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June 2, 2016

**Closing Date: Tuesday, June 21, 2016
at 6 p.m.**

FROM: Vice President and Corporate Secretary

Pakistan - Sindh Resilience Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Pakistan for a Sindh Resilience Project (IDA/R2016-0134), which is being processed on an absence-of-objection basis.

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Report No: PAD1684

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF US\$100 MILLION

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

SINDH RESILIENCE PROJECT

May 30, 2016

Social, Urban, Rural and Resilience Global Practice
Pakistan Country Management Unit
South Asia Region

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CURRENCY EQUIVALENTS

Exchange Rate Effective April 30, 2016

Currency Unit = Pakistani Rupee (PKR)

PKR104.80 = US\$1

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	M&E	Monitoring and Evaluation
AGP	Auditor General of Pakistan	MS	Mulchand Shah Bunder Bund
ARAP	Abbreviated Resettlement Action Plan	NAM	New Accounting Model
BP	Business Policy	NCB	National Competitive Bidding
BU	Bughar Ucheto Bund	NDMA	National Disaster Management Authority
CAS	Country Assistance Strategy	NDMP	National Disaster Management Plan
CBDRM	Community Based Disaster Risk Management	O&M	Operations and Maintenance
CER	Contingent Emergency Response	OM	Operations Manual
CPS	Country Partnership Strategy	OP	Operational Policy
CQ	Consultants Qualification	P&D	Planning & Development
CSO	Civil Society Organization	PAD	Project Appraisal Document
DG	Director General	PDMA	Provincial Disaster Management Authority
DRM	Disaster Risk Management	PDO	Project Development Objective
ECOP	Environmental Code of Practice	PISSC	Project Implementation Support and Supervision Consultant
EOC	Emergency Operations Center	PKR	Pakistani Rupee
EIA	Environment Impact Assessment	QCBS	Quality and Cost Based Selection
EOI	Expression of Interest	RAP	Resettlement Action Plan
ESA	Environment and Social Assessment	RFP	Request for Proposal
ESIA	Environment and Social Impact Assessment	RPF	Resettlement Policy Framework
ESMF	Environment and Social Management Framework	SBD	Standard Bidding Documents
ESMP	Environment and Social Management Plan	SDR	Special Drawing Rights
FDRA	Fiscal Disaster Risk Assessment	SECP	Securities and Exchange Commission of Pakistan

FIDIC	International Federation of Consulting Engineers	SEMU	Social and Environmental Management Unit
FMIS	Financial Management Information System	SGFR	Sindh General Financial Rules
FSAP	Financial Sector Assessment Program	SID	Sindh Irrigation Department
GDP	Gross Domestic Product	SH	Sunda Hilaya Bund
GoP	Government of Pakistan	SOE	State Owned Enterprise
GoS	Government of Sindh	SOP	Standard Operating Procedure
GRC	Grievance Redressal Committee	SORT	Systematic Operations Risk- Rating Tool
GRM	Grievance Redressal Mechanism	SRP	Sindh Resilience Project
IA	Implementing Agency	TOR	Terms of Reference
IBRD	International Bank for Reconstruction and Development	TTL	Task Team Leader
ICB	International Competitive Bidding	USD/ US\$	United States Dollar
IFC	International Finance Corporation	VSL	Value of Statistical Life
IT	Information Technology	VSI	Value of Statistical Injury
IDA	International Development Association		

REGIONAL VICE PRESIDENT:	Annette Dixon
Country Director:	Patchamuthu Illangovan
Senior Global Practice Director:	Ede Jorge Ijjasz-Vasquez
Practice Manager:	Bernice K. Van Bronkhorst
Task Team Leader:	Haris Khan

PAKISTAN
Sindh Resilience Project

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PAD DATA SHEET*Pakistan**Sindh Resilience Project (P155350)***PROJECT APPRAISAL DOCUMENT***SOUTH ASIA**Social, Urban, Rural and Resilience Global Practice*

Report No.: PAD1684

Basic Information			
Project ID P155350	EA Category A - Full Assessment	Team Leader(s) Haris Khan	
Lending Instrument	Fragile and/or Capacity Constraints []		
Investment Project Financing	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 20-Jun-2016	Project Implementation End Date 31-Aug-2021		
Expected Effectiveness Date 15-Sep-2016	Expected Closing Date 28-Feb-2022		
Joint IFC No			
Practice Manager/Manager Bernice K. Van Bronkhorst	Senior Global Practice Director Ede Jorge Ijjasz-Vasquez	Country Director Patchamuthu Illangovan	Regional Vice President Annette Dixon
Borrower: Economic Affairs Division			
Responsible Agency: Sindh Irrigation Department			
Contact: Telephone No.:	Syed Zaheer Haider Shah 92-21-99211445	Title: Email:	Secretary Jamal.irrigation.sindh@gmail.com
Responsible Agency: Provincial Disaster Management Authority, Sindh			
Contact: Telephone No.:	Commander (R) Syed Salman Shah 92-21-99251458	Title: Email:	Director General dg@pdma.gos.pk

Project Financing Data(in USD Million)										
<input type="checkbox"/> Loan		<input type="checkbox"/> IDA Grant		<input type="checkbox"/> Guarantee						
<input checked="" type="checkbox"/> Credit		<input type="checkbox"/> Grant		<input type="checkbox"/> Other						
Total Project Cost:		120.00				Total Bank Financing:		100.00		
Financing Gap:		0.00								
Financing Source						Amount				
BORROWER/RECIPIENT						20.00				
International Development Association (IDA)						100.00				
Total						120.00				
Expected Disbursements (in USD Million)										
Fiscal Year	2017	2018	2019	2020	2021	2022				
Annual	10.00	20.00	20.00	25.00	20.00	5.00				
Cumulative	10.00	30.00	50.00	75.00	95.00	100.00				
Institutional Data										
Practice Area (Lead)										
Social, Urban, Rural and Resilience Global Practice										
Contributing Practice Areas										
Climate Change, Finance & Markets, Governance, Water										
Cross Cutting Topics										
<input checked="" type="checkbox"/> Climate Change										
<input type="checkbox"/> Fragile, Conflict & Violence										
<input checked="" type="checkbox"/> Gender										
<input type="checkbox"/> Jobs										
<input type="checkbox"/> Public Private Partnership										
Sectors / Climate Change										
Sector (Maximum 5 and total % must equal 100)										
Major Sector				Sector		%	Adaptation Co-benefits %		Mitigation Co-benefits %	
Water, sanitation and flood protection				Flood protection		70	75			
Public Administration, Law, and Justice				Public administration-Water, sanitation and flood protection		30	5			
Total						100				
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information										

applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Social protection and risk management	Natural disaster management	100
Total		100

Proposed Development Objective(s)

The objectives of the Project are to mitigate flood and drought risks in selected areas and to strengthen Sindh's capacity to manage natural disasters.

Components

Component Name	Cost (USD Millions)
Strengthening Disaster and Climate Risk Management	23.75
Improving Infrastructure and Systems for Resilience	96.00
Contingent Emergency Response	0.00

Systematic Operations Risk- Rating Tool (SORT)

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

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]
Does the project require any waivers of Bank policies?	Yes []	No [X]
Have these been approved by Bank management?	Yes []	No [X]
Is approval for any policy waiver sought from the Board?	Yes []	No [X]

Does the project meet the Regional criteria for readiness for implementation?		Yes [X]	No []
Safeguard Policies Triggered by the Project		Yes	No
Environmental Assessment OP/BP 4.01		X	
Natural Habitats OP/BP 4.04		X	
Forests OP/BP 4.36			X
Pest Management OP 4.09			X
Physical Cultural Resources OP/BP 4.11			X
Indigenous Peoples OP/BP 4.10			X
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60			X
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Safeguards	X		CONTINUOUS
Description of Covenant			
The Recipient and the Project Implementing Entity to ensure that the Project shall be implemented in accordance with the guidelines, procedures, timetables and other specifications set forth in the Safeguard Documents. Prior to the implementation of each infrastructure subproject, appropriate instruments - Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), and/or Resettlement Action Plan (RAP) - should be prepared which is satisfactory to the Bank. In addition, all activities shall be consistent with the Recipient's own laws relating to environment and social safeguards.			
Name	Recurrent	Due Date	Frequency
Annual Work Plan	X		Yearly
Description of Covenant			
(a) SID and PDMA Sindh will prepare draft annual work plan and budget for each subsequent year of Project implementation including all Project activities financed from the Credit as well as Counterpart Funds.			
(b) Safeguard Documents acceptable to the Bank required prior to the implementation of the activities included in the draft Annual Work Plan and Budget have been prepared, or are in the process of being prepared.			
Name	Recurrent	Due Date	Frequency
Review of Performance	X		CONTINUOUS
Description of Covenant			
The Bank and the Government of Sindh shall carry out joint reviews, inter alia including: (a) an in-depth review of the Project within 12 months of Effectiveness, or such other period as may be agreed with the Bank; and, (b) a midterm review of the Project by November 30, 2018, or any other date agreed with the			

Bank. The Government of Sindh will furnish regular progress reports to the Bank before each review. The Recipient will assess on a six monthly basis in conjunction with the Bank and Implementing Agencies: (i) the performances of the Director and other key management, fiduciary and technical staff members/consultants at Implementing Agencies; (ii) the timely carrying out of the respective contribution of project staff to the Annual Work Plans and Budgets; and (iii) progress of implementation of Project activities.

Name	Recurrent	Due Date	Frequency
Procurement	X		CONTINUOUS

Description of Covenant

SID and PDMA Sindh shall establish within six months of Effectiveness and maintain the system throughout Project implementation: (a) a system for the handling of procurement complaints acceptable to the Bank; and, (b) a procurement documentation and record keeping system acceptable to the Bank.

Name	Recurrent	Due Date	Frequency
Recruitment for Project Implementing Agencies	X		CONTINUOUS

Description of Covenant

The Recipient shall cause the Government of Sindh to ensure that:

- (a) PDMA Sindh and SID shall provide and maintain officials and staff in sufficient numbers to implement the Project;
- (b) Staff working on the Project at SID and PDMA Sindh is selected or recruited on the basis of terms of reference, qualifications and experience satisfactory to the Bank;
- (c) full financial and administrative authority for the Project is delegated to the Project Director at each Implementing Agency; and
- (d) the Director at each Implementing Agency is working full time as Director for the Project.

In addition to the Implementing Agencies' current staff, the following resources will be recruited and maintained with terms of reference, qualification and experience acceptable to the Bank:

- (i) for PDMA Sindh: no later than three (3) months after the Effective Date, a financial management specialist, and a dedicated procurement and contract administration specialist; and
- (ii) for SID: no later than three (3) months after the Effective Date, a financial management specialist, a dedicated procurement and contract administration specialist and an internal auditor.

Name	Recurrent	Due Date	Frequency
Audit Reports	X		CONTINUOUS

Description of Covenant

The Project Implementing Entity shall submit financial statements for each fiscal year, audited by independent auditors, within 6 months after the end of the fiscal year.

Name	Recurrent	Due Date	Frequency
Counterpart Funds	X		CONTINUOUS

Description of Covenant

The Project Implementing Entity shall provide counterpart funds with an equivalent amount to USD 20,000,000 for the financing of the Project. These funds shall be primarily allocated to the financing of salaries of the officials, operation and maintenance of infrastructure assets, acquisition of land, and cost of resettlement and other activities carried out to comply with the provisions of the Safeguard Documents. The allocation of Counterpart Funds shall be specified in the Annual Work Plans and

Budgets.				
Conditions				
Source Of Fund	Name			Type
IDA	Project Operations Manual			Effectiveness
Description of Condition				
The Project Implementing Entity has adopted the Project Operations Manual.				
Source Of Fund	Name			Type
IDA	Condition of Disbursement for Contingent Emergency Response Component			Disbursement
Description of Condition				
The Recipient has determined that an Eligible Crisis/Emergency has occurred, and requested assistance under CER Component; The Bank has accepted the request and notified the Recipient. The Recipient's Coordinating Authority has adequate staff & resources. The Recipient has adopted a CER Operations Manual acceptable to the Bank, and has prepared and disclosed all safeguards instruments.				
Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Haris Khan	Team Leader (ADM Responsible)	Senior Disaster Risk Management Specialist		GSURR
Rehan Hyder	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGODR
Akmal Minallah	Financial Management Specialist	Sr Financial Management Specialist	Financial Management	GGODR
Ahsan Tehsin	Team Member	Disaster Risk Management Specialist	DRM Expert	GSURR
Alessandro Palmieri	Team Member	Consultant	Dam Safety	GSURR
Chau-Ching Shen	Team Member	Senior Finance Officer		WFALN
Daniel Jonathan Clarke	Team Member	Senior Insurance Specialist	Risk Financing and Insurance	GFMDR
Ditte Marie Gammelgaard Fallesen	Team Member	Senior Operations Officer		GSURR
Helene Bertaud	Counsel	Senior Counsel		LEGSG
Jaafar Sadok Friaa	Team Member	Program Leader		SACPK
Malik Najaf Khan	Team Member	Consultant	DRM Expert	GSURR

Masood Ahmad	Team Member	Lead Hydropower Specialist		GEEDR	
Maya Gabriela Q. Villaluz	Safeguards Specialist	Senior Environmental Engineer	Environment Safeguards	GENDR	
Mohammad Azhar Ul Haq	Team Member	Program Assistant		SACPK	
Mohammad Omar Khalid	Environmental Specialist	Consultant	Environmental Safeguards	GENDR	
Muhammad Abid	Team Member	Consultant	Irrigation and Flood Engineering	GSURR	
Salma Omar	Safeguards Specialist	Senior Social Development Specialist	Social Safeguards	GSURR	
Shahnaz Meraj	Team Member	Program Assistant		SACPK	
Suhaib Rasheed	Team Member	Consultant		GSURR	
Syed Umer Ali Shah	Team Member	Consultant	Engineering	GSURR	
Tahir Akbar	Team Member	Disaster Risk Management Specialist		GFDRR	
Extended Team					
Name	Title	Office Phone	Location		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Pakistan	Sindh	Sindh		X	
Consultants (Will be disclosed in the Monthly Operational Summary)					
Consultants Required ?	No consultants are required				

I. STRATEGIC CONTEXT

A. Country Context

1. Pakistan is the world's sixth most populous country with an estimated population of 182 million people and a per capita income of US\$1,360 in 2013, falling into the category of a lower-middle-income country. While Pakistan's per capita income has almost doubled and the share of population living in poverty has decreased by two-thirds over the last decade, the country's recent gross domestic product (GDP) growth rates (estimated at 4.2 percent in 2015) have been slower than needed to provide for the level of jobs required for a young and growing population.
2. Prospects for economic growth are beginning to improve, supported by increasing reserves, low inflation, and continuing strong remittances. Nevertheless, a weak private sector environment, public sector management, and implementation capacity will continue to hamper service delivery performance. As a result, human development indicators continue to lag; in fact, Pakistan did not meet the targets for the majority of the Millennium Development Goals by 2015, including those related to education and health.
3. Pakistan is exposed to a number of adverse natural events and has experienced a wide range of disasters over the past 40 years, including floods, earthquakes, droughts, cyclones and tsunamis. Over the past decade, damages and losses resulting from natural disasters in Pakistan have exceeded USD 18 billion; as the population and asset base of Pakistan increases, so does its economic exposure to natural disasters. Also, Pakistan has been ranked 6th among the most climate change affected countries in the world, with the fifth highest total losses of all countries attributed to climate change over the 1994-2014 period¹. Pakistan faces a major financing challenge arising from natural catastrophes, with flooding causing an estimated annual economic impact of between 3 and 4 percent of the Federal Budget². The fallout from large disasters such as the 2005 earthquake and the 2010 floods as well as impacts of the recent militancy crisis have taken a significant toll on national growth and macroeconomic indicators.

B. Sectoral and Institutional Context

4. ***Disaster Risks for the Sindh Province.*** The geographic location and climatic conditions of the Province of Sindh render it vulnerable to various natural disaster events. These include floods, cyclones, earthquakes, droughts, wind storms, tsunamis and sea intrusion. In addition, the geography, topography, nature of economy, rapid urbanization and high population levels exacerbate Sindh's vulnerability to natural disasters.
5. The scale and frequency of damages caused by floods represents the most recurrent and acute threat to communities in Sindh. Since 2010, damages incurred in Sindh from floods account for more than half of all flood damages across the country (refer Table 1). Increased frequency of flood events over the last two decades have caused significant damages to public and private property as well as loss of human lives and livelihood. Sindh experienced major floods in 1992,

¹ Global Climate Change Risk Index 2015: Who suffers most from extreme weather events? Weather related loss events from 1994 to 2013.

² Pakistan Fiscal Disaster Risk Assessment. May 27, 2016. Report No. 94474-PK

1994, 1995, 2003, 2005, 2007, 2010, 2011, 2012 and 2013. Besides riverine floods, primarily involving the River Indus, torrential flash floods have also severely impacted parts of Sindh. These floods normally occur in the monsoon months of July and August when heavy rains over the Kirthar hills located in Balochistan along the northwest border of the Sindh province give rise to torrents³ in the Kachhi plains of Sindh.

Table 1: Estimated damages from floods over the period 2010 – 2014 (in millions USD)⁴

	Sindh	Punjab	KPK	Balochistan	Federal/Others
2010	4,380	2,580	1,172	620	1,304
2011	2,524	<i>Not Affected</i>	<i>Not Affected</i>	69	153
2014	<i>Not Affected</i>	136	<i>Not Affected</i>	<i>Not Affected</i>	121
Total	6,904	2,716	1,172	689	1,578

6. Floods in 2010 and 2011 were amongst the most devastating in the history of the region impacting both urban and rural areas. Floods in 2010 displaced 7.2 million people and affected 11,992 villages. The impact on the economy of Sindh was estimated at PKR. 372 billion (USD 4.4 billion), with agriculture, livestock and housing contributing to major losses. It is estimated that 24% of the houses in the affected districts, 12% of the total health facilities in the province and 5,655 educational facilities were damaged/destroyed by the floods. The floods in 2011 inundated 38,347 villages, displacing 9.3 million people and human loss stood at 497 lives. The 2011 flood-affected districts constitute 86% of the geographical area and house 54% of the total population of the province. Moreover, these districts provided over 70% of the province's fishery and livestock products and an even larger proportion for wheat (88%), cotton (99%) and sugarcane (100%) outputs. The total damages were estimated at PKR. 311 billion (USD 3.6 billion) for the Sindh province, equivalent to 6% of the provincial GDP. The subsequent floods in succeeding years (2012 & 2013) further impacted the local economy and livelihood, displacing people (2012: 3.1 million, 2013: 0.5 million) and burdened federal and provincial exchequers to provide for relief, rehabilitation and reconstruction.

7. Besides floods, Sindh province faces drought in the northern and eastern region on a recurring basis. The drought from 1998 – 2002 affected 1.4 million people, 5.6 million heads of cattle and 12.5 million acres of cropped area, triggering the spread of malnutrition-based diseases in the population and food scarcity in the province due to poor overall crop output. Similarly, the ongoing drought situation in the province since 2013 has affected 4.9 million heads of cattle and 0.5 million people, resulting in the death of 750 persons. These drought events have also generally coincided with the El Niño phenomena. The strongest El Niño event in recorded history was 1998 which triggered a three-year long drought in Pakistan. Another El Niño emerged in 2015 causing weaker monsoons over parts of Pakistan, including most of Sindh, and a strong heatwave in June-July 2015 which caused more than 1200 fatalities from heatstroke and dehydration, mostly in Karachi (the provincial capital).

8. Sindh province also faces the risk of cyclone and wind-storms. In May 1999, Cyclone 2A

³ Including Mula, Boolan, Khanji, Mazarani, Dillan, Buri, Salari, Shole, Gaaj, Angai, Naing and Bandani channels.

⁴ All estimates for 2010 and 2011 flood damages from Damages and Needs Assessments, jointly prepared by the Bank and ADB. While Sindh was also affected by moderate floods in 2012, consolidated damage estimates are not available for the year. The figures for 2014 are based on the Government's damage assessments.

landed on the coast of Sindh near Karachi, causing widespread damage in three southern districts. It affected 5,243 villages, displacing 0.6 million people and damaged 138,719 houses. Cyclone Yemyin in 2007 affected 0.4 million people and 40,204 heads of cattle, and damaged 34,418 houses and 114,825 acres of cropped area. Further, Sindh lies on a major seismic fault line and faces a real threat of high intensity earthquakes. Recent notable seismic events include the 7.6 magnitude Gujarat earthquake in 2001, a 7.3 magnitude earthquake originating in Balochistan in 2011, a 5.6 magnitude earthquake in December 2013 near Warah (north-eastern part of the province), and a 5.0 magnitude earthquake near Nawabshah in May 2014.

9. **Disaster Risk Management.** Over the past decade, Pakistan has significantly improved regulations and institutional capacity for disaster management, and worked to change how the country addresses natural disasters - from an ex-post disaster response perspective to an ex-ante risk management approach. The National Disaster Management (NDM) Act was passed in 2010, under which Disaster Management Authorities were established at the national and provincial/regional levels. The disaster management authorities were envisaged to have an integrated mandate encompassing the entire disaster management sector, including risk assessments, planning, preparedness, early warnings, as well as response and recovery. Progress with District Disaster Management Authorities has been slower, and these have only been implemented in a small number of districts till date.

10. The National Disaster Management Plan (NDMP) was adopted in 2012 as the key sector plan from the national government and intends to direct and synchronize all mobilization of resources from public, private, donor, and non-governmental sources. NDMP's overall goal is to achieve sustainable social, economic and environmental development in Pakistan through reducing disaster risks and vulnerabilities, particularly those of the poor and marginalized groups; and to enhance the country's ability to manage all disasters using a comprehensive national approach. The NDMP envisages ten disaster management interventions (Table 2) to establish an efficient and effective disaster management system in Pakistan.

Table 2: NDMP Interventions	
1. Establish institutional and legal system for disaster management.	6. Strengthen DRR awareness programs at local level.
2. Prepare disaster management plans at various levels.	7. Infrastructure development for DRR.
3. Establish national hazard and vulnerability assessment.	8. Mainstreaming DRR into development.
4. Establish multi-hazard early warning systems.	9. Establish a national emergency response system.
5. Training, education and awareness for disaster management.	10. Capacity development for post-disaster recovery.

11. In addition to interventions aimed at understanding risk, ex-ante planning, preparedness, institutional strengthening and mainstreaming disaster risk, the NDMP Intervention 7, focuses specifically on “infrastructure development for disaster risk reduction”. The largest single expenditure item and priority action under Intervention 7 relates to floods, which plans to ‘Implement appropriate structural measures in flood prone areas taking into account comprehensive and integrated flood management plans’. Intervention 7 further calls for supporting implementation of the Fourth National Flood Protection Plan (NFPP-IV), along with revision and updating of the draft plan through a survey of existing flood protection facilities in view of damages to flood protection infrastructure incurred during the 2010 floods in the country.

12. Since the passage of the 18th Constitutional Amendment in 2012, Provincial Disaster Management Authorities (PDMAs) have assumed a much enlarged mandate and greater implementation responsibility to prepare for and respond to disasters. These agencies are increasingly at the forefront when responding to disaster situations. In the aftermath of such events, the PDMAs have led the government's efforts in such areas as coordinating search and rescue, establishment of temporary relief camps, supervising relief supplies and logistics, registration of affected population and processing compensation payments. However, the efficacy of these agencies is much more limited in terms of preparedness and ex-ante risk reduction owing to a number of factors. These include: (a) overlapping responsibilities with entities operating under earlier legislation; (b) weak capacity and limited resource allocation; (c) limited technical expertise available within the public sector in a relatively new area; (d) unavailability of adequate procedures and resources to operationalize the national and provincial disaster management funds; and (e) weak partnerships and convening power vis-à-vis other public sector entities with strategically linked mandates, such as finance, irrigation, and health departments.

13. ***Flood and Drought Management.*** Pakistan is one of the world's most arid countries, with an average rainfall of under 240 millimeters a year. It is located in an area which was once a desert – and it would have remained largely a desert without the development of the canal systems, dams and hydraulic structures that divert water from the Indus River and its tributaries. Pakistan's reliance on a single river basin system makes its water economy vulnerable in light of climate change. The impacts of global climate change, including changes in glacial melt, temperature, and precipitation patterns leads to increasing instances of flood and drought events. The provincial irrigation departments are responsible for constructing, operating, and maintaining infrastructure within their administrative jurisdiction, including flood defenses. On the other hand, there are federal agencies – such as the Federal Flood Commission and the Indus River Commission – responsible for consensus building and consistency between interventions undertaken by various provinces/ entities. There are strong government systems to ensure agreement between stakeholders and consistency in design and operation of proposed interventions; for instance, the proposals for all infrastructure investments along the Indus and its tributaries need be submitted to, and approved by, the Indus River Commission before proposed investments are included in provincial annual development budgets.

14. The overall investment needs for managing drought, and restoration and upgrading of the flood protection infrastructure in Sindh are significant and require financing sources outside the development funding available with the government. In terms of infrastructure investments to address water scarcity such as rainwater harvesting ponds, rainwater impounding weirs, and small dams, the Government of Sindh has undertaken a province wide assessment of potential sites for small rainwater harvesting dams/weirs with the help of engineering consultants. Technical work has also included development of feasibility studies and working designs by engineering consultants engaged by the government for more than 80 small dams across the province. The Sindh Irrigation Department has also established a dedicated unit within the Department – known as the Small Dams Organization – to manage construction, operation, and maintenance of such investments. The Government has also prioritized allocations within the development budget for developing such infrastructure; more than 30 small dams have been constructed within water scarce regions by the Government of Sindh over the last ten years.

However, the Government has requested assistance from international partners to address the financing gap.

15. In addition to weaknesses in planning and resource constraints, a number of technical and institutional improvements are also needed. Institutional knowledge available at the Sindh Irrigation Department has not kept pace with recent technical advancements, such as the use of bio engineering techniques in flood embankment designs, the use of modeling and geospatial information to guide flood management (identification of optimal breaching sites, watershed management, etc.), and establishing effective interfaces with other institutions and communities for information dissemination and early warnings. Furthermore, there are pronounced deficiencies in the operations and maintenance of embankments and other critical infrastructure, such as inadequate allocations and limited efficacy of systems and processes, which impacts the full usefulness of this infrastructure over the entire design life.

16. *The World Bank's Approach to DRM in Pakistan.* To support the Government's ex-ante approach towards risk management, the World Bank has provided technical assistance to highlight physical and fiscal risks from hazards. This included undertaking risk assessments for federal and provincial capitals, as well as a national-level fiscal disaster risk assessment report. In light of devolution of responsibilities to the provinces, the World Bank's interventions are being developed at the province level. Financed by a USD 5 million grant, the Balochistan Disaster Management Project was initiated in 2012 to strengthen the capacity of Provincial Disaster Management Authority Balochistan to prepare for, and respond to, natural disasters. Following the floods of 2014, the World Bank prepared a USD 125 million project to restore flood protection infrastructure and increase government capacity to manage disasters and climate variability. Moving forward, the World Bank now plans to undertake long-term engagement for investments in infrastructure and non-infrastructure risk mitigation, to increase the country's disaster and climate resilience. In this context, the Sindh operation is the first ex-ante risk reduction project through which the World Bank will address disaster risks in selected areas of the province.

C. Higher Level Objectives to which the Project Contributes

17. The proposed project in Sindh responds to Result Area 3 'Inclusion' of the World Bank's Pakistan Country Partnership Strategy 2015-19⁵ related to the outcome 'Increased resilience to disasters in targeted regions' through increasing technical capacity of government entities and improving key flood protection infrastructure. The proposed project in Sindh also supports two cross-cutting themes in the CPS. The theme on deepening engagement at the province level, while further clarifying the roles between provinces and the local governments, is being addressed with the support to relevant provincial agencies of Sindh, strengthening of district level agencies, as well as improving institutional and operational interfaces for effective coordination between the two tiers. Similarly, the cross-cutting theme on climate change adaptation and mitigation in public and private sectors, is also being addressed as the menu of climate adaptation and disaster resilience interventions included under the project represent key priorities for reducing vulnerability and improving preparedness for both the public and private

⁵ World Bank's Country Partnership Strategy for Pakistan for 2015-2019, dated April 4, 2015, Report No. 84645-PK.

sectors.

18. Building disaster and climate resilience is essential to supporting the World Bank's twin goals of ending extreme poverty and promoting shared prosperity. Climate change and natural disasters have their greatest impact on the poorest populations who generally live in higher-risk areas, where even frequent, low intensity events may have crippling and cumulative effects on livelihoods and communities. According to '*Shock Waves: Managing the Impacts of Climate Change on Poverty*' – a 2016 publication⁶ by the World Bank – ending poverty will not be possible if climate change and its effects on poor people are not accounted for and managed in development and poverty-reduction policies. A key message from the publication is that targeted adaptation interventions are needed to protect people who have moved out of poverty from falling back into poverty, as the poor: (i) are more often affected by these negative shocks or trends (*higher exposure*); (ii) lose more when affected, relative to their income or wealth (*higher vulnerability*); and (iii) receive less support from family, friends, and community, and have less access to financial tools or social safety nets (*weaker safety nets*). The work also presents evidence that Africa and South Asia – including Pakistan – are the most vulnerable regions in the world on this count. Pakistan ranks among the top ten countries in the world impacted by climate change, with potentially more than 7.4 million people pushed into extreme poverty by 2030 because of climate change. The work further shows that natural hazards, particularly river floods, drought events, and heat-waves, will become more intense and frequent due to the effects of climate change.

19. In this context, activities contributing to disaster and climate resilience are directly linked to sustained development and allow the poorest – the most affected by disasters – to escape from recurring cycles of poverty. The project promotes vulnerability reduction by supporting the government's capacity to cope with climate change and disaster events, reducing exposure of communities to floods, and decreasing the vulnerability of the communities to drought events.

20. Through improving fiscal resilience against disasters, the project also contributes towards the World Bank's broader engagement in Pakistan on the legal, regulatory and supervisory framework for the insurance sector which aims to improve market development outcomes in terms of insurance classes and products. The broader engagement also includes the ongoing Financial Sector Assessment Program (FSAP) Development Module, which emphasizes the need for longer term finances and asset classes including infrastructure finance and insurance, among others.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

21. The objectives of the Project are to mitigate flood and drought risks in selected areas and to strengthen Sindh's capacity to manage natural disasters.

⁶ Hallegatte, Stephane, Mook Bangalore, Laura Bonzanigo, Marianne Fay, Tamaro Kane, Ulf Narloch, Julie Rozenberg, David Treguer, and Adrien Vogt-Schilb. 2016. *Shock Waves: Managing the Impacts of Climate Change on Poverty*. Climate Change and Development Series. Washington, DC: World Bank.

B. Project Beneficiaries

22. The project would contribute to vulnerability and risk reduction within Sindh through a combination of physical works, strengthening fiscal resilience, and institutional development activities. The Project would have benefits for the entire population of Sindh in general due to the increased capacity at the Provincial Disaster Management Authority Sindh, Sindh Irrigation Department and the Finance Department, to manage and respond to adverse natural disasters.

23. The Project would have specific benefits for people living in the geographical locations protected or served through improved infrastructure developed under the project. Through infrastructure investments in restoration and improvement of flood embankments, an estimated 5 million beneficiaries, including both urban and rural populations, will be directly protected from frequent river flooding events. Besides, an estimated 65,000 beneficiaries living in the areas of the Kirther range hills and the Nagarparkar region of Tharparkar desert who are currently exposed to drought and food insecurity will also be directly benefitting from the construction of small dams for rain water harvesting and recharging of groundwater aquifers. In addition, these dams will also provide protection to communities inhabiting the Kohistan area from flash flooding in the hills of the Kirthar Range. Further, roughly half of all project beneficiaries are estimated to be female, based on demographic information available for these areas.

C. PDO Level Results Indicators

24. Progress towards achieving the development objectives of the Project will be measured through the following PDO level results indicators: (1a) Number of direct project beneficiaries; (1b) Percentage of female beneficiaries; (1c) Number of people protected through project interventions from floods, drought, and other natural disasters; (2) Land area protected through project interventions from floods and drought; (3) Improved institutional capacity for disaster and climate risk management; and, (4) Number of people at risk receiving timely and more accurate early warning notifications.

25. In terms of estimated targets for these indicators, tentative investments proposed by the Sindh Irrigation Department are expected to protect more than 5 million people from floods and drought conditions, representing the bulk of direct beneficiaries under Indicator 1. Around 50% of these beneficiaries are expected to be women. The infrastructure investments will further protect more than 517,000 hectares of land from floods and drought events, as measured under indicator 2. The achievement of targets under Indicator 3 will be measured against a set of benchmarks, including: a) Development of Disaster Risk Financing Strategy; b) Emergency Operations Centers set up at provincial and district disaster management authorities; c) Improved flood risk information available for planning; d) Operationalization of Standard Operating Procedures for Sindh Disaster Management Fund; and e) Adoption of integrated disaster management plans by relevant agencies. Finally, the Provincial Disaster Management Authority (PDMA) Sindh will improve its capability to generate and disseminate early warnings to an estimated 500,000 people in the province.

III. PROJECT DESCRIPTION

26. The Sindh Resilience Project (SRP) will focus on improving institutional capacities, performance, and preparedness at key agencies responsible for managing disaster risk in Sindh. In addition, the Project will further contribute towards enhancing resilience to hydro-meteorological disasters including floods and drought through physical infrastructure investments. The dialogue with Government of Sindh has established floods and droughts as the highest priority areas, owing to high frequency and impact. The dialogue has further identified critical needs in these areas, along with an estimate of resources needed to address these priorities.

27. SRP will be implemented in 5 years and have the following components.

A. Project Components

28. Component 1 - Strengthening Disaster and Climate Risk Management (USD 23.75 million): The Component will primarily focus on key disaster management institutions in terms of strengthening operational systems and capacities at the provincial and district levels. In addition, the Component will support other departments at the Government of Sindh – through the Provincial Disaster Management Authority (PDMA) Sindh to develop greater ‘fiscal resilience’ through strengthening financial capacity and risk financing mechanisms, and mainstream disaster risk reduction in development planning and budgeting processes.

29. Subcomponent 1.1. Improving Risk Identification and Using Risk Information for Development Decision-making (USD 2 million): This subcomponent will focus on identifying the disaster and climate risk environment for informed planning and decision-making, development of a framework to undertake the assessments, as well as the tools to allow the optimal utilization of risk information.

30. Subcomponent 1.2. Strengthening Disaster Risk Management Agencies (USD 14 million): This will entail developing the institutional set up and operational capacities at the Provincial Disaster Management Authority (PDMA) Sindh down to the district level. Activities will include enhancement of the operational facilities, construction of office buildings, training programs, and regular drills, at the provincial and district levels. In addition, PDMA will be supported to enhance outreach through establishing integrated rescue and response systems with other agencies, and improving systems for generating and disseminating early warnings. The subcomponent may also support improvement and customization works for PDMA Sindh’s operational facilities. PDMA Sindh will be further supported to enhance its capacity to implement Community Based Disaster Risk Management (CBDRM) interventions. Further, the subcomponent would also support specific interventions related to women, such as awareness raising, DRM training, and targeted women-friendly health and sanitation services in the aftermath of disasters.

31. This component will also support the ex-ante development of a post disaster recovery framework in Sindh to enhance its capacity to respond effectively and efficiently to disasters. The recovery framework would focus on four key areas: (i) strategy for recovery planning; (ii)

institutional set up for post disaster recovery; (iii) financing mechanisms for recovery; and (iv) strengthening of implementation arrangements for recovery activities.

32. Subcomponent 1.3. Enhancing Fiscal Resilience (USD 4.75 million): The fiscal resilience subcomponent will support the government towards strengthening its institutional and financial response capacity in the aftermath of a disaster, and reduce economic and fiscal burdens of such events. This would involve a Fiscal Disaster Risk Assessment (FDRA) for Sindh. The assessment would be followed by the development of a Risk Financing Strategy for Sindh, which would present a framework for how the Government of Sindh would use financial and budgetary instruments to finance post-disaster expenditures to protect selected populations and assets. Further, the project would support the rolling out of a risk finance instrument. This would include advisory services to support development and implementation of Standard Operating Procedures (SOPs), safeguards, and controls for the Sindh Provincial Disaster Management Fund (PDMF), drawing on international good practices. The subcomponent would also support the government in strengthening linkages with the private sector particularly to explore innovative risk finance instruments.

33. Subcomponent 1.4. Project Implementation Support to PDMA Sindh (USD 3 million): This subcomponent will support PDMA Sindh in implementing the Project. This will involve: technical assistance and consultancy services; incremental operating costs, including engagement of additional short-term resources not available within the department; project expenditures in such areas as procurement and financial management systems, grievance redressal mechanism (GRM), as well as social and environmental safeguards' mechanisms.

34. Component 2 - Improving Infrastructure and Systems for Resilience (USD 96 million): This Component will primarily support restoration and improvement of embankments at high risk sites along the Indus for protection against riverine floods as well as construction of small rainwater-fed recharge dams in drought prone regions in Sindh. In addition the Component will assist the Sindh Irrigation Department towards implementing project interventions and increasing operational efficiency.

35. In terms of infrastructure investments, the Sindh Irrigation Department (SID) has developed a long list of investments, including flood protection works and small dams, which would be considered under the Project. The long list has been developed based on a consultative process involving inputs from relevant stakeholders, including provincial departments (including: Irrigation; Finance; Rehabilitation; Revenue; and, Planning and Development) and the benefiting communities. Further, the long list of flood protection investments identified by the Irrigation Department has already been approved by the Indus River Commission. Critical investments for the first year of project implementation have been finalized. For subsequent years, a framework approach will be used for picking priority structural investments from the long list. Under this approach, consistent selection and safeguards screening criteria⁷ have been developed to identify subprojects that may be financed under this component. Additional financing may be considered

⁷ These criteria will inter alia include: (i) economic impact; (ii) technical readiness and feasibility criteria; (iii) demand by local communities; (iv) implementation duration; and, (v) scale of safeguards issues and mitigation costs. The selection criteria are described in further detail under Annex II. Additional risk information generated through interventions under Component 1 will also inform the final selection of investments.

to support the framework approach in case the current envelope does not meet the financing needs for critical investments.

36. *Subcomponent 2.1. Flood Protection Works (USD 44 million):* The Component will support structural investments including restoration, improvement, and up-gradation of flood embankments to increase resilience of communities and economically productive areas along the Indus River. The preliminary list of high risk sites and corresponding flood mitigation investments communicated by Sindh Irrigation Department will protect communities residing along the left and right banks of the Indus. The aforementioned framework approach will be utilized to finalize flood protection investments included under the Project by applying consistent selection and screening criteria. Overall, tentative investments proposed by the Sindh Irrigation Department are expected to protect: 517,000 hectares of land; more than 2 million acres of cropped area, and associated livelihoods; more than 6,500 kilometers of roads; an estimated population of 5 million and more than 600,000 housing units.

37. Three priority reconstruction investments – identified through the application of selection criteria – will be undertaken downstream of Kotri during the first year of Project implementation. These embankments will be located within the Irrigation's Department's Pinyari Circle which is a high risk site. Investments in strengthening these embankments – Mulchand Shah-Bunder (MS) and Sunda Hilaya (SH) Bunds on the left bank, and Baghar Ucheto (BU) and Indo Bunds on the right bank – will protect around 275,000 houses, and an estimated population of 2 million. These embankments will secure the important urban centers of Sujawal and Thatta, as well as more than 800,000 acres of rural agricultural lands against frequent floods.

38. In addition to the above, the sub-component will support SID to strengthen the Operations and Maintenance (O&M) regime, including allocations, inventory and asset management practices to ensure the sustainability of assets created.

39. *Subcomponent 2.2. Construction of Small Recharge Dams to Address Drought and Flash Flooding Risks (USD 40 million):* This subcomponent will support the construction of small rainwater-fed recharge dams, less than 10 meters in height, in the Kohistan and Nangarparkar regions. These small dams will primarily contribute to the recharging of underground aquifers and provision of water to communities during dry periods. Additionally, these would protect communities against seasonal hill torrents and flash floods originating in the Kirthar Range.

40. The Sindh Irrigation Department is sufficiently advanced with preparatory activities for a large number of proposed small dams, with completed feasibility studies and approved PC-I documents. The Project will utilize the screening criteria under the framework approach, particularly focusing on economic impact, to select priority dams to be financed. The proposed investments will be clustered in two regions: (i) the Nangarparkar area of district Tharparkar; and (ii) Kirthar range hills in Dadu, Jamshoro and Malir districts. The envisaged investments are expected to add more than 25,000 acre feet of water into fresh groundwater aquifers, thereby raising the water table from the current depth of around 200 feet up to 25-50 feet. In addition to recharging of fresh groundwater aquifers, these investments will provide safe drinking water to local communities and livestock as well as irrigating more than 7,000 hectares of arable lands.

Further benefits include protection of around 11,000 households having a population of more than 65,000 persons from hill torrents and flash flooding.

41. *Subcomponent 2.3. Technical Assistance to Sindh Irrigation Department (USD 5 million):* The sub-component will support the Sindh Irrigation Department for implementation of non-structural measures to enhance flood management and drought mitigation. The sub-component would also support related equipment upgrades and studies. Salient interventions will include the establishment of a Decision Support System for the Department, improving capacity for safety evaluation of flood embankments, river morphology studies, and floodplain mapping.

42. *Subcomponent 2.4. Project Implementation Support to Sindh Irrigation Department (USD 7 million):* This subcomponent will support the Sindh Irrigation Department in implementing the Project, encompassing: (i) incremental operating costs, including recruitment of additional short-term resources not readily available within the Department; (ii) consultancy costs – including engagement of Project Implementation Support and Supervision Consultant (PISSC); and (iii) expenditures on fiduciary systems, safeguards requirements, and GRM.

43. ***Component 3 - Contingent Emergency Response (USD 0):*** Following an adverse natural event that causes a major natural disaster, the government may request the World Bank to reallocate project funds to support response and reconstruction. This component would allow the government to request to reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available for such an emergency.

44. Disbursements under the Contingent Emergency Response component will be contingent upon the fulfillment of the following conditions: (i) the Government of Pakistan has determined that an eligible crisis or emergency has occurred and the Association has agreed and notified the Government; (ii) the Government of Pakistan has prepared and adopted the Contingent Emergency Response (CER) Operations Manual that is agreed with the Bank; and (iii) The Government of Pakistan has prepared, adopted, and disclosed all safeguards instruments required as per the World Bank's guidelines – which have been approved by the Association – for all activities from the CER Implementation Plan for eligible financing under the CER component.

B. Project Financing

45. The overall project cost is USD 120 million. Total financing through the IDA Scale Up Facility credit will amount to USD 100 million. The credit will carry a variable spread over LIBOR and be repayable over twenty four years including a grace period of five years. The Front-end fee of 0.25% of the amount of the Credit will be capitalized and paid out of the Credit. The Government of Sindh will contribute USD 20 million as counterpart funding, which will be primarily utilized for financing salaries of government officials working on the project, improved operations and maintenance of infrastructure assets, acquisition of land, and resettlement and other safeguards related costs. A summary of project costs, IDA financing, and percentage IDA financing contribution to project costs, is provided in the table below.

Project Components	Project cost (USD millions)	IDA Financing (USD millions)	% Financing
1. Strengthening Disaster and Climate Risk Management	23.75	19.75	83%
1. Improving Risk Identification & Using Risk Information for Decision-making	2	2	100%
2. Strengthening Disaster Management Agencies	14	12	86%
3. Enhancing Fiscal Resilience	4.75	3.75	79%
4. Project Implementation Support to PDMA Sindh	3	2	67%
2. Improving Infrastructure and Systems for Resilience	96	80	83%
1. Flood Protection Works	44	37	84%
2. Construction of Small Recharge Dams to Address Drought and Flash Flooding Risks	40	34	85%
3. Technical Assistance to Sindh Irrigation Department	5	4.5	90%
4. Project Implementation Support to Sindh Irrigation Department	7	4.5	64%
3. Contingent Emergency Response	0	0	Up to 100%
IDA Front End Fee	0.25	0.25	100%
Total Costs	120	100	83%
Total Financing Required		100	

C. Lessons Learned and Reflected in the Project Design

46. There are a number of lessons to be learnt from ongoing national, regional, and global operations supported by the World Bank in this sector. Within Pakistan, the World Bank has valuable lessons from the Balochistan Disaster Management Project (BDMP) and the Disaster and Climate Resilience Improvement Project (DCRIP). The institutional strengthening of DRM institutions in Sindh as well as physical and structural investments under the project will be informed by lessons from these operations.

(a) Disaster Management Authorities are nascent and have weak institutional capacity. The Project recognizes the key need for strengthening the capacity of PDMA Sindh towards disaster risk mitigation and has allocated funds and activities towards the same. The PDMA Balochistan is a good example and lessons are drawn from its evolution and development process.

(b) There is evidence that flood response operations focusing too heavily on rebuilding infrastructure and not enough on complementary adaptation and preparedness achieve limited results. A well-planned and well-targeted menu of interventions for flood management, fiscal resilience, and early warning systems, is needed for achieving long-term disaster risk reduction. The project focuses on technical and financial assistance in ex-ante risk mitigation and improving response mechanisms to increase preparedness.

(c) Disaster risk management funds can be a useful part of a disaster risk finance strategy, to pre-finance well-defined post-disaster expenditures. However, international experience shows that strong mechanisms and procedures are needed for optimal utilization of such funds. The project will combine strengthening standard operating procedures and associated institutional and financial mechanisms to ensure that these funds are timely and effective in financing post-disaster response and reconstruction.

(d) The project seeks to provide technical assistance and utilize international expertise to improve technical design and sustainability of infrastructure. Protection of river banks from erosion is a problem in flood-prone areas and involves large recurring expenditures. A number of new techniques and procedures have been used for improving the design of embankments in other projects within the region, which include: (i) ecological/ bio-engineering practices for protection against erosion and scouring; (ii) geotextiles for providing greater stability to foundations of embankments on soft soil; (iii) improved gabion design; and, (iv) bamboo/ wooden structures such as porcupines. These measures will be piloted with possible scaling up under the project based on results and efficiencies achieved.

(e) Experience with various infrastructure projects suggests that regular inspection and maintenance is essential for continued operation. The project will focus on improving the operations and maintenance regime at SID as well as mobilizing local communities to ensure that the infrastructure created continues to provide full benefits throughout its design life.

(f) An effective sedimentation management strategy is needed for small dams to ensure that reservoir volume is not silted up and reservoir services severely reduced or annulled. The project will utilize design features such as coarse sediment trapping and removal, dry excavation of fine sediments, subsurface dams, and/or off-stream storage, where possible, to address sedimentation.

(g) Other important lessons reflected in the project design involve the need for: (i) thorough hydrological and hydraulic analyses to determine frequencies for occurrence of floods of various magnitudes, and flood routing studies; and (ii) identification of any resettlement and land acquisition issues and using these as eligibility filters for prospective investments.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

47. ***Project Implementation:*** The Provincial Disaster Management Authority (PDMA) Sindh and Sindh Irrigation Department (SID) will be responsible for implementation of Component 1 and Component 2 respectively. In case Component 3 is activated, the Recipient will need to designate the responsible agency/ies for its implementation. The Sindh Planning and Development Department (P&DD) will facilitate coordination between provincial departments and agencies.

48. The two implementing agencies will have responsibility for project implementation including, but not limited to, reporting, monitoring and evaluation, social and environmental management, procurement, financial management, audit and disbursements, as well as coordination with the line agencies and the Association. Sindh Irrigation Department (SID) and Provincial Disaster Management Authority (PDMA) Sindh will notify dedicated focal points, officials and staff to manage project implementation. Specific resources contributed by the two institutions will be financed by Government of Sindh. The implementing agencies may augment designated staff with additional short-term resources from the market on a need basis to cater for specific specializations and skillsets not readily available within the two institutions.

49. ***Project Operations Manual:*** The project will be implemented according to the guidelines and procedures outlined in the Operations Manual (OM), which should be adopted by project effectiveness and reviewed periodically. The documents will lay out roles and responsibilities of different stakeholders and provide details of project processes and project cycle.

50. ***Communications:*** The Project will support the Implementing Agencies in developing and implementing an internal and external communications strategy during project implementation. The communication functions for the project will be housed at SID and PDMA Sindh.

B. Results Monitoring and Evaluation

51. The Results Framework in Annex 1 will be used to monitor and evaluate the achievement of the PDO. Project monitoring will be a continuous activity focusing on progress towards achieving identified outcomes and outputs. In addition to regular reporting of outputs, it will also include periodic process reviews and audits. The monitoring of physical progress will be carried out by the designated staff within the line departments who will share reports on a quarterly basis with the World Bank. The existing information database will be strengthened by an online tool for gathering updates. A portion of this database will also be uploaded on the Project website as part of regularly sharing information with the public.

52. The implementing agencies will submit progress reports to the World Bank every six months during project implementation. In addition, the implementing agencies will use further tools and data sources to collect information on the achievement of indicators included in the Results Framework. These will include: (i) Design and feasibility reports; (ii) An Institutional Coordination Review for a before-after analysis of DRM entities at the provincial and district levels; and, (iii) Outputs from analytical works such as risk assessments, floodplain mapping, etc. Additional tools employed to measure citizen engagement include regular transmission of information from the Grievance Redressal Mechanism, and undertaking Beneficiary Surveys at the end of Year 2 and Year 5 of project implementation. The information source for each specific indicator is listed at Annex I.

53. In addition, monitoring of social and environmental aspects will focus on: (a) continued compliance with national environmental regulations, social and environmental safeguards as laid out in World Bank's policies, and provisions of the Environmental and Social Management Framework (ESMF) and other safeguard documents; and (b) overall social and environmental impacts resulting from the project interventions.

C. Sustainability

54. SRP has strong institutional buy-in from the Provincial Government given the frequency and impact of disaster events. Given its ex-ante nature, the project requires embedding technical capacity for disaster management and risk financing mechanisms within institutional structures. Implementation arrangements follow government mandates and institutional responsibilities. Each component is implemented by the institution that would follow on its management to ensure the sustainability of these activities.

55. Adequate spending on Operations and Maintenance (O&M) is critical to ensure the sustainability of any capital investments made by SID. The project would strengthen the O&M regime at SID by promoting the culture of adequate resource allocation for O&M and improving the effectiveness in use of those resources. Over the course of the project, the project would support incremental costs for O&M on a declining basis, with the Government of Sindh to progressively take these up through counterpart finances. Similarly, the envisaged capitalization of the Provincial Disaster Management Fund under the Fiscal Resilience subcomponent will be achieved through counterpart co-financing, so as to make these allocations entrenched and sustainable.

56. The Project will also focus on incorporating several measures to ensure the longevity of infrastructure assets created under the project. These include design features such as use of eco-engineering techniques that include grass cover for increased protection against erosion for embankments and small dams as well as coarse sediment trapping and removal, dry excavation of fine sediments, subsurface dams, and/or off-stream storage for small dams. Further, an effective sedimentation management strategy will be developed and operationalized for small dams involving regular surveillance and maintenance, community engagement and participation in monitoring and ordinary maintenance, and regular monitoring of intended aquifer recharging. Similarly the Sindh Irrigation Department will be supported to enhance their capacity for inspection and safety evaluation of flood embankments through the provision of required equipment and trainings. In the case of small dams, the project will mobilize local communities for routine surveillance and, as appropriate, in ordinary maintenance (coarse sediment removal, maintenance of fencing, removal of invasive trees and bushes, etc.) to promote local ownership and enhance sustainability.

57. Owing to previous experience at concerned departments, procurement of equipment will make use of warranty and after sales maintenance provisions to ensure that the equipment continues to provide intended benefits throughout their design life.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

58. **Overall Risk Rating.** The overall risk rating for project design and implementation is “Substantial”. However, it is important to note that the project risk rating needs to be viewed in the operational context of the overall risk rating in the province and in the country, as significant risks to the project arise from country level factors as described below.

59. **Political and Governance Risks.** There is a substantial risk of sudden change to the political landscape in Pakistan, and this political instability creates the risk of a shift or change in government priorities. Moreover, governance is a considerable concern for growth and development in Pakistan. Institutions of accountability have not provided a strong framework for holding the executive or service delivery agents accountable for results. Initial steps taken by the government to improve transparency, accountability, and participation have as yet had limited impact. In response, the project design employs a comprehensive set of measures for promoting transparency and strengthening processes in such areas as prioritization/ selection of investments using objective criteria, financial management and reporting procedures, procurement and

complaint resolution mechanisms, engaging communities and citizens, operations and maintenance regime for infrastructure assets, and monitoring and evaluation.

60. There is weak coordination between various government departments/ agencies responsible for various aspects of disaster and climate resilience. The project design focuses on improving coordination and promoting integrated mechanisms for preparedness and response. This is discussed in greater detail in subsequent discussion of sector and stakeholder risks.

61. Other notable political risks include political dynamics in Sindh with competing urban and rural based interest groups, and deterioration of law and order in parts of the province associated with political events – particularly Karachi city and interior Sindh – involving sporadic violence and suspension of economic and other activities. This directly links to security risks which are discussed later in this section along with mitigation measures.

62. **Macroeconomic Risks.** Macroeconomic risk is rated as Substantial, as the country's fiscal situation remains highly vulnerable, particularly in light of expansionary spending linked to security and the continuous natural disasters. The fiscal deficit remains large and progress on revenue mobilization, power reforms, and SOEs restructuring is slow. The security risk is also substantial throughout the country given ongoing actions by militant groups and counteractivities by the military. Continued strong dialogue and analytic work with all levels of government and political parties to make the case for priority reforms at the macroeconomic and sector levels is expected to help mitigate these risks, and is part of the World Bank's overall risk mitigation strategy at the country level. In this context, the World Bank will work together with the government and development partners to sustain momentum for key reforms (for example, tax policy and administration, power sector, and so on). At the project and province level, the World Bank will continue to engage at all levels, and monitor counterpart financing, project allocations and releases. In addition, the application of strong filters for economic viability of investments will ensure strong economic returns for the provincial government.

63. **Sector Strategies and Policies.** As discussed in the sectoral and institutional context, the National Disaster Management Act 2010 led to the establishment of disaster management authorities at the national, provincial and district levels. However, the capacity and experience of these agencies is limited. The National Disaster Management Plan (NDMP) 2012 represents the key sector plan from the national government. However, there is a large financing gap for the implementation of the Plan. The project directly contributes to addressing these weaknesses through a strong menu of interventions aimed at strengthening disaster management institutions in Sindh, addressing capacity constraints, and financing provincial priorities from the NDMP.

64. **Technical Design Risks:** Limited institutional understanding and experience of managing hazard risks, the unreliability of the data base on hydro-meteorological conditions in the project areas, as well as the overall complexity of the project's design encompassing multiple subsectors and agencies make technical risk substantial. The operation will seek to proactively address institutional constraints to effectively plan, mitigate and respond to disasters, particularly through interventions implemented by PDMA Sindh. Similarly, support will be provided for improved information and data to facilitate a fuller understanding of disaster risks by the agencies involved. In addition to the above, sustainability of infrastructure managed by the public sector

would also have a substantial risk given the availability of funds for operations and maintenance. This risk would be addressed by facilitating the departments/ agencies to adopt more effective policies for operations and maintenance of infrastructure, thereby improving the quality and enforcement of construction standards.

65. *Institutional Capacity Risks for Implementation and Sustainability.* In terms of institutional capacity, the Sindh Irrigation Department has adequate capacity and experience of implementing several projects supported by the World Bank. On the other hand, Provincial Disaster Management Agency Sindh will need focused support to bring implementation capacity to the required level, due to shortage of qualified staff with project management and technical expertise. While the use of regular staff at the implementing agencies is envisaged to ensure a sustainable improvement of institutional capacities, the project will support the engagement of particular skillsets and specialized resources to augment existing staff to address gaps in implementation capacity. In terms of sustainability of infrastructure developed through the operation, the Project has focused interventions aimed at improving operation and management practices at Sindh Irrigation Department, which will ensure adequate budgeting and allocation of funds from the government budget for the upkeep and continued operation of physical investments/ assets throughout their design life.

66. *Fiduciary Risks.* The integrated fiduciary assessment identified several weaknesses in planning, budgeting, and procurement processes at the two implementing agencies. The agencies do not have strategic plans identifying priority investments and sources of financing. Due to weak linkage between plans and budgets, the development projects are delayed and revised a number of times. Some ongoing projects have suffered delays and incurred liabilities due to unpredictable releases from the government. In terms of procurement, the assessment found weaknesses in planning and packaging of procurements based on market analysis, institutional capacity, appropriate packaging, and aggregation of requirements wherever possible, to ensure 'economies of scale'. As a mitigation measure against the risk of delayed implementation of investments under the current project, the assurance of predictable releases, especially counterpart funds, has been built in project documents and legal agreements. Additional mitigation measures include, inter alia, engaging qualified procurement and financial management resources to improve available capacity and extant practices, market analysis, prior review of consultancies, the establishment of a website link and complaint management system for procurement, and the development of a strategic investment plan. The sections on procurement and financial management appraisal discuss fiduciary issues and remedial measures in greater detail.

67. *Environment and Social Risks.* In terms of environmental and social risks, the project will finance restoration works on embankments and construction of small dams, which may have moderate-to-substantial environmental and social impacts. Therefore, a framework approach has been employed whereby all subprojects will be screened at the identification stage for their impacts. Subproject-specific Environment and Social Management Plans/ Impact Assessments, and Resettlement Action Plans will be developed upfront if necessary, sent by IAs to the World Bank for review and clearance, and disclosed in accordance with the World Bank's policies. In addition, dedicated environmental and social specialists will be hired within the implementing

agencies to manage such risks in compliance with the ESMF, and in consultation with the World Bank's team.

68. **Stakeholder Risks.** The project will need to strongly engage with various government entities and communities, and require effective interfaces for institutional coordination and community engagement. The Sindh Planning and Development Department has been given an implementation role to facilitate institutional coordination. Similarly, a strong community engagement strategy and citizen engagement mechanisms will be used to facilitate participation, primarily for infrastructure investments and community based disaster risk management interventions. In addition the project will support a strong communication interventions strategy to increase community awareness and improve transparency in project activities.

69. **Other: Security Risks.** The volatile security situation in Pakistan poses risks that may hamper timely implementation and oversight of operations due to reduced access to some areas and suspended mission travel. As a mitigation measure, the project will use alternative supervision and monitoring arrangements in case security issues curtail access to project areas, such as third party monitoring, geo-referenced photography, and videoconferencing with counterparts.

VI. APPRAISAL SUMMARY

A. Economic Analysis

70. Benefits that can be readily estimated are of three types: First, project interventions will result in saving valuable life of citizens and reducing injuries. Second, the project will reduce the magnitude of damage to physical infrastructure including houses, roads, agriculture produce, livestock, and social assets. Third, small dams will improve water availability for irrigation in drought-affected areas. Some other economic benefits are difficult to quantify as multiplier effects are involved.

71. The economic analysis for the project is described in detail at Annex 4. Key results from the economic analysis are listed below:

- Present value of expected economic savings through protections of population against loss of lives and injuries are estimated at USD 304.11 Million.
- Present value of economic savings due to reduced damages from future floods are estimated to be around USD 292.27 Million.
- The present value of benefits from small recharge dams is estimated at USD 79.53 Million.
- The overall present value of benefits ranges from USD 407.23 Million to USD 944.59 Million with an average of USD 675.91 Million. These values are well above the proposed capital cost of the project; therefore, the net present value of the project is positive.

72. The above results show that the net fiscal impact from project investments will be strongly positive. The magnitude of economic benefits and savings outweighs the capital and recurring costs of the project, and the benefit-cost ratio ranges between 2.52 to 5.85 with an average of 4.19.

B. Technical

73. ***Rapid flood risk diagnostic.*** The Sindh Irrigation Department has performed a preliminary flood risk assessment to analyze the key elements of the flooding along the Indus, identify high risk spots and to get an understanding of the mechanism and conditions which result in inundation of the floodplain. The assessment used information from recurring flooding events along the Indus over recent years as available evidence to assess the adequacy of existing flood protection infrastructure as well as to estimate the nature and extent of damages resulting from failures. This analysis has identified a long list of embankments along with scenario maps of the extent of flooding associated with each site and estimated damages to communities and infrastructure within inundated areas. The selection of investments for the first year of implementation is based on this diagnostic assessment. Priority investments identified for subsequent years will be assessed in greater detail using the criteria listed in the framework approach. In addition, analytical outputs from project interventions such as river morphology studies, floodplain mapping, safety evaluation of flood embankments, and risk identification activities will provide additional information and evidence for selection of priority investments in subsequent years.

74. The Sindh Irrigation Department has experience of constructing flood protection infrastructure, including contracts for engineering design, supervision, and physical works. The proposals for the tentative long list of investments have already been approved by the Indus River Commission, which means that these investments are in line with national priorities in the sector and agreed between stakeholders. The Department has also prepared project documents, and has initiated the procurement process to engage the Project Implementation Support and Supervision Consultant who will review and validate engineering designs and bidding documents for all infrastructure investments.

75. ***Dam safety assessment.*** The Government of Sindh has a large set of feasibility studies, including reasonably complete working designs, developed by qualified engineering consultants for prospective small dams. The available studies, designs, and prospective sites have been reviewed and validated by an international expert during project preparation to ensure that dam safety concerns are adequately and appropriately addressed in these designs.

76. ***Building on the findings of the above assessments, the technical options selected adequately account for the need to build long-term resilience against flood and drought risks.*** This will be further strengthened during project implementation by the application of the selection criteria under the framework approach to refine the analysis and to ensure that decisions are evidence-based and cost-efficient.

77. Interventions at the PDMA are in line with the national priorities in the sector and are being successfully implemented at other provincial agencies under other operations supported by the World Bank. Institutional capacity assessments and risk identification exercises will further identify critical needs and inform recommendations for strengthening capacity of institutions to better manage disasters and climate variability. This would also include improved early warning and response capabilities, enhanced fiscal resilience and better post disaster recovery planning to the benefit of the target population. The PDMA has prepared draft TOR for the capacity

assessment and capacity development plan, which would be undertaken upfront during the first year.

C. Financial Management

78. The financial management assessment reviewed the current financial management arrangements relevant to the Project in the executing/implementing agencies to determine whether they give reasonable assurance that project funds will be used for their intended purpose. Based on this assessment, and subject to the implementation of mitigating measures for the identified risks, the Project's overall financial management environment provides reasonable assurance that the financing proceeds will be used for the intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency, and accountability, and appears able to support implementation and achieve the desired results.

79. PDMA Sindh and SID are the implementing agencies of the project. A Financial Management Specialist is needed at each agency to meet reporting and accounting requirements of the project. Since under the proposed project a large number of development schemes will be undertaken, it is imperative to ensure during the life of the project that disbursement is aligned to physical progress and procurement plan. In order to mitigate the risk of delayed implementation of schemes, Annual Work Plans will be prepared in detail and aligned with the Procurement Plan.

80. Payments will be made centrally from SID offices located in Hyderabad and PDMA Sindh offices situated in Karachi. Recording and reporting is intended to be carried out at SID offices (Hyderabad) and PDMA Sindh offices (Karachi). Accounting and reporting will be carried out by the AG Sindh. The government's Financial Management Information System (FMIS) generated fiscal reports will be the basis for preparation of the Project's Budget Execution Reports by each Implementing Agency (IA). The Financial Reports (interim and annual) will also be produced, showing such details as are required by the World Bank. The Financial Reports will take the form of Interim Financial Reports (IFRs) and Annual Financial Statements. The Project external audit will be carried out by the Auditor General of Pakistan (AGP) as the supreme audit institution of the country. Each of the two implementing agencies will submit the related activities/ components for audit. The accounts will be audited by DG (Audit) Sindh. For each financial year closing on June 30, acceptable audited financial statements of the project along with Management Letter will be submitted to the Bank by December 31, i.e. within six months after the close of the financial year.

81. Refer Annex 3 for the detailed assessment.

D. Procurement

82. All procurements envisaged for the implementation of this project will be carried out in accordance with the World Bank's Guidelines: "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers January 2011 revised July 2014"; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers January 2011 revised July 2014". The World Bank's standard bidding documents for procurement

under International Competitive Bidding (ICB), and sample bidding documents for procurement under National Competitive Bidding (NCB) which are already being used on other projects financed by the World Bank in Pakistan, will be used for procurement of Goods and Works under the Project. The World Bank's Standard Request for Proposal (RFP) document will be used in the selection of consulting firms.

83. The project's components will be implemented by the two IAs. SID has experience of working on significant procurement activities; however there is a need to develop a strong bidder's qualification process; realistic procurement planning keeping in view external constraints like climatic conditions; trusted complaint management; amicable dispute resolution mechanism and firm debarment procedures. There is also a need for building robust contract management and monitoring capacity for smooth operations of the project.

84. In case of SID the change of administrative jurisdiction for works and need for designating a field based staff to act as client's representative for Project Implementation Support and Supervision Consultant (PISSC) who would act as Engineer, there would be need to assign a field based officer as implementation support coordinator; ideally located at Hyderabad.

E. Social (including Safeguards)

85. The project triggers OP 4.12, *Involuntary Resettlement*. There are a number of civil works that could potentially include resettlement or temporary relocation of communities. Construction works could also include other impacts on communities and their livelihoods that may require mitigation measures. Since the exact sites of sub-projects for both dams and flood restoration works are undecided, a Resettlement Policy Framework has been prepared. A Resettlement Policy Framework (RPF) was prepared for appraisal and has been disclosed by the Government of Sindh as part of the Environmental and Social Management Framework (ESMF). The Resettlement Policy Framework identifies the resettlement approach, procedures for screening sites where resettlement is likely to take place, provide guidance on assessing the loss to communities, guidelines on determining compensation and managing relocation, institutional arrangements and monitoring framework. Sub-projects will then prepare a Resettlement Action Plan (RAP) or an Abbreviated Resettlement Action Plan (ARAP) where required after rigorous social screening of the site. A procedure for stakeholder consultations, disclosure of information and grievance redress mechanism has also been laid out.

86. For the first year of the Project, one sub project already identified has prepared an Environmental and Social Impact Assessment (ESIA) and an Abbreviated Resettlement Action Plan (ARAP), disclosed locally and nationally as well as at the WB InfoShop on January 25, 2016. During the process of ARAP development, a census was conducted and consultations were carried out with both households to be resettled and the wider community. Appropriate options for resettlement were identified in consultation with affected households and will be implemented in line with their choice.

87. At present, there is limited capacity within Sindh Irrigation Department for undertaking social and resettlement related work. Requisite capacity will be made available through a Memorandum of Understanding with Sindh Irrigation and Drainage Authority (SIDA) that has several years of experience of working on farmer organizations and social mobilization with the

World Bank. Technical support on social safeguards will also be available for the project through Environmental and Social Monitoring and Evaluation Consultants.

88. The Project Implementation Support and Supervision Consultant (PISSC) engaged by Sindh Irrigation Department will include capacity on social safeguards and will assist with development of Environmental and Social Management Plans (ESMPs), ESIAs, and RAPs. They will also be responsible for internal monitoring of social aspects under the guidance of Sindh Irrigation Department.

89. **Gender:** The Project will have several positive impacts on women who are a key vulnerable group during floods and drought. Under Sub-Components 1.1 and 1.2, support for disaster planning and trainings and outreach mechanisms will include specific measures for women. Strengthening systems for CBDRM will particularly focus on women to ensure that they are included in any field level/ community based disaster planning system. Appropriate technical capacity on gender will be acquired for this purpose by the PDMA.

90. For all sub-projects on floods and drought mitigation, consultations will include women in order to assess the potential impacts on them and to ensure that any negative impacts are properly mitigated. The Project will ensure that gender disaggregated data is collected during Social Assessments so that impacts on women can be delineated clearly. Female headed households will be awarded special attention during resettlement planning and will be provided with appropriate support and consulted on their preferences.

91. Further, Component 1 of the project will also support undertaking awareness raising, training and small scale infrastructure measures to specifically benefit women. These are likely to include such measures as creation of women-friendly water supply systems, provision of DRM training to women, health and sanitation measures for women during disasters etc. The Project will involve Civil Society Organizations and other partners to reach out to women and implement such activities.

92. **Citizen Engagement:** A Project level Grievance Redress Mechanism (GRM) has been designed and included in the ESMF. This will include a field level mechanism for resolving disputes as well as a higher level Grievance Redress Committee that can resolve complaints beyond the scope of field mediation. Further, Beneficiary Feedback Surveys will be conducted at the mid-term and completion stages of schemes to ensure that feedback from stakeholders is captured during implementation. Further, the surveys will be useful in conducting public consultations during scheme implementation and providing feedback to the local communities of their views regarding issues they may have highlighted in the surveys. This will provide feedback on both positive and negative impacts and enable the project to engage with the public effectively.

F. Environment (including Safeguards)

93. The World Bank's policy on Environment Assessment OP 4.01 is triggered. The embankments along the Indus River protect large areas of the Sindh Province from floods and resulting loss of lives and properties as well as damages to civil works, standing crops, irrigation

and other physical infrastructure. The proposed works on embankment would strengthen the segments that have been damaged/weakened by the recent floods. This would protect large areas of the province against possible flooding and inundation in case of breaches in the embankment. On the other hand, the construction of small recharge dams across intermittent rivers will improve the water availability in the areas that experience frequent droughts and are not covered by the canal irrigation system. These small dams will harvest rain water in seasonal (non-perennial) streams thus improving the groundwater availability in the area. This groundwater could then be used for cultivation as well as for domestic needs, thus improving the livelihood conditions of the local population while also providing water for domestic consumption. The increased water availability will also help in increasing the natural vegetation cover in these water scarce areas.

94. The project has been categorized as Environment Category A primarily because of construction of new albeit small recharge dams which may potentially cause significant environmental impacts. The major potential adverse impacts associated with the construction of the river embankment sub-projects include disposal of excavated/surplus soil material, development of shallow borrow pits away from the embankments for construction materials, temporary disturbance of surface water quality due to river embankment stone piling, minor traffic congestion and dust pollution on roads along the river dikes due to delivery trucks, temporary damage to non-critical riparian habitat and vegetation, minor soil erosion along embankments during construction, improper disposal of solid and liquid wastes, opening up of narrow access routes to embankments, and occupational health and safety risks. The positive impacts would be putting in place structurally sound and environment-friendly permanent structures along the Indus River to protect the embankments from breaching and the surrounding communities from severe flood damages as well as generate local employment during the construction phase. In case of the small recharge dams for rainwater harvesting, in addition to the construction-related impacts described above, the potentially adverse impacts include reduction of surface water flow during the rainy season for lower riparian areas, and possible proliferation of disease-causing vectors such as mosquitos in the water impoundment areas during the rainy season such as malaria and dengue. The positive impacts include flood control during the rainy season, and the recharge of groundwater and increase in water supply for irrigation, domestic as well as livestock use.

95. The World Bank's policy on Natural Habitats OP 4.04 is triggered as there is a need to manage short-term and reversible construction-related impacts in the existing access roads that traverse natural habitats of identified important flora and fauna species leading to the sub-project sites. The sub-project sites are not located in critical natural habitats areas nor will cause the conversion of the same. It is also anticipated that the establishment of borrow pits outside the sub-project sites but within areas of high water table in currently unproductive and uncultivated land are converted into permanent wetlands that may serve as natural habitats for flora and fauna endemic in the area.

96. One sub-project site will be in the fringes of the Kirthar National Park. The Kirthar area is characterized by rugged terrain, gravelly plains interspersed by low hills, scant and xerophytic vegetation, little rainfall but some flash floods during monsoon rains, no canal irrigation, availability of small quantities of groundwater only in some areas and hence cultivation possible

in only a few areas. The ESIA for this sub-project site will ensure that no project activity causes any conversion or disturbance to the important natural habitats in the area, nor construction-related impacts in the access roads traversing the Kirthar National Park cause any irreversible, long-term impacts to habitats of the flora and fauna in the sites.

97. The project includes the construction of small recharge dams and the reconstruction of river embankments triggering the World Bank's policy on Dams, OP/BP 4.37. These water control structures will not be more than ten (10) meters in height and are therefore classified as small dams. They are not located in environmentally critical areas as well so it is most likely that the anticipated impacts are manageable. For small dams, generic dam safety measures will be incorporated in the detailed engineering design and requirements for bid tendering of the construction contracts prepared by qualified engineers to ensure adequate compliance with the requirements of OP 4.37. The dam safety measures will also be integrated in the operation and maintenance of the dam and associated works by qualified engineers. The measures to address the anticipated impacts will be integrated in the construction supervision plan and the Environment and Social Management Plan with due diligence and quality assurance.

98. To address the above described potentially adverse impacts, appropriate mitigation measures have been proposed, including: proper disposal of excavated earth; water sprinkling at access roads and construction areas to avoid/minimize dust pollution; use of silencers for the machinery and vehicles; use of ear protection gears and other personal protective equipment by construction workers; provision of septic tanks in camps and offices, treatment of wastewater and other pollution control measures in construction camps; location of borrow pits to be at safe distances from structures and to be properly restored; not selecting productive land for borrow area or for establishing camps/construction areas, no damage to cultivated areas; avoiding unnecessary clearing of natural vegetation; avoiding archaeological or culturally important sites; avoiding and controlling toxic materials; implementing erosion control measures, and adhering to safety and occupational health precautions.

99. In pursuance of the national/provincial regulatory requirements as well as WB safeguard policies, the project has carried out an Environmental and Social Impact Assessment (ESIA) for the rehabilitation of three adjacent embankment subprojects along the Indus River to be undertaken during the first year of SRP. The ESIA includes an Environmental and Social Management Plan (ESMP), which identifies site- and subproject-specific potential impacts and also includes associated mitigation and monitoring plans to address the identified impacts.

100. In addition, an Environmental and Social Management Framework (ESMF) has been prepared for sub-projects to be undertaken during the later years since specific siting and design details are not known for all embankment and dam subprojects, and improvement of PDMA Sindh's operational facilities. The ESMF describes the project rationale, the overall environmental and social conditions of the project site and the overall process on how the safeguard instruments will be prepared. The ESMF includes a screening checklist that categorizes the subprojects as Environment Category A or B depending upon the nature and size of each subproject and the environmental and social conditions at or around the proposed intervention. The ESMF also identifies the generic impacts of the project interventions and describes the assessment needs of the individual subprojects. The ESMF calls for conducting an

environmental and social assessment (ESA), including an environmental and social management plan (ESMP), for each Category A subproject and preparing an ESMP for each Category B subproject. An Environmental Code of Practice (ECOP) accompanies the ESMF, which prescribes environment-friendly construction practices that the contractor will have to follow during the entire construction period, including pre-and post-construction. The ESAs and ESMPs for the subprojects to be undertaken during the subsequent years will be prepared during the project implementation as and when the subprojects are selected and their siting and technical details become available.

101. Both ESMF and ESIA have been consulted and disclosed locally and nationally as well as at the WB InfoShop on January 25, 2016, and updated in March 2016.

102. The Sindh Irrigation Department (SID) has designated a Project Director (PD) to lead project implementation. To manage the environmental aspects of the project, the SID Deputy Director (Hydrology and Environment) has been designated as SRP's environmental focal person. He will be responsible for ensuring timely availability of environmental safeguard documents during the project preparation phase and compliance of these documents during the project implementation phase. The PDMA will also designate an environmental focal point among their staff.

103. The SID has environmental management capacity at the Environmental Management Unit (EMU) within the Sindh Irrigation and Drainage Authority (SIDA) and the Project Management Office (PMO) of Sindh Barrages Rehabilitation Project (SBRP). The SID will be augmented by environment and social safeguards specialists from SIDA and the SBRP PMO who will be tasked to oversee and monitor the implementation of the ESMPs.

104. To further strengthen their capacity to implement safeguards measures in their project, the project's institutional strengthening component includes building the capacity of the SID to perform safeguards functions. Trainings on environmental and social safeguards will be conducted to the project's focal persons, field officers, contractor staff, workers and project beneficiaries.

G. Other Safeguards Policies Triggered

105. As the tributaries of Indus River are international waterways, the Project triggers the World Bank's policy on Projects on International Waterways OP/BP 7.50. The Bank has however determined that proposed Project activities only entail rehabilitation or reconstruction of existing infrastructure and technical studies and as such fall under the exception to the notification requirement under paragraphs 7(a) and 7(b) of OP 7.50.

H. World Bank Grievance Redress

106. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected

communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the 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.

Annex 1: Results Framework and Monitoring
PAKISTAN: SINDH RESILIENCE PROJECT

Results Framework

Project Development Objectives

PDO Statement

The objectives of the Project are to mitigate flood and drought risks in selected areas and to strengthen Sindh's capacity to manage natural disasters.

These results are at | Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries (Number) - (Core)	0.00	700000.00	1330000.00	2613000.00	4039000.00	5065000.00	5065000.00
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	0.00	50.00	50.00	50.00	50.00	50.00	50.00
Number of people protected through project interventions from natural disasters, including: (Number - Sub-Type: Supplemental)	0.00	700000.00	1330000.00	2613000.00	4039000.00	5065000.00	5065000.00
Floods (Number - Sub-	0.00	700000.00	1300000.00	2600000.00	4000000.00	5000000.00	5000000.00

Type: Breakdown)							
Drought (Number - Sub-Type: Breakdown)	0.00	0.00	0.00	130000.00	39000.00	65000.00	65000.00
Other (Number - Sub-Type: Breakdown)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Land area protected through project interventions from natural disasters, including: (Hectare(Ha))	0.00	71500.00	140000.00	266400.00	409200.00	517000.00	517000.00
Floods (Hectare(Ha) - Sub-Type: Breakdown)	0.00	71500.00	1400000.00	265000.00	405000.00	510000.00	510000.00
Drought (Hectare(Ha) - Sub-Type: Breakdown)	0.00	0.00	0.00	1400.00	4200.00	7000.00	7000.00
Improved institutional capacity for disaster and climate risk management. (Text)	No SOPs for Sindh disaster fund; limited disaster management plans at sub-national levels.	Disaster Risk Financing Strategy developed for GoSindh.	Emergency Operations Centers (EOCs) set up at PDMA Sindh; Improved flood risk information available for planning.	SOPs for Sindh Disaster Management Fund (SDMF) operationalized.	Emergency Operations Centers (EOCs) set up at DMAs	Integrated disaster management plans adopted by government departments at sub-national levels	Integrated disaster management plans adopted by government departments at sub-national levels.
Number of people at risk receiving timely and more accurate	0.00	30000.00	100000.00	200000.00	400000.00	500000.00	5000000.00

early warning notifications. (Number)							
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Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Number of Risk identification studies completed (Number)	0.00	0.00	1.00	2.00	4.00	4.00	4.00
Development and adoption of operational procedures for responding to disasters (Text)	Weak planning for few areas			Procedures developed	Procedures operationalized in priority areas.	Procedures operationalized in all areas.	Procedures operationalized in all areas.
Development and adoption of SOPs for Sindh Disaster Management Fund (SDMF) (Text)	No SOPs exist	SOPs developed	SOPs adopted by GoSindh	SOPs operationalized	SOPs operationalized	SOPs operationalized	SOPs operationalized
Length of embankments rehabilitated or constructed (Kilometers)	0.00	30.00	60.00	110.00	160.00	200.00	200.00
Number of small recharge dams constructed (Number)	30.00	30.00	30.00	33.00	39.00	44.00	44.00

Establishment of a Decision Support System (DSS) for SID (Yes/No)	No	No	No	Yes	Yes	Yes	Yes
Percentage of respondents in Beneficiary Surveys reporting that the public consultation and information sharing process was satisfactory. (Percentage)	0.00		60.00			80.00	80.00
Percentage of respondents indicating satisfaction with the timeliness and transparency of the GRM. (Percentage)	0.00	60.00	65.00	70.00	75.00	80.00	80.00

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department (SID) and Provincial Disaster

	from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.			Management Authority (PDMA) Sindh
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	No description provided.	No description provided.	No description provided.
Number of people protected through project interventions from natural disasters, including:	Assesses the reduction in people vulnerable to flooding, drought, and other natural disasters in Sindh as a result of project investments in flood risk mitigation, small recharge dams, and other interventions.	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Floods	Supplemental Indicator to “Number of people protected through project interventions from natural disasters”, which provides breakdown of the consolidated indicator value against type of disaster (Floods).	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Drought	Supplemental Indicator to “Number of people protected through project interventions from natural disasters”, which provides breakdown of the consolidated indicator value against type of disaster (Drought).	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Other	Supplemental Indicator to “Number of people protected through project interventions from natural disasters”,	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	SID and PDMA Sindh

	which provides breakdown of the consolidated indicator value against type of disaster (Other disasters besides floods and drought). The indicator will measure other direct benefits that are protected from disasters as a result of interventions implemented by Provincial Disaster Management Authority Sindh.			
Land area protected through project interventions from natural disasters, including:	Assesses the reduction in the land area within Sindh prone to flooding, drought, and other natural disasters as a result of project investments in flood risk mitigation, small recharge dams, and other interventions.	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Floods	Supplemental Indicator to “Land area protected through project interventions from natural disasters”, which provides breakdown of the consolidated number against type of disaster (Floods).	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Drought	Supplemental Indicator to “Land area protected through project interventions from natural disasters”, which provides breakdown of the consolidated number against type of disaster (Drought).	Annual	Design, Feasibility, and Completion Reports; and Progress Reports	Sindh Irrigation Department
Improved institutional capacity for disaster and climate risk management.	Assesses, through an evaluation of institutional coordination mechanisms (before-after analysis), improved institutional capacity of relevant agencies in Sindh on disaster and climate risk management. Benchmarks for improved institutional capacities will be: 1. Development of Disaster Risk Financing Strategy; 2. Emergency Operations Centers set up at PDMA Sindh; 3.	Annual	Institutional Coordination Reviews	PDMA Sindh

	Improved flood risk information available for planning; 4. Operationalization of Standard Operating Procedures for Sindh Disaster Management Fund; 5. Emergency Operations Centers set up at District Disaster Management Agencies; 6. Adoption of Integrated disaster management plans by relevant provincial and local government departments.			
Number of people at risk receiving timely and more accurate early warning notifications.	Indicator to measure both enhanced dissemination and improvements in timeliness / contents of early warning notifications, based on (i) inputs available through strengthened Decision Support System at Irrigation Department for flood management; and (ii) improved capacity at PDMA Sindh to access, process and collate information for early warnings.	Annual	Project reports of piloting and simulations	PDMA Sindh

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Number of Risk identification studies completed	This indicator measures availability and use of risk identification interventions focusing on floods, drought, and other natural hazards, leading to information products/data for preparedness, response, and development decision making. Envisaged studies to focus on multi-hazard risk assessments, including: cyclones and rising sea levels, seismic, riverine flooding, urban and flash flooding, etc.	Annual	Project Reports, Analytical outputs	PDMA Sindh
Development and adoption	This indicator assesses the implementation	Annual	Project Reports	Provincial Disaster

of operational procedures for responding to disasters	of operational procedures by relevant disaster management agencies through evaluations in years 4 and 5.	(Years 3 and 4)		Management Agency Sindh
Development and adoption of SOPs for Sindh Disaster Management Fund (SDMF)	The indicator would assess the development and adoption by relevant agencies of Standard Operating Procedures for the Sindh Disaster Management Fund, encompassing fiduciary safeguards and controls, and transparent allocation criteria.	Annual (Years 3 and 4)	Project Reports	Provincial Disaster Management Authority
Length of embankments rehabilitated or constructed	This indicator measures the aggregated length along the Indus with rehabilitated and improved physical defenses to mitigate the risks of flooding in the adjoining areas.	Annual	Design, Feasibility and Completion Reports	SID
Number of small recharge dams constructed	The indicator measures the number of small recharge dams constructed with project funds in water scarce regions within Sindh for ground aquifer recharging.	Annual	Design, Feasibility and Completion Reports	SID
Establishment of a Decision Support System (DSS) for SID	This indicator assess the setting up of a Decision Support System at Sindh Irrigation Department to facilitate evidence based decision making for selecting optimal breaching sites, managing flood peaks, etc.	Annual	Project Reports	SID
Percentage of respondents in Beneficiary Surveys reporting that the public consultation and information sharing process was satisfactory.	The indicator measures the extent of beneficiaries expressing satisfaction with project consultations and public dissemination interventions, through two surveys conducted (at the end of Year 2, and prior to closing).	Year 2 and End of Project	Beneficiary Surveys	SID and PDMA Sindh
Percentage of respondents	The indicator measures respondent	Annual	GRM Systems	SID and PDMA Sindh

indicating satisfaction with the timeliness and transparency of the GRM.	satisfaction with the Grievance Resolution Mechanism at the complaint registration and resolution stage for each complainant.			
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Annex 2: Detailed Project Description

PAKISTAN: SINDH RESILIENCE PROJECT

Component 1: Strengthening Disaster and Climate Risk Management (USD 23.75 million)

1. The Component will primarily focus on key disaster management institutions in terms of strengthening operational systems and capacities at the provincial and district levels. In addition, the Component will support other departments at the Government of Sindh – through the Provincial Disaster Management Authority (PDMA) Sindh to develop greater ‘fiscal resilience’ through strengthening financial capacity and risk financing mechanisms, and mainstream disaster risk reduction in development planning and budgeting processes.

2. *Subcomponent 1.1. Improving Risk Identification and Using Risk Information for Development Decision-making (USD 2 million):* This subcomponent will focus on identifying the disaster and climate risk environment for informed planning and decision-making, development of framework to undertake the assessments, as well as tools to allow the optimal utilization of risk information.

3. *Risk Identification:* The subcomponent will support technical studies and risk assessments focusing on such hazards such as seismic hazards, riverine flooding, hill torrents, cyclones and storm surges, and urban flooding events. The studies may include: (i) multi-hazard risk assessments; (ii) studies on the effects of climate change and associated risks; and (iii) analytical work related to specific hazards such as cyclones or storm surges, as required.

4. *Using Risk Information for Decision-making:* The subcomponent will further support the provincial government to make use of improved information made available on disaster and climate risks. This would also support provision of key resources at the Sindh Planning and Development Department to enhance understanding, improve the repository of information and evidence, and develop recommendations to incorporate adaptation and mitigation measures within development planning and approval mechanisms. Similarly, the Project will extend support to relevant provincial departments for using disaster management information for land use planning, updating building codes, and decision making related to development planning and budgeting. This may entail dissemination of risk information to guide institutional decision-making by related departments for construction of new public infrastructure such as schools and health facilities. In addition, the subcomponent will support Government of Sindh towards enhancing preparedness for post-disaster recovery (planning, coordination, procurement, financing, etc.).

5. *Subcomponent 1.2. Strengthening Disaster Risk Management Agencies (USD 14 million):* This will entail developing the institutional set up and operational capacities at Provincial Disaster Management Authority (PDMA) Sindh down to the district level. Activities will include construction of office buildings and technical enhancement of the operational facilities such as Emergency Operations Centers (EOCs), and training programs and regular drills for EOC staff and relevant officials at the provincial and district levels. In addition, PDMA will be supported to enhance outreach through providing mobile operation centers and establishing integrated rescue and response systems in coordination with agencies such as Rescue 1122. The subcomponent

may also support improvement and customization works for PDMA Sindh's operational facilities.

6. This will further focus on strengthening the capacity of the Government to manage disaster events through: a) an improved system for collecting and processing information related to disaster events for generation and dissemination of early warnings and instructions to communities at risk; and, b) better integrating SOPs and resources at emergency response agencies, fire services personnel, and District governments. Envisaged improvements to early warning systems include enhancing the capacity of Disaster Management Authorities to disseminate information products such as flood forecasts and evacuation instructions to a greater number of people at risk with a wider geographic coverage using media such as short messaging services and radio broadcasts. Furthermore, the Project will also provide better search and rescue equipment and improve stockpiles and associate logistics for rescue and relief operations by DMAs and other relevant agencies.

7. PDMA Sindh will further be supported under this subcomponent to enhance its capacity to implement Community Based Disaster Risk Management (CBDRM) interventions. This will involve the piloting of CBDRM interventions within selected union councils, along with development of comprehensive communications strategy and educational material for disaster risk management / reduction may also be included under the project. Further, the subcomponent would also support specific interventions related to women, such as awareness raising, DRM training, targeted women-friendly health and sanitation services in the aftermath of disasters.

8. This component will also support an ex-ante development of post disaster recovery framework in Sindh to enhance its capacity to respond effectively and efficiently to disasters. Recovery framework would focus on four key areas: (i) strategy for recovery planning; (ii) institutional set up for post disaster recovery; (iii) financing mechanisms for recovery; and (iv) strengthening of implementation arrangements for recovery activities.

9. Subcomponent 1.3. Enhancing Fiscal Resilience (USD 4.75 million): The fiscal resilience subcomponent will seek to increase the financial resilience of the Government of Sindh against the impact of disasters in two main ways. First, it will support the government in developing a disaster risk finance strategy. The process of developing a disaster risk finance strategy will begin with a Fiscal Disaster Risk Assessment (FDRA) for Sindh, to generate estimates for how much has been spent by Government and its development partners in each of the last ten years in response to extreme natural events. This institutional understanding within government over previous post-disaster expenditures will provide a foundation for development of a comprehensive disaster risk finance strategy. The Disaster Risk Finance Strategy will aim to formalize the objective and scope of the government's work in disaster risk financing, evaluate various financial and budgetary instruments to finance its contingent liability to natural disasters, and prepare implementation of selected instruments. It will provide a framework for how specific financial needs for post-disaster emergency response and reconstruction will be met through a combination of different financial and budgetary instruments to protect against events of different frequency and severity. Capacity building and resources to operationalize recommendations will also be provided. The sub-component will support the Sindh Finance Department in coordination with PDMA Sindh. The subcomponent will also support the

government in strengthening linkages with the private sector particularly to explore innovative risk finance instruments.

10. Second, the sub-component will strengthen the Government of Sindh's institutional and financial response capacity against disasters by supporting the operationalization of the Sindh Provincial Disaster Management Fund (PDMF). The PDMF has been created through the 2010 National Disaster Management Act, but is not currently actively used as a disaster risk financing instrument. Supporting the Sindh Finance Department and PDMA Sindh in operationalizing the PDMF is a high priority. The subcomponent will support the development of Standard Operating Procedures (SOPs), fiduciary safeguards and controls, and transparent allocation criteria, drawing on international good practices, and building on the priorities identified through the Government of Sindh Disaster Risk Finance Strategy.

11. *Subcomponent 1.4. Project Implementation Support (USD 3 million):* This subcomponent will support PDMA Sindh in implementing the Project. This will encompass incremental operation costs and engagement of additional short-term resources not readily available within the Department. It will further support other project management expenditure in such areas as procurement, financial management, grievance redressal mechanism (GRM), as well as management of social and environmental issues. It will further provide technical assistance and consultancy services in such areas as contract administration, supervision technologies, Management Information System, et al.

Component 2: Improving Infrastructure and Systems for Resilience (USD 96 million)

12. This Component will primarily support restoration and improvement of embankments at high risk sites along the Indus for protection against riverine floods as well as the construction of small rainwater-fed recharge dams in drought prone regions in Sindh. In addition the Component will assist the Sindh Irrigation Department towards implementing project interventions as well as increasing institutional efficacy and efficiency for preparedness against natural disasters and operations and maintenance of critical infrastructure assets.

13. In terms of infrastructure investments, the Sindh Irrigation Department (SID) has developed a long list of investments, including flood protection works as well as small dams, which would be considered under the Project. The long list has been developed based on a consultative process involving inputs from relevant stakeholders, including provincial departments (including: Irrigation; Finance; Rehabilitation; Revenue; and, Planning and Development) and the benefiting communities. Further, the long list of flood protection investments identified by the Irrigation Department has already been approved by the Indus River Commission. Critical investments for the first year of project implementation have been identified.

14. A *framework approach* will be used for picking priority structural investments from the long list. This approach will apply the following selection and safeguards screening criteria:

- (a) Sub-project should contribute to the objectives of the project

- (b) Economic impact, as reflected by the size of incremental benefits and the number of expected beneficiaries. Each subproject must have an EIRR of at least 12%, calculated using a methodology acceptable to the Association
- (c) Technical readiness and feasibility filters. Working plans need to be available for all investments (embankments and small dams). All proposals involving flood embankments need to be approved by Indus River Commission. Feasibility studies must be available for all investments involving small dams. Procurement and implementation plans, satisfactory to WB should be prepared and approved
- (d) Demand and agreement by local communities established through survey instruments
- (e) Likely implementation durations for investments
- (f) Scale of social issues and environmental issues and corresponding mitigation costs – such as issues of land acquisition, clearing, or resettlement. Subproject ESIA/ESMP and RAP must be prepared, and disclosed, satisfactory to the Association in accordance with ESMF and RPF. All necessary clearances/approvals for implementing the sub-project, including environmental licenses should have been given by the relevant authorities

15. The above selection criteria will identify subprojects that may be financed under this component. In case that the current envelope does not meet the financing needs, additional financing may be used to support the framework approach.

16. Subcomponent 2.1. Flood Protection Works (USD 44 million): The Component will support structural investments including restoration, improvement, and up-gradation of flood embankments to increase resilience to flooding events in Sindh. This will help plug gaps in existing lines of defense through upgrading of dykes / bunds to protect communities and economically productive areas along the Indus River and ensure continued operation of existing flood protection works at key sites.

17. *Long List of Investments*. The Sindh Irrigation Department has identified a preliminary list of high risk sites and corresponding flood mitigation investments. The aforementioned framework approach will be utilized to finalize flood protection investments included under the Project.

18. The Component focuses on these high-risk sites to facilitate clustering of investments and maximizing impact. The proposed list of embankments are clustered around the Kotri Barrage Region, and will protect communities residing along the left and right banks of Indus. Embankments along the Indus have been rendered vulnerable as a result of damage incurred from the 2010 super flood and frequent moderate floods over the intervening years. The Sindh Irrigation Department has identified a preliminary list of high risk sites:

- (a) Vulnerable sections along existing embankments on the left bank of the Indus just upstream of Kotri pose serious risk to densely populated areas, including important urban centers such as Saeedabad, Hala, Matiari, Shahdampur, Tando Allah Yar, and Mirpur Khas
- (b) Various sections of vulnerable embankments along the Indus downstream of Kotri which would risk areas including Dadoon and Daro (left bank), and adjacent to Kalri Lake (right bank)
- (c) Similarly, vulnerable sections of embankments further downstream, which pose serious risks to urban and densely populated areas including Pirjo Goth, Sujawal, and Chhohar Jamali (left bank) as well as Thatta and Gaarho (right bank)

19. Tentative investments proposed by the Sindh Irrigation Department to restore, upgrade, and strengthen embankments at these high risk sites are expected to protect: 517,000 hectares of land; more than 2 million acres of cropped area, and associated livelihoods; more than 6,500 kilometers of roads; an estimated population of 5 million and more than 600,000 housing units.

20. *First Year Investments.* Three priority reconstruction investments identified through the application of selection criteria presented above will be undertaken during the first year of implementation. The priority reconstruction sub-projects are geographically located across the left and right banks of the Indus River. The priority sub-projects for the first year include:

- (a) Rehabilitation and improvement of various reaches of Sunda Hilaya (SH) Bund and along right bank of Indus River in the Kalri Baghar circle.
- (b) Rehabilitation of various reaches of Baghar Ucheto (BU) and Indo bunds along right bank of Indus River Kalri Baghar circle.
- (c) Rehabilitation of damaged portions at various reaches of Mulchand Shah-Bunder (MS) Bund in Lower Pinyari circle.

21. The three investments listed above are at an advanced stage of technical readiness. Fully developed PC-Is are available with SID and the nature of the works does not require hydraulic modeling studies. SID will also pilot new techniques including eco/ bio-engineering solutions for erosion stability such as the use of vegetation to protect these embankments from scouring.

22. The three flood protective investments scheduled for the first year will protect around 275,000 houses, and an estimated population of 2 million. These embankments will secure the important urban centers of Sujawal and Thatta, as well as more than 800,000 acres of rural agricultural lands against frequent floods.

23. In addition to the above, the subcomponent will support SID to strengthen the Operations and Maintenance (O&M) regime, including allocations, inventory and asset management practices to ensure the sustainability of assets created. The O&M regime at SID would be strengthened by promoting the culture of adequate resource allocation for O&M and improving the effectiveness in use of those resources. Over the course of the project, the project will support incremental costs for O&M on declining basis. Incremental O&M component is proposed to be co-financed by the Government of Sindh such that its share increases over time, while the project's share decreases. Further, the Project will assist the Department to adopt measures such as eco-engineering techniques for protection of embankments from erosion.

24. *Subcomponent 2.2. Construction of Small Recharge Dams to Address Drought and Flash Flooding Risks (USD 40 million):* This subcomponent will support the construction of small rainwater-fed recharge dams, less than 10 meters in height, in the Kohistan and Nangarparkar regions that will contribute significantly to the provision of water to communities during dry periods, recharging of underground aquifers in adjacent drought prone areas, and protection of communities against seasonal hill torrents and flash floods originating in the Kirthar Range.

25. Sindh is extremely vulnerable to drought and about 60% of the province suffers from extreme water scarcity round the year. The Sindh Irrigation Department has proposed mitigation

steps to address water scarcity and drought conditions by constructing small rainwater impounding weirs in the western and south-east regions of Sindh province. The Department is sufficiently advanced with preparatory activities for a large number of proposed small dams, with completed feasibility studies and approved PC-I documents. The Project will utilize the screening criteria under the framework approach, particularly focusing on economic impact, to select priority dams to be financed. The proposed investments will be clustered in two regions: (i) the Nangarparkar area of district Tharparkar and (ii) Kirthar range hills in Dadu, Jamshoro and Malir districts.

26. The envisaged investments are expected to add 26,163 acre feet into fresh groundwater aquifers, thereby raising the water table from the current depth of around 200 feet up to 25-50 feet. In addition to recharging of fresh groundwater aquifers, these investments will provide safe drinking water to local communities and livestock as well as irrigating more than 7,000 hectares of arable lands. Further benefits include protection of around 11,000 households having a population of more than 65,000 persons from hill torrents and flash flooding.

27. Subcomponent 2.3. Technical Assistance to Sindh Irrigation Department (USD 5 million): The sub-component would support the Sindh Irrigation Department for implementation of non-structural measures to enhance flood management and drought mitigation and its related equipment upgrades and studies.

28. Establishment of a Decision Support System: The Project will support the development of an integrated Decision Support System at SID to facilitate evidence based decision making related to selecting optimal breaching sites, information sharing for evacuation of communities at risk, managing flood peaks, and irrigation infrastructure management during flood events. This will entail the development of a robust model that will integrate and analyze information from multiple sources in an integrated geo-spatial system. Required inputs to the DSS development may include Digital Elevation Maps (DEM), land contour maps, upgrading telemetry equipment, monitoring sensors and communication equipment etc. The Department will be supported to establish effective communication interfaces for sharing timely information on important decisions related to flood management with agencies concerned with early warnings including PDMA Sindh and local administrations.

29. Safety Evaluation of Flood Protection Structures: The Project will assist the SID to strengthen the capabilities for assessing the structural safety of the flood protection works. This will involve building in-house capacity at the department and providing the required equipment to undertake these diagnostics. The results generated will be initially validated through outsourcing a few inspections on a sample basis.

30. Supporting the Hydrology Directorate and Soil Mechanics Laboratory: The Hydrology Directorate and Soil Mechanics Laboratory under SID will be supported to undertake studies/trainings on improving hydraulic design through model studies and introducing advanced equipment's/devices in the laboratories.

31. River Morphology Studies and Floodplain Mapping: The subcomponent will further support study of the morphology of selected portions of Indus river impacted by the 2010 and 2015

floods, as well as floodplain mapping for these rivers to identify risks and possible mitigation measures.

32. Subcomponent 2.4. Project Implementation Support to Sindh Irrigation Department (USD 7 million): This subcomponent will support the Sindh Irrigation Department in implementing the Project.

33. Incremental Operation and Staffing Costs: This will encompass incremental operating costs and recruitment of additional short-term resources not readily available within the Department. It will further support other project management expenditure in such areas as procurement, financial management, grievance redressal mechanism (GRM), as well as management of social and environmental issues.

34. Consultancy Costs: This will involve technical assistance and consultancy services. In particular, the engagement of Project Implementation Support and Supervision Consultant (PISSC) will be financed to assist the department in detailed design / feasibility, contract administration, construction supervision, and application of safeguards' requirements.

Component 3 - Contingent Emergency Response (USD 0):

35. Following an adverse natural event that causes a major natural disaster, the Borrower may request the Association to re-allocate project funds to support response and reconstruction. This component would allow the government to request the World Bank to reallocate financing from other Project components to support emergency response and recovery costs. This component could also be used to channel additional funds should they become available for such an eligible emergency.

36. Disbursements would be made against a positive list of critical goods or the procurement of works, and consultant services required to support the immediate response and recovery needs. All expenditures to be financed under this component, will be in accordance with OP 10.00 and will be appraised, reviewed and found to be acceptable to the World Bank before any disbursement is made. In accordance with paragraph 12 and 13 of OP 10.00, this component would provide immediate, quick-disbursing support to finance goods (positive list agreed with the Governments), works, and services needed for response, mitigation, and recovery and reconstruction activities. For procurements paragraph 20 - under OP 11.00: 'Procurement elaborated in the Simplified Procurement Procedures: Situations of Urgent Need of Assistance or Capacity Constraints' will become applicable. Operating costs eligible for financing would include the incremental expenses incurred for early recovery efforts arising as a result of the impact of major natural disasters.

37. Goods, Works and Services under this component would be financed based on review of satisfactory supporting documentation presented by the government including adherence to appropriate procurement practices in emergency context. All supporting documents for reimbursement of such expenditures will be verified by the Internal Auditors of the Government and by the Project Director, certifying that the expenditures were incurred for the intended purpose and to enable a fast recovery following the damage caused by adverse natural events,

before the withdrawal application is submitted to the World Bank. This verification should be sent to the Association together with the application.

38. Specific eligible expenditures under the category of Goods include: (i) construction materials; water, land and air transport equipment, including supplies and spare parts; (ii) school supplies and equipment; (iii) medical supplies and equipment; (iv) petroleum and fuel products; (v) construction equipment and industrial machinery; and (vi) communications equipment.

39. Specific eligible expenditures under the category of Works may include urgent infrastructure works (repairs, rehabilitation, construction, etc.) to mitigate the risks associated with the disaster for affected populations. Specific eligible expenditures under the category of Services may include urgent studies (either technical, social, environmental, etc.) necessary as a result of the effects of the disaster (identification of priority works, feasibility assessments, delivery of related analyses, etc.).

40. Disbursements under the Contingent Emergency Response component will be contingent upon the fulfillment of the following conditions: (i) the Government of Pakistan has determined that an eligible crisis or emergency has occurred and the Association has agreed and notified the Government; (ii) the Government of Pakistan has prepared and adopted the Contingent Emergency Response (CER) Operations Manual that is agreed with the Bank; and (iii) The Government of Pakistan has prepared, adopted, and disclosed all safeguards instruments required as per the World Bank's guidelines – which have been approved by the Association – for all activities from the CER Implementation Plan for eligible financing under the CER component.

41. The CER Operations Manual shall set forth detailed implementation arrangements for the CER Component, including: (i) designation of, terms of reference for and resources to be allocated to, the entity to be responsible for coordinating and implementing the CER Component; (ii) specific activities which may be included in the CER Component, eligible expenditures required, and any procedures for such inclusion; (iii) financial management arrangements for the CER Component; (iv) procurement methods and procedures for Emergency Expenditures to be financed under the CER Component; (v) documentation required for withdrawals of funds for the financing of Emergency Expenditures; (vi) environmental and social safeguard management frameworks for the CER Component, consistent with the Association's policies on the matter; and (vii) any other arrangements necessary to ensure proper coordination and implementation of the CER Component

Annex 3: Implementation Arrangements
PAKISTAN: SINDH RESILIENCE PROJECT

Project Implementation Mechanisms

1. *Implementing Agencies for Components 1 and 2:* The Project will be implemented by the Sindh Irrigation Department (SID) and Provincial Disaster Management Authority (PDMA) Sindh. Component 1 will be implemented by PDMA Sindh while SID will be the implementing agency for Component 2. Sindh Planning and Development Department (P&DD) will facilitate coordination between provincial departments and agencies.
2. *Other Institutional Stakeholders:* Additional institutional stakeholders besides the implementing agencies for various activities to be implemented include:
 - (a) The provincial Finance Department (FD) for the subcomponent on Fiscal Resilience;
 - (b) Government of Sindh's Planning and Development Department (P&DD), other line departments, and institutions such as Department of Health, Department of Education, and Sindh Building Control Authority under the 'Improving Risk Identification and Using Risk Information for Development Decision-making' subcomponent; and
 - (c) District Governments in Sindh and Rescue 1122 for strengthening of Disaster Management capacities at the district level.
3. *Implementation Structures:* The project envisages the use of existing government departments for implementation. The use of mainstream departments/ agencies instead of short term implementation units will ensure that the incremental capacity, technical knowledge, and implementation experience developed through Project implementation continues to remain available to the two institutions after Project closure. Sindh Irrigation Department (SID) and Provincial Disaster Management Authority (PDMA) Sindh will contribute officials and staff to manage project implementation. Specific resources contributed by the two institutions will be financed by Government of Sindh.
4. The responsibilities of the implementing agencies – PDMA Sindh and SID – for their respective components will include, inter alia: project management; reporting; monitoring and evaluation; procurement and financial management; audits; compliance with Environmental and Social Frameworks; Project communications; as well as, coordination with the line agencies and the Association.
5. The implementing agencies may augment designated staff with additional short-term resources from the market on a need basis to cater for specific technical expertise, specializations and skillsets that are not readily available within existing resources at the two institutions.
6. *Project Operations Manual:* The project will be implemented according to guidelines and procedures outlined in the Operations Manual (OM), which should be adopted by project effectiveness. The documents will lay out roles and responsibilities of different stakeholders and

provide details of project processes and project cycle. The POM will further incorporate experiences gained through implementation of similar projects in Pakistan as well as the outcomes from detailed deliberations, institutional capacity and fiduciary assessments, and risk analyses that were carried out as part of project preparation. The Operations Manual will be reviewed periodically by the Borrower, and subject to approval by the World Bank revised as needed to address any constraints to the successful implementation of the project.

7. *Contingent Emergency Response Component:* In case Component 3 is activated, the Recipient will need to designate the responsible agency/s for implementation of activities under the Component, and may delegate the development and adoption of CER Implementation Plan as well as the development, adoption, and disclosure of safeguard instruments to the responsible agency.

8. *Communications:* The Project will support the Implementing Agencies in developing an effective internal and external communications strategy during project implementation, which would ensure adequate dissemination of information regarding the resilience agenda being supported as part of the project. The communication functions for the project will be housed in PDMA Sindh and the Sindh Irrigation Department.

9. It is important that the communications strategy is designed in a way that it distinguishes between the achievements under the project, which focus on the mitigating future risk of floods and drought through restoring flood mitigation infrastructure to more resilient standards and investments in small dams, and areas beyond the scope of this project, such as longer term integrated flood management and broader water sector issues. Strategic communication will help in creating buy-in and support both from within the various government entities involved and the external stakeholders to ensure sustainability of risk reduction measures.

10. Institutional strengthening interventions being supported at relevant institutions, particularly improvements in early warning and its dissemination would need to be communicated to populations at risk so that there is awareness of the new systems and how communities would be expected to respond when such information is disseminated. The proposed awareness and pilot community based disaster risk management interventions under Subcomponent 1.2 will be employed to amplify and reinforce these messages.

11. The strategy will also help inform the population about availability of mechanisms, such as grievance redressal and information disclosure systems. The communications strategy should aim to inform the citizens of such initiatives and also set up communication channels with stakeholders to engage and receive feedback on impacts and concerns from the beneficiary population. A Grievance Redressal Committee will also be formed at the project level to handle complaints in an efficient manner.

Financial Management, Disbursements and Procurement

Financial Management

12. *Staffing:* The project activities will be centrally managed in the SID. The department has sufficient expertise in procurement as a number of World Bank and Asian Development Bank (ADB) funded projects have been implemented in past. In addition to the existing strength SID would require services of a dedicated procurement specialist and an independent procurement verification system. Large volumes of procurements are expected and this would require adequate procurement facilities both on long term basis during the life of the project as well as short term procurement inputs.

13. Provincial Disaster Management Authority Sindh will be the second implementing agency. PDMA is established under National Disaster Management Act 2011. Comprehensive rules covering administrative as well as financial management aspects are being framed for PDMA. The organization is headed by Director General who is supported by Director Operation and Director Finance and Administration. The aim is to set up one regional office in each of the six divisions of the Province. Currently, authority has two regional offices in Sukkur and Hyderabad each. At present, out of the staff of five in the accounts and finance section, none of the official has a professional accounting qualification.

14. These entities shall be staffed with relevant technical staff either assigned through transfer and placement of government officials or through selection and employment of individual consultants. However there shall be a need to designate an official as project director, duly vested with administrative, technical and financial authority to implement the project. However in case of SID the change of administrative jurisdiction for works and need for designating a field based staff to act as client's representative for Project Implementation Support and Supervision Consultant (PISSC) who would act as Engineer, there would be need to assign a field based officer as implementation support coordinator; ideally located at Hyderabad. Both entities will require dedicated Financial Management and Procurement Specialists for accounting, reporting, procurement and contract management functions and an IT specialist for implementation of accounting software and support to newly introduced, IT based procurement processing system. The internal audit and asset management functions will be led by SID and PDMA from start to end.

15. *Planning and Budgeting:* Planning process at SID is weak. A document that provides the vision, outcomes and targets of the department for the next five years is not available. The Department needs to have a strategic plan that includes a road map of where the department wants to be in next five years, which projects are required to be undertaken and what percentage of those are funded by the federal and the provincial government and for which priority projects financing will be arranged from external resources. A strategic document of this nature will improve linkage between plans and budgets and make donor coordination efficient. Due to weak linkage between plans and budgets, the development projects are delayed and revised a number of times. For example, a project, "lining of distributaries and minors in Sindh province" was approved at the total cost of PKR 13 billion for phase I. The physical progress for the project is 80% and financial progress is just 45%. The project has to incur huge liabilities due to unpredictable releases from the federal government. Since under the proposed project a large number of development schemes would be undertaken, therefore it is imperative to ensure during the life of the project, that disbursement is aligned to physical progress and procurement plan. In contrast to this, ADB funded project, "Flood Emergency and Reconstruction Project" with a total

cost of PKR 18 billion, was completed within the stipulated time of one year, because allocation of funds were predictable, country systems were used in an efficient manner and a proactive regime of third party monitoring was adopted. In order to mitigate the risk of delayed implementation of schemes, the assurance of predictable releases should be built into the Government's project documents (PC-Is).

16. Funding for project financed activities will be allocated to the Government of Sindh, using detailed object and functional classification prescribed in the New Accounting Model (NAM). Separate PCIs for SID and PDMA have been prepared and submitted for approval. The instrument of the project is Specific Investment Lending and it is imperative that the implementing agencies make sure that the project's estimated disbursements are included in the estimates of foreign assistance on the receipt side of the budget. The expenditure budget is to be prepared using function and object codes of chart of accounts to capture expenditures for project identified schemes and assets to be procured under the three components and TA for all implementing agencies.

17. The budget for the Provincial Disaster Management Authority is released in four quarterly tranches. Once a release is approved by the Finance Department, it takes more than one month for the PDMA to receive the funds. The process of fund flow may be simplified and agreed with the Accountant General so that the lag time can be reduced.

18. *Accounting and Reporting:* Each IA agency will maintain their own books of accounts for the project-related activities (for all components) on a cash basis, using the government's accounting policies and procedures given in the NAM. The IAs will execute payments against eligible expenditure financed under the project through a designated account. Payments will be made centrally from SID offices located in Hyderabad and PDMA Sindh offices situated in Karachi. Recording and reporting is intended to be carried out at SID offices (Hyderabad) and PDMA Sindh offices (Karachi).

19. Accounting and reporting will be carried out by the AG Sindh. The AG office already has the necessary equipment with SAP connectivity to allow separate budgeting and accounting of the projects expenditure. The government's FMIS generated fiscal reports will be the basis for preparation of the Project's Budget Execution Reports by each implementing agency. The Financial Reports (interim and annual) will also be produced, showing such details as are required by the Association. The Financial Reports will take the form of IFRs and Annual Financial Statements. The template for IFRs has been communicated to the two implementing agencies. IFRs will be submitted to the Association within 45 days of the close of each six month period.

20. *Internal Controls:* The Government of Sindh has a comprehensive internal control framework comprising the Sindh General Financial Rules (SGFR), Treasury Rules (TR), and Sindh Delegation of Financial Powers Rules, which will be observed for project's expenditure. Internal Audit function does not exist. In PDMA, Asset Records Register and Stock Register is not maintained. However sufficient information of relief activities is available on the website of PDMA.

21. The project is expected to follow Government rules and regulations as notified and applicable. However, no consolidated manual exists for finance and accounts in the implementing agencies. More so the pre-audit check is not applicable on the expenditure financed through foreign assistance. It is recommended that key internal control procedures are included in the Project Operations Manual. The Manual will contain clearly-defined control policies and procedures related to payments verification and processing, segregation of duties, regular and timely reconciliations, record and asset management. For each process, the Manual will define key tasks, responsibilities, specific steps and timelines so it also serves as a benchmark for management to measure performance.

22. *Project Audit:* The Project external audit will be carried out by the Auditor General of Pakistan (AGP) as the supreme audit institution of the country. Each of the two implementing agencies will submit the related activities/ components for audit. For each financial year closing on June 30, acceptable audited financial statements of the project along with Management Letter will be submitted to the Bank by December 31, i.e. within six months after the close of the financial year.

23. *Disbursement and Funds Flow:* Two USD –denominated revolving-fund accounts (or child account) will be established at the two implementing agencies.

24. The table below summarizes Eligible Expenditures that may be financed out of the proceeds of the Financing ("Category"), the allocations of the amounts of the Financing to each Category, and the percentage of expenditures to be financed for Eligible Expenditures in each Category.

Category	Amount of the Credit Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consultants' services, Training and Incremental Operating Costs for Component 1 of the Project	19,750,000	100%
(2) Goods, works, non-consulting services, consultants' services, Training and Incremental Operating Costs for Component 2 of the Project	80,000,000	100%
(3) Emergency Expenditures for Component 3 of the Project	0	100%
(4) Front-end Fee	250,000	Amount payable pursuant to Section 2.03 of the Financing Agreement in accordance with Section 3.01 (a) of the General Conditions
TOTAL AMOUNT	100,000,000	

25. Disbursements will be report-based where advance equivalent to six months forecast of expected payments will be provided and subsequent bi-annual Interim Financial Reports (IFRs) will be the basis of documentation of the expenditures.

26. ***Retroactive Financing:*** Retroactive financing will be available under the Project for an aggregate amount up to USD 20,000,000 for payments made for eligible expenditures carried out on or after September 1, 2015. All expenditures, for which retroactive financing is sought, will be submitted to the World Bank in order to verify their eligibility as per the project description and disbursement table, safeguards policies and procurement requirements.

Procurement

27. Procurement for the proposed Project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers January 2011 (revised July 2014)"; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers January 2011 revised (July 2014)", as well as the provisions stipulated in the Financing Agreement. Procurement Plan shall form the basis of defining: applicable procurement methods, estimated costs, prior review requirements, and time frame. These have been agreed between the Borrower and the World Bank. The Procurement Plan will be updated at least annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity. A General Procurement Notice shall be published as soon as the procurement plan is prepared. Number of risk mitigation measures shall be instituted and shall be described in Operations Manual.

28. *Procurement of Works:* In addition to other staff, the Sindh Irrigation Department (SID) will also be supported by the Project Implementation Support and Supervision Consultant (PISSC) who would help in procurement, construction supervision, and technical aspects of the project. For civil works contracts, the nominated Project Director shall serve as the Employer and the PISSC shall perform the role of 'Engineer' who will also be responsible for the evaluation of bids and recommendation of the award for major contracts and would also provide required support in procurement of consultancies.

29. The civil works contracts which are: (i) estimated to cost up to or more than USD 4,000,000 equivalent would be procured through International Competitive Bidding (ICB) procedures. Prequalification would be mandatory for contracts estimated to cost more than USD10 Million equivalent; (ii) Estimated to cost less than USD 4,000,000 would be procured through National Competitive Bidding (NCB) procedures; (iii) For Minor works estimated to cost up to USD 50,000 equivalent per contract may be procured through shopping procedures. Designated staff at the implementing agencies would ensure credible documentary trail and authenticity of the quotations provided by suppliers under this procedure; (iv) Direct contracting may be used for any urgently required works after prior approval of the Association.

30. *Procurement of Goods:* Major goods contracts are expected to cover field equipment, heavy equipment, vehicles, furniture and office equipment etc. (i) ICB procedures shall be followed for

each Goods contract estimated to cost more than USD 600,000 equivalent;(ii) Goods estimated to cost up to USD 600,000 per contract may be procured through NCB procedures acceptable to the Association; (iii) Vehicles and small value off-the-shelf goods etc. estimated to cost up to USD 100,000 equivalent per contract may be procured following shopping procedures in accordance with the Association's procurement guidelines; (iv) Computer software, books, journals, training material and other goods with individual contract costing less than USD 5,000 equivalent may be procured following direct contracting procedures, with prior approval of the Association.

31. Additional Provisions for National Competitive Bidding: The following additional procedures will apply to all procurement of goods and works under NCB, to ensure economy, efficiency, transparency, and broad consistency with the provisions of Section I paragraph 3.3 and other applicable provisions of the Procurement Guidelines. In the event of a conflict between the Recipient's procedures and the additional provisions set out above, the latter shall govern:

- (a) Invitation to bid shall be advertised in at least one national newspaper with wide circulation, at least thirty (30) days prior to the deadline for the submission of bids;
- (b) Bid documents shall be made available, by mail or in person, to all who are willing to pay the required fee;
- (c) Foreign bidders shall not be precluded from bidding and no preference of any kind shall be given to national bidders in the bidding process;
- (d) Bidding shall not be restricted to pre-registered firms;
- (e) Qualification criteria shall be stated in the bidding documents;
- (f) Bids shall be opened in public, immediately after the deadline for submission of bids;
- (g) Bids shall not be rejected merely on the basis of a comparison with an official estimate without the prior concurrence of the Association;
- (h) Before rejecting all bids and soliciting new bids, the Association's prior concurrence shall be obtained;
- (i) Bids shall be solicited and works contracts shall be awarded on the basis of unit prices and not on the basis of a composite schedule of rates;
- (j) Contracts shall not be awarded on the basis of nationally negotiated rates;
- (k) A single bid shall also be considered for award;
- (l) Contracts shall be awarded to the lowest evaluated and qualified bidder;
- (m) Post-bidding negotiations shall not be allowed with the lowest evaluated or any other bidders;
- (n) Draft contract shall be reviewed by the Association in accordance with the prior review procedures;
- (o) Any firm declared ineligible by the Association, based on a determination by the Association that the firm has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for or in executing an Association-financed contract, or a contract financed by another institution with which the Association has entered into a cross-debarment agreement, shall be ineligible to be awarded an Association-financed contract during the period of time determined by the Association;
- (p) Each contract financed from the proceeds of the Financing shall provide that the suppliers, contractors and subcontractors shall permit the Association, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and

records audited by auditors appointed by the Association. The deliberate and material violation by the supplier, contractor or subcontractor of such provision may amount to obstructive practice.

(q) Recipient-owned enterprises shall be eligible to bid only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the Recipient

(r) The Association shall declare a firm ineligible, either indefinitely or for a stated period, to be awarded a contract financed by the Association if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for or executing a contract financed by the Association.

32. Selection of Consultants: Project Implementation Support and Supervision Consultant (PISSC) will be the largest consultancy, while other will be for development of management information and decision support systems, M&E and various Audit consultancies. Contracts with consulting firms will be procured in accordance with Quality and Cost Based Selection procedures or other methods given in Section III of the Consultants' Guidelines. Consulting services selection would be carried out through Quality and Cost Based Selection (QCBS) for contracts with consulting firms costing more than USD 300,000 equivalent, and through Consultants Qualification (CQ) for contracts costing up to USD 300,000. Other methods as mentioned in Section III of Consultants' Guidelines listed below shall be used as required.

33. Other Methods of Procurement of Consultants' Services: The following methods, other than QCBS, may be used for procurement of consultants' services for the Project as specified for each individual contract in the Procurement Plan: (a) Quality-based Selection; (b) Selection under a Fixed Budget; (c) Least Cost Selection; (d) Selection based on Consultants' Qualifications; (e) Single-source Selection of consulting firms; (f) Procedures set forth in paragraphs 5.2 and 5.3 of the Consultant Guidelines for the Selection of Individual Consultants; and (g) Single-source procedures for the Selection of Individual Consultants.

34. Selection of Individual Consultants: In order to provide technical or specialized managerial assistance to the Project individual consultants would also be selected and employed. These services will only be procured for tasks that conforms to the requirements set forth in paragraph 5.1 of the Consultant Guidelines. Procurement would be done in accordance with the provisions of paragraphs 5.2 through 5.3 of the Consultant Guidelines, which stipulate that the selection should be made through comparison of at least 3 CVs of comparably qualified candidates that meet the requirements of the Terms of Reference including those for qualifications and experience. Under the circumstances described in paragraph 5.4 of the Consultant Guidelines, such contracts may be awarded to individual consultants on a sole-source basis. Advertisement for seeking expressions of interest (EOI) would be required and even for small value contract the REOI shall at least be uploaded on websites EOIs should specify selection criteria that are solely based on experience and qualifications

35. Assessment of the Agency's Capacity to Implement Procurement: The assessment reviewed the organizational structure, staffing and capacity for implementing the project. Assessment of Implementing Agencies involved in project are given below.

36. *Sindh Irrigation Department (SID)* is a Sindh Provincial Government Department. Major task performed by the Irrigation Department are operation and maintenance of the irrigation and flood protection system, regulation of flows of River Indus and canal systems, covering Inter Provincial and Intra Provincial Systems. Execution of development schemes and mega projects is also one of the major responsibilities. Department is headed by a Provincial Secretary and has five Chief Engineers reporting to him. There are seven Circles headed by Superintending Engineers. There is a Tender Evaluation committee whose composition depends on the amount of contract to be awarded. SID follows the Sindh Public Procurement Rules (PPR) 2010 for all procurement and in case of a donor funded project, guidelines of the donor is followed. The World Bank's assessment concluded that the procurement staff of the SID are fully familiar with the World Bank's procurement policies, guidelines and standard bidding documents (SBD) which are based on FIDIC Conditions of Contract as they have already worked and are also presently working on projects financed by World Bank, ADB etc. The existing capacity of civil contractors is adequate and the procurement process is likely to be robust.

37. Thus in addition to the existing strength, SID would require services of dedicated procurement and contract administration specialist(s) and independent contract administration arrangements by outsourcing the role of engineer. In addition to this, an in-house pre-audit function shall be instituted.

38. *Provincial Disaster Management Authority Sindh (PDMA)* is an attached Department of the Rehabilitation Department, Government of Sindh. It was created under the Provincial Disaster Management Act 2010. The Director General of PDMA is the executive authority and looks after the disaster prevention and disaster relief efforts throughout Sindh.

39. PDMA Sindh will be the second implementing agency. PDMA is established under National Disaster Management Act 2010. The organization is headed by Director General who is supported by Director Operations and Director Finance and Administration. The aim is to set up one regional office in each of the six divisions of the Province. Presently the procurement function is not fully defined and there are no separation of roles and responsibilities, thus internal control environment needs to be spruced up. However on the basis of walkthrough, it can be confirmed that the function is being adequately performed as per governing procurement rules of the province (SPPR-2010). There is an urgent need to provide more structure and symmetry to the various exceptions and exemptions available under procurement rules through well-knit SOPs. The entity is likely to procure quite a few high value consulting services and do not have a documented track of managing the full-cycle procurement of services. PDMA will need a well experienced procurement and contract administration specialist with some prior experience in managing donor-funded procurements. Additionally PDMA will also need a basic Procurement Operations Manual.

40. *Transparency:* The World Bank's guidelines on publication of award paragraph 2.28 of consultant guidelines and 2.60 of the procurement guidelines shall be followed for disclosure. Each IA's website would be used for providing procurement plan, procurement notices, invitation to bid, bid documents and RFPs as issued, latest information on procurement contracts, status of evaluation, complaints and actions taken, contract award and performance under the contracts and other relevant information related to procurement. The website will be accessible

to all bidders and interested person equally and free of charge. The website should be operational as soon as competitive procurements for the project commence.

41. The Government shall also ensure that the Project is carried out in accordance with the provisions of the Anti-Corruption Guidelines.

42. *Complaints:* Designated staff at each implementing agency will manage the complaint handling system. This system will include documentation and shall address complaints within a period of 7 days. The implementing agencies shall keep the Association informed by forwarding any complaints within 3 days of the receipt of complaints. This system will include maintenance of a database, a standard protocol with appropriate triggers for carrying out investigations, and taking action against involved parties. Each implementing agency will develop the system within 6 months of Effectiveness and it will be reviewed by the World Bank.

43. For ICB/ international selection of consultants the World Bank-prescribed complaint redressal mechanism will apply.

44. *Filing and Management of Documents:* The implementing agencies will develop and maintain a Procurement Documentation System, filing system and the procurement database. An electronic backup system for all procurement record will be maintained periodically. Procurement SOPs shall be prepared and included in the Operations Manual, documenting the procurement processes and approval procedures for each agency responsible for procurement under the project. These will also describe roles and responsibilities, and service delivery standards.

Table: Risk Mitigation Actions
(Summary of Issues Identified and Agreed Actions)

Issues		Action	Timeline	Responsibility
(a)	Empowerment	(i) Delegation of administrative and financial powers to SID field office for PSICC contract administration (ii) Identification and placement of a staff of SID and PDMA within procurement team for a long-term capacity building for internalization of procurement function. As a legal covenant the implementing agencies shall share with Association: (i) performance of fiduciary staff (ii) Shall seek Bank's concurrence with justification for replacement of fiduciary staff	By Effectiveness	(i) FD, SID and PDMA (ii) SID and PDMA
(b)	Improving Procurement Planning & Monitoring	The World Bank will provide hands on support for adequate planning and monitoring of Procurement Plan including use of simple IT tools	Within 3 months of Effectiveness	The Association and implementing agencies
(c).	Upfront Actions	Hiring/identification of Procurement, Financial Management, and Contract Management Specialists for both implementing agencies	Within 3 months of Effectiveness	Implementing agencies
(d)	Procedural clarity	Procurement SOPs as part of Project Operations Manual	By Effectiveness	Implementing agencies and the Association
(e)	Bid Evaluation Capacity	(i) As above (ii) Training	(i) As above (ii) Ongoing	Implementing agencies and the Association

Issues		Action	Timeline	Responsibility
(f)	Market Constraints	(i) Adequate packaging (ii) Wide circulation (iii) Capacity building and knowledge sharing events of potential suppliers and service providers	(i) By Effectiveness (ii) Ongoing	Implementing agencies with the Association's assistance
(g)	Transparency	(i) Functional web site (ii) Intranet (iii) Disclosure of procurement information on website (iv) Procurement Clinics with focus on detecting red flags (v) Video recording of key procurement stages (vi) Uploading of the minutes of bid opening on same day (vii) State of the art civil contracts supervision strategies to be proposed by supervision consultants	Within 6 months of effectiveness As required	Implementing agencies
(h)	Complaints	Independent complaint redressal mechanism	Within 6 months of effectiveness	Implementing Agencies
(i)	Financial Management Manual	Develop Financial Management Procedures to be included in the Operations Manual for the project	By Effectiveness	Implementing agencies
(j)	Strategic Plan	Prepare Strategic Plan for SID	Within six months after Effectiveness	SID

45. *Additional Procurement Risk Mitigation Measures:* The fiduciary risk mitigation measures will concurrently aimed at internalizing procurement and financial management capacities of the government:

- (a) Procurement and Finance consultancies will be subject to prior review.
- (b) All consulting assignment over US\$ 300,000 will have a mandatory provision of secondment of staff to these consultancies. Inasmuch as possible consultancies will be on time-based contract and whenever practical consultants will be co-located with the department which would be an intended beneficiary of the outflows of consultancy assignments. At minimum the consultants will be required to establish offices at Hyderabad.
- (c) The inclusion of the fixed assets will be consistent with the government's fixed assets and austerity policies. The procurement assessments will account for useful/useable assets available in particular departments regardless of the financing source.
- (d) Every procurement publication will have a link to complaint/grievance redress portal. In order to ensure objective reporting of deviations in fiduciary issues
- (e) For enhanced transparency, the pre-bid/pre-proposal conferences, technical proposal submission meeting, financial proposals and bid opening meetings will be video recorded and proceedings uploaded on website within 60 minutes of the conclusion of such meetings.
- (f) Detailed guidance will be provided in Ops Manual regarding conflict of interest, transparency measures etc. In terms of code of ethics, measures will be provided in project operations manual which will take into account willful deviations from procurement processes.
- (g) Website will be used for providing procurement plan, procurement notices, invitation to bid, bid documents and RFPs as issued, latest information on procurement contracts, status of evaluation, complaints and actions taken, contract award and performance under contracts and other procurement information. The website will be accessible to all bidders, firms and other stakeholders at large, free of charge. The website will be supported by a filing system and a

procurement database as explained below. The web-site is operational however the link of new project needs to be developed as soon as competitive procurements for the project commence;

(h) There will be voluntary publication on UNDB even of NCB and also on SPPRA

46. *Procurement Plan:* The Recipient has developed a Procurement Plan for Project implementation which provides the basis for the procurement methods and review by the Association. This plan will be made available in the Project's database, Implementing Entities website, and the World Bank's external website. The Procurement Plan will be updated in agreement with the Association annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity Frequency of Procurement Supervision.

47. In addition to the prior review supervision to be carried out from the World Bank's offices, the capacity assessment of the Implementing Agency has recommended frequent supervision missions to visit the field to carry out post review of procurement actions.

48. *Review of Procurement by the Association:* Thresholds for prior review of contracts under eligible expenditures are given in the table below. All other contracts will be subject to Post-Review by the Association unless otherwise specified in the Procurement Plan. Implementing Entities will send to the World Bank a list of all contracts for post-review on a quarterly basis. Post-reviews as well as the implementation reviews would be done six monthly. Such review of contracts below threshold will constitute a sample of about 15-20 percent of the contracts.

Expenditure Category	Contract Value (Threshold) US \$	Procurement Method	Contracts Subject to Prior Review US\$ thousands
1. Works	>4,000,000	ICB	All
	<4,000,000	NCB	First Contract and all subsequent contracts estimated to cost > 1,000,000
	<50,000	Shopping	First Contract
	Regardless of value	Direct Contracting	All
2. Goods & Non-consulting Services	>600,000	ICB	All
	<600,000	NCB	First Contract and all subsequent contracts estimated to cost > 200,000
	<100,000	Shopping	First Contract
	Regardless of value	Direct Contracting	All
3. Consulting Services (Firms)			All TOR and Training Programs to be prior reviewed by Association's TTL regardless of value and review threshold
	>300,000	QCBS/QBS /FBS/LCS	All
	<300,000	CQS,	First contract
	Regardless of value	Single Source Selection	All
Individual Consultants	> 50,000	Comparison of 3 CVs	All
	< 50,000	Comparison of 3 CVs	First contract
	Regardless of value	Single Source Selection, Contracts for: procurement of Project	All.

		Coordinator, Procurement/FM Specialists, Procurement Agent and Legal Expert (as applicable) All TOR to be technically reviewed by the Association	
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49. The FM risk for the project is substantial and Procurement risk is also assessed as substantial; the overall fiduciary risk is also *substantial*.

Social Safeguards

Baseline Social Conditions:

50. The province's population according to the Government of Sindh, was estimated at 42.4⁸ million in 2010, growing by 2.8 percent annually from 30.4 million in the 1998 census. Just over half of the population resides in urban areas. Poverty incidence in the province, or proportion of population falling below the poverty line, was estimated at 31 percent, as opposed to an estimated national average of 33 percent. Rural poverty in Sindh was estimated at 38 percent, 7 percentage points higher than the provincial average. Urban poverty, however, estimated for small towns and cities, was found to be higher relative to rural poverty by 2 percentage points. Poverty is particularly pervasive in rural Sindh where the Project will be implemented. The poverty incidence for rural areas was considerably higher relative to urban areas across all categories of asset ownership, and in particular for rural population with no land ownership (41.26 percent). Surprisingly, however, poverty incidence among the rural population with house ownership is actually higher than those with no house ownership. In terms of asset poverty, rural poverty in Sindh is characterized by lack of land and house ownership. Geographically, the western half of the province, bordering Balochistan, has greater poverty incidence levels at 35.1% whereas the eastern half bordering India has 29.6% poverty. For rural households income from crop production was also an important component, at 21.5 percent, which is close to one fifth of the total average monthly income.

51. Agriculture is the primary source of income and of employed, 45.3 percent were found to be employed in the agriculture, hunting, and forestry sector. The main agricultural crops are banana, betel leaf, wheat, cotton, rice, sunflower and sugar cane together with vegetables grown for local consumption. There are two main cropping seasons; "Kharif" and "Rabi". The dominance of agriculture in the rural areas is evident from the fact that the sector employed 69 percent of males and 96 percent of all females in the labor force. Rural males also find employment in construction, wholesale and retail trade, public service, education, transport and manufacturing sectors, but rural females had few alternative employment opportunities.

52. Although Sindh's population is mainly Muslim (94.81%), it is home to nearly all (93%) of Pakistan's Hindus, who form 8.41% of the province's population. The majority of Muslims are *Sunni Hanafi* followed by *Shia*. The total Scheduled Cast population in Sindh was around

⁸ All figures from "REPORT ON THE STATUS OF MILLENNIUM DEVELOPMENT GOALS in SINDH" 2012, Government of Sindh, Pakistan

300,000 as per the 1998 Census. Out of these, 93% were amongst the rural population of Sindh and out of this rural population, 87% were residing in the Tharparkar District.

53. According to the joint donor/government Damage and Needs Assessment (DNA) of the floods, Sindh was the most severely affected province in Pakistan. Estimated flood damage in the province amounted to \$4.38 billion or 44 percent of the total. In terms of damages in sectors directly linked to MDGs, 18.5 percent of the pre-flood educational facilities in Sindh suffered damage (either partial or total destruction of buildings and infrastructure); while 11 percent of health facilities were similarly affected. Direct damage to housing stock was also the most significant in Sindh, with 880,000 housing units completely or partially damaged. This amounted to 55 percent of total housing stock damaged in the floods. Damage to water and sanitation infrastructure was estimated at about \$28.1 million. In addition to the infrastructure damage, the loss of livelihoods was devastating for the province. The DNA estimated that more than 90 percent of livelihoods from agriculture were affected as a result of the floods in the flood affected areas. These impacts were felt severely by poor and landless people who had little recourse to alternate sources of livelihoods.

Major Social Impacts and Mitigation Measures:

54. The major social impacts from both rehabilitation of flood works and construction of small dams is potential resettlement of people due to land acquisition. While the flood works are owned and operated on land belonging to Sindh irrigation Department, there are a number of squatters and encroachers who are living in the construction site. Project social assessment identified these people as poor or very poor living in small huts. Where resettlement is required, a RAP or an Abbreviated RAP will be prepared in line with the Resettlement Policy Framework prepared as part of the ESMF. Site screening for dams will also screen potential resettlement issues and ensure that the option presenting the lowest impact in terms of resettlement is selected. Appropriate instruments will also be prepared for dams, implemented and monitored stringently. Other social impacts expected from construction works are impacts on health and safety, mobility (especially of women) and labour camps and their impact on local people. These impacts will be assessed for each site and appropriate mitigation measures will be implemented.

55. For the first year of project implementation, an Abbreviated Resettlement Action Plan has been prepared for the repair of flood protection structures on three bunds in Thatta District. The census conducted for the site showed that 18 households will be effected either through resettlement of houses or from relocation of small road side businesses. The Project affected households will be fully compensated in accordance with the ARAP which includes a detailed information on Project Affected People, assets and entitlement for compensation. Consultations have been conducted (including with women-there are no female headed households) with PAPs and will continue during implementation and monitoring stages.

56. **Impacts on women** will be captured through separate consultations and gender disaggregated data collection. Further, Component 1 will support training, awareness raising on disaster preparedness and small scale infrastructure to help women avail water resources.

Other Key Social Measures:

57. Consultation and Disclosure: Extensive stakeholder consultations were undertaken while preparing ESMF and ESMP for the first year sub-projects in Thatta. In all, 52 sessions of consultations were completed with a total of 433 local community members, both men and women. In addition, a consultation workshop was also arranged to disclose the draft ESIA and ESMF. In this workshop, stakeholders from different walks of life presented their views. Both ESIA and ESMF have been disclosed nationally as well as at the WB InfoShop on 25 January 2016 and updated in March 2016. Similar consultations will be carried out while preparing ESAs, ESMPs and RAPs/ARAPs of later year sub-projects.

58. Citizen Engagement: A Project level Grievance Redress Mechanism (GRM) has been designed and included in the ESMF. This will include a field level mechanism for resolving disputes as well as a higher level Grievance Redress Committee that can resolve complaints beyond the scope of field mediation. Further, a Beneficiary Survey will be conducted after each sub-project is completed to capture impacts on stakeholders after implementation. This will provide feedback on both positive and negative impacts, enable the project to engage with the public effectively, and incorporate lessons into later year sub projects designs.

Environmental Safeguards

59. Environmental System of the Province. The Province has in place an adequate legislative and institutional regime for environmental management. The apex law in this regard is the Sindh Environmental Protection Act, 2014. The Act is applicable to environmental parameters such as air, water, soil, and noise pollution, as well as to the handling of hazardous wastes. The Act provides the framework for protection and conservation of species, wildlife habitats and biodiversity, conservation of renewable resources, establishment of standards for the quality of the ambient air, water and land, establishment of Environmental Tribunals, appointment of Environmental Magistrates, Initial Environmental Examination (IEE) and EIA approval. Penalties have been prescribed for those contravene the Act. The following are the key features of the Act that have a direct bearing on the SRP.

- Section 11 (Prohibition of Certain Discharges or Emissions) states that “Subject to the provisions of this Act and the rules and regulations made there under, no person shall discharge or emit, or allow the discharge or emission of, any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the National Environmental Quality Standards (NEQS)”.
- Section 12 & 13 (Import & Handling of Hazardous Substances) requires that “Subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle, or import any hazardous substance except (a) under a license issued by the Federal Agency and in such manner as may be prescribed; or (b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement, or other Instrument to which Pakistan is a party.” Enforcement of this clause requires the EPA to issue regulations regarding licensing procedures and to define ‘hazardous substance.’
- Section 15 (Regulation of Motor Vehicles): Subject to provision of this clause of the Act and the rules and regulations made there under, no person shall operate a motor vehicle from

which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the NEQS, or where the applicable standards established under clause (g) of subsection (1) of Section-6 of the Act.

- Section 17-I (Initial Environmental Examination and Environmental Impact Assessment) requires that “No proponent of a project shall commence construction or operation unless he has filed with the SEPA an IEE or, where the project is likely to cause an adverse environmental effect, an EIA, and has obtained from the SEPA for approval in respect thereof.” This ESIA meeting the requirement of IEE has been prepared for the sub-projects covered under the report to comply with this Section of the Act.
- Section 17-2a & b (Review of IEE and EIA): The Federal Agency shall review the Environmental Impact Assessment report and accord its approval subject to such conditions as it may deem fit to impose, or require that the EIA be re-submitted after such modifications as may be stipulated or rejected, the project as being contrary to environmental objectives.

60. The Sindh Environmental Protection Agency (SEPA) was established under Pakistan Environmental Protection Act 1997. It is headed by a Director General who exercises powers delegated previously to him by the Pakistan Environmental Protection Agency and now the Environmental and Alternate Energy Department, Government of Sindh. Sindh EPA is the relevant agency for the review and approval of the present ESIA.

61. *Safeguards Compliance Requirements and Project Category*: The project needs to comply with the provincial Environmental Protection Act (described above) as well as the relevant World Bank’s Operational Policies including OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitat, and OP 7.50 (Projects in International Waterways). The project has been categorized as Environment Category A in accordance with the provisions of OP 4.01 primarily because of the construction of new albeit small recharge dams which may potentially cause significant environmental impacts as described below.

62. *Environmental Baseline Conditions*: Sindh can be geographically divided into four distinct parts i.e. Kirthar range on the west, a central alluvial plain bisected by the Indus River in the middle, a desert belt in the east, and the Indus delta in the south. Most of the Project area is seismically falling in Zone 2A and Zone 2B. A small portion of Thar District is falling in Zone 4 which is called the High Damage Risk Zone. The soils along the Indus River banks are silt and sandy loam. Outside the active flood plain, the soils are generally calcareous, loamy and silty clay. Most of the soils in the district of Thar and parts of Khairpur and Sanghar districts are sandy.

63. The river embankment rehabilitation works will be carried out along the River Indus where typically agriculture lands lie on one side and river flood plain on the other side of the embankments. In certain areas, cultivation fields also exist in the river flood plain (ie, inside the river embankments). The area is generally arid with scant rainfall that is limited to only a few months of the year. Several sections of the river embankments are breached during high floods happening at least once a year. The breaching results in widespread inundation outside the embankments which causes extensive damage to crops, communities, and physical

infrastructure. Irrigated agriculture is the main livelihood in the area. There is little vegetation on the embankments though some small bushes, shrubs and a few water ponds exist along some sections of the embankments which support bird biodiversity in the surrounding areas. In general, the natural ecosystems have been greatly modified because of the presence of settlements and cultivation in the immediate vicinities. The embankments are generally connected with the road network in the area.

64. Small water impounding structures such as small recharge dams will be constructed in two separate regions of the province: Kirthar area; and Tharparkar. The Kirthar area is characterized by rugged terrain, gravelly plains interspersed by low hills, scant and xerophytic vegetation, little rainfall but some flash floods during monsoon rains, no canal irrigation, availability of small quantities of groundwater only in some areas and hence cultivation possible in only a few areas. The Tharparkar area is characterized by plain and sandy terrain with some sand dunes, scant and xerophytic vegetation, little rainfall, no canal irrigation, availability of small quantities of groundwater only in some areas.

65. *Water Resources.* The Indus River is the main surface water source of the province. It has three major barrages in Sindh that divert approximately 48 million acre feet (MAF) (or 59.0 billion cubic meters- BCM) of water annually to the 14 main canal commands in Sindh. More than 80 percent of the irrigated land in Sindh is underlain with brackish water unfit for agriculture. The shortage of irrigation water coupled with drought conditions in Sindh has increased the importance of groundwater exploitation wherever fresh water is available. Fresh groundwater is found mostly in a strip parallel to the left bank of Indus River and some pockets in other areas. More than 30,000 tube wells in private and public sector are installed for agriculture purpose. The province of Sindh is having 81 percent of its irrigation area classified as waterlogged. In the last few decades the waterlogged area has increased in the province. While right side of the Indus River in Sindh is facing the problem of drought.

66. *Biological Resource.* Currently there are 23 wildlife protected areas in Sindh. There are also a number of wetlands in the province, 10 of which are declared as Ramsar sites. In accordance to IUCN Red List of Threatened Species (2015), two species of mammals in Thar District (Asiatic wild ass and Indian pangolin) are endangered, one species (Striped hyena) is Near Threatened, and 30 species have Least Concern status whereas two species have not been evaluated for IUCN Red List (WWF Ecological Assessment of Thar, 2010-11).

67. The Thatta area has important habitat of mangroves. Mudflat coast provide habitat to species of mammals, birds, reptiles and amphibians. In small mammals, nine species belonging to two orders and four families are reported. Kharochann is an important area for a variety of bird species. Many water birds, mainly larids and charadriids use the area during winter as staging, feeding and wintering ground. As many as 85 species of birds have been reported in the area (WWF Ecological Assessment Report, 2010-11).

68. *Physical Cultural Resources (PCRs).* The Sindh province being the center of old culture and civilization has a number of archaeological sites. A total of 43 such sites exist in the districts of project area. However, the initial survey of some of the sub-projects reveals that none of the sites are located in the sub-project area and are unlikely to be impacted. Detailed assessment in this

respect will be carried out while conducting environmental and social assessment of each subproject. No SRP subproject that is likely to have any adverse impact on known PCRs in the area will be selected.

69. *Potential Impacts.* The major potential adverse impacts associated with the construction of the river embankment sub-projects include disposal of excavated/surplus soil material, development of shallow borrow pits away from the embankments for construction materials, temporary disturbance of surface water quality due to river embankment stone piling, minor traffic congestion and dust pollution on roads along the river dikes due to delivery trucks, temporary damage to non-critical riparian habitat and vegetation, minor soil erosion along embankments during construction, improper disposal of solid and liquid wastes, opening up of narrow access routes to embankments, and occupational health and safety risks. The positive impacts would be putting in place structurally sound and environment-friendly permanent structures along the Indus River to protect the embankments from breaching and the surrounding communities from severe flood damages as well as generate local employment during the construction phase.

70. In case of the small recharge dams for rainwater harvesting, in addition to the construction-related impacts described above, the potentially adverse impacts include reduction of surface water flow during the rainy season for lower riparian areas, and possible proliferation of disease-causing vectors such as mosquitos in the water impoundment areas during the rainy season such as malaria and dengue. The positive impacts include flood control during the rainy season, and the recharge of groundwater and increase in water supply for irrigation, domestic as well as livestock use.

71. In case the small dams are constructed close to the Kirthar National Park, the potential impacts of the construction as well as O&M activities could include habitat modification, encroachment into sensitive habitats, disturbance to key wildlife species caused by construction and O&M activities, increased human presence in critical habitat, increased hunting pressure, and reduced water availability to certain areas.

72. *Environmental Mitigation Measures.* To address the above described potentially adverse impacts, the following mitigation measures have been proposed: proper disposal of excavated earth; water sprinkling at access roads and construction areas to avoid/minimize dust pollution; use of silencers for the machinery and vehicles; use of ear protection gears and other personal protective equipment by construction workers; provision of septic tanks in camps and offices, treatment of wastewater and other pollution control measures in construction camps; location of borrow pits to be at safe distances from structures and to be properly restored; not selecting productive land for borrow area or for establishing camps/construction areas, no damage to cultivated areas; avoiding unnecessary clearing of natural vegetation; avoiding archaeological or culturally important sites; avoiding and controlling toxic materials; implementing erosion control measures, and adhering to safety and occupational health precautions.

73. *Safeguard Instruments.* To address the earlier-described potential impacts and in pursuance of the WB OP 4.01, the project has carried out an Environmental and Social Impact Assessment (ESIA) for the rehabilitation of three adjacent embankment subprojects along the Indus River to

be undertaken during the first year of SRP. The ESIA includes an Environmental and Social Management Plan (ESMP), which identifies site- and subproject-specific potential impacts and also includes associated mitigation and monitoring plans to address the identified impacts.

74. In addition, an Environmental and Social Management Framework (ESMF) has been prepared for sub-projects to be undertaken during the later years since specific siting and design details are not known for all embankment and dam subprojects, and improvement of PDMA Sindh's operational facilities. The ESMF describes the project rationale, the overall environmental and social conditions of the project site and the overall process on how the safeguard instruments will be prepared. The ESMF includes a screening checklist that categorizes the subprojects as Environment Category A or B depending upon the nature and size of each subproject and the environmental and social conditions at or around the proposed intervention. The ESMF also identifies the generic impacts of the project interventions and describes the assessment needs of the individual subprojects. The ESMF calls for conducting an environmental and social assessment (ESA) for each Category A subproject and preparing an environmental and social management plan (ESMP) for each Category B subproject. An Environmental Code of Practice (ECOP) accompanies the ESMF, which prescribes environment-friendly construction practices that the contractor will have to follow during the entire construction period, including pre-and post-construction.

75. *Screening Criteria for Sub-projects.* The ESMF provides a screening checklist that will be used to determine the viability and suitability of the sub-project sites and the modifications needed in the design and construction methods in order to achieve the sustainable management of project-related environment and social impacts. Priority will be given to sub-projects in sites that which will generate manageable and low impacts. . Given the needs of the communities, this project will support only medium-sized sub-projects involving rehabilitation of existing structures or the construction of small-scale infrastructure that are expected to cause low to moderate level of negative but reversible and localized impacts. An ESMP (and a RAP if needed) will be prepared for to fulfill the project's safeguards requirements. Nevertheless, a full EIA/ESA including an ESMP and RAP will be carried out for subprojects having significant irreversible and widespread impacts or involving significant degradation of forests or sensitive areas, requiring land acquisition or water impounding structures that will reach more than ten meters.

76. *Compliance with OP 4.04.* The World Bank's policy on Natural Habitats OP 4.04 is triggered as there is a need to manage short-term and reversible construction-related impacts in the existing access roads that traverse natural habitats of identified important flora and fauna species leading to the sub-project sites. The sub-project sites are not located in critical natural habitats areas nor will cause the conversion of the same. It is also anticipated that the establishment of borrow pits outside the sub-project sites but within areas of high water table in currently unproductive and uncultivated land are converted into permanent wetlands that may serve as natural habitats for flora and fauna endemic in the area.

77. Some part of SRP project area is located adjacent to the Kirthar National Park that supports some key wildlife species including Sindh Ibex, Urial, and Chinkara. The first year subprojects are not located in this area and hence will not have any impacts on the National Park, the wildlife

resources, or their habitat. The potential impacts of the later-year subprojects to be undertaken near the National Park will be carefully assessed and appropriate mitigation measures determined in accordance with the OP 4.04 to ensure that the National Park, its key wildlife species, and its habitat are not adversely affected. The ESIA and ESMPs of such subprojects will include details (ie, baseline, potential impacts, mitigation measures, residual impacts) pertaining to this aspect.

78. *Compliance with OP 4.37.* The project includes the construction of small recharge dams and the reconstruction of river embankments triggering the World Bank's policy on Dams, OP/BP 4.37. These water control structures will not be more than ten (10) meters in height and are therefore classified as small dams. They are not located in environmentally critical areas so it is most likely that the anticipated impacts are manageable. For small dams, generic dam safety measures will be incorporated in the detailed engineering design and requirements for bid tendering of the construction contracts prepared by qualified engineers to ensure compliance with the requirements of OP 4.37. The dam safety measures will also be integrated in the operation and maintenance of the dam and associated works by qualified engineers. The measures to address the anticipated impacts will be integrated in the construction supervision plan and the Environment and Social Management Plan with due diligence and quality assurance. In addition, the World Bank has engaged an international Dam Safety Expert to review the design of the dams and to ensure that dam safety concerns are adequately and appropriately addressed in these designs.

79. *Compliance with OP 7.50.* As the tributaries of Indus River are international waterways, the Project triggers the World Bank's policy on Projects on International Waterways OP/BP 7.50. The World Bank has however determined that proposed project activities only entail rehabilitation or reconstruction of existing infrastructure and technical studies and as such fall under the exception to the notification requirement under paragraphs 7(a) and 7(b) of OP 7.50.

80. *SEPA Approval:* The ESAs and ESMPs will need to be submitted to the Sindh Environmental Protection Agency (SEPA) to obtain necessary approvals of the subprojects.

81. *ESMP Implementation Budget.* A budget of about PKR 7.7 million has been estimated for the implementation of the ESIA for the first year subprojects. This includes about PKR 2.47 million as the compensation amount to be paid for the resettlement impacts.

82. *Consultation and Disclosure:* Extensive stakeholder consultations have been carried out while preparing ESMF and ESMP. In all, 52 sessions of consultations were completed with a total of 433 local community members, both men and women. In addition, a consultation workshop was also arranged to disclose the draft ESIA and ESMF. In this workshop, a total of 64 stakeholders from different walks of life participated. . Similar consultations will be carried out while preparing ESAs and ESMPs of later year sub-projects. Both ESIA and ESMF have been disclosed nationally as well as at the WB InfoShop on 25 January 2016 and updated in March 2016.

83. *Institutional Arrangements.* An Environmental and Social Management Unit (ESMU) within each IA will support implementation of ESIA, ESMF and sub-project-specific Environmental and Social Management Plans (ESMPs). The Project Implementation Consultants (PIC) will also

be engaged and will be responsible for supervision and monitoring of the construction works and also implementation of ESMF and ESMPs. The contractor will be responsible for the implementation of the sub-project specific ESMPs during the construction activities.

84. The Deputy Director (Hydrology and Environment) of SID has been designated as the environmental focal person for SRP. The Deputy Director will be responsible for ensuring timely availability of environmental safeguard documents during the project preparation phase and compliance of these documents during the project implementation phase. In addition Sindh Irrigation and Drainage Authority (SIDA) and Project Management Office (PMO) have been instructed by the Department to make their environmental management staff available to the project.

85. Environmental supervision and monitoring capacity will also be included in the Project Implementation Consultants (Construction Supervision Consultants) in the form of appropriate number of dedicated environment specialists. Similarly, the construction contractors will also be required to engage fulltime environment specialists at the construction site to ensure effective implementation of the ESMPs.

86. *Institutional Strengthening*: Some environmental management capacity already exists in SID in the form of the Environmental Management Unit (EMU) within SIDA and PMO of Sindh Barrages Rehabilitation Project, with experience related to preparing and implementing projects financed by the World Bank as well (Sindh Water Sector Improvement Project and Guddu Barrage Rehabilitation Project). However this capacity needs to be further enhanced by adding more specialists from various disciplines (environment, biologists, ecologists) and also capacity building of the specialists through trainings and exposure visits. To this end, a capacity building plan is included in the ESIA and ESMF of the SRP. The plan includes regular trainings on various environmental assessment and management aspects as well as exposure visits to various construction sites of projects financed by the World Bank in Pakistan.

87. *Monitoring and Reporting*. Safeguard monitoring will be carried out to ensure that the mitigation plans are regularly and effectively implemented. It will be carried out at three levels. At the project level, the environment and social specialists will carry out safeguard monitoring to ensure that the mitigation plans are being effectively implemented, and will conduct field visits on a regular basis. At the field level, more frequent safeguard monitoring will be carried out by the relevant staff of PIC. The PIC and ESMUs will produce monthly, quarterly and annual reports for ESMP and RAP implementation. The subproject-specific monitoring requirements will be defined in the respective ESMPs.

Monitoring & Evaluation

88. The World Bank will participate in joint review missions with the implementing agencies in order to formally review project implementation semi-annually. The missions will conduct a comprehensive review of Project performance against the Results Framework and agree on planned actions (including financing plan). The findings of the review will be discussed in detail with the implementing departments and follow-up actions will be agreed upon. One month prior

to the joint review missions, the Implementing Agencies will provide the World Bank with a comprehensive progress report on project activities.

89. Designated officials at implementing agencies will also monitor and supervise implementation of project activities through a system of reporting that will include the submission of quarterly and annual progress reports. A uniform simple progress-reporting format focusing on physical and financial progress and outcomes achieved will be adopted in this regard. Progress reports will be shared with the World Bank within one month of the end of the reporting period. The list of monitoring indicators and a detailed Results Framework is included at Annex 1.

90. An internet supported MIS will be installed based on formats for review and monitoring that have already been agreed upon and developed. The implementing agencies will hire an experienced agency for development and customization of this system. Responsibility for the management and periodic updates of the system will lie with designated officials at the Implementing agencies. The Project will also set up a base line for monitoring and evaluation of results through a Monitoring and Evaluation agency which will be appointed by the implementing institutions.

91. External procurement audits will be carried out for all the post-review contracts. Statutory and internal audits will be conducted for the Project.

92. Besides regular monitoring by implementing agencies, the agencies will engage entities for third party monitoring/validation to ensure that the required outcomes as per acceptable standards have been achieved. The firm will also review and comment on the continuing adequacy of the FM system, and any actions that the implementing agencies need to take. In addition, innovative supervision strategies such as geo-referenced photographs and video-conferencing are expected to be utilized since the geographic scope of the project is widely spread.

Annex 4: Detailed Economic Analysis

PAKISTAN: SINDH RESILIENCE PROJECT

Estimation of Savings and Economic Benefits

1. The project will result in improved and resilient infrastructure, skilled human resource to better manage the disasters, better road connectivity, better flow of water along embankment, better availability of underground water through small dams, increased agricultural outputs, and reduced risk of deaths and injuries in the future. However, some of these benefits are difficult to quantify as several rounds of effects are involved. Readily estimable benefits are of three types: First, project interventions will result in saving valuable life of citizens and reducing injuries. Second, the project will reduce the magnitude of damage to physical infrastructure including houses, roads, agriculture produce, livestock, and social assets. Third, small dams will improve water availability for irrigation in drought-affected areas.

2. In terms of economic savings through protections of population against loss of lives and injuries, Value of Statistical Life (VSL) and Value of Statistical Injury (VSI) are used to measure benefits of reduced risk of deaths and injuries. Benchmark values of mortality and injuries are taken from assessment of damages after 2012 floods, since it was not a super-flood and represents a typical monsoon flooding event involving the Indus. Benefits of VSL and VSI saving and that of reduced damage to physical infrastructure are calculated for the next 10 years which are then discounted to find present value of benefits. The value of Statistical life is taken from Rafiq and Shah (2010)⁹ and number of deaths per probabilistic flooding event is assumed equal to deaths during 2012 floods in the targeted areas. Annual aggregate savings in VSL (VSI) were estimated by multiplying VSL (VSI) by the number of deaths (injuries), which are further multiplied by the probability of occurrence of a disastrous event. This probability has been calculated by dividing number of floods over the time period 1991 to 2014 divided by total number of years (the probability is found 0.5). The benefits of this saving are estimated for 10 years in the future and their present values are found. Initially the discount rate is taken 5% which is then adjusted for population growth rate (1.8%), as the probability of loss of life and injuries would proportionately increase with the increase in population. The net discount rate, therefore, is 3.2%. The saving in value of statistical life and value of statistical injury, together, are expected to generate benefits worth USD 132.86 Million in case of lower limit of VSL and about USD 475.37 Million in case of upper limit of VSL.

3. In terms of economic savings due to mitigating damages through floods, the estimated annual cost of damage and reconstruction for Sindh Province, in the absence of the project, is estimated USD 205.72 Million. For this calculation, expected benefits have been estimated on the basis of envisaged area protected from floods. Estimated price of various economic assets and probabilistic loss numbers have been used to calculate losses without, and savings as a result of, project interventions. Total annual loss without undertaking the project is assumed USD 411.44

⁹ Rafiq, Muhammad, & Shah, Mir Kalan: The Value of Reduced Risk of Injury and Deaths in Pakistan—Using Actual and Perceived Risk Estimates. *The Pakistan Development Review*. 49:4 Part II (Winter 2010) pp. 823–837. The VSL in the study is estimated at \$355 which is comparable with the GNI per worker of \$361 calculated from Pakistan Economic Survey 2014-15.

Million, which is then multiplied by 0.5 (probability of the occurrence of disastrous event) to get the expected annual loss of USD 205.72 Million. For loss reduction, if project is undertaken, two scenarios are assumed; under low scenario the project is expected to reduce loss by 10% and under high scenario the expected improvement is 20%. The expected reduction in loss is calculated for 10 years and future values are discounted to get the present values of benefits. The discount rate is assumed 5%, which is then adjusted for GDP growth rate (4%). Positive GDP growth will lead to higher costs of damage in the future, which will lead to extended benefits of the project. Therefore, the discount rate is adjusted for real GDP growth rate. The overall benefit due to reduced probability of damage to physical infrastructure and other valuable assets is estimated at USD 194.84 Million in low scenario and USD 389.69 Million in high scenario.

4. The project further aims at building small dams for irrigation especially in drought prone areas. Building of such social assets will nourish economic activity by increasing cropped area through improved underground water availability and irrigation, increased crop yields, and enhanced fodder for livestock. Benefits of crop sector include enhanced cropped area, increase in crop yield, crop diversification, enhancement of orchards, and increase in plantation. Net annual crop sector benefits are estimated USD 4.63 Million. Construction of small dams will also increase yield of fodder and crop residue which will bring improvement for livestock and fisheries estimated at USD 0.23 Million. Similarly, small dams are expected to bring savings in irrigation costs which is expected to pay annual benefits of USD 0.14 Million. The present discounted value of these benefits, net of the operating and maintenance cost (1% of construction cost annually), has been calculated over 20 years. Moreover, these social assets are expected to generate positive externalities (the justification of government intervention) which add to the benefits of the project. For instance, good quality water will be available to the population through ground water source, which is expected to be helpful in eliminating water borne diseases. Increase in agricultural income in the project area will also improve the quality of life of people.

Sindh Resilience Project				
Savings in VSL and VSI due to Protection Infrastructure and Improved Flood Management				
	Lower Limit	Upper Limit	Average	
Deaths	283	283	283	
Injuries	2421	2421	2421	
VSL (USD)	122047	435294	278670.5	
VSI (USD)	417	1654	1035.5	
Annual VSL Saving (USD Million)	17.27	61.59	39.43	
Annual VSI Saving (USD Million)	0.5	2	1.25	
Discount Rate	3.20%	3.20%	3.20%	
PV of Benefits (USD Million)	132.86	475.37	304.11	
Savings from Reduced Risk of Damage to Infrastructure and Assets				
	Low Scenario	High Scenario	Average	
Expected Annual Loss (USD Million)	205.72	205.72	205.72	
Reduction in Loss (USD Million)	20.57	41.14	30.855	
Discount Rate	1	1	1	
PV of Benefits (USD Million)	194.84	389.69	292.265	
Benefits-Cost Analysis of Small Dams				
	Net Crop Sector Benefits	Livestock Benefits	Water Supply Benefits	Total
Annual Benefits (Million USD)	4.63	0.23	0.14	5.00

Cumulative Benefits (Million USD)	92.54	4.63	2.78	99.95
Discount Rate (%)	1	1	1	1
PV of Benefits (USD Million)	73.64	3.68	2.21	79.53
Overall Benefits and Benefit-Cost Ratio				
	Low Scenario	High Scenario	Average	
Capital Costs	120.00	120.00	120.00	
Total Costs (Capital & O&M)	161.5	161.5	161.5	
Total Benefits	407.23	944.59	675.91	
Benefit-Capital Cost Ratio	3.39	7.87	5.63	
Benefit-Cost Ratio	2.52	5.85	4.19	

5. The overall present value of benefits ranges USD 407.23 Million to USD 944.59 Million with an average of USD 675.91 Million. These values are well above the proposed capital cost of the project. If costs for Operations and Maintenance (O&M) of infrastructure created are also considered, the net present value still remains positive. The recurring O&M costs for infrastructure have been estimated at around 2 percent of capital cost annually throughout the design life. Therefore, the net present value of the project is positive and benefit-cost ratio ranges between 2.52 to 5.85 with an average of 4.19.

Annex 5: Implementation Support Plan

PAKISTAN: SINDH RESILIENCE PROJECT

Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) for the Sindh Resilience Project (SRP) has been developed based on the specific nature of project activities, the planned implementation schedule, lessons learned from similar emergency operations, and the risk profile as identified in SORT, as well as the fact that the project was prepared based on emergency procedures. The ISP envisages frequent implementation support missions by the World Bank's Task Team. The World Bank's Task Team will monitor implementation progress through: i) reporting against key performance indicators as outlined in the results framework; ii) implementation agency level project reports; iii) independent verification of progress through field visits; iv) fiduciary oversight of implementing agencies' activities; and v) regular communication with the Departments and the implementing agencies.
2. Project implementation will be supported by the task team based out of the World Bank's Islamabad office. This will ensure that it is possible to rapidly field missions should the need arise. Formal missions will be conducted at least three times during the first year of implementation and semi-annually thereafter. In addition, as required frequent 'Thematic' missions will be made to provide targeted support to address emerging issues.

Implementation Support Plan

3. The following ISP reflects preliminary estimates of the skill, timing, and resource requirements over the implementation period of the Project. The ISP will be reviewed from time to time to ensure that it continues to meet implementation support needs of the Project.
4. *Technical:* In addition to regular supervision and implementation review missions, the Association will mobilize technical specialists to support implementation, particularly in terms of adding value through knowledge sharing and cross-fertilizing experience from similar projects in other countries. The Task Team has included a Dam Safety Expert during preparation who will continue to assist during supervision. Similarly, fiscal risk management and insurance experts will be mobilized to support PDMA Sindh's work on fiscal risk management strategy and piloting risk transfer instruments. Similarly, the World Bank's institutional expertise on risk identification, engineering, and strengthening of fiduciary and operational systems will also contribute to adequate implementation of interventions and achievement of development objectives.
5. *Procurement, Financial Management, Environmental and Social Safeguards:* The World Bank's procurement, financial management, environmental and social safeguards specialists will provide regular implementation support and technical assistance to the counterpart teams during the project implementation. These team members will also identify capacity building needs to strengthen procurement, financial management, and safeguard capacity of the implementing agencies.

6. *Procurement:* In addition to the procurement prior review to be carried out by the Task Team, procurement support missions will be undertaken once a year to carry out post review of procurement actions in the field. The Procurement specialist will provide focused procurement support including: (i) reviewing procurement documents and providing timely feedback to the counterparts; (ii) providing detailed advice and guidance on the application of the World Bank's Procurement Guidelines; and, (iii) monitoring procurement progress against the Procurement Plan.

7. *Financial management:* The World Bank will conduct risk-based financial management supervisions, at appropriate intervals, in the following ways: (a) review the project's interim financial reports (IFRs), the project's annual audited financial statements, the auditor's management letter and remedial actions, if any; and (b) during the Association's on-site supervision missions, review the following key areas (i) project accounting and internal control systems; (ii) budgeting and financial planning arrangements; (iii) disbursement management and financial flows as applicable; and (iv) any transparency issues involving project resources. As required, a World Bank-accredited Financial Management Specialist will assist in the supervision process.

8. *Environment and social safeguards:* During the period of civil works the environmental and social safeguards specialists shall make annual or more frequent mission visits to ensure compliance with project safeguard requirements. The World Bank's task team will maintain close coordination with the counterpart to ensure compliance with the screening criteria as laid out in the framework approach. Further, between missions the team will review the supervision consultant's reports to monitor progress and identify issues that may arise. The Safeguards specialists will monitor the implementation in accordance with the World Bank's safeguard policies, and advise on corrective measures as needed. The implementation of the ESMF will be closely monitored, both through reviewing the supervision consultant's reports and through field visits.

Time (months)	Focus	Skills Needed	Resource Estimate (Staff Weeks)
<i>First six months</i>	Technical review of procurement bidding documents	Structural Engineer	8
		Procurement Specialist	4
	Technical review of TA documents	Technical Specialists	4
	Environmental Monitoring	Environmental Specialist	6
	Social Monitoring	Social Specialist	6
	Review of financial management	Financial Specialist	4
	Implementation Support	Task team	20
	Team Leadership	TTL	20
<i>6 – 48 months</i>	Project Construction	Structural Engineer	30
	Technical Reviews of TA Outputs	Technical Specialists	20
	Environmental Monitoring	Environ. Specialist	8
	Social Safeguards Monitoring	Social Specialist	8
	Review of procurement documents	Procurement Specialist	10
	Review of financial management	Financial Specialist	10
	Implementation Support	Task Team	100
	Team Leadership	TTL	100

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Team Leadership	120	15	
Environmental Specialist	12	15	
Financial Specialist	14	12	
Structural Engineer	38	18	
Implementation Support	120	20	
Procurement Specialist	14	15	
Social Specialist	12	15	
Technical Specialists	36	15	In various disciplines (DRM, flood protection, dam safety, and civil engineering)
Fiscal Risk Management and Insurance	12	10	