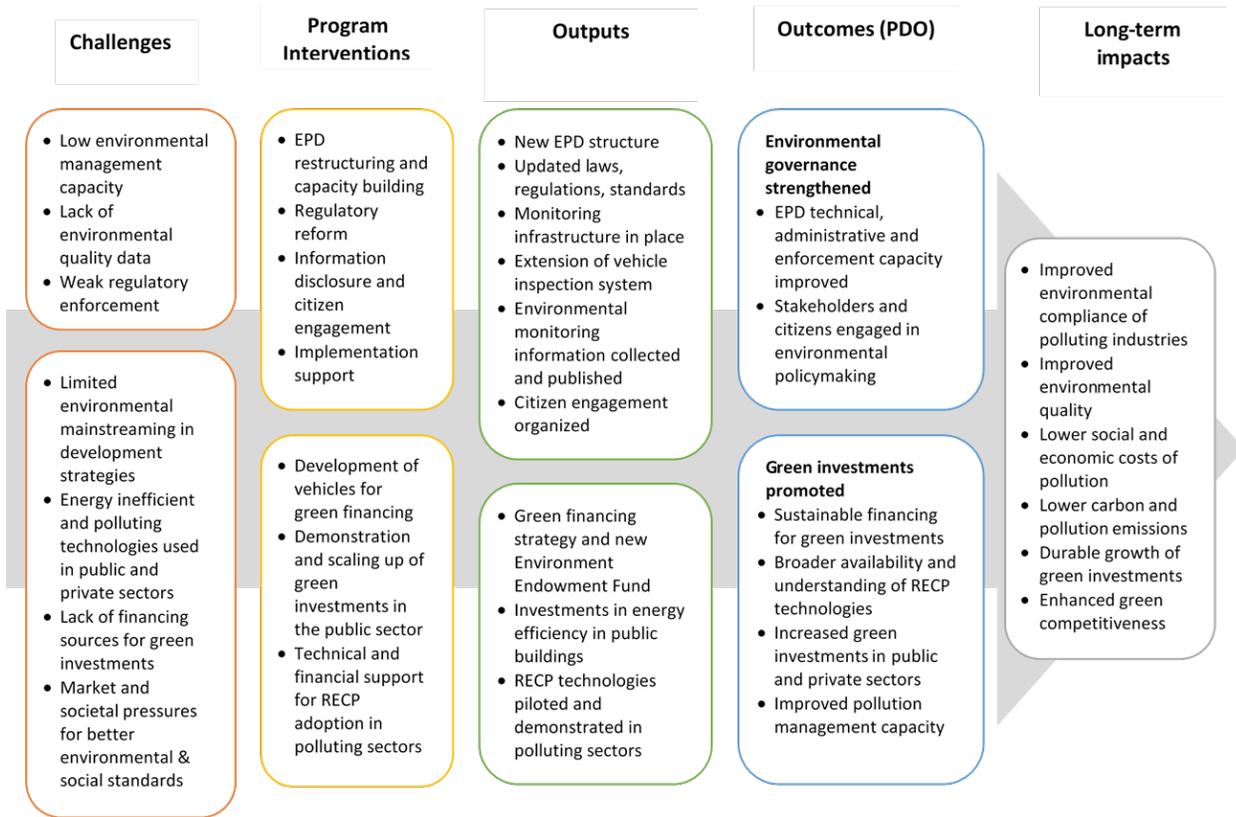
14. **The PDOs of the Punjab GDP are to strengthen environmental governance and promote green investments in Punjab.** Accordingly, the Program will cover two results areas: (a) strengthening environmental governance, and (b) promoting green investments. Activities under the first results area will aim to restructure the EPD, reform the environmental regulatory regime, and build the EPD’s capacity to deliver transparent and efficient environmental management services to the private sector and to the public. Activities under the second results area aim to promote selected green investments in both the public and private sectors and develop green financing schemes to finance such investments beyond the implementation period of this Program. Together, these efforts will help GoPunjab address pollution issues from the source, improve energy and resource efficiency in targeted sectors, and increase the green competitiveness of key industries. For this Program, green investments are defined as investments in infrastructure, facilities, technologies, and practices that contribute substantially to an improved environment compared to traditional investments. The theory of change underlying the Program is summarized in Figure 1. Following Maximizing Finance for Development (MFD) principles, the Program was designed to use public resources to leverage private capital for green development.¹⁶

¹⁴ <http://www.pndpunjab.gov.pk/mtdf>.

¹⁵ The ADP also provides a lump-sum allocation for budgets beyond the three fiscal years covered by the ADP.

¹⁶ Details on MFD are discussed in the technical assessment summary (Section IV.A) and in the Program’s Technical Assessment Report, which will be disclosed on the project website together with the Program Appraisal Document after the Board approval of this Program.

Figure 1. Theory of Change of the Program



15. **Program key results under each results area are listed here.** The full Results Framework (RF) of the Program, including intermediate results indicators, is detailed in Annex 1.

- **Strengthening environmental governance:** (a) average time to obtain Initial Environmental Examination (IEE) approval of investments with low safeguards risks, (b) stack emission and effluent discharge inspections carried out by EPA, and (c) disclosure of environmental information and citizen engagement.
- **Promoting green investments:** (a) volume of carbon emissions avoided from green investments, and (b) volume of new public and private capital leveraged for green investments.

16. **Regarding air pollution, the Program will address both local impacts and GHG emissions.** Because there are data and monitoring capacity constraints, estimated reductions in carbon emissions will be the main indicator tracked and will be used as a proxy for pollutants with more localized impacts, such as PM with a diameter of less than 2.5 micrometers (PM2.5). While the Program was largely motivated by the need to address the local consequences of pollution, as argued earlier the local and global dimensions of air pollution are closely linked and Program-supported actions will help on both fronts. Moreover, Pakistan’s contribution to global GHG emissions is expected to keep growing because of the dynamism of its economy, justifying a focus on carbon emissions. However, Program activities will strengthen GoPunjab’s capacity to monitor, analyze, and publish data on local pollutants, which GoPunjab will begin to monitor regularly during Program implementation.

17. **The Program will benefit both the public and private sectors, as well as the general public in Punjab.** Direct beneficiaries will include all provincial agencies, public institutions, targeted polluting industries, and commercial entities, which will benefit from the Program’s financial and technical support, an improved regulatory framework, and a more efficient and transparent environmental management system. On the public side, inhabitants of Punjab will benefit from access to high-quality and timely information about environmental quality in the province and, over time, from a less polluted environment and reduced health risks.

18. **The Program will have positive impacts on women and other vulnerable population groups in Punjab.** As noted earlier, women, children, and the elderly are particularly vulnerable to degraded environmental quality. Positive impacts from the Program will stem from its contribution to improved occupational health and safety (OHS) and labor conditions in beneficiary firms, and to reduced discharges of polluted air and water into the environment. In addition, the Program will use the proposed study on the health impacts of pollution in Punjab to collect and disseminate evidence on the scale and severity of such impacts, notably on women and girls. The EPD will also develop a health advisory system targeting women and other vulnerable demographics based on air quality indices. Finally, the Program will set up a funding window to finance environmental protection proposals that particularly benefit vulnerable groups.

C. PforR Program Scope

19. **As Table 1 shows, the planned Program expenditures over five years amount to US\$273 million, of which US\$200 million will be financed by the International Development Association (IDA) of the World Bank Group.** The proposed Punjab GDP will finance a total of 18 budget items (see Table 2). These items include (a) 8 selected activities featured in the MTFD (2017–2020) and ADPs (2017–2018), four of which have expanded scopes to better contribute to the PDOs; and (b) 10 new activities that GoPunjab has agreed to add in the MTFD (2018–2021) and ADPs (2018–2019) for the environment, finance, energy, and transport sectors. Overall, the corresponding expenditures will finance a mix of regulatory and institutional reforms, capacity building and TA, green investments in both public and private sectors, small-scale infrastructure development, monitoring and evaluation (M&E), and communications and citizen engagement activities. Table 2 includes indicative budget allocations for these 18 budget items over the five-year Program implementation period.

Table 1. Program Financing

Source	Amount (US\$ millions)	Percentage of total
Government	73	27
IDA	200	73
Total Program Financing	273	100

Table 2. Expenditure Framework of the Punjab GDP

Scope	Budget item	GS no	Expenditure types	Responsible Department	Eligible costs (US\$ million)	Y1	Y2	Y3	Y4	Y5
Results Area 1: Strengthening Environmental Governance										
EPD Restructuring	EPD Restructuring and Program Capacity Building	9293	New organizational setup; operating costs under the Program; capacity building for EPD and other relevant departments	EPD	22.6	2.3	4.5	6.8	4.5	4.5
	Establishment of Environmental Technology Center (ETC)	9291	Creation of new center; consultancy services; staff hiring; operating costs under the Program		13.5	1.4	2.7	4.1	2.7	2.7
	Establishment of Environmental Monitoring Center (EMC)	New	Water monitoring stations, mobile monitoring equipment, and a reference laboratory; certified green building		35.2	3.5	7.0	10.6	7.0	7.0
	Establishment of Environmental Policy Center (EPC)	New	Creation of new center; staff hiring; operating costs under the Program		2.3	0.2	0.5	0.7	0.5	0.5
	Air and Water Quality Monitoring Capacity Building	9288	Air monitoring stations, monitoring vehicles, monitoring equipment		10.3	2.4	7.9			
Regulatory Reform	Revision, Development of Environmental Quality and Industry-Specific Standards	9282	Consulting services for development of standards	EPD	0.3	0.0	0.1	0.1	0.1	0.1
	Policy and Regulatory Reforms	New	Consulting services on policy studies		5.0	0.5	1.0	1.5	1.0	1.0
	Expansion of Vehicle Inspection and Certification System	9258	Transaction advisory services for public-private partnership (PPP)	Transport	0.5	-	0.5	-	-	-
	Study on Safety and Emission Compliance of New Vehicles	New	Consulting services		0.3	-	0.3	-	-	-
Citizen Engagement	Public Disclosure, Awareness Raising, and Citizen Engagement	New	Consulting and non-consulting services	EPD	3.2	0.3	0.6	0.9	0.6	0.6
Implementation Support	Strengthening of Strategic Planning and Implementation Unit	9287	Staff hiring; operating costs under the Program	EPD	7.6	0.8	1.5	2.3	1.5	1.5
	Technical Support for Program Implementation and Independent Verification	New	Consulting services		6.0	0.8	1.2	1.6	1.2	1.2
Subtotal					106.6	12.1	27.8	28.5	19.1	19.1
Results Area 2: Promoting Green Investments										
Green Financing	Green Financing Strategy	New	Consulting services	Finance	2.7	0.3	0.5	0.8	0.5	0.5
	Environmental Endowment Fund (EEF)	New	Fund capitalization	EPD	55.0	-	50.0	-	-	5.0
Public Sector Investments	Energy Efficiency and Conservation Program	8254	Non-consulting services	Energy	32.9	12.8	7.4	5.4	4.0	3.3
	Pilot of Low-cost Wastewater Treatment Technologies	New	Works	EPD	9.0	0.9	1.8	2.7	1.8	1.8
Private Sector Investments	Pilot / Demonstration of RECP Technologies	9284 / 9292 / 9289	Works/goods	EPD	57.8	3.6	13.5	13.5	13.5	13.5
	Support to Sialkot Tanneries	New	Works/goods		9.0	0.9	1.8	2.7	1.8	1.8
Subtotal					166.4	18.5	75.1	25.2	21.7	25.9
Total					273.0	30.6	103	53.7	40.8	45.1

Results Area 1: Strengthening Environmental Governance

20. **EPD restructuring and capacity building.** The Program will support the EPD in improving its organizational structure, reforming its regulatory regime, and modernizing its administrative procedures and systems. Institutionally, this will include the creation of an Environmental Monitoring Center (EMC) with a network of air and water quality monitoring equipment and a reference laboratory; an Environmental Policy Center (EPC) to support sound environmental policymaking (for example, pollution management, resource uses, and climate mitigation/adaptation); and an Environmental Technology Center (ETC) to identify, pilot, and demonstrate RECP and pollution control technologies for priority sectors and GHG sources. To address the lack of facilities, which drastically limits the EPD's capacity to perform its functions, the Program will also finance the construction of a green building in Lahore to host the EMC and other EPD agencies.

21. To provide better and more transparent services to the public and private sectors, the Program will support EPD in improving its procedures and systems, including environmental approval; grievance redress; environmental monitoring, inspection, and enforcement; interagency coordination; and environmental information disclosure and citizen engagement. TA and capacity-building activities will help strengthen the EPD's technical and administrative capacity and improve the capacity of other provincial departments¹⁷ to manage environmental and social issues, including those that may arise from Program-supported activities. Finally, the Program will support industrial associations in developing their technical knowledge and understanding of available green/RECP technologies.

22. **Regulatory reforms.** The Program will assist GoPunjab in updating or establishing environmental policies, laws, and standards, including the following:

- (a) **Legislation.** (i) Revision of the Environmental Protection Act 1997, and (ii) development of an environmental information disclosure and citizen engagement regulation.
- (b) **Policy initiatives.** (i) Pollutant release and transfer register; (ii) pollution levy system; (iii) health advisory system targeting vulnerable groups (e.g., women and children); (iv) strategies for air/water quality and integrated waste management; and (v) development and implementation of a plastics management strategy and a regulation on the production and consumption of single-use plastics.
- (c) **Environmental standards.** Revision of provincial environmental quality standards and development of new ones, including industry-specific standards.
- (d) **Studies.** (i) Pollution impacts on public health, with a focus on vulnerable groups, including the poor, women, children, and the elderly;¹⁸ (ii) sustainable transport strategy, notably considering ways to improve vehicle fuel efficiency, promote public transport, and reduce traffic congestion and pollutant emissions; and (iii) green industrial and industrial estate development strategy.

23. Given the large contribution of vehicles to air pollution, the Program will support GoPunjab in strengthening its control over vehicle emissions. Specifically, the Transport Department will expand the

¹⁷ These departments include the Planning and Development (P&D) Department; Departments of Health, Transport, Energy, Mining, Agriculture, Women Development, Labor, and Irrigation; Housing, Urban Development, and Public Health Engineering Department; Industries, Commerce, and Investments Department; Local Government and Community Development Department; and Punjab Information Technology Board.

¹⁸ Documenting the impacts of pollution on these disproportionately affected groups is a recommendation of the 2017 Lancet Commission on Pollution and Health.

scope of its existing public-private partnership (PPP) for the Vehicle Inspection and Certification System (VICS) to cover the entire fleet, including private vehicles. It will also study the institutional and regulatory framework needed to ensure that new vehicles comply with safety and emission standards, with a focus on rickshaw production. Finally, the Program will help EPD develop its capacity to test the emissions of new vehicle engines.

24. **Information disclosure and citizen engagement.** The Program will strengthen EPD's capacity to disclose environmental information and engage citizens in environmental management through (a) the timely disclosure of environmental monitoring data online and through other channels (such as TV, newspaper, and radio) in both English and Urdu; (b) the annual public consultation on and publication of a report on the state of Punjab's environment in both English and Urdu; (c) the strengthening of existing citizen feedback and grievance redress schemes (for example, telephone hotlines and interactive internet portal); and (d) awareness campaigns on pollution management (for example, the management of single-use plastics) and green development.

25. **Implementation support.** EPD's capacity to lead overall Program implementation will be strengthened. Specifically, GoPunjab has decided to increase budget support to the EPD's Strategic Planning and Implementation Unit (SPIU) to manage Program implementation, including creating a Social Unit within the SPIU to manage the social aspects of Program activities. In addition, GoPunjab will mobilize external technical expertise for implementation as needed, and will retain an independent firm for the verification of Program results.

Results Area 2: Promoting Green Investments

26. Under the Program, GoPunjab will promote green financing as a way to mobilize resources for green investments beyond the Program's implementation period, and will directly support priority green investments in both the public and private sectors.

(a) Green Financing

27. Recognizing the importance of long-term financing for green investments, the Punjab GDP will support the development of a green financing strategy and an Environmental Endowment Fund (EEF).

28. **Green Financing Strategy.** The Finance Department (FD) will develop this strategy in close coordination with the EPD; Planning and Development (P&D) Department; the Industries, Commerce, and Investments Department; and other public and private stakeholders. Four aspects of green financing will be explored:

- (a) **Green Banking Guidelines.** The strategy will examine how to support commercial banks in operationalizing the October 2017 Green Banking Guidelines issued by the State Bank of Pakistan (SBP).¹⁹ Specifically, GoPunjab will work with commercial banks to improve their capacity to manage the environmental and climate risks associated with their investment portfolios and promote green investments.
- (b) **Green SME financing.** GoPunjab will work with commercial banks to design effective mechanisms to enhance SMEs' access to finance for green investments. In line with international best practices, such a scheme would enhance credit access on a commercial basis, focus on lowering risk through instruments such as credit risk guarantees (CRGs), and provide technical support and incentives to SMEs to prepare bankable projects for sound

¹⁹ See <http://www.sbp.org.pk/smefd/circulars/2017/C8-Annex.pdf>

green investments.²⁰ This work will be coordinated with SBP's national-level SME finance initiatives.²¹

- (c) **PPPs for environmental infrastructure.** The strategy will explore the opportunities and constraints for GoPunjab to make better use of PPPs to finance key public infrastructure to address Punjab's environmental challenges (for example, wastewater treatment and waste management facilities).
- (d) **Green bonds/sukuk.** To mobilize domestic capital markets as a sustainable source of finance for green investments, the FD will develop a set of principles for the issuance of green bonds/sukuk (Islamic bonds).²²

29. **EEF.** In line with the Punjab Environmental Protection Act, 1997 (amended 2012), which authorizes the creation of a provincial fund to finance environmental projects, GoPunjab will establish the EEF, including (a) establishing the board and secretariat, and selecting a professional fund manager; (b) capitalizing the fund with US\$55 million from the Program, to ensure that sufficient investment returns are generated to finance eligible environmental activities; and (c) adopting fund management procedures (for example, selection and financing of proposals, M&E, and reporting on the use of fund resources). Through the secretariat, the fund will issue regular calls for proposals to finance research, RECP pilots and demonstration activities, civil society proposals, and awareness-raising activities. The EEF will also set up a window for proposals that particularly benefit vulnerable groups. It is expected that GoPunjab will continue contributing to this fund to gradually strengthen its financial capacity and long-term impacts.

(b) Public Sector

30. The Program will include two areas of intervention in the public sector to generate quick results in reducing air and water pollution and GHG emissions: energy efficiency and conservation, and demonstration of low-cost domestic wastewater treatment technologies. For the first area, the Punjab Energy Efficiency and Conservation Agency (PEECA) of the Energy Department will install energy-efficient light bulbs and electric fans in the 50 public institutions in Punjab with the highest energy consumption, building on a successful IFC-financed pilot. PEECA will also develop (a) an Energy Conservation and Efficiency Strategy and Policy for the province, (b) a study on energy consumption norms for energy-intensive industries and the public sector, and (c) energy efficiency standards and labeling for air conditioners. For the second area of intervention, EPD will identify, design, and pilot low-cost and decentralized technologies, such as constructed wetland, to treat domestic wastewater for small towns, villages, housing colonies, and the like. For all pilot areas, GoPunjab plans to use public land that will be selected through stakeholder consultations. In addition to reducing the releases of local air pollutants (such as oxides of nitrogen and sulfur and fly ash) and water pollutants (such as organic matters and nitrogen), these pilots will contribute to both climate adaptation, by facilitating decentralized access to clean water, and mitigation, by reducing the energy needed to treat wastewater and related GHG emissions.

(c) Private Sector - RECP Piloting and Demonstration

31. **EPD will support the identification, piloting, and provincewide demonstration of suitable RECP technologies for Punjab's industries.** This will respond to requests received by GoPunjab from several

²⁰ GoPunjab may subsequently launch a green SME financing scheme, which is currently not included in the Program.

²¹ The World Bank is currently supporting the SBP in redesigning its central CRG scheme for SME financing; this effort is expected to result in a new CRG scheme and company that will be run on a sustainable basis.

²² This activity will be closely coordinated with the World Bank's ongoing support to the FD on subnational financing, including for the issuance of GoPunjab's first regular bond, expected in 2018.

polluting industries for technical and financial support to improve their environmental performance. The technologies to be demonstrated are expected to improve both the financial and environmental performance of polluting firms. All beneficiary firms will commit to achieving environmental compliance at the successful completion of their investments. Direct support to SMEs with low technical and financial capacity through matching grants is justified by the large environmental externalities to be addressed in terms of air and water pollution and GHG emissions, and by the strong expected demonstration effects. The specific RECP technologies, levels of support, and criteria for firm selection will be decided in consultation with the relevant industrial associations and the World Bank, and will be disclosed before the pilots are launched. Piloted technologies with the highest potential to help industries achieve environmental compliance will be recommended for future scaling up. The EPD will also assist SMEs that are interested in adopting demonstrated RECP technologies to prepare loan proposals, connect them with commercial lenders, and support them through the loan appraisal processes.

32. RECP piloting and demonstration efforts will focus on a few priority polluting sectors and will directly support a small number of SMEs in each of them. Overall, the EPD plans to provide grant support to around 500 SMEs in different industries. During Program preparation, two priority sectors were identified:²³

- **Bricks:** It is estimated that Punjab has over 10,000 brick kilns. Brickmaking is a large source of employment and income, but also a major contributor to air pollution and GHG emissions. While mature cleaner production technologies have been widely adopted elsewhere in South Asia, they are still new to Pakistan; only one such technology has been successfully piloted at a kiln in Raiwind, Punjab, in 2017 with external TA and partial financial support from EPD.
- **Leather:** Pakistan's second-largest export industry, this sector employs between 500,000 and 1 million workers and is a major source of water use and pollution. Its inability to comply with international buyers' environmental and social standards has become a significant threat to competitiveness, contributing to a recent decline in exports.²⁴ Program support for RECP technologies will help the sector improve its compliance.

33. In the leather sector, the Program will also support an initiative to relocate polluting tanneries in the city of Sialkot to a dedicated industrial estate. Sialkot is one of three tannery centers in Punjab. Its 250 tanneries (about one-third of the tanneries in the country) are operating in 10 clusters in the city with very limited wastewater treatment and are thus polluting the groundwater. Under the Program, GoPunjab will support the industry-led Sialkot Tannery Zone (STZ) project by financing the construction of (a) a grid connection station, (b) the zone's wastewater collection system, (c) a training center with a focus on RECP technologies and OHS, and (d) financial incentives for tanners to transfer their production to STZ.²⁵ In

²³ Additional polluting industries—stone crushers, rice husking mills, steel furnaces and rerolling units—may be included in the RECP pilot and demonstration scheme during Program implementation. Detailed assessments of technical, environmental, and social impacts will be conducted for each sector after each pilot.

²⁴ Major brands (for example, Adidas, H&M, IKEA, and Nike) are increasingly seeking to buy products from manufacturers that are compliant with international standards set by the Leather Working Group (LWG) as well as the Registration, Evaluation, Authorisation, and Restriction of Chemicals Regulation (REACH) regulation of the European Union (EU). Also, since 2014 Pakistan has been a beneficiary of the EU's Generalized Systems of Preferences (GSP+), which grants duty-free market access for over 60 percent of EU tariff lines and requires ratification of and compliance with 27 international conventions, including 8 on the environment.

²⁵ To address the sector's pollution issues, in 2009, the Sialkot Chamber of Commerce and Industry and tanners formed the Sialkot Tannery Association (Guarantee) Ltd. (STAGL), a nonprofit organization, to develop a dedicated estate with a CETP through a PPP arrangement with GoPunjab. STAGL has completed land acquisition and installation

addition, individual tanners will have opportunities to access the Program’s RECP pilot/demonstration scheme if they are eligible. All Sialkot tanners receiving Program support will commit to achieve full environmental compliance after the completion of their RECP investments.

D. Donor Coordination

34. **This Program has been prepared in full coordination with donors.** The World Bank organized consultation meetings in Islamabad in June and December 2017 with the participation of the Asian Development Bank; Embassy of France; French Development Agency (*Agence Française de Développement*, or AFD); German Agency for International Cooperation (*Deutsche Gesellschaft für Internationale Zusammenarbeit*); Japan International Cooperation Agency (JICA); United Nations Development Programme; United Nations Educational, Scientific, and Cultural Organization (UNESCO); United Nations Human Settlements Programme; and UNIDO. The World Bank will continue this coordination during Program implementation to ensure that donor interventions are complementary and sustained to support GoPunjab in addressing its mounting environmental challenges. Technically, the Program will work closely with IFC, JICA, and other donors to promote energy-efficient lights and electric fans under the Program. The Program will also work closely with IFC and UNIDO to help STZ and Sialkot tanners adopt proper RECP technologies and run the STZ CETP properly. The Program will learn from IFC and UNIDO about international best practices in the development of green industries and industrial estates. On CRG, the Program will rely on the World Bank’s Finance, Competitiveness, and Innovation teams to coordinate with other donors (for example, the U.K. Department for International Development and AFD) to support the SBP in reforming CRG regulations at the federal level. Moreover, the Program will learn from UNESCO from its pilot wetland wastewater treatment system in Islamabad.

E. Disbursement-linked Indicators and Verification Protocols

35. **Disbursements under the Punjab GDP will be carried out with eight disbursement-linked indicators (DLIs).** Annex 2 provides detailed information on the DLIs—four each for the two results areas of the Program—on disbursement-linked results (DLRs) for each DLI, and on their verification protocols. Scalable disbursement formulas are used where possible to create additional incentives for achieving stronger results.

36. **DLI 1 - Improving EPD Capacity.** The EPD and its EPA have so far lacked the structure and resources to effectively carry out several of their environmental management mandates, including environmental clearance of investment proposals and inspection of industries for environmental compliance. This DLI will measure results achieved under the Program to improve the EPD’s capacity, with GoPunjab’s approval of the department’s restructuring plan during the first year and a gradual increase in the number of annual inspections for industrial effluents and stack emissions over subsequent years. A more active inspection regime will increase the pressure for polluting industries to comply with environmental standards and invest in cleaner technologies.

of fences, and has started building zone infrastructure such as roads. All Sialkot tanners purchased STZ plots to relocate their production by 2019/2020 after the estate is ready. The United Nations Industrial Development Organization (UNIDO) has been supporting STZ development since 2015 (for example, training on RECP and pollution control; completion of land-use planning, climate and social assessment, and waste management plan; technical design of CETP and building of first module, expected to be completed in 2019). The STZ’s Environmental Impact Assessment (EIA), including an Environmental Management Plan (EMP), was approved by EPD in 2011. Under the UNIDO project, STAGL reconfirmed its commitment to properly implement the EMP.

37. **DLI 2 - Air and Water Quality Monitoring.** With only six air quality monitoring stations and no water quality monitoring stations available, the EPA has so far not been able to collect a sufficient amount of pollution data to give meaningful estimates on the evolution of environmental quality in Punjab. This DLI will measure results to improve this situation through investments and capacity-building efforts under the Program. Targets include EPA's collection of air and water quality data from an increasing number of monitoring stations by the Program's second and third year, as well as the establishment of a fully operational EMC by the fourth year with the capacity to analyze the data collected and carry out modeling exercises.

38. **DLI 3 - Disclosure of Environmental Information and Citizen Engagement.** The lack of information on pollution and environmental quality in the province has not only limited GoPunjab's capacity to take informed decisions to curb pollution, but has also undermined the public's trust in GoPunjab's efforts to manage the environment. Thus, the adoption of an environmental information disclosure and citizen engagement regulation is a key step to show the Government's willingness to become more transparent and accountable on environmental management. Following this regulation, EPD's annual publication of a substantial report providing environmental quality data and information on actions taken to strengthen environmental governance and reduce pollution, incorporating feedback solicited during public consultations, would be a major achievement to translate the Government's willingness into concrete actions. This will reflect both the EPD's increased capacity to collect and analyze environmental quality data and progress on transparency and citizen engagement for environmental management. Therefore, these two actions are key outputs to be delivered under DLI 3. Considering the time needed to improve EPD's monitoring and analytical capacity, the publication of a partial report is expected in the third year of the Program, to be followed by comprehensive reports from the following year onward.

39. **DLI 4 – Sound Management of Plastics.** Plastics accounts for a significant share of Punjab's pollution and solid waste issues, and the province lacks a comprehensive framework to manage this issue in an environmentally, socially, and economically sound way. Under this DLI, GoPunjab will adopt and implement a plastics management strategy and a regulation on single-use plastics, and will conduct awareness campaigns to reduce the production, consumption, and disposal of plastics.

40. **DLI 5 - Energy Efficiency Investments in Public Institutions.** Inefficient use of electricity in Punjab is driving up demand and putting unnecessary burden on the available energy supply. PEECA's initial efforts to promote energy efficiency in the public sector will be scaled up under the Program. This DLI will measure the energy saved through PEECA's installation of energy-efficient light bulbs and fans in the 50 public institutions with the highest energy consumption in Punjab. By reducing electricity consumption, this will help reduce emissions of local air pollutants and GHGs from thermal power plants and diesel generators.

41. **DLI 6 - Vehicle Compliance with Emission Standards.** The number of vehicles has grown rapidly in Punjab in recent years and is expected to continue increasing, representing a growing source of air pollution and GHG emissions. Following the planned expansion of the VICS's scope under the Program, this DLI will measure the results achieved to ensure that a growing proportion of the private vehicle fleet is inspected and certified as compliant with emissions standards.

42. **DLI 7 - Green Investments by Polluting Industries.** Technical and financial capacity constraints have limited the adoption of RECP technologies in industrial sectors in Punjab. This DLI measures results to promote the adoption of such technologies by polluting industrial sectors (such as brick kiln and leather) in Punjab. The first result will be the number of sectors in which EPD has supported the piloting

of new RECP technologies, and the second will be the volume of investment in such technologies by SMEs supported under the Program.

43. **DLI 8 - Mobilization of Sustainable Green Financing.** This DLI will measure the achievement of expected results to develop new sources of green financing. The first, second, and fourth targets will focus on the development of the legal and administrative structure of the EEF, the capitalization of the fund, and its actual operations. The third target will focus on the Program's support for the development of principles for green *sukuk/bonds*.

44. **The Program Key Results and DLIs will be regularly monitored, evaluated, and reported, allowing an independent verification to be conducted.** The SPIU at the EPD will have overall responsibility for monitoring and reporting on the Program's results. It will conduct regular M&E reporting on progress in each of the results areas, including the collection of output milestones for intermediate indicators and DLIs. A private firm will be competitively recruited by GoPunjab to conduct independent verification of achievement of the different targets set under each DLI.

F. Capacity Building and Institutional Strengthening

45. **Institutional strengthening and capacity building are an integral part of the Punjab GDP.** The Program's expected impacts on these two aspects are fully reflected in the PDO and results indicators of the RF, as well as in most DLIs. Among the 18 budget items, 4 are related to the establishment of new institutional units (EPC, ETC, EMC, EEF) and 3 to the strengthening of existing institutions (EPD, SPIU, and VICS). Two more are related to extensive policy and regulatory reforms (Environmental Standards and Policy and Regulatory Reform). Three budget items support the capacity development of the EPD and at least 12 other departments on environmental governance and green development. The creation of new institutions, reinforcement of existing institutions, and reform of the regulatory regimes will ensure that GoPunjab allocates sufficient human and financial resources and assigns proper regulatory and administrative responsibilities to its EPD and other related departments.

46. **Capacity-building activities will also focus on targeted industrial associations and their members through two budget items.** Program Capacity Building, and Pilot and Demonstration of RECP Investments. The first budget item will enable the industrial sectors to better understand the new regulatory regimes and, more generally, best available RECP technologies and best environmental practices for targeted polluting sectors. The second budget item will then provide hands-on support to industrial firms and help them understand the technical and operational intricacies of the piloted RECP technologies. This will help these firms make use of the full financial and environmental potentials of the technologies and will build a strong basis for sector-wide adoption of the piloted technologies.

47. **The Program will also support commercial banks through the budget item of the Green Financing Strategy.** Supporting commercial banks in fully operationalizing the Green Banking Guidelines and becoming familiar with RECP technologies will ensure the long-term sustainability of private sector investments in Punjab.

48. **Finally, the Program has a specific emphasis on the importance of citizen engagement in environmental governance and green development.** Through the development of a specific Environmental Information Disclosure and Citizen Engagement Regulation under the budget item of Policy and Regulatory Reform, the mandatory annual consultation on the publication of the Status of Punjab's Environment report according to the requirements of DLI 3, and the development of effective communication channels in English and Urdu (including an online interactive platform and a telephone

hotline) for citizen engagement, the Program aims to help the EPD develop its capacity to work with other agencies, civil society organizations, citizens, and donors in carrying out its tasks. For the proposed green investment activities, the Program will also require full consultation with all concerned stakeholders, advance disclosure of beneficiary selection criteria, and disclosure of the selection results and implementation status of such investments. This disclosure will be done through multiple channels (such as the Internet, radio, newspaper) in both English and Urdu. This emphasis will help GoPunjab further improve its governance capacity in green development.

III. PROGRAM IMPLEMENTATION

A. Institutional and Implementation Arrangements

49. **Through multiple rounds of stakeholder consultations, GoPunjab has decided to adopt the institutional arrangements shown in Figure 2.** At the Program level, it will establish a Program Steering Committee (PSC) to provide strategic guidance and overall supervision to Program implementation. The PSC will be chaired by the Chairman of the P&D Department, and its members will be the Secretaries of Finance, Environment, Industries, Transport, Energy, Women Development, Labor and Housing, Urban Development, and Public Health Engineering, as well as a representative of the chambers of commerce. The PSC will hold scheduled semiannual meetings to review Program implementation, and at the request of PSC members additional meetings will be organized to review specific implementation issues. Given the multisectoral nature of this Program, the P&D Department agreed to use the existing Environment Wing of the department as the Program Coordination Unit (PCU) of the Program. The PCU is headed by the Member Environment and Climate Change in the P&D Department to provide administrative support to the PSC and coordinate all stakeholders to properly implement the Program.

Figure 2. Institutional Arrangements for Program Implementation



50. **A limited number of civil society representatives, selected on a first-come first-served basis, will be invited to observe each PSC meeting.** The selection criteria, application process, and the maximum number of observers will be published on the EPD website. Observers of the PSC meeting will not participate in meeting discussions but can serve as an incentive for GoPunjab to properly implement the Program.

51. **Program implementation will be carried out by one executing agency and three implementing agencies.** As the main proponent of this Program, the EPD will serve as the executing agency of the Program and will be in charge of overall project implementation through close cooperation with the three implementing agencies (FD, Transport Department, and Energy Department) and relevant industrial associations. The EPD will implement its activities and maintain close cooperation with other stakeholders through its SPIU, which will serve as a program implementation unit. Each implementing agency will carry out its activities under the Program through a Program Delivery Unit (PDU) that is an existing unit of the agency. The EPD and all implementing agencies will follow the Government's policies and procedures to perform the procurement, financial management (FM), and environmental and social (E&S) safeguard activities of their respective budget items.

B. Results Monitoring and Evaluation

52. **The Program's RF, including PDO-level and intermediate results indicators, was developed with the full participation of all stakeholders.** The RF includes key program results under both results areas, as well as indicators to capture results on gender and citizen engagement.²⁶ The SPIU will support the EPD, the Project Coordination Unit, and the PSC to monitor overall Program implementation, including the application of E&S safeguard measures according to domestic requirements. Each implementing agency will use its existing institutional set-up to monitor the implementation of its respective Program activities. The SPIU will regularly collect M&E information from the implementing agencies and compile Program-level M&E reports for review by the Program Coordination Unit, the PSC, and the World Bank.

53. **For green investments, additional M&E will be performed at the task level.** Specifically, PEECA will recruit a third-party consultant to monitor and evaluate the Program's results on energy efficiency improvements in targeted public institutions. M&E will be an integral part of pilot/demonstration investments, to ensure the proper assessment of the social, environmental, and financial results of the proposed technologies and provide information to support GoPunjab and its stakeholders in deciding whether to scale up the technologies in the province. For other investments, independent technical consultants will be mobilized as needed to evaluate the results achieved by Program activities. For example, sectoral consultants might be hired to evaluate RECP investments' impacts on the product quality of a representative sample of beneficiary firms in an industrial sector.

C. Disbursement Arrangements

54. **Disbursements under the Program will follow PforR procedures.** IDA funds for the Punjab GDP will be channeled to the GoPunjab Non-Food Account-1 through the SBP following the procedure notified by the Ministry of Finance of the Government of Pakistan in August 2013. Program funds will be disbursed twice annually on the basis of the results of DLIs verified by an independent firm to be hired under the Program. Under the legal agreements, the SPIU will report to the World Bank and will provide evidence from the independent verification firm to justify that results for DLIs are met. For a scalable DLI, the amount to be disbursed will be determined according to the formula stated in the verification

²⁶ See Annex 1.

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.

55. **Disbursement requests will be submitted to the World Bank using its standard disbursement forms signed jointly by the authorized signatories.** Details of key disbursement issues are 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. In addition, withdrawal of up to 10 percent of the loan amount may be made as an advance for the purpose of achieving one or more DLIs. If by Program completion, the IDA financing disbursed exceeds total Program expenditures, then the FD of GoPunjab is required to refund the difference to the World Bank.

IV. ASSESSMENT SUMMARY

A. Technical

56. **Strategic relevance. The Program is highly relevant to Punjab’s development agenda.** It was initiated in response to GoPunjab’s urgent need to address its mounting environmental challenges, which pose significant public health risks to the Punjabi people, undermine the economic competitiveness and social welfare of the province, and thus threaten the sustainability of the province’s development achievements. The first comprehensive donor-supported initiative on this agenda, this Program focuses on two priority results areas—improving environmental governance and strengthening green investments—with the intentions of developing a sound regulatory regime and capable institutions to carry out effective environmental monitoring and enforcement with strong citizen engagement, and of helping economic actors shift their investments toward a sustainable path. Successful implementation of this Program will lay a solid foundation for future interventions.

57. **Technical soundness. The proposed Punjab GDP is assessed as technically sound** because (a) it was developed through a collaborative process with key stakeholders from government agencies, industrial associations, civil society, and donors; (b) its design incorporates relevant international best practices; (c) it has a strategic focus on green investments; (d) it promotes a holistic approach for pollution control; (e) it strives to maximize private and public investments for green development; and (f) it has a good balance between short-term investments to generate immediate results and sectoral developmental strategies to address environmental challenges in the long run.

58. **The Program was developed through extensive stakeholder consultations and full consideration of international best practices.** Recognizing Punjab’s environmental challenges, stakeholders requested that the first PDO and results area address the inadequate capacity of the provincial EPD to perform its environmental quality monitoring and management responsibilities; they then requested the second PDO and results area with an expectation that Punjab can shift its development direction toward a sustainable path by promoting green investments. In response to these requests, the World Bank helped GoPunjab incorporate international best practices in the design of the Program. To improve the province’s regulatory regime, a pollution releases and register system and a pollution levy system have been proposed to help GoPunjab develop a sound pollution inventory and adopt the “polluter pays” principle to regulate pollution. More significantly, the Program will promote public participation in environmental management through the development of a regulation on public disclosure of environmental information and citizen engagement and the inclusion of such activities as disclosing environmental information and collecting citizen inputs through multiple communication channels in both English and Urdu. Regarding industrial pollution control, the Program elected not to focus on conventional end-of-pipe pollution

control investments, such as municipal wastewater treatment plants, as such investments are costly to construct and operate and their operations are often problematic under a weak regulatory environment. Instead, the Program's focus on green investments will help achieve pollution reduction sustainably by avoiding/minimizing the creation of environmentally unfriendly assets and improving both the financial and environmental performance of polluters through RECP investments. In this regard, the Program will support GoPunjab in learning from international best practices on CRG and green *sukuk/bonds* and developing its capacity to mobilize financing for future green investments.

59. **The Program takes a holistic approach to pollution control.** Its support for regulatory reform, environmental monitoring and enforcement, and information disclosure and citizen engagement will help create both regulatory and societal pressures for polluters to address their pollution issues. In addition, its support for green financing, LWG/REACH/GSP+ compliance, and consumer awareness will elevate market incentives to induce positive environmental behaviors in polluters. Finally, the Program's technical and financial support will enable responsible polluters to invest in RECP technologies and thus reduce pollution releases. All together, these interventions take multiple angles in promoting long-term environmental compliance by polluters.

60. **Following MFD principles, the Program was designed to use public resources to leverage private capital for green development.** Part of the Program resources will be used to develop core public sector functions related to environmental governance and management, strengthening enforcement and public pressure for polluting industries to reduce their environmental footprint. Additionally, the Program will use public funding to catalyze private investment by (a) providing technical support and limited grants to pilot and demonstrate RECP technologies in targeted polluting industries; (b) supporting firms in mobilizing commercial financing to scale up these technologies; (c) improving the capacity of banks to implement the SBP's Green Banking Guidelines; and (d) developing the capacity of GoPunjab to mobilize sustainable financing for green investments through bond markets and PPPs.

61. **Lastly, the Program has a good balance between strategies and investments in pollution control.** As has been noted, in Pakistan there is still very limited information on pollution sources, patterns, and impacts. Therefore, the Program will first support the development of a number of strategies (such as air, water, and solid waste pollution control) with an expectation that environmental monitoring data to be collected under the Program will help such strategies identify the most cost-effective interventions to address priority pollution issues. Recognizing stakeholders' high willingness to see concrete pollution control results, in particular on air and water pollution, the Program will support a selective set of "no-regret" investments that have been proven effective internationally: (a) vehicle emission inspection, RECP investments in the brick kiln and other sectors, and replacement of energy-inefficient lights and electric fans in public institutions for air pollution control; and (b) RECP investments in the leather sector for restoring the sector's competitiveness in the export market and controlling its water pollution.

62. **Institutional arrangements.** The institutional arrangements of the Program (see Figure 2), developed through multiple rounds of stakeholder consultation, were assessed to be adequate. The creation of the PSC and the Program Coordination Unit at the P&D Department will help ensure that this multi-sectoral Program will be properly coordinated and implemented to deliver its expected results. The use of EPD as the focal agency corresponds to its regulatory mandates and reflects the main driver of this Program, mounting environmental challenges. It is expected that, with Program support, all agencies involved in Program implementation will have sufficient capacity to manage their respective tasks.

63. **Expenditure framework.** The expenditure framework described in Section II.B. is deemed appropriate to allow GoPunjab to carry out the different activities of the Program and start addressing environmental priorities. Program funds will be used mostly to cover development expenditures related to Program activities of the EPD and each implementing agency (for example, consulting services, goods, works, EEF capitalization). Some Program activities related to EPD's restructuring will include hiring staff for the newly created centers, although this will represent only a fraction of the planned staff expansion of EPD. Most of this hiring will be for EPA and financed separately through GoPunjab's recurrent budget, which is not included in the Program budget by GoPunjab's request. The efficiency of Program expenditures will be ensured by GoPunjab's robust process of reviewing all budget items included in its MTFD and ADP. Implementation support provided by the World Bank will also help GoPunjab further improve this efficiency by learning from international best practices for activities under both results areas.

64. The financial sustainability of Program investments is guaranteed mainly by GoPunjab's commitment to improve environmental governance to address its mounting environmental challenges under Results Area 1, as well as by the nature of the green investments promoted under Results Area 2. As in other PforR operations in the province, the FD and P&D Department will ensure that the agreed Program resources will be adequately budgeted for in each ADP following the regular budget cycle, and disbursed in accordance with the Program Expenditure Framework to accomplish DLI targets. Multiyear earmarked allocations for all Program activities in the MTFD will also ensure the visibility and predictability of the resources that are necessary to achieve results. The US\$273 million total expenditures under the five-year Punjab GDP represent only around 1.5 percent of GoPunjab's budget of about US\$17.8 billion for a single fiscal year (FY17–18),²⁷ and GoPunjab has confirmed that the five-year Program would be easily manageable from a fiscal perspective. All Program funding (regardless of the source) will flow through distinct budget line items. The FD will track and report the source of funds in its budget. However, the EPD and all implementing agencies will see no difference between GoPunjab's funding and the World Bank's support to the Program.

65. **Economic evaluation.** The Program's support for environmental governance and green investments is expected to generate positive environmental, social, and economic benefits, including (a) improved industrial productivity and competitiveness, (b) improved resource efficiencies and associated climate benefits, (c) health benefits associated with improved environmental quality, and (d) other benefits such as improved agricultural productivity and environmental amenities. As there are limited data to estimate Program benefits, the economic benefits of two key Program investments are estimated indirectly using avoided carbon emissions as a proxy, as described below.

- (a) Program support to the brick kiln sector may generate positive economic benefits of US\$2.4 million to US\$4.3 million with an emission reduction of about 0.339 million tons of carbon dioxide (CO₂) during the five years of Program implementation. Research in Bangladesh has shown that converting kilns to more efficient technologies could reduce PM emissions by 40-90 percent and generate large health benefits and health costs savings each year.²⁸ Similar research in Punjab will help quantify such benefits during Program implementation; and
- (b) Program support to energy efficiency improvement in the 50 public institutions may result in approximately 72 GWh energy savings, a financial saving of about US\$12 million, and CO₂ emission reduction of about 39,000 tons during the five-year period of Program implementation.

²⁷ <http://www.finance.punjab.gov.pk/system/files/ABs17-18.pdf>

²⁸ Guttikunda, S. K., and M. Khaliqzaman. 2014. Health benefits of adapting cleaner brick manufacturing technologies in Dhaka, Bangladesh. *Air Quality, Atmosphere & Health* 7(1): 103-112.

66. In addition, Program support may help the Sialkot leather sector restore its export competitiveness by complying with LWG/REACH/GSP+ requirements. This may help the Sialkot sector increase its export revenues by US\$50 million annually by Years 4 and 5 of Program implementation.

67. In summary, during the five-year implementation period, the Program is expected to generate economic benefits of at least US\$115 million against about US\$100 million of Program support to the three types of investments. Additionally, using shadow pricing conservatively for 0.339 million tons in avoided CO₂ emissions suggests additional benefits of at least US\$13 million during the Program's five-year implementation period.²⁹ During implementation, the Program will support GoPunjab in collecting more data and further evaluating the economic benefits of the Program, including cost savings from RECP investments and health benefits from reduced local pollution. As Program investments will continue operating beyond the Program implementation period, the Program's economic benefits are expected to be much higher than its costs.

68. **Climate co-benefits.** All green investment activities are expected to have climate mitigation co-benefits. Most green investments are mitigation measures with positive financial returns from energy efficiency improvements (efficient lighting/fans, efficiency improvement in industries and vehicles). With low power consumption per unit of wastewater treated, piloted low-cost wastewater treatment technologies will lead to lower GHG emissions compared to traditional treatment technologies. Activities to enhance vehicles' emission control will also contribute to lower GHG emissions. At appraisal completion, the Program's climate co-benefits are estimated at 59 percent of total Bank financing.

69. **The Program's support to green investments will fully consider the impacts of potential climate risks—extreme weather, flood, and water scarcity—in the design and implementation of such investments.** Among all activities, the STZ has been designed with full consideration of climate adaptation. The STZ is working with the District Disaster Management Agency to examine how to incorporate climate risks into the district's existing hazards management plan. The STZ has also adopted measures such as raising road levels, using adequately sized storm drains, and developing a flood management plan. Under the Program, the STZ will promote RECP investments, including water-saving technologies, to address the risks of decreasing water availability in a changing climate.

B. Fiduciary

70. The fiduciary systems assessment (FSA) conducted for the Punjab GDP in accordance with the World Bank Policy and Directive on PforR financing concluded that the Program's overall fiduciary risk was Substantial. The FSA evaluated the systems of the different implementing agencies—the Environment, Finance, Energy, and Transport Departments. Reflecting the FSA, the Program Action Plan (PAP) specifies measures to mitigate identified key fiduciary risks (see Annex 4 for details).

71. **Procurement.** All GoPunjab departments will follow the comprehensive Punjab Procurement Rules 2014 to carry out their procurement activities under the Program. The World Bank's Procurement Assessment found that all departments had some deficiency in complying with the rules. For example, some departments are not transparent on the disclosure of their Procurement Plans and contract awards and in addressing procurement complaints. In addition, there are weaknesses in departments' procurement performance, such as the long time it takes to award contracts, the limited number of participating bidders, and delays in contract implementation. One of the main causes of significant

²⁹ The World Bank's *Shadow Price of Carbon in Economic Analysis Guidance Note* (2017) estimates that the shadow prices of carbon emission range from US\$38-77 per metric ton of CO₂ equivalent (constant prices) in 2018 with an increasing trend to US\$43-86 (constant prices) in 2023.

procurement delays is that procuring agencies are often reluctant to publish procurement notices before obtaining the FD's confirmation of fund allocation. To lead the Program implementation and manage most of the procurement activities, EPD will need to substantially strengthen its procurement capacity, including ensuring adequate staffing. The EPD will develop a comprehensive online Procurement Management Information System (PMIS) to mitigate the procurement risk identified in the FSA. In addition, EPD will also lead the efforts to ensure that Open Data protocols are established for the three implementing agencies (Finance, Transport and Energy Departments).

72. **Financial Management.** All GoPunjab departments will maintain their own books of accounts for program-related activities on a cash basis. The SPIU at the EPD will be responsible for preparing program-level annual consolidated financial statements, which will be audited by the Department of the Auditor General of Pakistan. Audit reports will be submitted to the World Bank within six months after the close of each financial year. To mitigate identified FM risks, the Program has incorporated measures recommended by the FSA into the Program Action Plan (see Annex 4 for details).

73. **Fraud and corruption.** It was agreed that the borrower will implement the Punjab GDP in accordance with provisions of the Anti-Corruption Guidelines applicable to PforR operations, as further elaborated in the Anti-Corruption Protocol agreed with the World Bank. The World Bank team reviewed the debarment list and found no firms in the region with experience in the technical areas of the proposed Program. The World Bank has large engagements in Punjab for which national systems are deemed satisfactory, and the assessment found that systems to counter corruption were adequate, despite weaknesses. To further strengthen systems and correct such weaknesses, the FSA recommends (a) developing a management information system to replace the manual systems currently used by implementing agencies to register and follow complaints, (b) developing a hotline for corruption complaints in Punjab, and (c) developing an open data platform to ensure transparency about the use of Program resources and results achieved. Moreover, GoPunjab has agreed to provide the World Bank with annual reports on any incidents of fraud and corruption noticed, recorded, or denounced, whether *ex-officio* by GoPunjab or by third parties. The World Bank team will keep the Integrity Vice Presidency abreast of any irregularities or patterns observed during Program supervision that might provide evidence of fraud and corruption.

C. Environmental and Social Effects

74. **Successful implementation of the Program will generate positive E&S effects for the population of Punjab.** The Program, as defined by its PDOs, results areas, DLIs, and budget items, will help GoPunjab improve its environmental regulatory systems and strengthen the EPD's technical capacity and human and financial resources to better manage the province's environment challenges. It will allow GoPunjab to use multiple instruments to steer public and private investments toward a sustainable development path, minimizing pollution discharges and the associated environmental and health impacts from such investments.

75. **However, the Program will pose substantial E&S risks if business-as-usual is maintained in managing the E&S effects of its regulatory reform and green investment activities.** Such E&S risks are associated with (a) inability to address potential social issues in the regulatory reform, capacity building, EPD restructuring, strategy development; and citizen engagements; (b) poor construction quality of physical structures; (c) poor OHS records in the operation and maintenance of industrial facilities, (d) unsafe disposal of replaced equipment and wastes; (d) land acquisition for green building and pilot wastewater treatment sites; and (e) transfer of tannery production to the STZ. Such risks are manageable

if the regulatory reform, capacity building, and green investments promoted by the Program can be properly designed and implemented with full stakeholder consultation and the adoption of international best practices that are most suitable to local conditions.

76. **By fully identifying and addressing the needs and concerns of all stakeholders, the Program's support for citizen engagement in environmental management will further ensure that potential E&S risks are properly identified and managed.** Specifically, the Program's support for regulatory reform, EPD's information disclosure channels in both English and Urdu, annual consultation on the State of Punjab's Environment report, and the interactive Internet portal for public inputs in environmental management will help mitigate its potential E&S risks. These commitments are reflected in the Program's specific DLI on information disclosure and citizen engagement. In addition to these activities, consultations will be carried out for all investment activities to ensure the full support of stakeholders.

77. **Legal, policy, and institutional framework.** The Program's Environmental and Social Systems Assessment (ESSA) concluded that the applicable policy and regulatory framework was broadly adequate to address the E&S risks related to Program activities, and that the Program will help upgrade/strengthen the framework. However, the enforcement of rules and the overall environmental governance remain weak, justifying the Program's focus on strengthening them under Results Area 1. Gaps in the legislation related to land acquisition (for example, compensation of non-titleholders, loss of livelihoods) and lapses in its implementation were also noted as weaknesses for Program activities to address. While public consultations are generally better in donor-financed projects and a complaint cell is active at EPA, the lack of a grievance redress mechanism at the program level was noted as a weakness to be corrected, and the development of a comprehensive stakeholder consultation and engagement strategy was recommended. The experience accumulated in Punjab through the Cleaner Production Centers was found to be highly relevant to mitigate negative environmental impacts in supported industries. Additionally, the interest Sialkot tanneries expressed in seeking certification under the E&S auditing process of the international LWG is also a positive aspect of risk mitigation.

78. **Capacity assessment.** The ESSA concluded that Punjab has the institutional basis to manage Program E&S risks, but that Program implementing agencies' human and financial capacity should be strengthened through an incremental, risk-based approach. The EPD plays a key role but currently functions with moderate efficacy and with insufficient resources for some sections, such as the ones in charge of IEE/EIA review and monitoring and of the laboratory. EPD's focus on environmental dimensions and limited capacity to address social risks were also noted. Institutional strengthening, capacity building, and the adoption of standard operating procedures to manage social and labor issues were recommended for EPD and other implementing agencies. The restructuring of and provision of capacity building to the EPD are key parts of the Program and will help mitigate the Program's E&S risks.

79. **Climate Change Commitments.** See Paragraphs 67 and 68 for details.

80. **Gender. Special attention was given to identifying and addressing the gender-specific impacts of pollution.** There is ample evidence at the global level that air and water pollution have disproportionate impacts on pregnant women and children (cf. Section 1). ESSA analysis highlights that social issues (including gender) are largely neglected in environmental decision-making process of Punjab and information on the impact of pollution on vulnerable groups including women and children is limited. The Program identifies this lack of social and gender analysis as a gap and proposes to address this by taking on the following actions: (a) conduct a study on the health impacts of pollution on people including vulnerable groups (e.g. women and children) to provide data on this issue in Punjab, (b) develop a health

advisory system targeting women and other vulnerable demographics based on air quality indices, (c) include social management and gender specific actions in RECP financing agreements; (d) train EPD and the Program implementing agencies to ensure social and gender issues will be integrated into the policies and standards to be developed under the Program; and (e) ensure the EEF to give preference to environmental protection proposals that will benefit vulnerable groups (including women and children). Additionally, the Women Development Department of Punjab will be represented on the PSC to ensure that all Program activities adequately consider gender aspects.

81. The Result Framework have included two intermediate indicators (1-1 and 1-2) to ensure effective implementation and monitoring of Actions (b) and (d). In addition, DLI 3 will use findings of Action (a) to refine the design and implementation of the proposed health advisory system. Moreover, DLI-7 has incorporated Action (c) as a condition for RECP financing. Lastly, for Action (e), the EEF's Operation Manual will highlight such preference as one of the criteria for evaluating funding proposals.

82. **Citizen engagement.** Citizen engagement is an integral part of the Program design with a dedicated DLI 3: Disclosure of Environmental Information and Citizen Engagement. The Program's citizen engagement activities are detailed in Paragraph 48.

83. **Proposed actions.** The ESSA put forward a number of actions to mitigate Program E&S risks for inclusion in the PAP, related mainly to (a) the institutional strengthening of the EPD/EPA and other implementing agencies, and (b) the preparation of studies and adoption of environmental management plan for specific Program activities (for example, Sialkot tanneries and appliance replacement).

84. **Grievance redress.** 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 WB's Grievance Redress Service (GRS). 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.

D. Risk Assessment

85. **The Program's overall risks are Substantial.** The specific substantial risks are: political and governance, macroeconomic, institutional capacity for implementation and sustainability, fiduciary, and E&S.

86. **Political and governance risks are substantial.** On the political side, the reform momentum may slow down temporarily in the run-up to the 2018 general elections. Sustained political support will be needed to improve environmental governance in Punjab. However, this topic is not expected to be the object of political disputes and the strong public pressure to address pollution should ensure continued effort by GoPunjab regardless of electoral results. The Program's focus on citizen engagement will contribute to mitigating this risk. Governance risk stemming from existing weaknesses in GoPunjab's anti-

corruption systems will be mitigated through implementation of relevant FSA recommendations and PAP measures.³⁰

87. **Pakistan’s macroeconomic situation warrants continued monitoring.** Pakistan’s near-term outlook for economic growth remained broadly favorable. However, continued erosion of macroeconomic resilience could put this outlook at risk, notably due to fiscal and external imbalances. The World Bank will continue monitoring this risk during Program implementation. It is expected that Program interventions will contribute to making Punjab’s growth trajectory more sustainable and strengthening the long-term competitiveness of supported industries.

88. **At the Program level, the main technical risks are related to the EPD’s implementation capacity and the sustainability of Program impacts.** The EPD may face challenges in implementing the Program activities while restructuring its own organizational structure, and the SPIU has only managed small investment activities so far. To address capacity risks, the Program has included multiple activities to support the EPD and the SPIU in improving their technical and implementation capacity. To mitigate the sustainability risk, the Program has strongly promoted stakeholder consultation, public disclosure and citizen engagement, and the study on pollution’s health impacts with an expectation that the public’s improved environmental awareness will create sustained political pressure for GoPunjab to address its environmental challenges and steer Punjab’s economy toward a sustainable path.

89. **Fiduciary risks are rated Substantial because of deficiencies the FSA found in the procurement and FM systems.** In addition to measures proposed in the FSA and included in the PAP, the Program’s efforts to promote information disclosure and citizen engagement in Program implementation will help mitigate these risks.

90. **E&S risks are rated Substantial because of concerns over public distrust of GoPunjab’s efforts and capacity to manage potential pollution releases from beneficiary firms.** The first issue will be addressed through improved information disclosure and citizen engagements. The second issue will be addressed by capacity-building activities under the Program. In addition, the EMPs of such investments will be required to specify how E&S risks will be managed.

91. **Climate risks.** The climate risk assessment conducted for the Punjab GDP concludes that (a) green investments under the Program will have positive impacts on climate mitigation, and (b) physical investments under the Program will face moderate climate risks caused by extreme weather events (temperature, precipitation and flooding, and strong winds). Proper mitigation measures will be incorporated in the design and implementation of related physical investments.

³⁰ See Section IV.B.

Annex 1: Results Framework Matrix

Results area	PDO indicators	Intermediate indicators	DLI #	Unit of measure	Baseline (FY18)	End target (FY23)
Strengthening Environmental Governance	1. Average time to obtain IEE approval of investments with low safeguards risks			Number of days	160	90
		1.1. Socially responsive new or updated law, policies, and regulations		Number (cumulative)	1	6
		1.2. Socially responsive new or updated environmental standards		Number (cumulative)	0	67
	2. Stack emission and effluent discharge inspections carried out by EPA		1	Number of inspections	400	2,250
		2.1. Monitoring stations operational for air quality monitoring	2	Number of stations	6	30
		2.2. Monitoring stations operational for water quality monitoring	2	Number of stations	0	15
		2.3. Inspection teams at EPA		Number of teams	12	35
	3. Disclosure of environmental information and citizen engagement		3	Number of reports on State of Punjab's Environment (cumulative)	0	3
		3.1. Annual public consultation events on State of Punjab's Environment report organized in different cities		Number of events	0	5
		3.2. Number of nongovernmental institutions participating in annual public consultations on State of Punjab's Environment report		Number of institutions	0	10
		3.2. An interactive EPD platform for public inputs in environmental management		Yes/No	No	Yes
Promoting Green Investments	4. Volume of carbon emissions avoided from green investments			Tons CO ₂ e (cumulative)	0	339,000
		4.1. Energy savings in public institutions under the Program	5	GWh (cumulative)	0	72

Results area	PDO indicators	Intermediate indicators	DLI #	Unit of measure	Baseline (FY18)	End target (FY23)
		4.2. Proportion of registered motor vehicles with valid emission certificates under the expanded VICS program	6	Percentage	0	15
	5. Volume of new public and private capital leveraged for green investments			US\$ millions (cumulative)	0	100
		5.1. Number of industrial firms that received financial support from the Program for RECP investments		Number of firms	0	500
		5.2. Investment in RECP technologies by SMEs supported by the Program	7	US\$ millions	0	10
		5.3. Capitalization of the EEF	8	US\$ millions	0	55

Indicator name (#)	Description	Frequency	Data source	Methodology for data collection	Responsibility for data collection
1. Average time to obtain IEE approval of investments with low safeguards risks	This indicator measures the average time between the acceptance of the complete submission of IEEs of a low-safeguards-risk project and the notification of a decision to applicants by the EPA (approval or rejection).	Semi-annual	EPA	This indicator, based on EPA registries, will be computed by summing the number of days between IEE acceptance and decision for all low-risk projects submitted during a year, and dividing by the number of such IEEs submitted.	EPD (SPIU)
1.1. Socially responsive new or updated laws, policies, and regulations	This indicator measures the adoption of one updated law, three policies (including the Smog Policy adopted in October 2017), and two regulations. Whenever applicable, social implications (including gender) of such policies, law and regulations will be carefully analyzed and properly addressed.	Semi-annual	EPD	EPD to provide evidence on adopted texts.	EPD (SPIU)
1.2. Socially responsive new or updated	This indicator measures the adoption of new or updated standards: 9 environmental quality standards, and 58 industry-specific environmental standards. Whenever	Semi-annual	EPD	EPD to provide evidence on adopted texts.	EPD (SPIU)

Indicator name (#)	Description	Frequency	Data source	Methodology for data collection	Responsibility for data collection
environmental quality standards	applicable, social implications (including gender) of such standards will be carefully analyzed and properly addressed.				
2. Stack emission and effluent discharge inspections carried out by EPA	This indicator measures the annual number of inspections that the EPA has performed to monitor wastewater discharges and air emission from polluting stacks under the Program.	Semi-annual	EPA	The number of stack emission and effluent discharge inspections performed in a given year will be collected from EPA monitoring records.	EPD (SPIU)
2.1. Monitoring stations operational for air quality monitoring	This indicator captures the number of functional air quality monitoring stations in Punjab.	Semi-annual	EPA	EPA to provide information on number of stations and evidence of their operational status.	EPD (SPIU)
2.2. Monitoring stations operational for water quality monitoring	This indicator captures the number of functional fixed water quality monitoring stations in Punjab.	Semi-annual	EPA	EPA to provide information on number of stations and evidence of their operational status.	EPD (SPIU)
2.3. Inspection teams at EPA	This indicator measures the number of effluent and stack inspection teams at EPA.	Semi-annual	EPA	EPA to provide information on number of its inspection teams.	EPD (SPIU)
3. Disclosure of environmental information and citizen engagement	This indicator measures the EPD's performance on information disclosure and citizen engagement through the consultation and publication of the State of Punjab's Environment report. The report will be based on quantitative and qualitative analysis of environmental data and EPD performance, and public consultations will be conducted on the content of the report. In line with DLI 2, three successive annual reports are expected to be published from FY21 to FY23. The first report will be a preliminary one with as much information as possible while the EPD's environmental monitoring capacity is being strengthened.	Semi-annual	EPD	Collection of published reports and records of consultation events.	EPD (SPIU)

Indicator name (#)	Description	Frequency	Data source	Methodology for data collection	Responsibility for data collection
3.1. Annual public consultation events on State of Punjab's Environment report organized in different cities	This indicator measures the extent of EPD consultations on this report.	Semi-annual	EPD	EPD to provide records of annual public consultation events.	EPD (SPIU)
3.2. Number of nongovernmental institutions participating in annual public consultations on State of Punjab's Environment report	This indicator measures the extent of institutional participation in public consultation events organized by the EPD for each State of Punjab Environment report, starting in FY21. The focus is on nongovernmental institutions such as business associations, civil society organizations, academic institutions, and the media.	Semi-annual, starting FY21	EPD	EPD to provide record of consultations.	EPD (SPIU)
3.3. An interactive EPD platform for public inputs in environmental management	This indicator captures progress made by the EPD to make available an interactive online platform for the public to participate in environmental management, e.g., commenting on EPD documents and filing complaints.	Semi-annual	EPD	EPD to provide a summary of information collected from the interactive platform.	EPD (SPIU)
4. Volume of carbon emissions avoided from green investments supported	This indicator assesses cumulative climate mitigation impacts (tons of CO ₂ equivalent avoided/sequestered) of green investment activities, including (a) RECP investments, and (b) energy efficiency investments.	Semi-annual	EPD for RECP investments and PEECA for energy efficiency investments	(a) RECP investments. Carbon emissions will be monitored and evaluated before and after RECP investments as part of RECP pilot projects. (b) Energy efficiency in public institutions. PEECA will hire an independent consultant to monitor and evaluate energy efficiency gains at each public institution based on its tested methodology.	EPD (SPIU)
4.1. Energy savings in public institutions under the program	This indicator measures the amount of energy savings generated from the installation of energy-efficient lights and electric fans in 50 public institutions.	Semi-annual	PEECA	PEECA to provide the M&E report of its independent consultant.	EPD (SPIU)

Indicator name (#)	Description	Frequency	Data source	Methodology for data collection	Responsibility for data collection
4.2. Proportion of registered motor vehicles with valid emission certificates under the expanded VICS program	This indicator measures the percentage of registered vehicles with valid emission certificates under the expanded VICS program.	Semi-annual	VICS concessionaires	VICS concessionaires to provide records of inspections.	Transport Department (Transport Planning Unit) and EPD (SPIU)
5. Volume of new public and private capital leveraged for green investments	This indicator assesses the cumulative amount of public and private capital mobilized to support the Program's green investments.	Semi-annual	EPD, PEECA, Transport Department	EPD will be responsible for collecting (a) EEF's financial records, and (b) investment information of (i) RECP pilots/demonstration, (ii) the pilot low-cost wastewater treatment, and (iii) the STZ. PEECA to collect information on investment costs of energy efficiency investments in the 50 public institutions; Transport Department to provide information on investments mobilized for the expansion of its VICS.	EPD (SPIU)
5.1. Number of industrial firms that received financial support from the Program for RECP investments	This indicator measures the number of polluting industrial firms receiving financial support from the Program for RECP investments.	Semi-annual	EPD	EPD to provide information.	EPD (SPIU)
5.2. Investment in RECP technologies by SMEs supported by the Program	This indicator measures the volume of capital invested and direct financial costs (for example, cost of labor) incurred by supported SMEs for investments in RECP technologies, netted from any amounts contributed by the Program.	Semi-annual	EPD	EPD to collect data on individual investments by supported SMEs and provide that information.	EPD (SPIU)
5.3. Capitalization of the Environment Endowment Fund	This indicator measures the level of capitalization of the EEF to be established under the Program.	Semi-annual	EEF	EEF to provide evidence of fund capitalization.	EPD (SPIU)

Annex 2: Disbursement-Linked Indicators, Disbursement Arrangements, and Verification Protocols

Table 2.1. DLIs and Indicative Timeline for Achievement

DLI	Financing allocated (US\$ m)	Share of total financing	DLI baseline	Prior results (FY18)	Indicative timeline for DLI achievement				
					FY19 (Year 1)	FY20 (Year 2)	FY21 (Year 3)	FY22 (Year 4)	FY23 (Year 5)
DLI 1: Improving EPD Capacity	-	-	Limited EPD enforcement capacity and low number of inspections performed annually	(i) EPD has approved a smog control policy; (ii) Punjab has approved EPD's Restructuring Plan			The EPA has carried out at least (i) 500 inspections for industrial effluents, and (ii) 100 inspections for stack emissions		The EPA has carried out at least (i) 2,000 inspections for industrial effluents, and (ii) 250 inspections for stack emissions
<i>Allocated amount (US\$ m)</i>	25	12.5%		<i>5 for (i) and 5 for (ii)</i>			<i>2 upon achievement of 50% of the targeted inspections for both (i) and (ii), and 1 for each additional 10% achieved for both (i) and (ii)</i>		<i>3 upon achievement of 50% of targeted inspections for both (i) and (ii), and 1 for each additional 10% achieved for both (i) and (ii)</i>
DLI 2: Air and Water Quality Monitoring	-	-	Only 6 air quality and 0 water quality monitoring stations available for Punjab			EPA has collected hourly data from at least (i) 10 air quality monitoring stations and (ii) 5 water quality monitoring stations	EPA has collected hourly data from at least (i) 30 air quality monitoring stations and (ii) 15 water quality monitoring stations	EPD's EMC has become operational	
<i>Allocated amount (US\$ m)</i>	30	15%				<i>5 for (i) and 5 for (ii)</i>	<i>5 for (i) and 5 for (ii)</i>	10	

DLI	Financing allocated (US\$ m)	Share of total financing	DLI baseline	Prior results (FY18)	Indicative timeline for DLI achievement				
					FY19 (Year 1)	FY20 (Year 2)	FY21 (Year 3)	FY22 (Year 4)	FY23 (Year 5)
DLI 3: Disclosure of Environmental Information and Citizen Engagement	-	-	Limited disclosure of environmental information and citizen engagement		EPD has adopted (i) a regulation on information disclosure and citizen engagement, and (ii) a health advisory system for critical air pollution events, targeting vulnerable population groups		EPD has published the first State of Punjab's Environment report covering CY2020 and has carried out related stakeholder consultations	EPD has published the second State of Punjab's Environment report covering CY2021 and has carried out related stakeholder consultations	EPD has published the third State of Punjab's Environment report covering CY2022 and has carried out related stakeholder consultations
<i>Allocated amount (US\$ m)</i>	20	10%			5 for (i); 5 for (ii)		3	3	4
DLI 4: Sound Management of Plastics			No policy in place to manage plastic waste		EPD has adopted (i) a plastics management strategy, and (ii) a regulation on the production and consumption of single-use plastics	EPD has carried out provincewide public communication campaigns with nongovernmental organizations to reduce production and consumption of single-use plastics		EPD has implemented at least 50% of the initiatives for reducing the production and consumption of single-use plastics set forth in the adopted plastics strategy and regulation	
<i>Allocated amount (US\$ m)</i>	10	5%			1 for (i) and 2 for (ii)	1 per round for a maximum of 2		5	
DLI 5: Energy Efficiency Investments in Public Institutions	-	-	Energy-inefficient appliances installed in targeted public institutions		Punjab has saved at least 5 GWh through the installation of energy-efficient lighting and fans in public institutions		Punjab has saved at least 20GWh through the installation of energy-efficient lighting and fans in public institutions financed by PEECA		

DLI	Financing allocated (US\$ m)	Share of total financing	DLI baseline	Prior results (FY18)	Indicative timeline for DLI achievement				
					FY19 (Year 1)	FY20 (Year 2)	FY21 (Year 3)	FY22 (Year 4)	FY23 (Year 5)
					financed by PEECA				
<i>Allocated amount (US\$ m)</i>	20	10%			<i>5 upon achievement of target and 0.5 for each additional 1 GWh up to 20 GWh</i>		<i>5 upon achievement of target and 0.5 for each additional 1 GWh</i>		
DLI 6: Vehicle Compliance with Emission Standards							At least 5% of the registered motor vehicles of Punjab have valid emission certificates under the expanded VICS program		
<i>Allocated amount (US\$ m)</i>	15	7.5%					<i>5 upon achievement of target and 1 for each additional 1%</i>		
DLI 7: Green Investments by Polluting Industries	-	-	SMEs have limited technical and financial capacity for adoption of RECP technologies			EPD has provided grant support to SMEs in at least 3 industrial sectors to pilot new RECP technologies		SMEs supported by the Program have invested at least US\$6 million equivalent in RECP technologies	
<i>Allocated amount (US\$ m)</i>	30	15%				<i>10 upon achievement of target and 3 for each additional sector</i>		<i>10 upon achievement of target and 1 for each additional US\$0.5 million invested</i>	

DLI	Financing allocated (US\$ m)	Share of total financing	DLI baseline	Prior results (FY18)	Indicative timeline for DLI achievement				
					FY19 (Year 1)	FY20 (Year 2)	FY21 (Year 3)	FY22 (Year 4)	FY23 (Year 5)
DLI 8: Mobilization of Sustainable Green Financing	-	-	No dedicated and sustainable source of financing available for green projects		Punjab has adopted the legal and institutional structure of the EEF	Punjab has capitalized the EEF with at least US\$50 million equivalent		Punjab has developed the principles for green <i>sukuk/bonds</i>	The EEF has generated at least US\$5 million in revenue and has committed at least 30% of this revenue to eligible projects
<i>Allocated amount (US\$ m)</i>	50	25%			5	30		5	<i>5 upon achievement of target and 1.5 for each additional 10% in commitment</i>
Total financing allocated (US\$ m)	200	100%		10	28	57	45	38	22

Table 2.2 DLI Verification Protocols

DLI 1 - Improving EPD Capacity	DLR 1-1. (i) EPD has approved a smog control policy and (ii) Punjab has approved EPD's Restructuring Plan	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> The EPD approved the Policy on Controlling Smog 2017 on October 21, 2017 (Policy No. SO(Tech)EPD/1-1/2016). The EPD's Restructuring Plan is expected to be approved by May 15, 2018.
		Verification	<ul style="list-style-type: none"> Verified during appraisal with a copy of the Policy on Controlling Smog 2017 (Policy No. SO(Tech)EPD/1-1/2016). GoPunjab will provide a copy of its decision on the approval of the EPD's Restructuring Plan, which will detail EPD's institutional mandates, new organizational structure, staffing plan, responsibilities of key officials, and a time-bounded implementation plan.
	DLR 1-2 and 1-3. The EPA has carried out at least: (i) [XXX] inspections for industrial effluents; and (ii) [XXX] inspections for stack emissions in FY20XX.	Description	Scalable/Time-bound. <ul style="list-style-type: none"> The actual number of inspections carried out will be determined by counting those that have been completed and have final decisions/reports/analyses issued.
		Verification	<ul style="list-style-type: none"> <i>Data source:</i> EPD. <i>Verification entity:</i> Firm competitively recruited. <i>Procedure:</i> EPD to maintain and provide records of inspection. Firm to verify the records and perform on-site verification.

DLI 2 – Air and Water Quality Monitoring	DLR 2-1 and 2-2. EPA collects hourly data from at least: (i) 10 air quality monitoring stations; and (ii) 5 water quality monitoring stations.	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> Data collection shall have taken place in both air and water monitoring stations on at least an hourly basis for a minimum of 300 days in a given year.
		Verification	<ul style="list-style-type: none"> <i>Data source:</i> EPD. <i>Verification entity:</i> Firm competitively recruited. <i>Procedure:</i> EPD to provide (a) procurement information and details on each air and water quality monitoring station (for example, type, installation date, location), and (b) full database of monitoring data. Firm to verify records and perform on-site verification.
	DLR 2-3. EPD's Environmental Monitoring Center has become operational.	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> Operability of the EMC will be deemed achieved upon (a) procurement, installation, and commencement of operation of the reference lab; (b) procurement and installation of about 30 air and 15 water monitoring stations, all of them generating at least hourly data; and (c) the procurement and delivery of mobile monitoring equipment and monitoring vehicles.
		Verification	<ul style="list-style-type: none"> <i>Data source:</i> EPD. <i>Verification entity:</i> Firm competitively recruited. <i>Procedure:</i> EPD to provide procurement information on fixed and mobile monitoring equipment. Firm to verify records, visit the EMC, and perform site visits for monitoring stations and other equipment located outside of the EMC.
DLI 3 – Disclosure of Environmental Information and Citizen Engagement	DLR 3-1. EPD has adopted (i) regulation on information disclosure and citizen engagement, and (ii) health advisory system for critical air pollution events, targeting vulnerable population groups.	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> “Adoption of regulation on Information disclosure and citizen engagement” means EPD’s notification of regulation on disclosure of environmental information and citizen engagement requiring (a) preparing and disclosing the State of Punjab’s Environment report in both English and Urdu; (b) publishing air and water quality data through EPD’s website; (c) disclosing key environmental policies and regulation, IEE and EIA reports and their decisions; and (d) mandating public feedback mechanism before the approval of environmental policy, regulations, standard, and EIAs. “Adoption of a health advisory system” means the EPD’s approval of a policy/standing instruction: (a) setting up the methodology defining “critical air pollution events” and “vulnerable groups” (such as children, pregnant women, the elderly, and people with cardiovascular and respiratory diseases); and (b) prescribing the menu of remedial actions to be taken by the Government and health/safety advice to be communicated to the population through multiple media channels in both English and Urdu. Whenever available, findings from the health impact study of pollution on people including vulnerable group (e.g. women and children) shall help refine the design and implementation of the health advisory system.
		Verification	<ul style="list-style-type: none"> GoPunjab will provide copies of official notifications for the issuance of the regulation and the adoption of the health advisory system.
	DLR 3-2, 3-3, and 3-4. EPD has (i) published the [first/second/ third] State	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> The State of Punjab’s Environment reports shall cover (a) assessment of air, surface water and groundwater, and soil quality, as extracted from the available monitoring data; (b) assessment of

	<p>of Punjab’s Environment report covering CY[XXXX], and (ii) carried out related stakeholder consultations.</p>		<p>pollution sources that contributed to air, water, and soil pollution, including a summary inventory of pollutants, detailing time and intensity thereof; (c) assessment of environmental performance of wastewater treatment facilities and solid waste management facilities; (d) measures taken to control pollution and improve environmental quality; (e) summary of environmental complaints received, classified by type of environmental issue, as well as actions taken in respect thereof; (f) public feedback on the report and EPD’s responses thereto; and (g) GoPunjab’s environmental action plan for the following calendar years.</p> <ul style="list-style-type: none"> • It is expressly noted that the first such report might not contain such a detailed level of information and analysis as subsequent ones. • “Stakeholder consultations” will be deemed satisfactorily “carried out” on completion of at least two rounds of public commenting, one on the proposed content of the report and another on the draft report, through formal hearings and at least a one-month online public comment period on the EPD’s website. For public hearings, all concerned GoPunjab departments, chambers of commerce, industrial associations, civil society organizations, the media, and donors shall be invited.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to provide evidence of invitations and records of public hearings, online posting and commenting, and published reports. Firm to verify the records.
DLI 4 – Sound Management of Plastics	<p>DLR 4-1. EPD has adopted (i) a plastics management strategy, and (ii) a regulation on the production and consumption of single-use plastics.</p>	Description	<p>Non-scalable/Not time-bound.</p> <ul style="list-style-type: none"> • The “plastics management strategy” should be a comprehensive document (a) analyzing different environmental, social, and economic aspects related to the production, use, and disposal of plastics in Punjab; (b) identifying adequate policy measures to reduce plastics consumption and pollution, such as regulations/bans, taxes, communication activities, and promotion of cleaner alternatives; and (c) including an action plan with clear time frame, responsibilities, and allocation of resources for the implementation of these interventions by the end of the Punjab GDP period. • The “regulation on the production and consumption of single-use plastics” should contain concrete and enforceable provisions to discourage the production and consumption of single-use plastics. • Both documents should be prepared after broad consultations with stakeholders, including plastics producers, retailers, and environmental associations.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to provide evidence of strategy and regulation adoption; firm to verify.
	<p>DLR 4-2. EPD has carried out provincewide public communication campaigns with nongovernmental</p>	Description	<p>Scalable/Not time-bound.</p> <ul style="list-style-type: none"> • “Public communication campaigns” are campaigns that use the media, messaging, and an organized set of communication activities to improve public awareness of the negative environmental and health impacts of single-use plastics during a given period of time.

	organizations to reduce production and consumption of single-use plastics		<ul style="list-style-type: none"> • Not less than 2 rounds of such campaigns shall be organized in a given calendar year, with at least 6 months between two rounds of campaigns. • “Nongovernmental organizations” includes at least industrial associations related to plastics production, chambers of commerce, large retailers, civil society organizations, primary and secondary schools, and the media.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to provide evidence of campaigns organized in all major cities of the province; firm to verify.
	DLR 4-3. EPD has implemented at least 50% of the initiatives for reducing the production and consumption of single-use plastics set forth in the adopted plastics strategy and regulation.	Description	Non-scalable/Not time-bound. <ul style="list-style-type: none"> • This DLR will reflect the status of GoPunjab’s implementation of all initiatives included in the plastics strategy and regulation adopted under the Punjab GDP.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to provide evidence of the implementation of initiatives of the strategy and regulation and results.
DLI 5 - Energy Efficiency Investments in the Public Sector	DLR 5-1 and 5-2. Punjab has saved at least 20 GWh by installing energy-efficient lighting and fans in public institutions financed by PEECA.	Description	Scalable/Not time-bound. <ul style="list-style-type: none"> • GWh saved shall be calculated as absolute number since Program implementation against the estimated “no-program” consumption.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> PEECA. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> PEECA to maintain records of energy-efficient appliance procurement and installation; the M&E firm hired by PEECA to evaluate energy savings from appliance replacement; the Program verification firm to verify PEECA records and M&E firm reports, and do on-site checks.
DLI 6 - Vehicle Compliance with Emission Standards	DLR 6-1. At least 5% of the registered motor vehicles of Punjab have valid emission certificates under the expanded VICS program.	Description	Scalable/Not time-bound. <ul style="list-style-type: none"> • The registered motor vehicles refer to vehicles registered with, and paying token tax to, the Punjab Excise and Taxation Department. • The percentage of registered motor vehicles with valid emission certificates under the expanded VICS program will be measured against the number of registered motor vehicles (rolling fleet) in the year of verification.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> Transport Department and VICS concessionaires. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> Transport Department and VICS concessionaires to provide current records on motor vehicle registrations and emission certificates issued by the expanded VICS program; firm to verify.
		Description	Scalable/Not time-bound.

DLI 7 - Green Investments by Polluting Industries	DLR 7-1. EPD has provided grant support to SMEs in at least three industrial sectors to pilot new RECP technologies.		<ul style="list-style-type: none"> • “Provided grant support to SMEs in at least three industrial sectors” will be achieved upon EPD’s signing of financing agreements with at least ten SME in any three industrial sectors (for example, brick kiln and tanneries). Such RECP financial agreements will specify environmental and social (including gender) management plans for the agreed investment activities. • This DLR will only compute the financial support provided under the RECP pilots contemplated in subparagraph 3(a) of Result Area 2 of the Program description in the Financing Agreement.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to provide evidence of signed financing arrangement; firm to verify.
	DLR 7-2. SMEs supported by the Program have invested at least US\$6 million equivalent in RECP technologies.	Description	<p>Scalable/Not time-bound.</p> <ul style="list-style-type: none"> • “RECP technologies” means any investments that improve resource efficiency and cleaner production, and achieve environmental compliance of industrial production. • The amounts mobilized shall consider the capital invested and direct financial costs (for example, cost of labor) incurred by SMEs (i.e., private cofinancing), netted from any amounts contributed by the Program.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EPD to maintain and provide records of RECP investments; firm to verify records and visit sample of beneficiaries.
DLI 8 - Mobilization of Sustainable Green Financing	DLR 8-1. Punjab has adopted the legal and institutional structure of an Environmental Endowment Fund	Description	<p>Non-scalable/Not time-bound.</p> <ul style="list-style-type: none"> • The adoption of the legal and institutional structure of the EEF requires (a) the enactment/approval of applicable legal framework, (b) the hiring of a professional fund manager, (c) the establishment of the fund secretariat, and (d) the approval of an operational manual. • The applicable legal framework shall provide for (a) the establishment of the EEF, (b) the EEF governance framework, (c) the EEF capitalization, and (d) the determination of EEF funding/revenue sources. • The “establishment” of the EEF secretariat requires the appointment/nomination of at least (a) a secretariat director, (b) an FM specialist, (c) an E&S specialist, (d) an M&E specialist, (e) a communications specialist, and (f) an internal auditor. • The EEF operations manual shall include (a) selection and terms and responsibilities of the fund’s board and its secretariat staff; (b) terms of reference of secretariat staff; (c) scope of activities to be financed by the fund (for example, small-scale green investments, environmental studies, and citizen engagement activities); (d) eligibility criteria of beneficiaries and selection protocol for the identification of the fund’s green investments; (e) E&S management procedures/standards (including a gender policy); (f) terms and conditions of financial assistance provided by the fund; (g) financial management standards and procedures for the fund; (h) responsibilities of the professional fund management firm administering the EEF; (i) monitoring and reporting requirements; and (j) fund information disclosure regimes.
		Verification	<ul style="list-style-type: none"> • <i>Data source:</i> EPD. • <i>Verification entity:</i> Firm competitively recruited.

			<ul style="list-style-type: none"> • <i>Procedure:</i> EPD and EEF secretariat to provide evidence on the adoption of the EEF legal framework, hiring of fund manager, establishment of fund secretariat, and adoption of fund operations manual; firm to verify.
DLR 8-2. Punjab has capitalized the Environmental Endowment Fund with at least US\$50 million equivalent.	Description	Non-scalable/Not time-bound.	<ul style="list-style-type: none"> • “Capitalized” means the actual integration/deposit of the fund amounts into a fund account owned by the EEF.
	Verification		<ul style="list-style-type: none"> • <i>Data source:</i> FD, EEF Secretariat. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> FD and EEF Secretariat to provide evidence of EEF capitalization; firm to verify.
DLR 8-3. Punjab has developed the principles for green <i>sukuk/bonds</i>	Description	Non-scalable/Not time-bound.	<ul style="list-style-type: none"> • In line with recognized international green bond principles, “principles” for green bonds or green <i>sukuk</i> shall determine (a) the types of green project eligible to be financed with the proceeds; (b) the process for project evaluation and selection (including E&S safeguards); (c) the management of proceeds; (d) reporting requirements on the impact of projects; (e) external reviews, certification, ratings, and disclosure; and (f) other relevant aspects, such as possible incentives for investors.
	Verification		<ul style="list-style-type: none"> • <i>Data source:</i> FD. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> FD to provide evidence on principles developed for green <i>sukuk/bonds</i>; firm to verify.
DLR 8-4. The Environmental Endowment Fund has (i) generated at least US\$5 million equivalent in revenue; and (ii) committed at least 30 percent of this revenue to eligible projects.	Description	Scalable/Not time-bound.	<ul style="list-style-type: none"> • The revenue generated shall consider all income obtained by the EEF and deposited in the EEF fund account since fund inception (other than the original capital), resulting from EEF investments. “Committed” amounts are amounts of financial assistance granted by EEF with duly signed legal contracts. The overall amounts to be computed for the purpose of determining the commitment levels shall only consider the funds disbursed/to be disbursed by the EEF (that is, they shall not include any resources mobilized by the private beneficiary and/or any financial institution cofinancing the investment).
	Verification		<ul style="list-style-type: none"> • <i>Data source:</i> EEF Secretariat. • <i>Verification entity:</i> Firm competitively recruited. • <i>Procedure:</i> EEF Secretariat to provide records on fund investment revenue and commitments; firm to verify.

Annex 3: Systematic Operations Risk Rating (SORT)

PAKISTAN: Punjab Green Development Program
Stage: Appraisal

SORT Table

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

Annex 4: Program Action Plan

Action description	Responsible party	Due date	Applicable provision	Completion measurement
Formal establishment of the PSC	P&D Department	One (1) month after the Effective Date of the Credit	Covenanted under Section I.B.(a) of the Schedule to the Program Agreement	Notification establishing the PSC.
Formal establishment and adequate staffing of the Program Coordination Unit	P&D Department	One (1) month after the effective date of the credit	Covenanted under Section I.B.(b) of the Schedule to the Program Agreement	Notification establishing the Program Coordination Unit (identifying staff and responsibilities)
Formal nomination and adequate staffing of the PDUs in key implementing departments	Departments of Energy, Transport, and Finance	One (1) month after the effective date of the credit	Covenanted under Section I.B.(d) of the Schedule to the Program Agreement	Notification of establishing the PDUs (identifying staff and responsibilities) in each of the three departments
Establishment of a social cell within the SPIU	EPD	Three (3) months after the effective date of the credit	Covenanted under Section I.B.(c) of the Schedule to the Program Agreement as further elaborated in PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Appointment of labor, gender, social, grievance complaint, and communications specialists (at least one each)
Development of standard operating procedures (including for chance finds) for land acquisition for green building and low-cost wastewater treatment pilots	EPD (SPIU) to develop	Three (3) month after the effective date of the credit	PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Notification of the completed SOP
Development of annual implementation plans based on MTD/ADP allocation consistent with Program RF and DLI requirements	Annual plans to be prepared by each of the EPD, FD, and Departments of Transport and Energy, and consolidated by	Two (2) months prior to each fiscal year (the first such program to be approved no later than two months after the effective date of the credit)	Provided for in the PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Approval by the PSC of plan containing detailed budgetary allocations; source of funding; foreseeable Program expenditure, including nature and composition; program activities; timelines; etc.

Action description	Responsible party	Due date	Applicable provision	Completion measurement
	the EPD for PSC approval			
Develop environmental management plans for closed STZ tanner sites	Tanners to prepare; EPD to review	Three (3) months before the relocation of a tanner to STZ	PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Notification of the approved EMPs
Development, adoption, and implementation of a Program M&E framework, including data collection, analysis and reporting requirements and frequency, staff assignments, and budget arrangements. Such reporting will include (a) semiannual reporting on indicators agreed with the Association; (b) semiannual reporting on grievance complaints, processing, and resolutions; (c) semiannual report on labor issues of green investment activities; and (d) annual report on any allegations of fraud and corruption under the Program received and registered during the year, as well as any related investigations and any actions taken, pursuant to the reporting template attached to the agreed Anti-Corruption Protocol.	EPD (SPIU) to develop and Departments of Energy, Transport, and Finance to adhere	Six (6) months after effective date of the credit	PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement, and Anti-Corruption Protocol agreed at Negotiations	Physical inspection of systems/records by team members
Strengthening of FM system, to include (a) appointment/hiring of qualified FM staff; (b) the SPIU to use the Financial Management Information System for generating consolidated financial reports for the Program; (c) the SPIU team to develop a manual depicting controls applied to achieve the PDOs; and (d) adoption of internal auditing functions for the Program in a manner and substance satisfactory to the World Bank.	EPD (SPIU) to develop and Departments of Energy, Transport, and Finance to adhere	Six (6) months after the effective date of the credit	Covenanted under Section I.A. of the Schedule to the Program Agreement as further elaborated in PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Physical inspection of systems/records by team members
Develop/implement an online PMIS in a manner and substance satisfactory to the Association, including (a) a freely and publicly accessible website showing procurement plans and procurement notices, invitations to bid, bidding documents and requests	EPD (SPIU) to develop and Departments of Energy, Transport, and	Six (6) months after the effective date of the credit	PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Public access to program implementation data on procurement and associated complaints.

Action description	Responsible party	Due date	Applicable provision	Completion measurement
for proposals, as well as the procurement status of various contracts, including status of evaluation, complaints and actions taken, contract awards and contract performance; and (b) a system for handling procurement complaints, providing for, inter alia, the maintenance of a complaint database, a standard protocol setting forth triggers for carrying out investigations, and a sanctions regime	Finance to adhere			
Establish Open Data Portal and Regime aligned with EPD's information disclosure platform, in a manner and substance satisfactory to the Association, including (a) Open Data Standards; (b) Platform for Open Data Analysis; and (c) Training on Open Data and Analysis	EPD (SPIU) to develop and Departments of Energy, Transport, and Finance to adhere	Six (6) months after the effective date of the credit	PAP agreed with GoPunjab and cross-referred in Section I.E of the Schedule to the Program Agreement	Public access to program implementation data, including data related to procurement, RF, and DLIs.