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Report No: PAD1661

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR142.6 MILLION
(US$200.0 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

BALOCHISTAN INTEGRATED WATER RESOURCES MANAGEMENT AND DEVELOPMENT PROJECT

June 7, 2016

Water Global Practice
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2016)

Currency Unit	=	Pakistan Rupees
PKR 104	=	US$1
US$1.40288	=	SDR 1

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AGP	Auditor General of Pakistan
AGPR	Accountant General Pakistan Revenues
BCM	Billion Cubic Meters
BSSIP	Balochistan Small-Scale Irrigation Project
CGA	Controller General of Accounts
CIA	Cumulative Impact Assessment
CO	Community Organizations
CQS	Consultant Qualification Selection
DA	Designated Account
EA	Environmental Assessment
EFA	Economic and Financial Analysis
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERR	Economic Internal Rate of Return
FBS	Fixed Budget Selection
FM	Financial Management
FMIS	Financial Management Information System
FMM	Financial Management Manual
FO	Farmer Organization
FWP	Future With Project
FWOP	Future Without Project
GAP	Gender Action Plan
GDP	Gross Domestic Product
GIS	Geographic Information System
GOB	Government of Balochistan
GRC	Grievance Redressal Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IBIS	Indus Basin Irrigation System
IBRD	International Bank for Reconstruction & Development
ICB	International Competitive Bidding
ICT	Information & Communications Technology
ID	Irrigation Department (Balochistan)
IDA	International Development Association
IPSAS	International Public Sector Accounting Standards
IUFR	Interim Unaudited Financial Report
IWRM	Integrated Water Resources Management
LCS	Least Cost Selection
M&E	Monitoring and Evaluation
Mha	Million hectares
MIS	Management Information System

NCB	National Competitive Bidding
NGO	Non-Government Organization
O&M	Operations and Maintenance
OM	Operations Manual
PDO	Project Development Objective
PFM	Public Financial Management
PIU	Project Implementation Unit
PKR	Pakistan Rupee
PMU	Project Management Unit
PSC	Project Steering Committee
PSDP	Public Sector Development Program
PSIA	Project Supervision and Implementation Assistance
QBS	Quality Based Selection
QCBS	Quality & Cost Based Selection
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SA	Social Assessment
SCF	Standard Conversion Factor
SIA	Social Impact Assessment
SIAMP	Social Impact Assessment and Management Plan
SOP	Standard Operating Procedures
SSS	Single Source Selection
WB	World Bank
WUA	Water User Association

Regional Vice President:	Annette Dixon
Country Director:	Patchamuthu Illangovan
Senior Global Practice Director:	Jennifer Sara (Acting)
Practice Manager:	Meike van Ginneken
Task Team Leaders:	William Young/Mahwash Wasiq/Muhammad Riaz

PAKISTAN
BALOCHISTAN INTEGRATED WATER RESOURCES MANAGEMENT AND DEVELOPMENT PROJECT

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PAD DATA SHEET

Pakistan

PK-Balochistan Integrated Water Resources Management & Development Project (P154255)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

GWA06

Report No.: PAD1661

Basic Information			
Project ID P154255	EA Category A - Full Assessment		Team Leader(s) William Young, Mahwash Wasiq, Muhammad Riaz
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 01-Aug-2016	Project Implementation End Date 30-Jun-2022		
Expected Effectiveness Date 01-Sep-2016	Expected Closing Date 31-Oct-2022		
Joint IFC No			
Practice Manager/Manager Meike van Ginneken	Senior Global Practice Director Jennifer J. Sara	Country Director Patchamuthu Illangovan	Regional Vice President Annette Dixon

Borrower: Islamic Republic of Pakistan			
Responsible Agency: Balochistan Irrigation Department, Government of Balochistan			
Contact:	Mr. Abdul Hameed Mengal	Title:	Project Director
Telephone No.:	92812870705	Email:	bssip@yahoo.com

Project Financing Data(in USD Million)							
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee		
[X]	Credit	[ ]	Grant	[ ]	Other		
Total Project Cost:		209.70		Total Bank Financing:		200.00	
Financing Gap:		0.00					

Financing Source	Amount
BORROWER/RECIPIENT	2.00
International Development Association (IDA)	200.00
LOCAL BENEFICIARIES	7.70
Total	209.70

Fiscal Year	2017	2018	2019	2020	2021	2022	2023
Annual	10.00	20.00	30.00	40.00	40.00	40.00	20.00
Cumulative	10.00	30.00	60.00	100.00	140.00	180.00	200.00

Institutional Data

Practice Area (Lead)

Water

Contributing Practice Areas

Agriculture, Climate Change, Environment & Natural Resources

Cross Cutting Topics

[X] Climate Change
[X] Fragile, Conflict & Violence
[X] Gender
[ ] Jobs
[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Agriculture, fishing, and forestry	Irrigation and drainage	60	20	
Agriculture, fishing, and forestry	Forestry	10	20	
Public Administration, Law, and Justice	Public administration-Water, sanitation and flood protection	10	20	
Water, sanitation and flood protection	Water supply	10	20	
Water, sanitation and flood protection	Flood protection	10	20	
Total		100		

☐ 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	%

Rural development	Rural services and infrastructure	40
Environment and natural resources management	Water resource management	30
Social protection and risk management	Natural disaster management	10
Rural development	Other rural development	10
Environment and natural resources management	Climate change	10
Total		100

Proposed Development Objective(s)

To strengthen provincial government capacity for water resources monitoring and management and to improve community-based water management for targeted irrigation schemes in Balochistan.

Components

Component Name	**Cost (USD Millions)**
Component A: Institutions, Capacity and Information	20.40
Component B: Water, Infrastructure and Management Investments	163.90
Component C: Project Management and Technical Assistance	25.40

Systematic Operations Risk- Rating Tool (SORT)

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

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
Establish Project Steering Committee	X		Continuous

Description of Covenant

The Project Implementing Entity shall establish by no later than one (1) month after the Effective Date and maintain throughout the period of Project implementation, a Project Steering Committee

Name	Recurrent	Due Date	Frequency
Establish Grievance Redress Mechanism and Grievance Redressal Committee	X		Continuous

Description of Covenant

The Project Implementing Entity shall establish by no later than one (1) month after the Effective Date and maintain throughout the period of Project implementation a Grievance Redress Mechanism with guidelines and procedures satisfactory to the World Bank and a Grievance Redressal Committee with composition and terms of reference satisfactory to the World Bank

Name	Recurrent	Due Date	Frequency
Maintain a PMU	X		Continuous

Description of Covenant

The Project Implementing Entity shall maintain throughout the period of Project implementation, a Project Management Unit under the direction of qualified management, provided with sufficient resources, and staff with competent personnel in adequate numbers

Name	Recurrent	Due Date	Frequency
Establish and maintain a PIU in each of the Nari and Porali basins	X		Continuous

Description of Covenant

The Project Implementing Entity shall establish by no later than one (1) month after the Effective Date and maintain throughout the period of Project implementation, a Project Implementation Unit in the Nari river basin and a Project Implementation Unit in the Porali river basin, each with composition and terms of reference satisfactory to the Association

Name	Recurrent	Due Date	Frequency
Prepare a satisfactory Operations Manual	X		Continuous

Description of Covenant

Not later than one (1) month after the Effective Date, the Project Implementing Entity shall prepare and adopt an Operations Manual, satisfactory to the World Bank

Name	Recurrent	Due Date	Frequency
Annual work plan and budget	X		Yearly

Description of Covenant

The Project Implementing Entity shall throughout Project implementation, furnish to the World Bank for approval not later than January 31 of each year an annual work plan and budget for the subsequent fiscal year.

Name	Recurrent	Due Date	Frequency
Mid-term review		30-Sep-2019	

Description of Covenant

A mid-term Project review report shall be submitted to the World Bank

Name	Recurrent	Due Date	Frequency
Interim unaudited financial reports	X		Yearly

Description of Covenant

The Project Implementing Entity shall provide to the World Bank interim unaudited financial report forty-five (45) days after the end of each calendar quarter

Name	Recurrent	Due Date	Frequency
Project & Scheme Cultural Heritage Management Plans prepared & disclosed	X		Continuous

Description of Covenant

The Project Implementing Entity shall prepare a Project level Cultural Heritage Management Plan not later than twelve (12) months after Effectiveness. Scheme level Cultural Heritage Management Plans, satisfactory to the World Bank, shall be prepared prior to the commencement of any civil works in Project scheme areas

Name	Recurrent	Due Date	Frequency
Safeguards and site EMPs & Scheme Social Impact Assessment & Mgt Plans	X		Continuous

Description of Covenant

The Recipient and Project Implementing Entity shall ensure that the activities under the Project are carried out in accordance with the Safeguards Instruments. Prior to commencement of civil works the Project Implementing Entity shall prepare site-specific Environmental Management Plans (EMPs) and scheme-specific Social Impact Assessment & Management Plans (SIAMPs), satisfactory to the World Bank, and

thereafter implement the site-specific EMPs and SIAMPs.

Name	Recurrent	Due Date	Frequency
Resettlement Action Plans	X		Continuous

Description of Covenant

Prior to the commencement of any civil works requiring involuntary resettlement, the Project Implementing Entity will prepare and implement Resettlement Action Plan(s) satisfactory to the World Bank, in accordance with the Resettlement Policy Framework

Name	Recurrent	Due Date	Frequency
Matching Grant Program	X		Continuous

Description of Covenant

The Borrower shall ensure that the selection, appraisal and implementation of Matching Grants by Project beneficiaries, and the evaluation of these Matching Grants by the Project Implementing Entity, are all undertaken in accordance with the Matching Grants eligibility criteria and procedures contained in the Operations Manual. No withdrawal shall be made under Category 2 until the Project Implementing Entity has prepared and adopted Matching Grants procedures as part of the Operations Manual, satisfactory to the Association

Name	Recurrent	Due Date	Frequency
Appointment of Internal Auditor	X		Continuous

Description of Covenant

The Project Implementing Entity will, within three months of Effectiveness, appoint and maintain throughout Project implementation, a chartered financial accounting firm to undertake independent internal auditor for the Project, with qualifications and terms of reference satisfactory to the World Bank

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 of the end of the fiscal year, and make these publicly available in a timely fashion.

Name	Recurrent	Due Date	Frequency
Expenditures financed by counterpart funds	X		Continuous

Description of Covenant

The Project Implementing Entity shall ensure that the following Project Expenditures are financed exclusively out of its own resources, and, to this end, shall provide, the resources required therefor: (a) all land acquisition required for the Project; (b) any compensation, resettlement and rehabilitation payments to Displaced Persons in accordance with the provisions of the RAP; and (c) from Project Year 4, the full costs of operation and maintenance of all hydromet systems installed or rehabilitated under the Project.

Conditions

Source Of Fund	Name	Type
IDA	Appointment of financial management specialist	Effectiveness

Description of Condition		
The PMU financial management specialist shall have commenced active service under a defined work program whose scope includes measures satisfactory to the World Bank pertaining to the management of expenditures under the Project		
Source Of Fund	**Name**	**Type**
IDA	Expenditure audit for retroactive financing	Disbursement
Description of Condition		
Prior to reimbursement for any eligible expenditures incurred during the period allowed for retroactive financing, the Borrower must submit confirmation of the validity of the amount claimed, supported by a satisfactory audit report completed by an independent auditor satisfactory to the World Bank, testifying that the expenditures are eligible Project expenditures		
Source Of Fund	**Name**	**Type**
IDA	Disbursements for Matching Grants	Disbursement
Description of Condition		
Prior to disbursements for Matching Grants, the Project Implementing Entity must prepare and adopt Matching Grant procedures as part of the Operations Manual.		

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
William Young	Team Leader (ADM Responsible)	Lead Water Resources Management Specialist	Water Resources Management	GWA06
Mahwash Wasiq	Team Leader	Sr. Water Resources Mgmt. Spec.	Water Resources Management	GWA06
Muhammad Riaz	Team Leader	Sr. Agricultural Spec.	Agriculture	GFA12
Claire A. Kfouri	Team Member	Sr. Water & Sanitation Spec.	Operations Advisor	GWA06
Rehan Hyder	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGO06
Qurat ul Ain Hadi	Financial Management Specialist	Financial Management Specialist	Financial Management	GGO24
Abdelaziz Lagnaoui	Environmental Specialist	Lead Environment Specialist	Environmental Management	GEN06
Cecilia Belita	Team Member	Operations Analyst	Operations Analyst	GWADR

Chaohua Zhang	Safeguards Specialist	Lead Social Development Specialist	Social Development	GSU06
Chau-Ching Shen	Team Member	Senior Finance Officer	Financial Management	WFALN
Ghulam Farid	Team Member	Program Assistant	Admin. Support	SACPK
Grant Milne	Team Member	Sr Natural Resources Mgmt. Spec.	Watershed Management	GFA12
Helene Bertaud	Team Member	Senior Counsel	Legal Advice	LEGSG
Jonathan David Pavluk	Counsel	Senior Counsel	Legal Advice	LEGES
Maqsood Ahmed	Team Member	Consultant	Consultant	GSU06
Minerva S. Espinosa-Apurada	Team Member	Program Assistant	Admin. Support	GWA06
Moon Sun Yi	Team Member	Temporary	Admin. Support	GWADR
Rahat Jabeen	Team Member	Environmental Specialist	Safeguards Specialist	GEN06
Sana Shahid Ahmed	Team Member	E T Consultant	Operations Advisor	SACPK
Shahnaz Meraj	Team Member	Program Assistant	Admin. Support	SACPK
Zakia B. Chummun	Team Member	Program Assistant	Operations Assistant	GWA06

Extended Team

Name	Title	Office Phone	Location
Babar Naseem Khan	Environment Consultant		
Ishanlosen Odiaua	Safeguards Specialist		Montreal
Maqsood Ahmad	Social Development Consultant		
Ohn Myint	Irrigation and Dam Specialist	+13013556752	Montgomery Village
Thomas Muenzel	Sr. Economist	+390657054643	Rome
Walter Klemm	River Basin Management Consultant	+3905646294	Manciano

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Pakistan	Balochistan	Balochistan	X		

Consultants (Will be disclosed in the Monthly Operational Summary)	
Consultants Required?	Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. Pakistan is the world's sixth most populous country with an estimated population of 185 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 in the last decade, the country's recent 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. Prospects for economic growth are beginning to improve, supported by increasing reserves, low inflation and continuing strong remittances. Nevertheless, a weak private sector environment, low public sector management and implementation capacity, and security issues will continue to hamper performance.

2. Balochistan is Pakistan's largest (43 percent by area) but most sparsely populated province (approximately 10 million inhabitants). It borders Afghanistan and Iran and has approximately 1000 km of coastline extending to the strategically important Straits of Hormuz. It is thus well-situated for trade with Afghanistan, Central Asia, Iran and Persian Gulf countries. The province has huge deposits of coal, natural gas, oil, iron, gold and precious stones. Its strategic location and extensive natural resources invite conflict and power politics.

3. In spite of its size, location and resources, Balochistan is Pakistan's least developed province. Annual per capita GDP is less than 60 percent of the national average, the literacy rate is 50 percent (compared to 58 percent nationally) and less than 15 percent of people have access to clean water. Further, security difficulties cause a substantial "brain drain", and together with the sparse population and lack of infrastructure, mean the cost of delivering goods and services is very high. These factors, coupled with limited investment and an absence of coordinated economic policy, have led to economic stagnation in recent decades.

B. Sectoral and Institutional Context

Pakistan Water Sector

4. Water is critical to the Pakistan economy, including for agriculture (22 percent of GDP and 45 percent of jobs) where irrigation represents 93 percent of total water use. Pakistan has low water availability per capita at approximately 1250 m^3/year. Water availability is highly variable within and between years. Pakistan has very low water storage capacity (12 percent of mean annual flow). Climate change is expected to reduce water security significantly across Pakistan as a result of more variable and more intense rainfall. Consequently, water availability is expected to be less predictable and floods and droughts more common, with the poor most significantly impacted.

5. The Indus River and associated alluvial groundwater systems are Pakistan's main sources of water, and most of the population and the majority of irrigated agriculture is found on the Indus Plain. The Indus Basin Irrigation System (IBIS) is the largest irrigation system in the world, and IBIS and hydropower development in the upper basin are the focus of most of water management and water policy debate in the country.

6. The Federal Ministry of Water and Power is responsible for water resources management and development. While there are relatively stable arrangements in place for the management of the Indus River (both internationally and nationally), there is no national water policy framework and no coordinated approach to guide the development and increasing critical reforms in the sector required to underpin national economic growth. A National Water Policy was drafted several years ago, but it is only very recently that the government is again considering how to progress in this sector. As in many federated systems, the Pakistan Constitution assigns policy and planning responsibilities for water to the provinces and irrigation and drainage are managed at this level. The Provincial Irrigation and Drainage Authority Act provides a framework for the establishment of provincial authorities, water boards and farmer organizations (FOs).

Balochistan Water Sector

7. Balochistan is the least water-secure province in Pakistan, the most at risk from climate change, and the least able to cope with water-related development challenges. Per capita water availability in Balochistan is well above the national average because of low population density. Balochistan is comprised of eighteen river basins crossing six agro-ecological zones. Less than 40 percent of Balochistan's available water is from the Indus River, and this fraction is only available to around five percent of the area of the province given the challenges of topography. Inadequate water distribution infrastructure means that less than half of the water available to Balochistan from the Indus is utilized. Variability in water availability is far higher than the national average and per capita water storage is only 20 percent of the (grossly inadequate) national average.

8. Floodwater generated by intense but highly episodic rainfall is the largest usable water resource in Balochistan. Extended droughts and destructive flash floods are relatively common, and are expected to worsen with future climate change. Rainwater is harnessed for irregular spate (or flood) irrigation. Spate irrigation in the province is generally poorly managed and reliant on inadequate infrastructure making it both relatively inefficient and unproductive.

9. Given the unreliability of surface water and the limited infrastructure, groundwater is a critical resource. Groundwater is a small fraction of the overall water resource, but its comparative reliability means it is in high demand. Groundwater is significantly over-abstracted and has led to major declines in groundwater levels in many parts of the province. Given intense rainfall events, groundwater recharge is limited.

10. Governance challenges and a lack of investment have led the province to remain highly dependent on agriculture (60 percent of provincial GDP and 67 percent of labor) despite the availability of considerable mineral and energy resources. Recent economic growth has been largely driven by expansion of tube-well irrigation for high-value agriculture, especially horticulture with key agricultural products, including wheat, apples, grapes, vegetables, barley, milk and meat.

11. The people most vulnerable to water scarcity in Balochistan are the rural poor, especially women and children. Many rural communities lack secure water supplies and adequate sanitation. This has major impacts on health and human development. Water is critical to the irrigation that underpins food security in semi-arid Balochistan. The majority of the rural poor in

the Balochistan depend on unreliable surface water irrigation (either spate irrigation or rainfall harvesting), or livestock-based production across the extensive but relatively unproductive rangelands of the province. In the current context, improving rural livelihoods and stimulating economic growth require vastly improved management of the scarce water resources of the province.

Balochistan Water Institutions

12. Water management in Balochistan is the responsibility of the Irrigation Department (ID) of the Government of Balochistan (GoB). The department is responsible for management of irrigation, drainage and flood control infrastructure and equitable distribution of irrigation water. In addition, the department has a responsibility to formulate and implement water policy under the Canal and Drainage Act and under the Balochistan Groundwater Rights Administration Ordinance (1978, amended in 2000).

13. Coverage and reliability of hydrological data is poor, preventing well-informed planning and management of water resources. Much of the province has no groundwater monitoring network, despite the criticality of groundwater resources, and the density of surface water data collection is inadequate. There is a lack of expertise in hydrological monitoring, constraints on accessing field sites, a virtual absence of supervision of field staff and a lack of data transmission infrastructure.

14. The Balochistan Water Users' Association (WUA) Ordinance (1981) provides for the formation, operation and promotion of WUAs in the province; it makes it obligatory for farmers to organize themselves into WUAs for collective action, including watercourse rehabilitation and ongoing maintenance. The Ordinance however, is only applicable to canal irrigation systems and not to the more widespread small-scale irrigation schemes operated by FOs. Some limited efforts have been made to establish functioning WUAs outside canal irrigation areas, but significant additional effort is required to move towards provision of labor, cost-sharing, operations and maintenance (O&M) cost-recovery and transferal of operation of local schemes to community groups.

15. Women have very limited involvement in WUAs given the strict separation of men and women in most of rural Balochistan, the low social and economic status of most rural women, and their restricted mobility and lack of decision-making authority. In the long-term, finding appropriate entry points for changing the perceptions in rural Balochistan on the roles and abilities of women in general, and the opportunities for their contributions to improved community water management, will be critical.

Balochistan Water Policy

16. In 2006 the GoB adopted an Integrated Water Resources Management (IWRM) Policy with the support of the Asian Development Bank (ADB). The policy describes the provincial situation of severe water scarcity, inefficient and profligate usage, prolonged droughts and the dire consequences for rural livelihoods and economic growth. It is organized into 16 "thrust areas" for improving and sustaining the management of surface and groundwater resources. The

policy identifies numerous studies required to fill important knowledge gaps, critical capacity gaps, regulatory reforms and institutional reforms.

17. While useful progress has been made in the last decade with outside assistance in undertaking many of the identified studies, the fundamental required changes identified in the policy have not been tackled. The primary reasons for the lack of substantive progress are (i) the lack of any national framework or national political push for water sector reform, (ii) the highly political nature of water in the province and the lack of real political will, and (iii) the lack of technical and policy capacity within government to change from within. Recent relative improvements in the security situation and political stability, together with the relative success of the recently completed World-Bank financed Balochistan Small Scale Irrigation Project (BSSIP[1]) that trialed irrigation aspects of the IWRM Policy in the Pishin Lora River Basin, have significantly increased the government appetite for tackling water reform.

C. Higher Level Objectives to which the Project Contributes

18. The Project contributes to the World Bank Group's twin goals given its objective to improve the livelihoods of the rural poor in Balochistan including through local-level participation to build stronger and more resilient communities, and to drive economic development through more efficient, productive and sustainable management and use of water resources in a watershed context. By working both at community level and provincial government level, the project will both improve the livelihoods of the current generation of poor people, and introduce the reforms needed to contribute towards long-term poverty reduction.

19. The Project contributes to result areas 2 and 3 in the World Bank Group Country Partnership Strategy (CPS Report # 84645-PK, April 4, 2015) for Pakistan for FY2015-19 including *Outcome 2.2: Increased Productivity in Farms in Selected Irrigation Schemes* (which includes prioritizing water resources management and community water supply) and *Outcome 3.3: Increased Resilience to Disasters in Targeted Regions* (which includes improved flood management and increased protection). In addition, the CPS stresses the importance of climate change resilience in Pakistan under the cross-cutting area of Climate Change Adaptation and Mitigation in Public and Private Sectors, focusing on energy, water and agriculture investments. The Project will support implementation of priority areas of the Balochistan IWRM Policy that target poverty and environmental sustainability and will establish a road-map for fuller and longer-term implementation of the full policy across the province.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

20. The Project Development Objective (PDO) is to strengthen provincial government capacity for water resources monitoring and management and to improve community-based water management for targeted irrigation schemes in Balochistan.

[1] P089378: Balochistan Small Scale Irrigation Project Development Objective was to support efforts by the Government of Balochistan to improve the management of scarce water resources in the Pishin Lora Basin by reducing the overall impact of the present water crisis. Financing: US$25M IDA Credit No. 4387-PK. Signed 25 June 2008. Closed: 31 Dec 2014.

B. Project Beneficiaries

21. The main Project beneficiaries will be small-holding farmers (up to 5 ha) and medium-holding farmers (5-20 ha) engaged in irrigated agriculture. In the Project areas, approximately 42,800 farm households will benefit from irrigation schemes and improved on-farm water management, 3,600 households will benefit from improved potable water supply, 10,200 households will benefit from improved flood protection and 20,400 households will benefit from better watershed and rangeland management. In total, approximately 71,200 households (or an estimated 569,400 people) will directly benefit; these totals reflect that some households benefit from multiple project interventions and assume an average of eight people per household.

22. In addition, GoB staff with responsibilities for water management and water planning, across all sectors, will directly benefit from training and from the generation of new data sets and information that enable them to more effectively fulfil their professional responsibilities. Improved water resources policy and planning will indirectly benefit all water users in Balochistan, especially in the Project river basins where investment in hydro-meteorological monitoring will be made.

C. PDO Level Results Indicators

23. Progress towards the PDO will be measured using three indicators: (i) the percentage of available quality-assured hydro-met data from project basins publically available in online data system, (ii) the irrigated area within project schemes with good water management practices, and (iii) the number of direct project beneficiaries (including the percentage of female beneficiaries).

III. PROJECT DESCRIPTION

24. The project combines technical assistance to the GoB to lay the foundation for a gradual transition to IWRM with targeted investments to support implementation of IWRM approaches within a framework of community mobilization and participation in the Nari and Porali basins.

25. The Project will support implementation of the 2006 IWRM Policy of the GoB. The key issues identified in this Policy that will be supported through this project include: (i) establishing adequate and reliable water data, (ii) improving coordination between the water and agricultural sectors, (iii) adopting an integrated approach to project formulation and to project Monitoring and Evaluation (M&E), (iv) improving irrigation water use efficiency, (v) improving groundwater recharge through watershed management and water conservation, and (vi) ensuring effective participation of water users and other stakeholders in water management. These will provide a solid foundation to guide longer-term reforms, a road-map for which will be developed during the Project.

26. The project will support investments in two of the eighteen basins in Balochistan – Nari and Porali river basins. These river basins have been selected based on the current water resources development status and future development opportunities identified through pre-feasibility studies, along with the consideration of security issues and a balanced approach to extending development support to different tribal groups. These choices also reflect a desire to avoid the very arid and less populated western desert basins and avoid the canal-irrigated basins, but to focus on basins dominated by a mixture of perennial and spate irrigation and groundwater-

dependent higher value agriculture. Nari River Basin (69,200 km^2) flows towards the Indus but terminates in inland lakes and wetlands. Groundwater in the basin is over-exploited in many areas, but considerable opportunities exist for development of surface water resources. The Porali River Basin (11,600 km^2) that flows south to the coast and terminates in Miani Hor – a Ramsar-listed mangrove lagoon. Groundwater is also over-exploited in the Porali basin but surface water resource development is relatively limited.

27. The selection of two priority river basins is the first step in a long-term process of province-wide water sector strengthening and reform. Tackling two basins also provides an opportunity to learn from sequential implementation and will provide some flexibility to reprioritize and expand interventions during implementation should the security situation change significantly.

A. Project Components

Component A: Institutions, Capacity and Information
Total Cost US$20.4M (IDA US$18.4M, GoB US$2M)

28. This component will support a gradual transition to IWRM approaches in Balochistan in line with the existing IWRM policy. It will support institutional restructuring, professional development, installation and operation of hydro-meteorological systems, and establishment of multi-agency river basin information systems that provide public access to all available hydro-met data for the two project basins. The Project will support the establishment of a hydro-met observation network in the two project river basins including telecommunication equipment, software for data transmission and analysis, storage conversion of the data into the needed information and training in network O&M. Because of its crucial importance, a groundwater observation network will be installed and operated in the two river basins. Public online river basin information systems will combine climate and hydrological data with spatial data sets from multiple agencies including for land-use, soils, topography, river networks, environmental assets etc. Appropriate institutional arrangements for initial IWRM efforts will be determined and progressively implemented during the Project. Investment will be made in professional development to support IWRM, including in aspects of water resources planning and management.

29. *Sub-component A1* will support institutional strengthening and restructuring; it will determine appropriate institutional arrangements for the initial stages of IWRM in Balochistan and recommend a realistic trajectory for institutional change considering current institutions and capacity. The restructuring recommendations will be implemented progressively over the life of the Project.

30. *Sub-component A2* will support hydro-meteorological data collection and management to provide the required information platform for improved water resources planning. The Project will design and implement monitoring networks across the two basins for collecting climate, surface water and groundwater data. Data transmission and storage facilities will be established, and government staff will be trained in operating and maintaining these systems and in water resources analysis and modelling using the data collected.

Component B: Water Infrastructure and Management Investments
Total Cost US$163.9M, (IDA US$156.2M, Beneficiaries US$7.7M).

31. This component will support implementation of IWRM sectoral investments in the Nari and Porali basins within a framework of community mobilization and participation. Investments will include: B1 – Construction and/or rehabilitation of irrigation and potable water supply facilities; flood protection infrastructure; B2 – Related watershed and rangeland management; and B3 – On-farm water management and agricultural productivity activities.

32. For the Nari and Porali river basins, detailed feasibility studies assessed surface and groundwater resources and the opportunities for integrated water resources development. For the Nari Basin, pre-feasibility analysis identified 264 potential schemes; feasibility studies considered 77 of these and detailed assessments were made for the 18 most cost-effective. For the Porali Basin, a feasibility study considered 13 perennial and three flood irrigation schemes.

33. These 34 (18+13+3) irrigation schemes were then considered in terms of (i) economic rate of return, (ii) number of beneficiaries, (iii) security risks, (iv) beneficiary ethnicity, (v) beneficiary willingness to participate in scheme management including operations and maintenance, and (vi) available funding envelope. This led to the selection of three schemes in the Nari Basin (Nari Gorge, Yatabad and Mushkaf) covering around 55,000 ha, and three schemes in the Porali Basin (Khudzar, Nimmi and Gundacha) covering around 15,000 ha.

34. In addition to these schemes, the proposed Project incorporates various watershed management activities, on-farm water management improvements, and other aspects of water management improvement.

35. *Sub-component B1* will support six irrigation schemes: three each in the Nari and Porali basins, spanning approximately 69,300 ha. Development work will include remodeling of the headwork and secondary canals. The Project will support construction and rehabilitation of sixteen village water supply schemes providing potable water supply to ~3,600 households. High-intensity rain in the steep upper catchments generates high-energy flash flooding and there is a dire need for flood protection works in five districts in the Nari basin and in two districts in the Porali basin. The proposed works will protect ~14,600 ha of farmland, 31 km of village roads (with 18 bridges and culverts), numerous villages and various irrigation infrastructure.

36. *Sub-component B2* will support a participatory approach to watershed management and rangeland management at the irrigation scheme level, to complement the new infrastructure investments under sub-components B1 and B3. Watershed management will include soil and water conservation measures, drainage improvement, rainwater harvesting, rehabilitation/protection of irrigable land degraded/endangered by erosion gullies and plantations. Rangeland management will focus on pasture and biomass production through introduction of rotational grazing and stocking rate limits.

37. *Sub-component B3* will support the improvement of on-farm and field irrigation water efficiency and farm productivity. The sub-component will invest in command area development including establishment of FOs, on-farm infrastructure, matching grants and training. On-farm infrastructure will include construction/rehabilitation of watercourses, water storage tanks/ponds, and farm access roads. Matching grants will support investment in farm technologies, value chain enhancements and farm development work with highest income potential and sustainability. Trainings will invest in capacity building for farmers, entrepreneurs and project/department staff in best agricultural and water management practices.

Component C: Project Management &Technical Assistance
Total Costs US$25.4M (IDA US$25.4M)

38. This component will support project management, monitoring and evaluation and studies. The component will finance expenditures associated with overall project implementation costs, including incremental costs associated with the Project Management Unit (PMU) and the Project Implementation Units (PIUs), Project Supervision and Implementation Assistance (PSIA) consultants, M&E consultants, and implementation of Management Plans and Strategic Studies including the Environmental Management Plan (EMP), the Social Mitigation Plan and the Gender Action Plan (GAP). Study tours will also be included with piloting of new technologies and others that may be identified during project implementation, as well as feasibility studies for other river basins (that do not include international waterways as defined in OP7.50).

B. Project Financing

39. **Project Cost.** The total project cost is estimated at US$209.7 million. Cost by components is shown in Table 1. Detailed costs of Project items by component and by year, cost sharing, and expenditure category are available in the Project Files.

40. **Project Financing.** IDA financing will cover 95.4 percent of the total Project costs including US$22.9M in taxes and duties. The Government of Balochistan will finance US$2M percent of the Project costs for O&M costs for the hydro-met networks under Component A commencing from project year 4. Project beneficiaries will finance US$7.7M of the total Project costs through in-kind contributions to infrastructure investments and cash contributions to matching grants.

Table 1: Summary of Project costing

Project Components	Total Cost (US$M)	IDA Financing		Government & Beneficiary Financing (US$M)
		US$M	%	
A. Institutions, Capacity and Information	20.4	18.4	90.2	2.0
B. Water Infrastructure and Management Investments	163.9	156.2	95.3	7.7
C. Project Management & Technical Assistance	25.4	25.4	100.0	0.0
Total Project Costs	**209.7**	**200.0**	**95.4**	**9.7**

C. Lessons Learned and Reflected in the Project Design

41. The following lessons learned from previous projects in Balochistan (including BSSIP), other projects in Pakistan, and similar projects in Afghanistan, Ethiopia, India, and Central Asia, are incorporated in the Project design.

(i) **Flexibility.** In conflict areas, projects must have built-in flexibility and room for innovation to respond to ever changing security situation in a timely and practical manner. The schemes included in this Project are a subset of a much larger set of technically and economically viable schemes in different locations that could be implemented if the security context for the selected schemes changes;

(ii) **Mining Local Knowledge and Skills.** To build community credibility, it is important to have implementing agency staff from the project area. This allows for better access to communities and local decision-making bodies. This was a key reason for successful implementation of BSSIP. The new PMU will therefore include several local staff to guide implementation;

(iii) **Managing Expectations for Policy Reforms.** A phased and incremental approach to policy reforms is more likely to build ownership and ensure sustainability. Focus on practical and achievable activities can yield results within a six-year period and lay the foundation for significant institutional change through longer-term engagement. In this regard, the proposed Project will include an assessment in the early stages of implementation to determine, in consultation with government, an appropriate approach to institutional reform. The initial focus will be on practical steps such as establishing a functioning and well run hydro-met network to inform improved decision making;

(iv) **Partnering with expert partners leverages international expertise:** The involvement of specialist partner agencies in project implementation will provide additional technical support on community approach issues relating to agricultural enhancement;

(v) **Incentive Structure and Benefit Sharing to Foster Community Ownership.** Clear incentives for farmer and community participation are required. This should reward commitment and can prevent potential moral hazard. Benefit sharing mechanisms are required to incentivize watershed protection activities that benefit downstream communities. This will be achieved in the proposed Project through a matching grants scheme and a wide range of awareness raising and training programs implemented through FOs that will be established under the Project; and

(vi) **Smart Monitoring Mechanisms, Tools and Technologies.** The use of innovative tools and technologies including third party monitoring are important supervision tools where regular field visits are difficult.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

42. The Irrigation Department (ID), GoB, will be the Implementing Agency for the Project. The ID will access technical expertise from the departments of Agriculture, Forestry, Livestock, and Public Health Engineering to guide project implementation. A central Project Management Unit (PMU) in the ID (located in Quetta) will incorporate staff from the ID Planning and Monitoring wing and the ID Water Resource Management directorate, supplemented with

additional qualified staff. Project Implementation Units (PIUs) in the Nari and Porali river basins, located in the towns of Sibi and Uthal respectively, will lead field implementation and manage community engagement process for the project, with PMU oversight.

43. The PMU is led by a Project director. It will include a financial management specialist, two accountants, a procurement specialist, a communication specialist, an environmental safeguards specialist, a social safeguards specialist, a gender development specialist, a monitoring and evaluation specialist, a matching grants specialist, a training management specialist, a water resources specialist, a livestock specialist and an agriculture specialist.

44. The PMU will be responsible for project implementation including technical aspects, financial management and procurement. Led by executing engineers, the PIUs will be responsible for supervision of project works and activities in the river basins and for community liaison and participation through COs/FOs. The PMU and PIUs will be supported by Project Supervision and Implementation Assistance (PSIA) and Monitoring and Evaluation (M&E) consultants. The PMU is a continuation of the PMU of the Balochistan Small Scale Irrigation Project (P089378). The Implementation Completion Report (ICR) of that project rated the performance of the implementation agency as satisfactory.

45. A Project Steering Committee will provide strategic guidance and facilitate inter-agency coordination. It will be chaired by the Additional Chief Secretary Balochistan and will include the Secretaries of Irrigation, Agriculture, Forestry, Public Health Engineering, Livestock and Finance departments and Local Government. It will meet quarterly or as required to review physical and financial progress, to recommend ways to accelerate implementation and to resolve any complaints that have been brought by the Chairman of the Grievance Redress Committee.

B. Results Monitoring and Evaluation

46. Monitoring and evaluation will be conducted by the PMU with the help of a dedicated consulting firm that will monitor Project operational efficiency and effectiveness and indicate when design adjustments or policy refinements are needed. The firm will not only monitor physical implementation, environmental and other parameters, but will also benchmark Project performance. Close monitoring and transparent reporting of qualitative social outcomes of participation in decision-making, equity and improved livelihoods will be a focus.

47. Multiple systems – remote sensing, geographic information systems (GIS), management information system (MIS), information & communications technology (ICT)-based monitoring and verification and the Grievance Redress Mechanism (GRM) – will be used to provide a robust monitoring and evaluation system and ensure social accountability of the Project. These systems will enable the PMU to periodically report (with assistance from consultants) on all aspects of Project implementation and progress towards the project development objective results.

48. The Project will ensure a high level of transparency around implementation though an open access website where information on project planning (including budgets), procurement (including awarded contracts), matching grants and stakeholder consultation (including any complains and responses) will be shared. The Project will also support increased transparency in

the water planning through providing online open access to all hydro-metrological data collected by the Project.

49. Quarterly and annual progress reports will be submitted by the PMU to the Bank in an agreed format, within 30 days after the end of each quarter. An annual progress reports will report on PDO and intermediary results indicators. The PMU will conduct an in-depth Project review within twelve months following effectiveness. A mid-term Project review will be conducted by September 30, 2019. A final Project Review Report will be submitted to the Bank within six months after the closing date.

C. Sustainability

50. The sustainability of Project activities will require commitment from public and private stakeholders. The GoB's commitment to the reform aspects of the Project is demonstrated by the adoption of the 2006 IWRM Policy that lays out a significant water reform agenda. Since its adoption the government has invested in significant efforts to build the knowledge base to support implementation, although the suggested institutional changes will be a long-term process. Government commitment to the infrastructure components has been demonstrated by the financing of feasibility studies for Nari and Porali basins including preparation of multiple detailed scheme designs, and by the allocation of internal funds for completion of Project preparation tasks including social and environmental assessments. In the Project design the government has committed to providing O&M funds for the systems being constructed and or rehabilitated under the Project (including the new hydro-meteorological network) to ensure the longer-term sustainability of these and investments. The government has demonstrated its readiness to commence the bidding process for civil works of four schemes totaling US$87.0M.

51. The Project will strengthen the ID to support implementation of the adopted IWRM policy and for the continued adoption of improved water management practices. It will improve farmer-managed water distribution networks and introduce timely and reliable water supplies to deliver long-term improvements in irrigated productivity. Government contributions to the operation and maintenance of the hydro-met network will foster ownership and sustainability. Development of watersheds and rangelands as community resources will improve livelihoods in a sustainable manner, and rural community water supplies will sustainably improve rural livelihoods. Modern technical and managerial approaches will be piloted for crop intensification and diversification. Successes will be replicated through a learning framework. Improved agronomic and agricultural practices will sustain the benefits from intensification and diversification of irrigated agriculture. Environmental and social benefits from improved irrigation management, forestry and rangeland management are expected to be significant and sustainable.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

52. The project overall risk is rated *High* because of political and governance risks, technical risks, fiduciary risks, limited institutional capacity for implementation and sustainability, environment and social risks and stakeholder risks.

53. Because of political instability in Balochistan, the *political and governance* risk is rated *High*. While the target river basins are not subject to the acute conflict of other parts of Balochistan, local and tribal politics could affect Project implementation. Government programs and activities are not always welcomed in parts of the province. The risks associated with political instability will be partly mitigated by engaging PSIA consultants experienced in working with tribal communities to assist the PMU and PIUs in Project implementation.

54. Although the Project areas are remote and sparsely populated, Balochistan is reliant on federal government resources and has limited influence on national policy. Pakistan'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 state owned entities restructuring is slow. The *macroeconomic* risk rating is therefore rated *Substantial*. 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 Bank's overall risk mitigation strategy at the country level. In this context, the Bank will work with the government and development partners to sustain momentum for key reforms (for example, tax policy and administration, power sector reform). For the water sector, the Bank (and Project team) are actively engaged in the dialogue on the National Water Policy (that has a macroeconomic focus) and are advising how the federal government can establish greater trust with and amongst the provinces.

55. Because institutional capacity is low, especially for management of technical projects, the *institutional capacity for implementation* risk rating is *High* and the technical risk is *Substantial*. These risks will be mitigated by engaging professional specialists to the PMU as well PSIA and M&E consultants, providing training for PMU staff, ensuring close supervision of implementation and conducting rigorous Project review processes.

56. The limited institutional capacity within the GoB for sound fiduciary management – both systems and professional staff, as well as the difficulty in attracting adequately qualified accountants from the local market and involvement of farmers and community organizations (FO and CO) in project implementation, mean the *fiduciary* risk rating is *High*. The fiduciary risk will be mitigated by ensuring the appointment to the PMU of a well-qualified Financial Management (FM) Specialist approved by the World Bank by effectiveness, conducting bi-annual independent internal audits by private chartered accountant firms, and the PMU providing community-level FM training to enable sound FM by FOs. The PMU will establish and maintain a Project website providing open access to project information including procurement processes and contracts awarded, and any complaints and government responses.

57. The *stakeholder* risk is *High* given the multiple tribal groups in the Project area and the complexity of tribal politics as well as the broad footprint of the Project across watersheds, rangelands in additional to specific scheme areas, which also contributes to the *Substantial environment and social* risks. These risks will be partly mitigated by close consultation with affected communities in the two basins, especially via the PIUs based in the basins with local area implementation staff to engage with local tribal leaders and to build community-level trust. The project-specific GRM and the Bank's Grievance Redress Service (GRS) will be important for mitigating the stakeholder risk. Both the Gender Action Plan (GAP) and the Resettlement Policy Framework (RPF) will be crucial for managing specific aspects of the stakeholder risks.

58. *Other* risks – namely security – are *High* because of potential conflict in the Project basins. The current security situation in Balochistan will restrict and may prevent travel to the Project area by the Project team. The security risks are partly mitigated by the flexibility in project design (enabling a shift to schemes in more secure areas within the same river basins). Should the security situation deteriorate in some areas, the implementation of alterative schemes will be considered.

VI. APPRAISAL SUMMARY

A. Economic Analysis

59. The economic internal rate of return (EIRR) for the Project base case is 26.3 percent with a net present value of PKR 53,220 million (US$511.7 million) using a six percent discount rate. Because of data limitation the economic analysis was limited to consideration of costs and benefits of the irrigation schemes and flood protection works, including irrigation scheme-related interventions in watershed and rangeland management and on-farm water management and agricultural productivity.

60. The main *medium-term* economic benefits of the Project are: (i) increased irrigation productivity, (ii) more sustainable watershed agriculture especially livestock farming, (iii) more profitable and diversified production systems and improved post-harvest technologies and market linkages, (iv) reduced flood damages and losses, (v) extended water infrastructure life and (vi) reduced water infrastructure construction costs. *Longer-term* economic benefits will accrue from economically efficient management and development of water resources based on improved water data and strengthened professional and institutional capacity.

61. The economic benefits were quantified for the irrigation schemes, the flood protection works, the irrigation scheme-related work on watershed and rangeland management, and the activities for on-farm water management and agricultural productivity. The quantified economic benefits of the Project are based on expected: (i) increases in irrigated area and cropping intensity, (ii) increases in crop yields, (iii) diversified cropping systems including more high-value crops, (iv) increases in livestock productivity and (v) reduced flood damages.

62. The following social and environmental benefits were not quantified: (i) enhanced opportunities for women to engage in profitable agricultural activities, (ii) reversed environmental degradation and conserved natural resources in protected watersheds to support sustainable livelihoods and (iii) environmentally friendly agronomic practices. Benefits from the

potable water supply schemes have not been estimated because of inadequate data.

63. A sensitivity analysis shows that the economic viability of the Project is very robust to changes in project costs and benefits. The ERR only drops below six percent if incremental benefits are reduced by 75 percent. Even a 20 percent reduction in incremental benefits and a 20 percent increase in project costs, with a three-year delay in benefits, results in an ERR of 12.6 percent.

B. Technical

64. Proposed Project activities and works are technically simple, with many having been implemented in Balochistan and in similar situations elsewhere. A decade ago Balochistan had a limited but functioning hydro-met system and the capacity to collect, analyze and use water data, but due to worsening security situation and lack of funding, the system is no longer operational and capacity has been lost. Re-establishment of hydro-met facilities and capacity requires investment but basic capacity still exists. Given recent technological advances and the challenges of remote and insecure locations, careful consideration of appropriate instrumentation will be required.

65. Works associated with construction of diverse irrigation infrastructure have all been successfully conducted recently in Balochistan, and sufficient capacity exists to support the Project in public sector institutions and in private sector engineering and construction. FO/CO will be trained in irrigation system O&M. The effectiveness of existing "delay-action dams" (designed for groundwater recharge – not water storage) is uncertain as sedimentation may limit recharge; options for maintaining these structures including de-silting will be explored.

66. The Project will expand watershed interventions across the two target basins with active community participation supporting appropriate capacity building. Some of the proposed activities for agriculture productivity and irrigation agronomy improvement have been piloted, however, land-leveling including precision leveling and integrated pest management are new to Balochistan and implementation will be supported by demonstrations, piloting, training and matching grants.

C. Financial Management

67. FM arrangements will build on the arrangements established by the ID for the implementation of BSSIP. Key risks include difficulty in attracting adequately qualified accountants from the local market, potential for corruption relating to contractor payments and complex project design involving FO and CO. Recruitment of FM staff at competitive rates, development of simplified FM arrangements using Pakistan systems, FM capacity building for communities and bi-annual independent internal audits will mitigate these risks.

68. The PMU will use country systems that provide reasonable assurance on appropriate use of IDA finances. Government budgeting processes will apply and the Project budget will be part of the annual government budget. The PMU will maintain Project accounts in accordance with government accounting policies, and the National Financial Management Information System will be used for accounting and reporting. Detailed internal controls will be defined in the FM Manual and the Operations Manual, and the PMU will prepare Standard Operating Procedures

(SOPs) and a community-level FM training plan. Project financial statements will be prepared in accordance with the Cash Basis International Public Sector Accounting Standards (IPSAS) and audited by the Auditor General of Pakistan. Audited financial statements will be submitted to the Bank within six months of the close of each financial year. Details on the FM assessment are in Annex 3.

69. All payments will be handled by the PMU. A designated account (in US$) will be established. Disbursements will be report-based and the Bank will transfer funds to designated account on the basis of six-monthly cash forecasts as reported in the Interim Unaudited Financial Reports. The Bank will document expenditure against advances based on the Interim Unaudited Financial Reports..

D. Procurement

70. Project procurement will be conducted in accordance with the following guidelines: (i) Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers (January 2011, revised July 2014), (ii) Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers (January 2011, revised July 2014), (iii) provisions stipulated in the Financing Agreement and (iv) Guidelines on Preventing and Combating Fraud and Corruption in Project Financed by IBRD Loans and IDA Credits and Grants (October 2006, revised January 2011).

71. The ID's capacity to handle procurement functions under the project is considered satisfactory given the mitigation measures included in the Project design. To ensure timely initiation and completion of procurement activities, appropriate administrative and financial powers will be delegated to the Project Director, and a standalone procurement unit will be established *ab-initio*. For community-level interventions the established Community-Driven Development approach to procurement will be used and the procedures will be documented in the Operations Manual. While procurement capacity exists, contract administration capacity will need to be strengthened. An adequately staffed Provincial Procurement Regulatory Authority has been established in Balochistan and is making steady progress in efficient, economic, and transparent procurement. An 18-month procurement plan has been finalized and agreed. It is available in Project files.

E. Social (Including Safeguards)

72. The project may have negative impacts associated with land acquisition and resettlement, and therefore OP 4.12 (Involuntary Resettlement) is triggered. OP 4.10 (Indigenous People) is not triggered as there are no communities in the project basins that fall under the definition of indigenous peoples in OP 4.10. A Social Impact Assessment and Mitigation Plan (SIAMP) was prepared and disclosed in-country and at the World Bank Infoshop on February 9, 2016. Project information, including anticipated impacts, benefits and design concepts, was disseminated broadly in local communities and relevant government agencies. The consultations indicated local communities strongly support the Project and that the Project will generate significant socioeconomic benefits.

73. As the details of project schemes will only be finalized during implementation, the SIAMP includes an RPF that has been developed in line with relevant government policies and World Bank safeguard policies to guide detailed scheme design and implementation. The SIAMP describes the extent of potential impacts of these initial schemes, including land needs and tree losses, compensatory interventions, consultation and participation, grievance redress, public communication as well as implementation arrangements.

74. The RPF lays out the planning procedures and requirements as well as implementation arrangements for resettlement planning and implementation. The resettlement assessment process will comprise of two steps. As a first step, an initial screening whether the particular activity under review will generate land acquisition or resettlement. As a second step, if land acquisition or resettlement are expected, a Resettlement Action Plan (RAP) will be prepared. RAPs will be reviewed, approved, and disclosed in accordance with World Bank safeguards policies. Step: (i) will initiate as early as possible once activities are defined sufficiently to carry out the assessment. Step (ii) will be finalized before works starts. The Government of Balochistan has completed technical designs for four of the proposed six project schemes and implementation for these four schemes is expected to commence in the first year of the project. Social impact assessments have been carried out for these schemes and all required mitigation interventions have been developed in line with relevant policy requirements[2].

75. Local communities will be pro-actively engaged in Project implementation, through training programs, awareness raising activities, cash and in-kind contributions to different interventions, including through a "matching grants" scheme and through the formation of farmers' organizations. Beneficiaries will be trained to undertake and be responsible for the ongoing operations and maintenance of the infrastructure provided under the project. A core indicator on citizen engagement has been included in the results framework.

76. A large population will benefit indirectly from the project, including farm laborers and temporary and permanent laborers in the construction and manufacturing sectors. The Project will involve and strengthen local private sector service providers (for land improvement) and input suppliers. Private companies will supply construction materials and farm inputs, improve canal construction, improve watercourses and gain business from increased agricultural production.

77. **Gender Assessment, Actions and Frameworks.** Balochistan is a male-dominated society and women's inputs to decision making are therefore very limited at levels in both public and private matters. Women are rarely permitted to own productive assets such as land or livestock although being the primary care-givers for livestock. There is a lack of empowerment of women and low representation and participation in decision making at all levels. The Project will enhance opportunities for women to participate in profitable agriculture by tailoring interventions to their specific needs and by promoting gender equity in rural communities.

78. A GAP has been developed with specific actions to raise awareness and sensitize Project staff on gender, to increase the participation of women in the Project (particularly in decision

[2] The precise geographic footprint of the schemes was still not known at the time of appraisal, and the RAPs will be completed once such geographic footprint is confirmed.

making) and to maximize Project benefits to women. In addition to mainstreaming women in planned project activities, the GAP also proposes the design and implementation of specialized projects and interventions strategically designed to promote active engagement of women in the Project. These include the design of specialized water, irrigation, agriculture and livestock projects to improve women's practical and strategic gender needs. The GAP has been publically disclosed as part of the SIAMP on February 9, 2016.. Gender-sensitive M&E indicators will assess progress in GAP implementation.

79. **Citizen Engagement.** A core indicator on citizen engagement has been included in the results framework to emphasize engagement with local communities in project implementation. Surveys every two years will gauge the level of beneficiary satisfaction with Project implementation. Tailored training programs, awareness raising activities, cash and in-kind contributions to different interventions, including through the "matching grants" scheme and through the formation of Farmers' Organizations are examples of priority emphasis on citizen engagement and the incorporation of a meaningful feedback loop. In addition, the Project website and the transparent sharing of all Project information will assist with citizen engagement.

F. Environment (including Safeguards)

80. The Project is categorized as Environment Assessment Category A. The project will have a net positive environmental effect by adopting sound water resources management practices. Negative environmental impacts may be associated with construction and or rehabilitation of irrigation infrastructure. The Project could increase the volume of water diverted for irrigation.

81. The Project triggers the following safeguards policies: Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Forests (OP/BP 4.36), Pest management (OP/BP 4.09), and Physical Cultural Resources (OP/BP 4.11). The Project does not trigger OP 4.37 (Safety of Dams) as the project will not support the construction or rehabilitation of dams nor will it support other investments which rely on the services of existing dams. The project infrastructure investments, including irrigation, potable water supply and flood protection, will not rely on the performance of any existing dams.

82. The PMU has prepared basin level Environmental Impact Assessment (EIA) reports for the Nari and Porali basins that have informed an Environmental Assessment report (EA). The EA includes a Cumulative Impact Assessment (CIA) that considers environmental flows, delineates watersheds for improvement, assesses the health of protected areas and includes an EMP that will be implemented and monitored throughout the project duration. Associated costs for implementation of EMP are included in the project. The EA emphasized the inclusion of the EMP in contractor bidding documents and the need for a binding clause to be included into the terms of partnerships signed with the FOs on (i) protection and non-conversion of natural habitats and (ii) restriction on converting ecologically important land for irrigation. Through basin-level environmental studies, project preparation engaged stakeholders to define Project investment priorities and discussed potential social and environmental impacts of the Project.

83. Capacity in the ID to implement the EMP is limited, although the Department has acquired familiarity with Bank safeguards requirements through BSSIP implementation. The BSSIP ICR found the performance of the ID to be Satisfactory including for environmental

management under OP/BP 4.01 where a check-list for environmental monitoring was developed and an EMP was integrated into the Project. The EA proposes institutional arrangements to manage the environmental impacts of the Project, recommends to establish a baseline at the early stage of implementation and suggests monitoring requirements for effective implementation of mitigation measures, describes training needs and specifies reporting and documentation requirements. The EA indicates human resource requirements for the PMU and the ID, contractors and supervision consultants, and proposes third party validation. It proposes a grievance redress mechanism and describes the process to be followed from field level to the PMU.

84. The EA recommended two additional studies to be conducted early during Project implementation: (a) biodiversity conversation and fish farming, and (b) cultural heritage impact assessment. Public consultations were held in 61 settlements across the two river basins as well as with institutional stakeholders (government, non-government organizations (NGOs) and academia). The Environmental Assessment report has been disclosed in-country on January 25, 2016 and in the World Bank Infoshop on January 26, 2016, including an Urdu translation of the Executive Summary.

G. World Bank Grievance Redress

85. 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 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

Country: Pakistan

Project Name: PK-Balochistan Integrated Water Resources Management & Development Project (P154255)

Results Framework

Project Development Objectives

PDO Statement

To strengthen provincial government capacity for water resources monitoring and management and to improve community-based water management for targeted irrigation schemes in Balochistan.

These results are at	Project Level

Project Development Objective Indicators

		Cumulative Target Values						
Indicator Name	**Baseline**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**End Target**
Quality-assured hydro-met data from project basins publically available in online data system (Percentage)	0	0	10	30	50	70	90	90
Irrigated area within project schemes with good water management practices (Hectare(Ha))	20,000	20,000	30,000	40,000	50,000	60,000	70,000	70,000

Direct project beneficiaries (Number) - (Core)	0	5,000	100,000	200,000	300,000	400,000	569,400	569,000
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	0	46.50	46.50	46.50	46.50	46.50	46.50	46.50
Intermediate Results Indicators								
Cumulative Target Values								
Person-days of water management/planning training for government staff. (Days)	0	10,000	40,000	70,000	100,000	130,000	150,000	150,000
Active climate, streamflow and groundwater monitoring stations. (Number)	0	0	30	60	90	120	150	150
Area of irrigation scheme watershed with good erosion management (Hectare(Ha))	1,000	1,000	1,500	2,500	4,000	6,000	8,000	8,000
Area protected from four-year	0	0	2,000	6,000	9,000	12,000	14,000	14,000

average recurrence interval flood. (Hectare(Ha))								
Area provided with irrigation and drainage services. (Hectare(Ha))	0	0	20,000	40,000	60,000	70,000	70,000	70,000
Water users provided with new/improved irrigation & drainage services (Number)	0	0	50,000	100,000	200,000	300,000	350,000	350,000
Percent Female (Number - Sub-Type: Breakdown)	0	0	30	30	30	30	30	30
Operational water user associations created and/or strengthened (number) (Number) - (Core)	0	0	9	18	18	18	18	18
Surveyed beneficiaries satisfied with project implementation (Percentage)	0	-	10	-	50	-	80	80

Indicator Description

Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Quality-assured hydro-met data from project basins publically available in online data system	Percentage of all data (historical and new daily, monthly and annual data of precipitation, temperature, evaporation, streamflow and groundwater levels), collected, analyzed and verified, and made accessible on a public website maintained by the project.	Every two years	PMU	PMU supported by M&E consultants
Irrigated area within project schemes with good water management practices	The surface area within the defined project area which makes optimal use of available irrigation water; including one or more of the following techniques: irrigating at the right time with the right amount of water to avoid under or over irrigation (soil moisture measurements), maintaining canals and hydraulic structures to avoid operation and percolation losses (canal flow measurements), and ensuring equitable distribution of irrigation water throughout the irrigation system to provide sufficient water according to each farmer's water right.	Every two years	Surveys and interviews with head and tail end irrigators as per methods in M&E manual	PMU supported by M&E consultants
Direct project beneficiaries	Individuals or communities who directly derive benefits from improvements to irrigation systems.	Every two years	Surveys as per methods in M&E Report	PMU supported by M&E consultants
Female beneficiaries	Percentage of the beneficiaries described above that are female.	Every two years	Survey using methods in M&E Report	PMU supported by M&E consultants

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Person-days of water management/planning training for government staff.	Number of days of training targeting government staff on water management topics implemented during the project	Annual	PMU	PMU supported by M&E consultants
Active climate, streamflow and groundwater monitoring stations.	Number of active stream and groundwater monitoring stations implemented through the project.	Annually	PMU	PMU supported by M&E consultants
Area of irrigation scheme watershed with good erosion management	Surface area within the project area which show both of the following characteristics: (a) loss of water avoided (no areas of water logging and no uncontrolled drainage during rainfall) and (b) loss of land (no ravine and gully development and no significant accumulation of sediments in streams and torrents).	Annual	Survey via methods in M&E Manual	PMU supported by M&E consultants
Area protected from four-year average recurrence interval flood.	Surface area within the project area which shows improved protection from four-year average flood, as measured during project implementation	Annual	PMU	PMU supported by M&E consultants
Area provided with irrigation and drainage services.	Surface area within the project area which comprises implementation of irrigation and drainage services	Annual	Survey via methods in M&E Manual	PMU supported by M&E consultants
Water users provided with new/improved irrigation & drainage services	Number of water users that have access to new/improved irrigation and drainage services through the project	Annual	Surveys using methods in M&E manual	PMU supported by M&E consultants
Percent Female	Percentage of the number of water users described above that are female	Annual	Surveys using methods in M&E manual	M&E Consultants to be engaged by the PMU
Operational water user associations created and/or strengthened (number)	Number of water user associations created and/or strengthened under the project that are operational.	Annual	PMU	PMU supported by M&E consultants

Surveyed beneficiaries satisfied with project implementation	Number of project beneficiaries that are satisfied with project implementation, as quantified through a survey implemented every two years.	Every two years	Surveys using methods in M&E manual	PMU supported by M&E consultants

Annex 2: Detailed Project Description

Water Resources of Balochistan

1. The climate of Balochistan varies; the upper highlands are characterized by very cold winters and hot summers, while in the lower highlands winters vary from extremely cold in northern districts to mild along the Makran coast. Winters are mild on the plains and summers are hot and dry while the deserts regions are very hot and dry. Average annual rainfall is less than 200 mm, with as few as seven rain days per year in the desert areas and no more than 28 rain days in the mountain areas.

2. Surface runoff is highly variable in time and in space across Balochistan. Annual average surface water generated within Balochistan is around 10.8 BCM of around 21 percent is used (Table 1). In the Porali and Nari river basins around 8 and 13 percent of the surface water is used respectively, mainly because of limited infrastructure for storage or diversion runoff especially episodic flood flows. Balochistan receives a water allocation of around 4.8 BCM from perennial canals of the Indus Basin Irrigation System, and a further 5.7 BCM of floodwaters is allocated under the Water Apportionment Accord (1991). Only 36 percent of this combined allocation is used because the canal infrastructure is inadequate and poorly maintained. Much of the water that is diverted is lost in through inefficient conveyance and on-farm application.

3. Given the unreliability of surface water and the limited infrastructure, groundwater is a critical resource. However, given intense rainfall events, groundwater recharge is limited and episodic and over-exploitation of groundwater is leading to rapid decline of groundwater levels (see Table 1). Around 93 percent of all water use (surface and groundwater) in the Balochistan is for irrigation.

4. The population of Balochistan (approximately 10 million) is largely rural. Agriculture accounts for 60 percent of GDP and 67 percent of the labor force in Balochistan. Crops and livestock contribute about 62 percent and 38 percent of gross farm income, respectively. However, agricultural productivity is low and rural poverty is widespread. The importance of agriculture for livelihoods is greatest in the poorest rural communities, and hence improved water management is fundamental to tackling rural poverty in Balochistan.

Table 1: Balochistan Water Balance in BCM (After ADB TA-4560 PAK 2008)

Source of Water	Available/Allocated Water	Current Water Use	Balance Available for Further Development
Indus Basin Perennial Water	4.776[a]	3.767[b]	1.009
Indus Basin Floodwater	5.72[a]	0.000[b]	5.72
Internally Generated Floodwater	10.79[c]	2.222[c]	8.568[c]
Groundwater	2.210[c]	2.659[c]	-0.449[c]
Total	23.496	8.648	14.848

a Pakistan Water Apportionment Accord 1991.

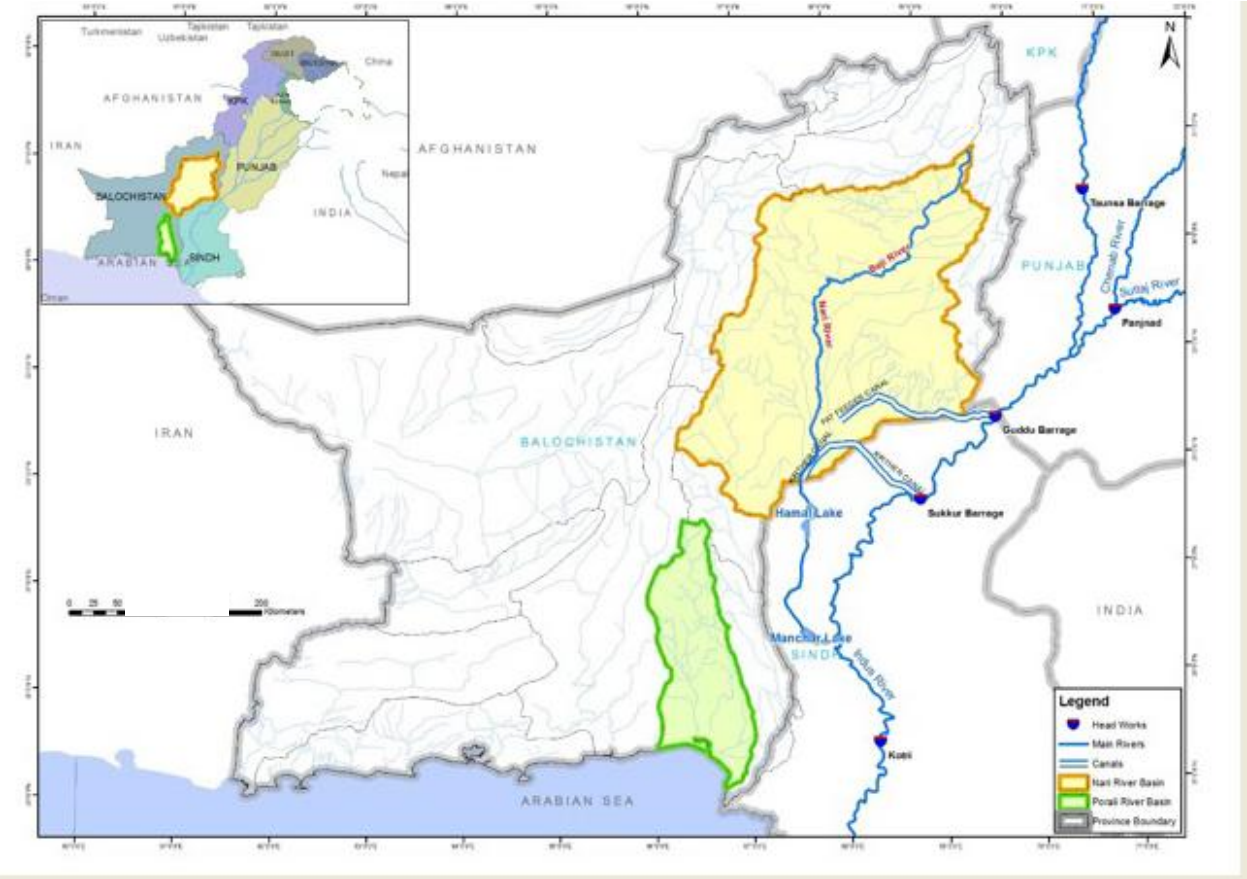
b Irrigation Department, Quetta, Balochistan.

c Tareen, S., B. Sani, K. Babar and S. Ahmad. 2008. Re-assessment of Water Resources Availability and Use for the Major River Basins of Balochistan – Major Findings, Policy Issues and Reforms. Vol. (4), No. (7), ADB TA-4560 (PAK), Quetta, Pakistan. Data of rainfall used for the period of 1890 to 2005 for the climatic stations operated by Irrigation Department (GoB) and Pakistan Meteorological Department. Study for the assessment of water resources was conducted by the Messers Halcrow Pakistan and Cameos Consultants, 2008. This is the only study till today which covers all the 18 river basins of Balochistan.

Irrigation in Balochistan

5. Balochistan is divided into 18 river basins (Figure 1). The main water sources for irrigation are surface water from Indus basin irrigation system, flood flows and perennial base flows in rivers, sub-surface flow through river gravels, springs and groundwater. The estimated total perennial irrigated area is 1.2 Mha of which 44 percent is irrigated by the Pat Feeder, Desert and Khirthar canals from the Gudu and Sukkur barrages on the Indus River. Tubewells and dug wells irrigate 0.43 Mha and 0.06 Mha respectively. Karezes, springs and minor irrigation sources irrigate 0.18 Mha (Agriculture Statistics of Pakistan, 2011).

Figure 1. Major river basins of Balochistan highlighting the two Project river basins[3].



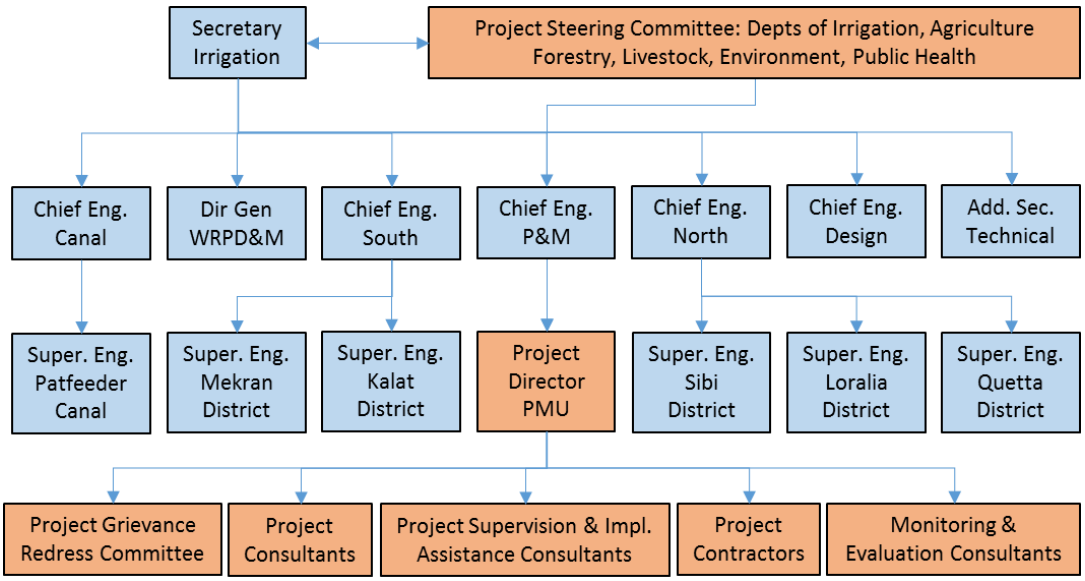
6. Spate irrigation (traditionally known as Sailaba farming) remains common as is rainwater harvesting (Khushkaba). Around 0.87 Mha are under Sailaba and Khushkaba irrigation (Agricultural Statistics of Pakistan, 2011) and thus the irrigated area is 2.07 Mha. Sailaba and Khushkaba farming are dependent on irregular rainfall and floods. Spate irrigation could be expanded significantly if additional floodwaters could be effectively diverted; prospects exist at Nari, Porali, Kaha, Hingol, Zoab and Rakhshan River basins. Spate Irrigation not only supports

[3] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status on any territory, or any endorsement or acceptance of such boundaries.

agriculture production but recharges groundwater and helps mitigate flood damages. There is also considerable scope to expand rainwater harvesting across Balochistan to the benefit of poor remote settlements and fragile environments.

7. The ID (Figure 2) has the responsibility for management of water in Balochistan including planning, development and monitoring. It is responsible for planning, investigation, and execution of water sector projects including construction and maintenance of flood protection schemes and O&M of canal irrigation systems. The Water Resources Planning, Development and Monitoring Directorate monitors groundwater and conducts groundwater exploration. Water resources planning and monitoring is in theory the responsibility of the Water Resources Planning, Development and Monitoring Directorate, however, their culture and expertise are in construction and there is no or limited effort put into planning or monitoring.

Figure 2: Organizational structure of the ID showing location PMU and reporting lines including to Project Steering Committee.



Issues in Water Management

8. **Coverage and reliability of hydrological data** is poor preventing well-informed planning and management of water resources. Much of the province has no groundwater monitoring network, despite the criticality of groundwater resources, and the density of surface water data collection is inadequate. There is a lack of expertise in hydrological monitoring, constraints on accessing field sites, a virtual absence of supervision of field staff and a lack of data transmission infrastructure.

9. **Lack of adequate infrastructure for the sustainable management of water.** In a context of chronic and often acute water scarcity, the lack of water storage facilities (surface and ground) and the dilapidated state of canal infrastructure inflicts prohibitive additions to development costs. Constructing new water infrastructure and improving and maintaining

existing facilities is the most direct means available to us to practically address the principle constraint to agricultural, food security and economic development in the province.

10. **Extended droughts and their impact on the natural resources base.** Balochistan often experiences severe drought conditions with a 4-5 year cyclical frequency. The long dry spells take a heavy toll on the livelihood patterns of the local population as irrigation and potable water resources dry up. Water availability is drastically reduced during extended droughts.

11. **Extended flooding and flash flooding and its impact on settlements, agricultural land use and irrigation infrastructure.** Severe floods in 2010 and during the 2007 and 2011 cyclones led to loss of life and destruction of settlements and irrigation infrastructure, significantly reducing the agricultural production base. The lack of adequate water storage capacities, flood retention areas as well as flood protection dykes exacerbated the damages experienced during those years – and will cause damages again in the future. Construction of storage facilities and flood protection works are essential to mitigate flood risk.

12. **Poor watershed management.** Local communities need to change their pattern of land use and associated resource use in order to improve the long-term sustainability of the environment and their livelihoods. Currently, watersheds in the province are in a very poor and dilapidated state. Intensive efforts and activities are needed to rehabilitate the watersheds in close collaboration with local communities and the Departments of Agriculture, Irrigation, and Forestry. This will have a direct impact on both range land and ground water.

13. **Inefficient use of water by agriculture.** Irrigation practices in the province are largely inefficient. Orchards in particular are irrigated by flooding entire fields, which reduces water use efficiency to below 30 percent. Water conveyance channels from the source to the farms are mostly unlined, causing seepage losses of up to 45 to 50 percent in the system.

14. **Depleting groundwater tables.** In the absence of assured surface water supplies, people depend heavily on groundwater, especially for agriculture. Increases in the number of tube wells and subsidized electricity for pumping have contributed to ever-falling groundwater tables and unevenness of groundwater use in most river basins of Balochistan. It is estimated that in many places, groundwater depletion is occurring at rates exceeding one meter per year, and in the Quetta sub-basin of Pishin-Lora, Zhob and in Loralai (sub-basin of Nari) at about 3 meters per year.

15. **Institutional weakness and lack of community involvement.** Poor governance, low institutional capacity, improper institutional set up and lack of political will and commitment by the public sector to address the water problems in a planned and systematic way are the issues for effective water management in Balochistan. The GoB lacks well-qualified staff and the ability to effectively plan, manage and monitor water resources in a holistic manner. Irrigation service delivery is handled in isolation from other agriculture and irrigation sectors. There is little interaction or information exchange amongst communities and with the GOB on options available to them to increase water productivity in the long-term.

16. **Lack of coordination between water using sectors.** There is no coordination between the Department of Irrigation and the other line Departments (Agriculture, Forestry, Livestock,

Public Health Engineering and Environment) for proper planning, development and management of water resources and infrastructure being build. These linkages with stakeholders' institutions covering all sub-sectors of water use is essential and can be ensured with an IWRM approach at basin level.

17. **Impact of Climate Change.** The impacts of global climate change on water resources, including changes in glacial melt, temperature, and precipitation patterns leads to variations (often negative) of river flows and increased instances of floods and droughts. Analyses project that all rainfall/snow-fed rivers will have a significantly reduced discharge in the long-run. Glacier-fed rivers will increase their discharges by 10-15 percent through 2050 but thereafter also significantly reduce their discharges. A 2008 the Intergovernmental Panel on Climate Change report predicts that climate change over the next century will affect rainfall patterns, river flows and sea levels all over the world. For many parts of arid regions, there is an expected precipitation decrease over this century of 20 percent or more. Climate change is expected to lead to declining precipitation in most parts of the world, and projected temperature increases will imply higher evaporation and drier conditions. Rain is also expected to reduce in frequency but increase in intensity. All these will result in frequent droughts and floods. Climate models project decreasing precipitation in already dry areas, such as the Middle East, North Africa and Balochistan. In South Asia, earlier snow melt and the loss of glacial buffering in the Karakorum - Himalayas will affect the seasonal water supply for significant proportion of the population of the subcontinent. Groundwater use has become unsustainable. Already in many parts of the world, such as Balochistan, aquifer drawdown is such that future reliance cannot be placed on this resource. Other impacts of climate change on water resources include (ii) threat to agriculture and food security especially in arid and semiarid areas; (ii) decrease in hydropower generation in many developing countries, placing stress on the energy infrastructure; (iii) increased risk to ecosystems, particularly forests and wetlands; (iv) increase vulnerability of coastal areas from the increase in sea levels, flooding, storm surges, and stronger winds; (v) increased work load on women and girls, spending more time collecting water and fuel/wood; and (vi) increased potential to escalate existing regional tensions given that scarcity of renewable water resources.

18. **Need for IWRM Policy**. Scarcity of water in Balochistan and the issues highlighted, will be exacerbated by population growth, increasing urbanization, mining, and industrialization in the future. With a population growth rate of close to 3 percent, by 2025 the total population of Balochistan will increase by 50 percent and the urban population will double. In addition, the mining sector will require water, further increasing the competition for the scares resource. In this context, the GoB adopted the IWRM approach in 2006 for formulating a policy including sixteen policy thrust areas to improve and sustain the management of water resources in the province. The principle of IWRM is defined as "*a process that promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystem*."[1]. The expected benefits of implementing an IWRM approach include better planning and management of water quality and supply, more cost-efficient management, and improvements in distribution of water between consumptive and ecosystem uses. The approach is also essential to mitigate the impact of seasonal and cyclical droughts and

[1]Global Water Partnership http://www.gwp.org/ToolBox/ABOUT/IWRM-Plans/

flash floods. For Balochistan, this approach means (i) to strategize, plan and utilize surface water resources during the wet and normal years, maximally and efficiently, for all purposes including groundwater recharge, irrigation of rangelands and water storage wherever technically and cost-effectively possible; and (ii) utilizing groundwater efficiently during dry spells to sustain livelihoods and to mitigate cyclical droughts. Some elements of this approach have been successfully tested during the implementation of the recently completed BSSIP.

19. **IWRM Policy Implementation.** Implementation of IWRM is a gradual long term process that can only be fully achieved over a couple of decades. Implementation will be carried out in steps, which will be supported and spearheaded through this Project. Component A and its sub-components would be the first step towards enhancing the broader institutional capacity of the province within which IWRM would be implemented. This would include (i) development and implementation of programs for capacity building of the data collecting institutions; (ii) enforcement of basin-wide approach for collection of data for surface water (river-flows, floodwater, runoff and precipitation) and groundwater to have reliable assessment and monitoring of the resource; (iii) adoption of IWRM approach as a framework for planning, formulation and implementation of water projects to achieve river basin sustainability; (iv) supporting adoption of basin approach as a hydrological unit for sustainable planning, development and management of water resources for agriculture; and (v) undertaking a study for formulation of a strategy and action plan for strengthening water resources planning and development in the ID, to address needs of water sector institutions in planning, design, implementation and monitoring of IWRM projects. In addition, the component would support a basin level approach to watershed, rangeland, agricultural and environment planning and management. The process will include participation of all stakeholder water user communities.

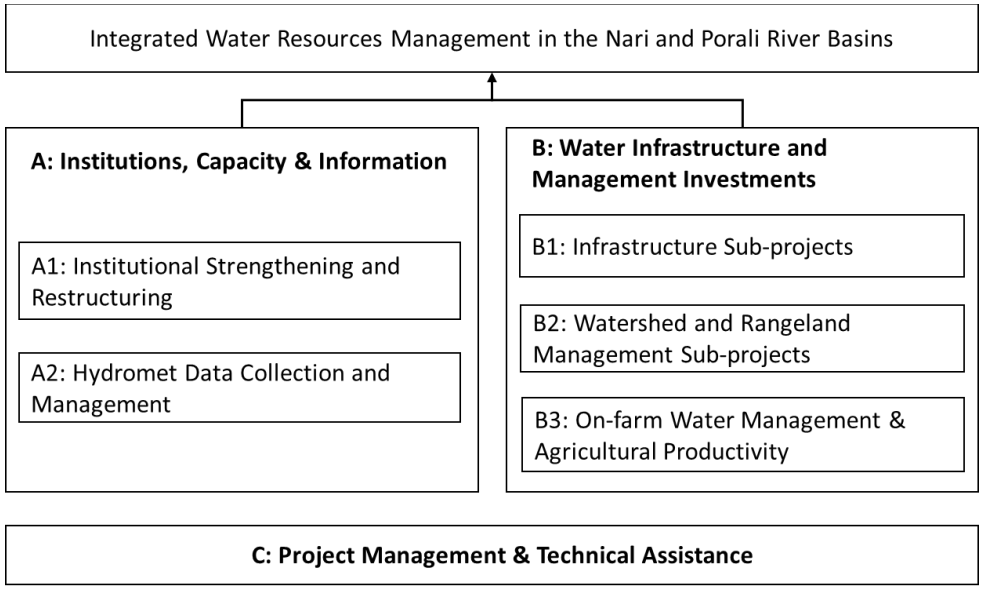
Project Description

20. The Project will begin the transformation of water management in Balochistan from a narrow irrigation project focus, to an integrated multi-sectoral river basin planning and development approach. It will be achieved through institutional strengthening, investments in hydro-meteorological data and water information systems, priority infrastructure investments in irrigation, water supply and flood protection, and associated watershed and rangeland management, for the Nari (69,200 km^2) and Porali (11,600 km^2) river basins.

21. The Project activities will adopt an integrated water resources management approach, promoting: (i) water savings technologies in irrigated agriculture (which is the largest user of water) such as utilization of high efficiency irrigation system, promotion of land leveling , thereby improving soil and water availability; (ii) improved agriculture practices and promotion of drought tolerant cropping varieties and other productivity enhancement techniques related to pest management will improve soil and water conservation; (iii) better decision making by the farmers in better crop selection choices, based on analysis of soil, improved water availability, and weather advisories; and (iv) improved watershed and rangeland management technologies to improve soil moisture retention, reducing erosion and improving groundwater recharge. These activities not only have a positive impact on the environmental sustainability but also build resilience to climate change and associated floods and droughts.

22. The Project has three components (Figure 3): (A) Institutions, Capacity and Information, (B) Water Infrastructure and Management Investments and (C) Project Management and Technical Assistance.

Figure 3: Structure of Project components and sub-components



23. The Project financing arrangements by component and sub-component is shown in Table 2.

Table 2: Financing Plan by Component (US$M)

Project Components	Project cost	IDA		Farmers	Govt	Non-IDA %
		US$M	%	US$M	US$M	
A. Institutions, Capacity and Information						
A.1 Institutional Strengthening and Restructuring	4.8	4.8	100.0	0.0	0.0	0.0
A.2 Hydro-met Data Collection and Management	15.6	13.6	87.2	0.0	2.0	12.8
Sub-Total A	**20.4**	**18.4**	**90.2**	**0.0**	**2.0**	**9.8**
B. Water Infrastructure and Management Investments						
B.1 Infrastructure Investments	110.0	110.0	100.0	0.0	0.0	0.0
B.2 Watershed & Rangeland Management	19.7	18.9	96.0	0.8	0.0	4.0
B.3 On Farm Water Mgt & Agriculture Productivity	34.2	27.3	80.0	6.9	0.0	20.0
Sub-Total B	**163.9**	**156.2**	**95.3**	**7.7**	**0.0**	**4.7**
C. Project Management & Technical Assistance						
C.1 Project Management Unit (Professional)	0.8	0.8	100.0	0.0	0.0	0.0
C.2 Incremental Support Staff & O&M	7.7	7.7	100.0	0.0	0.0	0.0
C.3 Consulting Services	13.5	13.5	100.0	0.0	0.0	0.0
C.4 Environmental and Social Management Plans	3.4	3.4	100.0	0.0	0.0	0.0
Sub-Total C	**25.4**	**25.4**	**100.0**	**0.0**	**0.0**	**0.0**
Total Project Costs	**209.7**	**200.0**	**95.4**	**7.7**	**2.0**	**4.6**
Total Financing Required		**200.0**				
Taxes and Duties included in Total Project Costs	**22.9**					

Component A: Institutions, Capacity and Information
Total Cost US$20.4M (IDA US$18.4M, Government US$2.0M)

24. Component A has two sub-components: A1 Institutional Strengthening and Restructuring, and A2 Hydro-meteorological Data Collection and Management.

25. Sub-Component A1: The Balochistan IWRM Policy adopted by the provincial cabinet in 2006 includes numerous policy actions relating to the institutional arrangements to enable IWRM. However, in the decade since its adoption no institutional changes have been made to support IWRM implementation. This sub-component will determine appropriate institutional arrangements for the initial stages of IWRM in Balochistan and recommend a realistic trajectory for institutional change considering current institutions and capacity. This will be guided by a team of international consultants working in a close interactive partnership with relevant senior government officials. The restructuring recommendations will be implemented progressively over the life of the Project. While new institutions can be created for particular functions, to be effective they will require sufficient professional capacity. Currently, the technical, planning and policy capacity for water resources management in Balochistan is very low. The Project will therefore make a significant investment in professional development to support a transition to IWRM. Professional development is expected to focus on (i) hydro-meteorological system design, implementation and operation, (ii) public online water data systems, GIS, river and groundwater modeling and analysis, and (iii) river basin planning and management including stakeholder participation, and economic analyses. Capacity development will focus on on-the-job training and customized training programs.

26. Sub-Component A2: Hydro-meteorological data collection, analysis and dissemination ceased some eight years ago in Balochistan. Without regular maintenance given lack of funds for operation, most of the stations cannot be economically rehabilitated. The project will therefore re-establish hydro-meteorological observation networks in the Nari and Porali river basins. The sites of past observation stations will be verified and made use of as far as possible in order to be able to use historical data from the past in developing long data series. A preliminary determination of observation sites has been made (Table 3), and will be verified by the PSIA consultants who would advise the PMU in choosing the most feasible observation and measurement technology.

Table 3: Preliminary estimate of required hydro-meteorological stations

	Nari	**Porali**	**Total**
Fully automatic climate stations and communications	22	8	30
Rainfall recording stations and communications	35	10	45
Streamflow gauging stations and communications	20	10	30
Groundwater monitoring wells	30	15	45

27. Telecommunication equipment, software for data transmission and analyses, and training in network O&M will be supported. This would include a data center in Quetta and data reception units in the Porali and Nari basins. During project implementation hydro-meteorological data reception and analyses would be temporarily housed in and supported by the PMU in Quetta and the river basin PIUs. The goods, works and services required to set up,

operate and maintain the hydro-met system will be procured in batches by type (e.g., meteorological, streamflow and groundwater stations) and by basin – but by one main contractor responsible for the installation, operation and maintenance of all observation stations. Progressive implementation will support capacity development, however, all batches will be procured from a single reliable provider that will take responsibility for installation, O&M and training on-the-job, supervised by the PSIA consultants and monitored by M&E consultants.

28. Translation of hydro-meteorological data into water resources information that can guide planning and development will require investment in systems to collate, store, manage and transform the monitoring data, and interface this with spatial information layers describing the river basins. The Project will establish the IT systems to centrally store and manage hydro-meteorological data and support associated GIS and other data analysis.

Component B: Water Infrastructure and Management Investments
Total Cost US$163.9M (IDA US$156.2M, Beneficiaries US$7.7M)

29. This component has three sub-components: B1 Infrastructure Investments, B2 Watershed and Rangeland Management and B3 On-farm Water Management and Agricultural Productivity. All sub-component activities will be implemented in each of the two river basins (Figures 4 and 5).

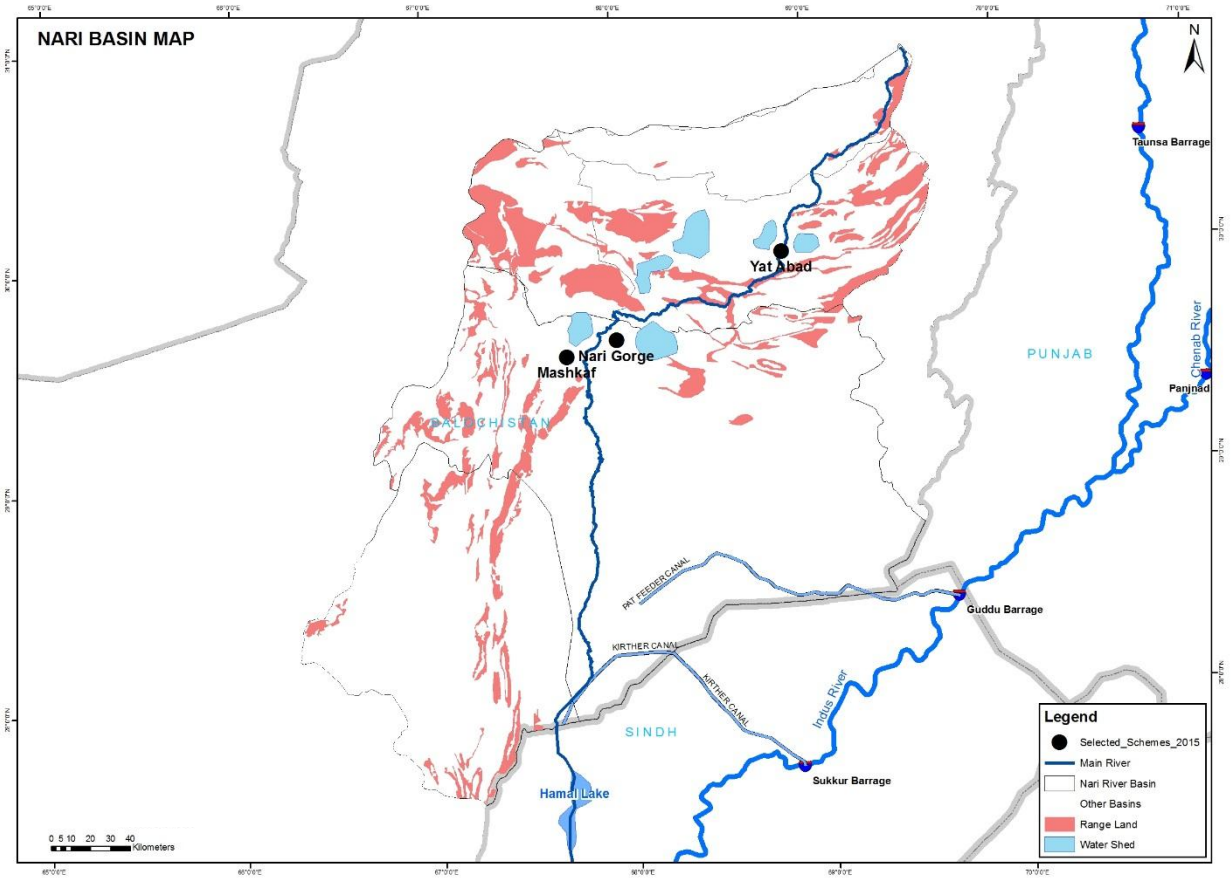
30. Sub-component B1 (Infrastructure Investments): This sub-component includes irrigation, water supply and flood protection infrastructure investments. Six irrigation schemes will be implemented under this Sub-component: three each in the Nari and Porali river basins – all are spate and/or perennial irrigation systems dependent on the internal water resources of the respective basins (Table 4). Development works include remodeling headwork structures and main secondary canals. Detailed scheme descriptions can be found in the Project Files.

Table 4. Command areas for irrigation schemes in Nari and Porali River Basins

Scheme	Perennial (ha)	Spate (ha)	Khushkaba (ha)	Total (ha)
Nari Gorge	17,833	607	10,522	28,962
Yatabad	0	16,188	6,073	22,261
Mushkaf	0	1,821	1,619	3,440
Nari RB Sub-total	17,833	18,616	18,214	54,663
Khuzdar District PIS	947	0	0	947
Nimmi PIS	1,457	0	0	1,457
Gundacha PIS	12,199	0	0	12,199
Porali RB sub-total	14,603	0	0	14,603
Total Command Area	**32,436**	**18,616**	**18,214**	**69,266**

PIS: Perennial Irrigation System.

Figure 4: Nari River Basin map indicating the location of project schemes, watershed areas and rangeland areas[4].



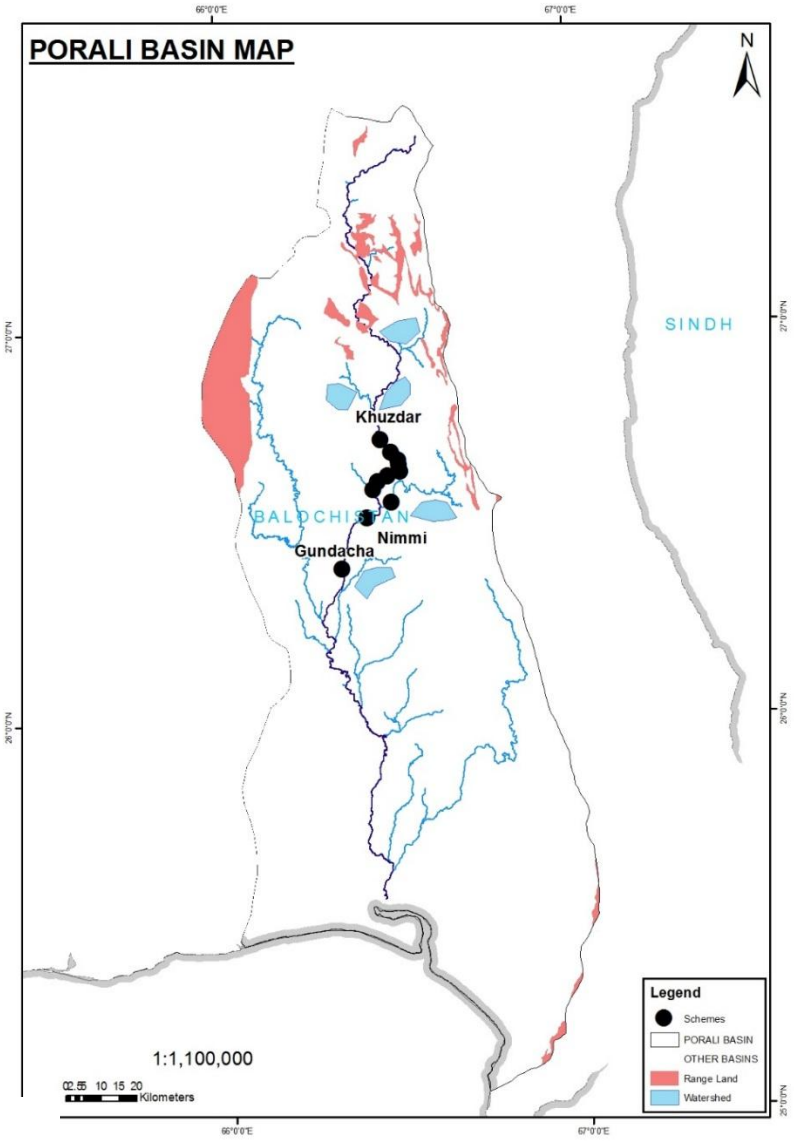
31. Sixteen village water supply schemes will have intake structures and water supply systems rehabilitated and remodeled under this sub-component. Many of these water supply schemes use the common intakes of the above-mentioned irrigation head-works or structures for nearby schemes. They supply potable water to ~28,800 people.

32. Floods are a recurrent challenge in Balochistan, especially in the Nari and Porali river basins. High-intensity rain in steep upper catchments generates high-energy flash flooding damaging agriculture and infrastructure. Estimated damages of the September 2012 flooding were about US$2.6M. Similar magnitude flooding occurred in June 2014 and August 2015. Given limited investment to-date in flood protection there is an urgent need for flood protection in five districts (Loralai, Bolan, Sibi, Jhal Magsi and Naseer Abad) in the Nari basin and two districts in the Porali basin (Lasbela and Khuzdar). Seven schemes are planned for the Nari basin (~60 percent of sub-component cost) and five schemes are planned for the Porali basin (~40 percent of sub-component cost). Works will include construction of (i) earthen bunds with rip rap, (ii) earthen spurs with stone pitching, and (iii) gabion river training structures. These works will protect ~14,600 ha from land erosion, 31 km of village roads (including 18 bridges and

[4] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status on any territory, or any endorsement or acceptance of such boundaries.

culverts), numerous villages and diverse irrigation infrastructure; the works will collectively benefit 10,200 farming households.

Figure 5: Porali River Basin map indicating the location of project schemes, watershed areas and rangeland areas[5].



33. Sub-component B2 (Watershed and Rangeland Management): This sub-component will adopt a participatory approach to watershed management and rangeland management at irrigation scheme level and at river basin level. COs will be supported to actively participate in project decision-making and implementation process. Direct beneficiaries will be asked to contribute in cash or in kind to project implementation measures. Special attention will be given to deliver benefits to participating families. To support this approach, social mobilization and training to strengthen the Forestry Department will be conducted.

[5] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status on any territory, or any endorsement or acceptance of such boundaries.

34. Watershed management activities will include soil and water conservation measures (e.g., contour ridges, mulching, strip farming, wind break plantations, drainage improvement network and erosion gully rehabilitation); block plantations for fuel-wood and small timber production (primarily for local subsistence) and shelter-belt plantations to reduce sheet erosion and evapotranspiration losses. Trees will be planted along canals and around ponds for optimum use of available water, and community plantations established for diversified services and habitat improvement. Plantations will be planned with participation by local communities. Target areas in the Nari basin include Yatabad watershed (6,700 ha), Nari Gorge watershed (809 ha) and Mushkaf watershed (1,620 ha). In the Porali basin target areas include the Khuzdar District (284 ha) and the watershed areas of the Gundacha (500 ha) Nimmi (262 ha) irrigation schemes.

35. Rangeland management activities will focus on pastures and biomass production. The exact area to be covered is not yet defined. Rangeland management activities will be either "regulation" activities or planting activities. Regulation activities will include preventing grazing on degraded land, protecting areas with good natural regeneration potential, reseeding/sowing rangelands with palatable species, establishment of grazing management plans based on carrying capacities, and construction of watering ponds for livestock. Planting activities will include planting of palatable shrubs and trees, reseeding of grass and introduction of stall feeding based on fodder production.

36. Sub-Component B3 (On-farm Water management and Agricultural Productivity): This sub-component will support investment in command area development that includes establishment of farmers' organizations, on-farm infrastructure, matching grants and training. Around 42,800 farming households across 78,000 ha (Nari 62,400 ha, Porali 15,600 ha) will participate in and benefit from irrigation development. Beneficiary farmers will contribute in-kind to the infrastructure work and in cash to the matching grants.

37. Establishment of FOs: The community will be mobilized and formed into community-based organizations such as FOs or Water Users Associations to ensure their active participation in project decision-making and implementation. Social mobilization will promote participatory skills development. The participatory process will be formalized in MoUs between farmers and government (project) for improvement of irrigation infrastructure and allied activities such as matching grants and trainings.

38. Command area infrastructure development will watercourse lining and construction of water storage tanks/ponds for improved water delivery at tertiary/on-farm level. Command areas will be provided with access tracks to the nearest gravel roads for transportation of farm produce. These infrastructure works will primarily be conducted via community participatory procurement with water users contributing 15-35 percent to the construction costs in-kind and to labor.

39. Matching grants will be provided for investment in farm technologies, farm development works and value chain enhancements. Grants will be scoped during the Project but broad support areas are likely to include farm machinery, land leveling and land development rentals, high efficiency irrigation systems, model orchards, seeds and saplings, nursery establishment, tunnel farming, harvesting and post-harvest technologies and livestock farming. Women will have a reserved quota at easier terms for the matching grants. Procurement under the grants will be screened for compliance with the Bank environmental guidelines. Procedures, criteria and

eligibility for the Matching Grants are documented in the Matching Grants procedures set out in the Project Operations Manual.

40. Training will be provided to farmers, entrepreneurs and project staff through field demos, class work and exposure-visits. Training will focus on improved water and crop management including integrated pest management and crop diversification. Training for women in kitchen gardening, poultry rearing and livestock farming. Exposure visits will be provided for farmers, private sector and project staff to see best practice in production, trading and processing.

41. PSIA consultants will be responsible for the command area infrastructure activities. While a senior consultant team is hired, at the PMU level, to look after the community and institutional development (FOs formation), matching grants, and training activities together with the representatives of the line departments. They will develop the strategy, work program, training plans, monitoring reports, and also provide technical inputs to various procurement related activities for the sub-component. Field level implementation including farmer training will be conducted by the line department staff. Subject matter specialists and/or agencies will be hired for departmental staff training, in order to prepare them for training of farmers. M&E consultants will verify works and services, geotag demos and assess impact. Inputs and technologies will be procured from and through the local private sector to stimulate and sustain business growth.

Component C: Project Management and Technical Assistance
Total Costs US$25.4M (IDA US$25.4M)

42. This component supports four activities. The first two encompass overall project implementation and management activities by the PMU, the third is for mobilization of M&E consultants and PSIA consultants, and the fourth is for completion of various management plans and feasibility studies for other basins (that do not include any international waterways as defined in OP7.50) and implementation of the EMP, the Social Mitigation Plan, the RPF, the GRM and the GAP.

43. PMU staffing will include, but is not limited to, a project director, a financial management specialist, two accountants, a procurement specialist, a communication specialist, an environmental safeguards specialist, a social safeguards specialist, a gender development specialist, a monitoring and evaluation specialist, a matching grants specialist, a training management specialist, a water resources specialist, a livestock specialist and an agriculture specialist. Incremental operating costs with include support staff and field team salaries and overheads, procurement of Project vehicles, rent, office supplies, utilities, travel costs of staff, and operating and maintenance expenditures of office equipment and vehicle.

44. M&E consultants will provide continuous feedback to government on Project performance and impact. An independent consulting team monitor and evaluate: (i) implementation progress, including spot checking of works and quality of construction, and targeting of works as compared to agreed criteria; (ii) project impacts and (iii) environmental and social impacts particularly on small/marginalized and women farmers. The consultancy contract will include reimbursable items. The consultants will work closely with the PMU, PIU and other consultants. PSIA consultants will lead project design and construction supervision. The

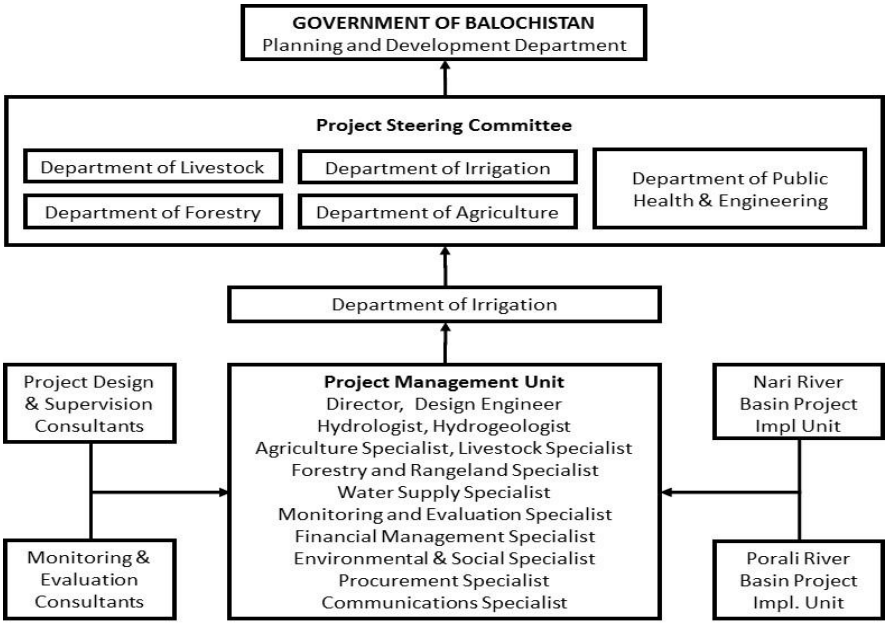
consultancy contract will include reimbursable items. The consultants will work closely with the PMU, other technical consultants and service providers including the M&E consultants.

45. Various management plans and strategic studies will be supported including (i) implementation of the EMP, the Social Mitigation Plan and the GAP, (ii) strategic studies and study tours including piloting new groundwater irrigation technologies.

Annex 3: Implementation Arrangements

1. **Institutional and Implementation Arrangements (Figure 6).** The ID will be the Implementing Agency for the Project. The ID will access technical expertise from the departments of Agriculture, Forestry, Livestock, and Public Health Engineering to guide project implementation.

Figure 6: Project implementation arrangements.



2. **Project Management Unit.** A PMU will be established in Quetta to implement the project, incorporating functions from the Planning and Monitoring wing and Water Resource Management Directorate of the ID. The PMU will be led by a project director. It will include a financial management specialist, two accountants, a procurement specialist, a communication specialist, an environmental safeguards specialist, a social safeguards specialist, a gender development specialist, a monitoring and evaluation specialist, a matching grants specialist, a training management specialist, a water resources specialist, a livestock specialist and an agriculture specialist. The Project Director will have overall responsibility for project implementation and execution, including financial management, procurement, and recruitment of staff, consultants and contractors. The ID has demonstrated its capacity for project implementation through the recently completed BSSIP. The Project Director and other some other PMU staff will be permanent government staff assigned to the PMU for the duration of the Project.

3. **Project Implementation Units (PIU).** For effective and efficient management of field staff, COs and achievement of progress of different components and activities, the PMU will be supported by two Project Implementation Units (PIUs) one each for the Nari and Porali river basins, to be located in the towns of Sibi and Uthal respectively. The PIUs, led by Executive Engineers with deputies from other line departments will be responsible for collaboration with the communities, COs and FOs, as well as for implementation of project works and activities in

the river basins. Community mobilization field teams will report directly to them. The Executive Engineers will reporting to the PMU Director.

4. **Community Mobilization Field Teams** will implement project activities at the field level. Two field teams will be mobilized: one for on-farm water management and agriculture productivity and the other for watershed management. The Department of Agriculture, Directorate of On-Farm Water Management has field teams used for community mobilization in lining of watercourses, typically including a water management specialist, survey and design engineers, and a social mobilizer. Under the Project these teams will be augmented to accommodate expertise in agriculture extension, irrigation agronomy, land leveling, high efficiency irrigation, and agro-forestry. The number of teams will be determined by the size of the communities they mobilize. Similarly, the Department of Forestry has a community mobilization team that will be deployed to mobilize watershed and rangeland communities to implement project activities. Field teams will report to the respective basin PIU.

5. The PMU will be supported by PSIA and M&E consultants. PSIA consultants will prepare the implementation program, ensure quality and timely delivery of works, and certify the quantity of work conducted and authorize payments. They will assist the PMU in project planning and management, progress reporting, procurement planning, financial management and overall project management. Their work will include: (i) project management support for project launch, quality assurance, screening and clearance of project works an activities, (ii) supervision and verification of survey, design and preparation cost estimates of works associated with all components, (iii) verification of site selection, design, bill of quantities and tender documents for all works, (iv)verification, facilitation of farm selection and design for agriculture productivity activities, (v) reparation of detailed design and supervision of all works, (vi)preparation of annual work plan and annual financial requirements; (vii) facilitating distribution of new technologies and equipment under matching grants, (viii) spot checking for quality assurance and (ix) construction supervision. M&E consultants will be responsible for (i) monitoring physical progress, (ii) monitoring and evaluation of Project impact, (iii) review and supervision of the environmental and social aspects and (iv) guiding Project managers in early problem identification and resolution. Their general scope of work will include: (i) establishment of MIS, GIS and ICT-based monitoring system, (ii) monitoring implementation and physical progress of the civil works including environmental and social safeguards, (iii) ensuring compliance with legal financial covenants and (iv) ensuring all component activities are in the Annual Work Plan and (v) collecting and analyzing data on Project impacts.

6. A Project Steering Committee (PSC) will be established to provide strategic guidance for implementation and to facilitate inter agency coordination at the highest level. The PSC will be chaired by the Additional Chief Secretary Balochistan and will include the Secretaries of Irrigation, Agriculture, Forestry, Public Health Engineering, Livestock and Finance departments and Local Government. It will meet quarterly or as required to review physical and financial progress, to recommend ways to accelerate implementation and to resolve any complaints that have been brought by the Chairman of the Grievance Redressal Committee (GRC).

7. Given the size, coverage, policy changes and security concerns, and adoption of new technologies, an integrated communication strategy is required. The Project will benefit from an effective public information campaigns strategy to (i) promote demand for project activities, (ii)

facilitate management and mitigation of project risks, and (iii) strengthen Government capacity in handling such communications. A communications specialist will be recruited in the PMU to assist the ID and community mobilization teams.

Financial Management, Disbursements and Procurement

8. The FM assessment identified key FM risks and rated the overall FM risk as *High*. Difficulty in attracting adequately qualified accountants from the local market, the potential for corruption around contractor payments, and a complex Project design involving FOs and COs, are some of the risks identified. The recruitment of incremental FM staff at competitive rates from the market, the development of a simplified FM arrangements and the use of country system, capacity building of the community for financial management matters and the conduct of quarterly internal audits by an independent firm of auditors are key requirements to mitigate the identified financial management risks.

9. The designed financial management arrangements are based on the country systems and provide reasonable assurance on the use of Credit proceeds for intended purposes. Government budgeting processes will apply and the project's budget will be a part of the government's annual budget. PMU will maintain books of accounts on cash basis of accounting in accordance with government accounting policies. The National FM Information System (FMIS) will be used for accounting and reporting. Detailed internal controls will be defined in the Financial Management Manual (FMM) and the Operations Manual (OM). The PMU will prepare SOPs and a training plan for financial management at communities. The project activities will be subject to periodic internal audit. The project's financial statements will be prepared in accordance with the Cash Basis IPSAS and audited by the Auditor General of Pakistan (AGP). The audited financial statements will be submitted to the Bank within six months of the close of the financial year.

10. For the project, a segregated Designated Accounts (US$) will be established. Disbursements will be report based and the Bank will transfer funds to the project Designated Account on the basis of six-monthly cash forecasts as reported in the Interim Unaudited Financial Reports. The Interim Unaudited Financial Reports submitted will be used to document expenditure against advances.

11. Pakistan has a three tier governance PFM infrastructure that operates through federal, provincial and district governments. Finance ministries or departments and line ministries or departments at federal and provincial level have well-defined roles and responsibilities for budget formulation and execution. A Controller General of Accounts (CGA) – a representative of the federal government through its offices across the country – pre-audits transactions, makes payments and thereafter prepares financial statements. The AGP being the Supreme Audit Institution of the country is bestowed by the Constitution to conduct audit of federal, provincial and district government entities.

12. The PMU will have the overall responsibility to maintain an appropriate financial management system for the project; however, COs/FOs will have financial management responsibilities for funds transferred to them (Table 5).

Table 5: FM Responsibilities (to be refined in the Operations Manual)

Area	PMU	COs/FOs
Transactions to be handled	• Monthly transactions as per approved procurement and disbursement plan • Transfer of Funds to COs/FOs.	• Expenditure as per the approved plan
Staffing	• Full time FM staff	• A member to act as treasurer
Budgeting	• Prepare annual consolidated budget of the project based on work plan of the activities to be carried out during the year. • Prepare a detailed Project Plan for the entire project duration with quarterly breakup of activities and estimated funds utilization.	• Annual fund requirements will be included in the approved plan that will be disbursed on two tranches after participatory contribution and satisfactory completion of the work certified by PSIA
Funds Flow	• Open and maintain the designated/ assignment account of the project for receipt of funds from the Bank. • Transfer funds to COs in tranches on the basis of approved plan. • Negotiate with commercial banks to provide banking services to COs. If possible, enter a corporate level agreement with a commercial bank in which accounts of all COs/FO will be opened.	• Receive funds from PMU in the commercial bank account and make payments for the expenditure as per the approved plan. • Maintain a commercial bank account where PMU will transfer funds.
Accounting	• Maintain accounts on cash basis as per government accounting procedure i.e. New Accounting Model and CGA's approved Financial Management Manual. • Use the National FMIS	• Maintain cash book and supporting documents.
Financial Reporting	• Prepare monthly financial report • Prepare and submit quarterly IFRs to the Bank. • Prepare and submit annual financial statements of the project to the Auditors. • Verification of monthly expenditure submitted by CO/FO on test basis • Comply with government reporting requirements	• Prepare expenditure statement with supporting documents on monthly basis
Internal Control Framework	• Government Financial Rules • Operations Manual • FM Manual • Bank's Procurement Guidelines • Periodic Internal Audit	• Operations Manual
Audit	• AGP will carry out annual audit of the project. The audit scope will cover the PMU and COs. The audit will also include field visits to sites and physical verification of assets created or the work financed from the grant proceeds.	

13. Since the implementing agency has a shortage of skilled FM staff, additional professional staff will be required for the PMU together with concurrent internal auditing arrangements. Specifically, one adequately qualified and experienced FM Specialist and two accountants (one deputed from the AGPR-Balochistan) are required. A separate designated account in the name of the project will be opened for receiving cash contribution under sub-component B3. In addition, the FM staff will be mandated to provide guidance to district offices, for example on opening of bank accounts for community contributions or keeping of accounts by FOs/COs in case of participatory agreements. For each such organization the treasurer will handle FM matters including (i) operating a bank account jointly with the organization's focal person, (ii) maintaining simplified cash book & accounting records and (iii) preparing periodic expenditure

reports. The FM Specialist at the PMU will (i) prepare SOPs (including guidance for local organizations on bank accounts, fund flow arrangements, cash books and accounting records, as well as completion and closure of the scheme) and (ii) prepare and implement a training plan and training module to build FM capacity of local organizations.

14. The PMU will prepare an annual budget in accordance with the GoB rules and regulations. The project's budget will be reflected in the annual Public Sector Development Program (PSDP) of the province as well as Demands for Grants with a unique Cost Centre Number/ DDO Code. In addition, PMU will prepare annual work plan and cash plan that will provide quarterly break up of planned activities and associated costs. PIUs established under PMU will provide details of planned activities at the river basins and their associated costs to PMU, for preparation of the project level budget, work plan and cash plan. The overall cost share of Project beneficiaries is 3.7 percent or US$7.70M (equivalent). Beneficiary contribution to the Project is based on the experience of BSSIP and in-line with their capacity. US$200M equivalent or 95.4 percent of the total cost will be financed by IDA.

15. *Accounting:* PMU will maintain separate books of accounts on cash basis of accounting for the project. Payment vouchers will be prepared for each transaction and the relevant accounting codes, disbursement category and project component will be mentioned on the payment vouchers. PMU will work with the CGA to include the transactions in the National FMIS. A manual cash book, as required by government rules, will be maintained. In addition, the following manual registers will be maintained: (i) Assets Register – with details of assets procured from the grant, unique identification number, location of the asset and custodian of the asset and (ii) Invoice Register – with dates of invoice/bill receipt and date of payment to supplier/ contractor. The Invoice Register will be used to monitor payment processing time.

16. *Financial reporting:* The PMU will prepare monthly, quarterly and annual financial reports. Monthly, the Financial Management Specialist will prepare and present a system generated budget execution report to the Project Director within five days of the close of the month. For each calendar quarter, PMU will furnish a system generated Interim Unaudited Financial Report (IUFR) that will be furnished to the Bank within 45 days of the close of the quarter. The IUFRs will include, but not limited to sources and application of funds, budgeted vs actual expenses (explaining variance if any for more than 5 percent), financial vs physical progress, and procurement status reports. The format and content of IUFR will be agreed during project appraisal. Annually, PMU will prepare project annual financial statements in accordance with Cash Basis IPSAS. The financial statements will cover a period of one financial year and will be submitted to the auditors within six months of the close of financial year.

17. *Internal controls:* Detailed internal controls will be defined in the FMM and the Operations Manual (OM). The FMM provides a comprehensive set of preventive, detective and corrective controls for different processes and transactions. PMU will prepare the OM that will include detailed step-by-step guidance on all activities pertaining to the formation and operation of FOs under the proposed project.

18. Quarterly internal audits will be conducted. The Project will hire a firm of chartered accountants to conduct internal audits. The auditors will report to the Steering Committee, with a copy of the audits to the Project Director. The firm will prepare the risk-based internal audit plan.

The scope of work of auditors will be to determine whether the project's risk management, controls, and compliance processes, as designed and represented by management, are adequate and functioning. The auditors will review project transactions, processes, procedures and performance to provide assurance regarding the fiduciary controls, risk management and monitoring mechanisms in place at all levels, that is, PMU, PIU and CO/FO.

19. For project supervision, PMU will be supported by a PSIAC who will verify all invoices before payment is made. The M&E team will also conduct regular field visits to verify the project activities.

20. *Fund Flow and Disbursement Arrangements:* The PMU will open and operate a segregated Designated Account (DA) in US Dollars at the National Bank of Pakistan for receipt of funds from the Bank. The DA will be operated by the PMU in accordance with the provisions of "Revised Accounting Procedure for Revolving Fund Account (Foreign Aid Assignment Account)" dated August 2, 2013 issued by the Finance Division.

21. Disbursements will be report based and the project will mainly use the advance method of disbursement where the funds will be front-loaded into DA based on six monthly cash forecasts. Initial advance into DA will be provided by the Bank on the basis of projections for the first six months / two quarters. Subsequent advances will be based on forecast for the following two quarters and the balance available with PMU as reported in the quarterly IUFR. The expenditure incurred during a quarter against advance will also be documented in the Bank's system on the basis of IUFR. Further details regarding disbursements are provided in the Disbursement Letter.

22. For execution of works by local organizations funds, will be transferred to the organization's bank account. The PMU will approach commercial banks operating in the province, particularly in the outlying districts to provide banking services for local organizations. Preference will be given to commercial banks providing mobile banking services across the province and willing to agree into a corporate level agreement with the PMU for provision of banking services for local organizations. This would allow the PMU to obtain consolidated financial reports from the Bank about funds transferred and expended by local organizations.

23. At the end of the project if any unspent funds are lying with the local organizations these will be returned to the PMU, which will subsequently refund the amount to the World Bank. The Agreements/MOUs signed with local organizations will specifically include a clause stating this requirement. The quarterly budget execution report along with the physical progress of the project will be uploaded on the project's website within 30 days of the close of the quarter.

24. *Retroactive Financing* is allowed up to US$40M equivalent (SDR 28.52M) for payments made to meet eligible expenditures under expenditure categories (1) and (3) in Table 6, incurred before effectiveness of the Credit agreement and after September 1, 2015. The Bank will reimburse the eligible expenditure incurred under retroactive financing after the receipt of the audit report conducted by an independent auditor.

25. *Auditing:* Office of the AGP will conduct annual audit of the project, which is acceptable to the Bank. Directorate General Audit (Balochistan), as representative of AGP, will carry out the audit of the project in accordance with the TORs that have been agreed between the Bank and

AGP. The audit will include field visits to project sites for physical verification of assets created or the work financed from the loan proceeds. For each financial year closing on June 30, acceptable audited financial statements will be submitted to the Bank by December 31, i.e. within 6 months of the close of the financial year. There are no overdue audit reports and no overdue ineligible expenditure in respect of PMU. The AGP will also conduct a mid-term performance audit of the project and will share the report with the Bank on the efficiency, economy and effectiveness of the project activities.

26. *Disbursements:* The categories of Eligible Expenditures under the project, 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 are given in Table 6.

Table 6: Eligible expenditures

Category	**Amount of the Financing Allocated (USD equivalent)**	**Percentage of Expenditures to be Financed (inclusive of Taxes)**
(1) Goods, works, non-consulting services, consultants' services and training	185,000,000	100%
(2) Matching grants	7,000,000	100% of amounts disbursed
(3) Incremental operating costs	8,000,000	100%
TOTAL AMOUNT	200,000,000	**100%**

27. *Supervision Plan:* Initially during the first year, quarterly field supervision missions would be carried out to review the financial management arrangements at the PMU. Due to the security situation visits to the COs/FOs are unlikely. Internal and external audit reports, third party monitoring visits, as well as project's internal reports, would be the primary source of information about the financial management arrangements at community level.

Procurement

28. Project design envisages intensive fiduciary assurance approach and this will entail selection and employment of various consultancies over the life of the Project. There will be high number of packages of major and minor civil works; which due unique geo-political and current security situation are likely to be procured through National Shopping and National Competitive Bidding (NCB). The Community Driven Development model of procurement will be employed for interventions at community level. There will be procurement of goods for PMU and large design and supervision, MIS/GIS, audit and validation consultancies using applicable procurement methods. However the contract administration capacities needs to be built up for which various strategies will be developed.

29. An adequately staffed Provincial Procurement Regulatory Authority has been established in Balochistan and is making steady progress in the implementation of province-wide efficient, economic and transparent procurement processes. Procurement under project would be carried out in accordance with Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011,

revised in July 2014 and Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011, revised in July 2014 as well as the provisions stipulated in the Financing Agreement. Guidelines on Preventing and Combating Fraud and Corruption in Project Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and revised in January 2011 will also apply.

30. All expected procurement of goods, works and consultants‟ services have been listed in the project's General Procurement Notice, and Specific Procurement Notices shall be published for all consulting services, and International Competitive Bidding (if any), estimated to cost more than US$300,000.

31. *Procurement of Works*

(i) Works estimated to cost more than US$4,000,000 equivalent would be procured through International Competitive Bidding (ICB) procedures. Pre-qualification would be mandatory for contracts estimated to cost more than US$10M equivalent;
(ii) Works estimated to cost up to US$4,000,000 would be procured through NCB procedures;
(iii) For minor works; estimated to cost up to US$50,000 equivalent per contract, may be procured through shopping procedures.

32. *Procurement of Goods:* Other Goods procured under this project would include: office equipment, vehicles, furniture, printing of training material field equipment and heavy equipment, instruments, hydraulic water measuring equipment and others identified during the project. Following procedures would apply for procurement of goods:

(i) ICB procedures shall be followed for each Goods contract estimated to cost more than US$600,000 equivalent. Domestic Preference will be allowed to local manufacturers on ICB contracts;
(ii) Goods estimated to cost up to US$600,000 per contract may be procured through NCB procedures acceptable to the Bank; and
(iii) All vehicles for project use; regardless of the value, and other goods estimated to cost up to US$50,000 equivalent per contract may be procured following procurement procedures in accordance with the Bank's procurement guidelines.

33. *Improvement of Bidding Procedures under National Competitive Bidding:* The following improvements in bidding procedures will apply to all procurement of Goods and Works under National Competitive Bidding, in order to ensure economy, efficiency, transparency and broad consistency with the provisions of Section 1 of the Guidelines:

(i) Invitation to bid shall be advertised in at least one national newspaper with a wide circulation, at least 30 days prior to the deadline for the submission of bids;
(ii) Bid documents shall be made available, by mail or in person, to all who are willing to pay the required fee;
(iii) Foreign bidders shall not be precluded from bidding and no preference of any kind shall be given to national bidders in the bidding process;
(iv) Bidding shall not be restricted to pre-registered firms; qualification criteria shall be stated in the bidding documents;

(v) Bids shall be opened in public, immediately after the deadline for submission of bids;

(vi) Bids shall not be rejected merely on the basis of a comparison with an official estimate without the prior concurrence of the Bank;

(vii) Before rejecting all bids and soliciting new bids, Bank's prior concurrence shall be obtained;

(viii) Bids shall be solicited and works contracts shall be awarded on the basis of unit prices;

(ix) Contracts shall not be awarded on the basis of nationally negotiated rates;

(x) Single bid shall also be considered for award;

(xi) Contracts shall be awarded to the lowest evaluated and qualified bidder;

(xii) Post-bidding negotiations shall not be allowed with the lowest evaluated or any other bidders;

(xiii) Draft NCB contract would be reviewed by the Bank in accordance with the prior review procedures; Government-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; A firm declared ineligible by the Bank, based on a determination by the Bank that the firm has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for or in executing a Bank-financed contract, shall be ineligible to be awarded a Bank financed contract during the period of time determined by the Bank;

(xiv) The Bank shall declare a firm ineligible, either indefinitely or for a stated period, to be awarded a contract financed by the Bank, 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 in executing, a contract financed by the Bank; and

(xv) Each contract financed from the proceeds of a credit shall provide that the suppliers, contractors and subcontractors shall permit the Bank, 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 Bank. The deliberate and material violation by the supplier, contractor or subcontractor of such provision may amount to obstructive practice.

34. *Selection & Employment of Consultants:* 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, such as quality based (QBS), fixed budget (FBS), least cost selection (LCS), consultants qualification selection (CQS) or single source selection (SSS). For contracts with consulting firms estimated to cost less than US$500,000 equivalent per contract, the shortlist of consultants may comprise entirely of national consultants in accordance with the provisions of paragraphs 2.7 of the Consultant Guidelines.

35. *Selection of Individual Consultants***:** World Bank provides guidelines on selection of individual consultants in Section V of the Consultant Guidelines. Services for assignments that meet the requirements set forth in the first sentence of paragraph 5.1 of the Consultant Guidelines may be procured through contracts awarded to individual consultants in accordance with the provisions of paragraphs 5.2 through 5.3 of the Consultant Guidelines. 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.

36. *Single-Source Selection:* Specific consultants‟ services through firms, satisfying Consultants Guidelines (paragraph 3.9 to 3.13), with Bank's prior agreement may be procured following single source selection procedures.

37. *Engagement of NGOs, Public Sector Universities / Research Institutes / Community Procurement:* If needed, the project may engage services from NGOs or public sector universities or research institutes using appropriate procurement process as per consultant's guidelines. Community procurement arrangements for goods will be agreed and disseminated to the participating communities. The PSIA consultants will spot check compliance. Contracts for community based works, as well as goods have also been agreed and documented during appraisal.

38. *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 in the procurement section. The ID is a permanent establishment. Under overall leadership of Secretary to GoB, it is primarily performing various administrative, technical, coordination and procurement functions. As per the existing delegation of powers there is no separation of procurement and payment functions.

39. The key procurement actions to be taken are listed in Table 7.

Table 7: Key procurement actions

Issues	**Action**
Empowerment	• Delegation of administrative and financial powers to Project Director • Addition of procurement staff to the ID to build and internalize long-term procurement capacity
Improving Planning & Monitoring	• Bank to provide hands-on support for planning and monitoring of Procurement Plan including use of simple IT tools
Upfront Actions	• Hiring of Contract Management Specialist to PMU
Procedural clarity	• Development of Procurement procedures for Operations Manual
Bid Evaluation Capacity	• Provision of detailed SOPs and workflows in the Operations Manual • Provision of procurement training
Market Constraints	• Adequate remuneration of procurement officers • Wide circulation of vacancy notices • Capacity building and knowledge sharing events for potential suppliers and service providers
Transparency	• Establishment of functional Project web site and PMU intranet • Disclosure on website of all Project information including procurement, planning (including budgets), expenditure, matching grants and stakeholder engagement activities • Procurement clinics with focus on detecting red flags • Video recording of key procurement stages • Uploading minutes of bid opening on same day
Complaints	• Independent complaint re-dress mechanism

40. *Additional Procurement Risk Mitigation Measures*. Fiduciary risk mitigation measures will target internalizing procurement and financial management capacities of government.

(i) In terms of fiduciary staffing as linked to mitigation measures, building the capacity of existing government staff in the implementing entity is a priority. Capacity will be built through training and secondment plans including Procurement Immersion Plan;
(ii) All consulting assignments over US$0.3M will have a mandatory provision for secondment of staff to these consultancies. As far 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 Quetta;
(iii) 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;
(iv) Procurement complaints will be part of overall Grievance Redress Mechanisms however the Bank's specific compliant management process will also be followed. Relevant entities will be maintaining complaint data on a freely accessible website and M&E Officer will report this to Bank on monthly basis. Every procurement publication will have a link to complaint/grievance redress portal. In order to ensure objective reporting of deviations in fiduciary issues, M&E Officer will lead reporting;
(v) 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; and
(vi) A 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.

41. *Procurement Plan:* The implementation agencies have developed procurement plans for project implementation which provide the basis for the procurement methods. These plans are available in the project's database and the Bank's external website. The procurement plan will be updated in agreement with the project team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. An 18-month procurement plan has been finalized and agreed. It is available in project files.

42. *Review of Procurement by the Bank:* In addition to the prior review supervision to be carried out from Bank offices, frequent supervision missions would be carried out to visit the field for the purpose of post review of procurement actions by the implementation agencies. Thresholds for prior review are given below. These thresholds would be reviewed in 18 months and adjustments upwards or downwards would be made based on implementation experience:

(i) All ICB contracts for works and goods;
(ii) All single source selection or direct contracts;
(iii) First NCB contract for works and goods irrespective of value;
(iv) First contract procured through shopping, for goods as well as works, and through community based contracting procedure;

(v) The first Consultants‟ Services contract with consulting firms, irrespective of value, and thereafter all contracts with firms estimated to cost US$100,000 equivalent or more; and
(vi) First consulting services contract with individual consultants, irrespective of value, and thereafter all contracts with individuals estimated to cost US$50,000 equivalent or more.

43. *Post Review:* All other contracts will be subject to Post-Review by the Bank and PIU will send to the Bank, a list of all contracts that are subject to post-review on a quarterly basis. Post reviews as well as the implementation reviews would be done quarterly for the first 18 months or till the credit disbursements reach US$30M and thereafter bi-annually. Such review of contracts below threshold will constitute a sample of about 25 percent of the contracts.

44. *Frequency of Procurement Supervision:* The Bank's review missions will be carried out every six months, and more frequently in the early stages of the project, with a procurement specialist participating.

Environmental and Social Safeguards

45. The proposed project is to be implemented in the Nari and Porali river basins in the arid and water-stressed province of Balochistan. Both the selected basins are water overdrawn, with high levels of groundwater extraction combined with outdated irrigation practices. The selected basins are home to unique and fragile ecosystems, including in the Ziarat district (Nari basin) the second largest Juniper Forests in the world and the Miani Hor mangrove forests on the coast of Lasbela district at the outlet of the Porali basin. Both the basins have large tracts of rangelands and pastures that support the local livestock population as well as wild ungulate populations. There are a number of protected areas in the area, including Miani Horr, a Ramsar site, Juniper forests, a Man and Biosphere Reserve and other important wildlife sanctuaries and game reserves.

46. Given the potential for downstream impacts the Project has been classified as Environmental Assessment Category A. The Project will use integrated water resource management tools, practices and approaches for improved management of scarce water resources among targeted communities and farmers. This is likely to have positive impact on water management and conservation in the project area. Table 8 describes the Safeguards Policies triggered, with corresponding justification.

Table 8: Safeguard policies triggered

Safeguard Policy	Triggered	Justification
Environmental Assessment OP/BP 4.01	Yes	Multiple ecological zones to be affected, with possibility of some irreversible change in the functioning of the eco-zones require detailed environmental assessment. Implementation of infrastructure schemes will have construction-related environmental impacts such as air quality deterioration, water and soil contamination, land use and land form changes, and impacts on biological resources. This policy is therefore triggered and a detailed EA and an EMP have been prepared.
Natural Habitats OP/BP 4.04	Yes	This policy is triggered because of the potential environmental impacts of project activities on the natural habitats and protected areas in the two river basins. The EA has identified and delineated areas of critical habitat and ensured application of the mitigation hierarchy in accordance with this policy

		for all project works.
Forests OP/BP 4.36	Yes	Juniper forests in Ziarat and Mangrove forests at the coast of Lasbela may be affected due to the presence in the project area of influence. Mitigation measures are thus proposed as part of the EMP.
Pest Management OP 4.09	Yes	Major interventions planned to enhance agricultural productivity with a possible introduction of newer crop varieties that together may affect local pest population leading to increased use of pesticides and other agrochemicals. A pest management plan is included in the disclosed EA.
Physical Cultural Resources OP/BP 4.11	Yes	The social assessment revealed local significant heritage places such as religious buildings, graveyards and religious shrines. Mitigation measures have been incorporated into the disclosed EMP including provisions for a detailed Cultural Heritage Management Plan.
Indigenous Peoples OP/BP 4.10	No	No indigenous people as defined in the OP reside in the Project area.
Involuntary Resettlement OP/BP 4.12	Yes	Project schemes will require lands for their construction and this will trigger OP 4.12 through land taking and possible resettlement.
Safety of Dams OP/BP 4.37	No	This policy is not triggered as the project will not support the construction or rehabilitation of dams nor will it support other investments which rely on the services of existing dams. The project infrastructure investments, including irrigation, potable water supply and flood protection, will not rely on the performance of any existing dams.
Projects on International Waterways OP/BP 7.50	No	This policy is not triggered as neither the Porali nor the Nari are international rivers as defined in OP7.50. The Nari basin is within the geographic extent of the Indus River Basin and the Indus is an international river. However, the Nari River terminates in inland lakes before reaching the Indus River, hence it is not a tributary of the Indus.
Projects in Disputed Areas OP/BP 7.60	No	No disputed territories exist in the Project area.

47. The EA report has been disclosed in-country on January 25, 2016 and in the World Bank Infoshop on January 26, 2016, including an Urdu translation of the Executive Summary. Six irrigation schemes and other interventions are planned across the Nari and Porali River basins, and cumulative impacts from the implementation of schemes require close attention. Basin EIA studies, which provide useful information at the regional level, informed the EA. A CIA is an integral part of the EA and covers impacts in each basin using the baselines, analyze the project effects and considers the planned and future interventions. Table 9 illustrates the scope of the CIA.

Table 9: Scope of the CIA

Component	**Feature**	**Major Concerns/Benefits**
Physical environment		
Surface water	Downstream water releases	Lesser water available in downstream areas during low flow season
	Water availability	Improved water supply for irrigation Possible land conversion for agriculture due to increased water availability Lesser water available for maintaining environmental flow

Biological environment		
Aquatic habitat & fish	Downstream fish habitat	Reduced flows and/or increased surges in low flow season
Biodiversity and forests	Natural forests	Pressure on forests (illegal logging) by influx of workers Forest land conversion due to increased agricultural potential
	Wildlife	Decreased water availability; reduction or degradation of aquatic and forest habitats
	Natural habitats	Degradation by increased overgrazing, firewood collection, etc. Land conversion due to improved irrigation and agricultural potential
		Lack of reliable data on terrestrial and aquatic ecology, wildlife and forests

48. The EA assesses environmental flow requirements, delineates watersheds for improved watershed management, provides current assessment of health of protected areas, and provides an EMP that will be implemented during the Project to mitigate negative impacts and maximize positive impacts. Key mitigation measures for all potential environmental impacts are tabulated in the EA.

49. Potential impacts have been identified for design and planning, construction and operations and maintenance stages of the project, along with corresponding mitigation/enhancement measures. Environmental concerns have also been mainstreamed into the watershed management and agriculture components, which have identified and proposed interventions that will benefit forests, rangelands, farm level vegetation as well as pest management measures, which will secure agro-level biodiversity.

50. The EA proposes institutional arrangements to manage the environmental impacts of the project, recommends establishing the baseline condition at the early stage of implementation, suggests monitoring requirements to ensure effective implementation of the mitigation/enhancement measures, describes training needs for all tiers, and also specifies the reporting and documentation requirements. It provides human resource requirements at each tier of Project implementation arrangement, covering the PMU, contractors, and supervision consultants, and requires an annually conducted third party validation of EMP implementation. It also suggests a training plan for each tier, from COs to the basin level management unit, and for Quetta-based management setup. Each tier has to have a dedicated environmental specialist, ecologist, and occupational health and safety specialist, to ensure steady and accurate compliance to the EMP. Other capacity enhancement tools including participation in national level safeguards knowledge sharing events, study tours and decision support systems have also been suggested to improve the capacity to monitor and manage the EMP.

51. The EA recommended two additional studies to be conducted early during implementation: (a) biodiversity conservation and fish farming – to improve the livelihood of the local community by creating a positive impact on the economic conditions, conservation of biodiversity in Miani Hor and Juniper forest, and improvement in watershed to regulate water flow in the downstream river system, and (b) cultural heritage impact assessment: to identify the cultural places of local significance and develop programs which will contribute to the awareness and knowledge base of Balochistan cultural heritage.

52. A Grievance Redress Mechanism has been developed, setting out the process to be followed from field level to the PMU in Quetta. Focal points within the farmer/water users groups, at the basin level as well as within the ID will be appointed, briefed and trained to

respond to any grievance filed at any level. This was also disclosed in the public consultations which were held in both the river basins, in 61 settlements in total at grassroots level, and with identified stakeholders (government, NGO's and academia).

Summary of Social Assessment

53. A SIAMP was disclosed in-country and at the World Bank Infoshop on February 9, 2016. Balochistan faces acute water shortages and largely depends on small perennial flows in ephemeral rivers and seasonal short duration floods. The province often faces severe drought conditions and water availability is drastically reduced during extended droughts which lead to high marginality in income and livelihoods. Water storage facilities are inadequate and canal and water structures require urgent rehabilitation and then regular maintenance. The lack of adequate water storage, flood retention areas and flood protection embankments has led to recurrent flood damage. Branch and village level water distribution is expressed in fixed time share of original cycle of 30 days. There is no fixed distribution of floodwater. A special water share has been allocated to fill community reservoirs.

54. The population is primarily Muslim, and languages spoken in the area include Pashto, Sindhi, Balochi and Brahvi. Urdu is also understood and spoken in all the project areas. The social assessment revealed a lack of electricity, gas and appropriate approach roads to villages. Primary level education facilities are minimal. The tribal representation is of Khajak, Dephal, Luni, Marghzani, Tareen, Safi and Rind tribes of Pashtun, Baloch, Bizenjo, Mengal and Sian, Roonja, Khaskheli and Roonja, Khaskheli, Bizenjo, Mengal, Jamot, Bandija and Siapad. Education levels are low and illiteracy levels are high. Health facilities in the villages and nearby districts are limited and often non-functional. Groundwater is depleted and so canal water is often used and for drinking supplies. There are no telephone connections, limited electricity supply for domestic or agricultural use, and few sewerage systems in villages. Some houses have installed solar panels for electricity. Guzara forest in the project area provides a source of fuelwood. Most of the community lives in extended family homes. Land tenure in the project area is largely owner-operated. The average land holdings are 1.8 ha (cultivated) and 3.6 ha (uncultivated).

55. Community consultations during the Social Impact Assessments and resettlement planning process indicate a broad willingness of communities and land owners to voluntarily contribute their land where required for construction or rehabilitation of irrigation schemes. The assessment brought out two major factors at play. The first is that most of the irrigation schemes are owned and operated by the communities and the land owners are the primary beneficiaries of the project investments. The second major factor is that the land required is relatively limited and mostly unproductive. Community donation of land for community-oriented investments has been commonplace in the project areas for past development assistance.

56. Around 1,385 trees (Tamarix, Acacia nilotica and Kabbar) were observed and recorded along existing canals in the Porali River Basin. The contractor will make efforts to avoid felling trees. In Nari River Basin 18,148 small bushes like trees (Acasia nilotika) grow along the main and branch canals. Farmers fell these trees for fuelwood. No fruit trees will be affected by

project interventions. Studies indicate that agriculture is the primary income source, livestock is the secondary income source and laboring is the tertiary income source. Very few farmers are engaged in business activities and only a small number of family members are in government employment. The proposed irrigation development and rehabilitation will only require acquisition of uncultivated barren land, hence community incomes and livelihoods will not be affected.

57. In the unanticipated event that any private land is required for the project, land acquisition will be obtained on a willing-buyer-willing-seller basis and on replacement cost, or as a voluntary donation or bequest, in each case in conformity with the requirements of the SIAMP. Any expenditure pertaining to land acquisition required for the project, compensation, resettlement and/or rehabilitation payments to displaced persons in accordance with the provisions of the RAPs, will be financed exclusively out of GOB's own resources.

Resettlement Policy Framework

58. As detailed designs were not available for all of the schemes to be implemented under the Project, a RPF was prepared in line with relevant government and World Bank policies to guide resettlement planning and implementation in order to mitigate against any unanticipated resettlement impacts. The RPF provides the policy objective and establishes resettlement and compensation principles. It provide an entitlement matrix, the organizational arrangements for resettlement planning, implementation, monitoring and evaluation during Project implementation.

59. In case of land donations from communities, the Project will use a transparent process and ensure donations are truly voluntary by preparation of documentation showing:

(i) land ownership and evidence indicating the voluntary nature of the donation;
(ii) the appropriateness of the donation for the intended purpose;
(iii) the economic status of the donor indicating he/she is above the poverty line and that his/her remaining holdings are economically viable;
(iv) the absence of encumbrances on the land;
(v) the absence of any negative livelihood impacts on vulnerable groups;
(vi) that no compensation will be paid; and
(vii) that owners relinquish all claims on the land and that the title will be transferred to the recipient through procedures prescribed under Balochistan law.

60. The documentation of land donation will be prepared, reviewed and approved by the PMU, and will be filed at the district government for regular monitoring and supervision to check compliance. The documentation will also be submitted to the World Bank. Any grievances related to land donations and other project development will be reported and addressed through the PMU and through established processes at Union Council Level, District Level, River Basin Level and Project Level. Farmers Organizations (FOs) established under the Project will play role in grievance redress. All grievances will be recorded and redressed within a stipulated time period.

Gender and Development

61. Balochistan has a poor record on gender equality. More than three quarters of the population live in rural areas and depend on the agricultural sector. Almost a sixth of the farms are less than 1 ha. The large majority of farms are owned by the cultivator of the land, and very few are cultivated by tenant farmers. In almost all cases, the land owner is the (male) head of the family, and much of the agricultural work is undertaken by family members; larger farms and orchards also hire labor. As a male-dominated society, women have very limited influence in family and social affairs. Women are rarely allowed to own productive assets such as land or livestock. Gender sensitive development approaches are being introduced. Engagement of men will create sustained ownership in the project to address gender inequities in the system. Change is possible, notwithstanding the cultural and social fabric of the province.

62. The GAP has been developed as a component of the SIAMP to ensure that women benefit from all project activities and equitably participate in decision-making. Efforts will be made to ensure equitable participation of women in all project activities from community mobilization through to monitoring and impact assessment. In addition to mainstreaming women in all planned project activities, the GAP also proposes design and implementation of specialized projects and interventions strategically designed to promote active engagement of women with the Project. These include design of specialized water, irrigation, agriculture and livestock projects designed to improve women's practical and strategic gender needs. Kitchen gardens, backyard poultry demos and livestock demos will be part of the programs which will be developed and implemented for women to promote income enhancement through entrepreneurial training and skill development in relevant areas as well as access to and use of technology.

63. The objectives of the GAP are initially to raise awareness of women's rights and gender issues amongst all project stakeholders. To improve the situation for women, and given the cultural context, the project will approach women through men in the first instance, as well as through children. The GAP includes the mechanisms to raise the education and health standards of women and children, and their access to project benefits. The GAP has been developed cognizant of the current context. It adopts a realistic approach given the existing socio-cultural and tribal society.

64. The GAP includes quantitative "targets" as starting points for involving men to raise awareness of project benefits including those accessible to women. All proposed activities have gender as a cross cutting theme and there are qualitative and quantitative indicators to capture results. Gender-sensitive M&E will objectively assess progress in GAP implementation. The key gender aspects of the M&E framework include: (a) monitoring gender development activities as they occur, and (b) assessing the outcomes and impacts on a regular basis.

Annex 4: Implementation Support Plan

1. The strategy for implementation support was developed based on the nature of the project and its risk profile. It reflect to complexities of the project and the capacity for implementation. The objective of the implementation support is to ensure that government agencies involved properly implement the project. It also ensures that World Bank resources and staff are sufficient to supervise and support this implementation.

Main areas of Supervision

2. Formal supervision and field visits will be carried out semi-annually. Given the security conditions of Balochistan, field visits may be supplemented by meetings in Quetta and/or Islamabad as required. Supervision will focus on technical and institutional soundness, procurement, financial management, and environmental and social safeguards. The supervision of the project will address the high fiduciary risk of the project through intensive implementation support and oversight of FM and procurement issues.

Technical

3. Technical implementation support will first focus on ensuring timely establishment of the project management team, and appropriate technical design of the project components carried out. The Bank team will include a Bank staff engineer, in order to review technical specifications, proposals and bid documentation.

Procurement

4. World Bank procurement specialists will participate in implementation support missions to assist in monitoring procurement procedures and plans. An Islamabad-based procurement specialist will further provide regular implementation support and capacity strengthening to the ID and other entities involved in implementation.

5. The procurement plan will indicate those contracts which are subject to prior review. All other contracts will be subject to post-review. During the early phase of the project implementation, more frequent supervision is envisaged in order to ensure that procurement guidelines are followed by the project management team and to strengthen local capacity for implementation. During the regular implementation support missions, the procurement plans will be updated at least once each year (or more often as required to reflect the actual project implementation needs) and post-procurement reviews will be carried out at a minimum once annually.

6. The World Bank will conduct sample post-reviews of contracts that are below the prior review threshold for contracts implemented to ascertain compliance with the procurement procedures as defined in the legal documents.

Financial Management

7. Training for PMU staff will be provided by the Bank's Islamabad-based financial management specialist before the commencement of project implementation. The financial management specialist will provide timely support and coordinate closely with the ID and PMU staff on project implementation issues pertaining to financial management, audit compliance and technical assistance as required. Supervision of financial management arrangements will be

carried out semi-annually as part of the project supervision plan and support will be provided on a timely basis to respond to client needs.

Safeguards

8. Environmental and social safeguards support will include visits to project areas as far as possible given security constraints and monitoring of social and environmental mitigation measures. During construction, monitoring is necessary to ensure compliance with environmental and social safeguards related to the infrastructure projects, including attention to gender differences and impacts, cultural heritage, pest management and other issues highlighted in the SIAMP. An environment specialist will be based in Islamabad and will provide ongoing support to all aspects of project implementation.

Overall Support Implementation Needs

9. The World Bank team will include a mix of skills and experience as required for successful project implementation. The Bank team will include staff and consultants from both headquarters and the country office. Table 10 outlines the expected staff weeks and travel required to ensure the actions and schedule are appropriately resourced.

Table 10: Staff resources for implementation support

Time	Focus	Skills Needed	Resource Estimate
First twelve months	Launch of project and establishment of PMU	Procurement, Technical, financial management and safeguards	24 staff weeks
12-48 months	Supervision of technical and safeguards project aspects	Technical, fiduciary and safeguards	48 staff weeks
48 months – project close	General project supervision	Technical, fiduciary and safeguards	20 staff weeks per year

10. The staff skill mix and focus in terms of implementation support is summarized in Table 11.

Table 11: Required skills for implementation support

Skills Needed	Number of Staff Weeks/year	Number of Trips	Comments
Task Team Leader	10	2 per annum	HQ based
Sr. Irrigation Engineer	5	2 per annum	Country office based
Sr. Procurement Specialist	5	2 per annum	Country office based
Sr. Financial Management Specialist	4	2 per annum	Country office based
Social Safeguard Specialist	3	1 per annum	HQ based
Environmental Specialist	3	1 per annum	Country office based
Agriculture Specialist	2	1 per annum	Country office based

Annex 5: Economic Analysis

Introduction

1. An economic analysis of the Project was undertaken in order to assess the economic soundness of the Project and its likely impact on beneficiaries. In addition, analysis of individual schemes considered the financial impacts on farm households. An attempt was made to quantify the benefits of improved flood protection. The analyses are based on the detailed feasibility studies conducted in 2014 for the schemes to be supported by the Project and the benefits and costs reflect March 2016 prices. The analysis is based on the total project costs and project phasing assumptions at the time of appraisal. Expected project benefits that cannot be easily quantified in monetary terms (especially institutional, social and environmental benefits) are not included in the analysis.

2. An analysis was conducted to assess the sensitivity to changes in the key parameters in the economic assessment. This considered (a) reduced benefits associated with key project risks (including delayed implementation); and (b) increased project costs. A summary of the economic analysis is provided below; the details are in the Project File. The Project's M&E System will be designed to provide the required data to update the economic analysis at mid-term and completion stage.

Rationale for Public Sector Financing

3. There is a strong rationale for public sector financing, given that the introduction and implementation of IWRM are core public sector concerns. The type of activities included in the project would not interest private financiers. Key areas that require public sector financing and are addressed by the Project include: (a) the transformation of water management in Balochistan from a narrow irrigation construction focus to an integrated multi-sectoral river basin planning and development approach. This will be achieved through progressive institutional restructuring and strengthening, and development of hydro-meteorological networks and water information systems; (b) priority investments in irrigation, potable water supply, flood protection, watershed and rangeland management. The Project will help build the basis for improved public and private investments in the region in areas related to water resources management. The Project will involve and strengthen existing local private-sector service providers for land improvements and private-sector input suppliers.

4. The World Bank has extensive experience with IWRM in the region and with funding related projects in Balochistan – such as the Balochistan Minor Irrigation Project, the Balochistan Community Irrigation and Agriculture Project; and the Balochistan Small-Scale Irrigation Project. The key value proposition of the support from the World Bank and the use of limited IDA resources is the package of support that is provided, combining structural and non-structural measures to assist Government in the introduction of IWRM. Coupling the funds required for the above mentioned priority investments and the restructuring and strengthening of key institutions with the World Bank's global experience in IWRM will help increase the Project's development impact and address key issues for the transformation of water management in Balochistan beyond what can be realized by exclusive reliance on the Government's own resources.

Project Area

5. The Project will be implemented in the Nari Basin (69,200 km2) and the Porali Basin (11,600 km2). Six irrigation schemes will be implemented; three in the Nari Basin (scheme area 62,400 ha) and three in the Porali Basin (scheme area 15,600 ha). There will also be sixteen village water supply schemes where intake structures and water supply systems will be rehabilitated and remodeled. The Project will finance flood protection works in five districts (seven sites) in the Nari Basin, and in two districts (five sites) in the Porali Basin. Collectively, across the two river basins, these flood protection works will protect ~14,600 ha from erosion and floods.

Project Benefits and Beneficiaries

6. The ultimate goal of the integrated water resources management introduced by the Project is to sustainably enhance the livelihoods of local communities in the targeted river basins, primarily in terms of (a) increased incomes; (b) improved food and nutrition security; and (c) reduced vulnerability and increased resilience to climate-change and impacts of floods and droughts.

7. The main expected medium-term economic benefits of the Project include: (i) increased irrigated agricultural productivity and production; (ii) more sustainable watershed agriculture especially livestock farming (increased livestock productivity and production due to increased production of fodder and improved rangeland management); (iii) more profitable and diversified production systems, also benefiting from improved post-harvest technologies and market linkages; (iv) reduced damages and losses resulting from floods; (v) extended life of water resources infrastructure resulting from reduced sediment loads; and (vi) reduced water resources infrastructure construction costs due to improved water data and information. The longer-term economic benefits will accrue from improved water data and information and increased professional and institutional capacity that will support more economically efficient management and development of water resources in Balochistan. Knowledge and capacity will provide the foundation that will be critical to building climate change resilience into irrigated agriculture and water supply, and mitigating the impacts of expected increases in flood frequency and magnitude.

8. Specifically, the institutional benefits expected from the Project that directly contribute to these economic benefits include: (i) improved capacity of the ID and other Government Departments and Agencies[6] for effective planning and managing of IWRM interventions by these institutions (not limited to the project river basins); (ii) newly established institutions with the mandate and capacity for strategic water resources planning and for river basin level water resources management; and (iii) improved capacity of FOs, Water User Associations and Agricultural Development Groups for more sustainable management of their land and water resources.

9. The main social and environmental benefits expected from the Project are: (i) enhanced opportunities for women to engage in profitable agricultural activities. This will result from gender sensitive development approaches introduced by the project to tailor interventions to the specific needs of women and to ensure more equity in the roles and responsibilities of both men and women; (ii) reduced environmental degradation and conserved natural resource base in the

[6] Departments of Agriculture, Forestry, Livestock, and Public Health & Engineering.

protected watersheds for sustainable livelihoods of present and future generations; and (iii) environmentally friendly agronomic practices.

10. It is expected that about 71,200 farming families (around 569,400 people) will directly benefit from the Project. Table 12 provides an overview of the estimated number of Project beneficiaries by intervention/sub-component.

Table 12: Number of project beneficiaries by sub-component

Intervention (Sub-component)	**Total Cost**	**Sub-component Beneficiaries**	**Net Beneficiaries**	**Female beneficiaries**	
	US$M	Households People	Households People	Sub-comp.	Net
Irrigation Schemes (B1)	95.5	42,800 342,400	42,800 342,400	159,200	159,200
Water Supply Schemes (B1)	4.9	3,600 28,800	2,900 23,000	13,400	10,700
Flood Protection Works (B1)	9.6	10,200 81,600	9,200 73,400	37,900	34,100
Watershed and Rangeland Management (B2)	19.7	20,400 163,200	16,300 130,600	75,900	60,700
On-farm Water Management and Agric. Productivity (B3)	34.2	42,800 342,400	0 0	159,200	0
Other interventions (A, C)	45.8	NA	NA	NA	NA
Total*	**209.7**	**NA**	**71,200** **569,400**	**NA**	**264,700**

*Net beneficiaries are less than the sum of beneficiaries across interventions as many will benefit from several interventions. Assumptions: percent of beneficiaries not benefitting from Irrigation Schemes: Potable Water Supply Schemes (80 percent), Flood Protection Works (90 percent), Watershed & Rangeland Management (80 percent) and On-farm Water Management & Agric. Productivity (0 percent).

Economic Analysis

11. The economic analysis assesses the value of the benefits resulting from the irrigation schemes and flood protection works, including irrigation scheme-related interventions in watershed and rangeland management and on-farm water management and agricultural productivity. Benefits from water supply schemes have not been estimated as there are inadequate data for a meaningful quantification.

12. The economic benefits of the Project that were quantified are derived from: (a) increased area under irrigation and cropping intensity; (b) increased crop yields; (c) diversified cropping systems including more high-value crops (orchards and vegetables); (d) increased livestock productivity and production due to increased production of fodder and improved rangeland management; and (e) reduced damages and losses resulting from floods. Details of the underlying analyses are in Project Files.

13. The analysis is based on detailed feasibility studies conducted in 2014 for the six schemes to be supported by the Project. Representative crop budgets have been prepared for the main crops cultivated under different irrigation systems in each scheme. For all crops, budgets have been prepared for the present situation (future without Project, FWOP) and for the future with Project (FWP) situation, considering a build-up of benefits over five years.

14. In the estimation of the economic benefits, economic gross margins per acre were derived from the crop budgets by valuing the physical input and output quantities in terms of their respective economic prices. Import or export parity prices have been calculated for major internationally traded commodities and chemical fertilizers using World Bank commodity price data. For all other commodities and inputs, a standard conversion factor (SCF) of 0.92 has been applied. All prices are current (March 2016) prices. Family labor has been valued at an estimated opportunity cost of PKR 322 per person day (92 percent of the rate of hired farm labor). The economic gross margins per ha were subsequently multiplied by the crop areas to determine the net benefits in the FWP and FWOP situations. The differences between the net benefits in FWP and FWOP situations were then calculated in order to determine the economic impact of the changes in cropping pattern, intensity and productivity.

15. The financial project costs have been converted to economic costs, which exclude taxes and duties and price contingencies, using the COSTAB software and applying a SCF of 0.92. The analysis was carried out for a 20-year period, which is the estimated project life including the six-year project implementation period. The economic analysis was undertaken in March 2016 constant prices, and a discount rate (i.e. opportunity cost of capital) of 6 percent was assumed. The Pakistan Rupee (PKR) was used as the unit of account and the March 2016 exchange rate of PKR 104 to US$1.0 was used.

16. The annual O&M costs of irrigation and flood protection structures have been estimated at 2 percent of investment cost and were included in the analysis as these costs will be incurred if the future benefits are to be sustained. Table 13 shows for each irrigation scheme the number of beneficiaries, area covered and economic rate of return.

Table 13: Project beneficiaries and area by scheme and type of intervention

Scheme Name	Total cost (US$M)	No. of House-holds	No. of Bene-ficiaries	Command area (ha)			Water-shed area (ha)	Total area (ha)	Cost per ha (US$)	Cost per HH (US$)	ERR (%)*
				PIS	Spate	Khush-kaba					
Nari River Basin											
Yatabad	57.66	15,557	124,460	0	16,188	6,073	6,070	**28,331**	2,035	3,706	31.2
Nari Gorge	31.97	16,348	130,786	17,833	607	10,522	809	**29,771**	1,074	1,955	56.4
Mushkaf	13.22	2,333	18,666	0	1,821	1,619	809	**4,249**	3,111	5,665	18.1
Sub-total NRB	**95.82**	**34,239**	**273,912**	**17,833**	**18,616**	**18,214**	**7,688**	**62,351**	**1,537**	**2,798**	**37.1**
Porali River Basin											
Khuzdar PIS	5.83	676	5,408	947	0	0	284	**1,231**	4,734	8,621	14.7
Nimmi	13.75	944	7,552	1,457	0	0	262	**1,719**	7,999	14,567	13.7
Gundacha-N-Hingri	18.09	6,973	55,788	12,199	0	0	500	**12,699**	1,424	2,594	43.5
Sub-total PRB	**37.48**	**8,593**	**68,747**	**14,603**	**0**	**0**	**1,046**	**15,649**	**2,395**	**4,361**	**26.3**
Project Total	**133.29**	**42,832**	**342,659**	**32,436**	**18,616**	**18,214**	**8,734**	**78,000**	**1,709**	**3,112**	**26.3**

*Economic Rate of Return. Overall ERR for the project includes total project costs and quantified benefits under irrigation schemes and flood protection works.

17. The economic benefits from flood protection works in terms of avoided damages to infrastructures and livestock and crop production losses are presented in Table 14. The quantification of damages/losses is based on (a) an inventory of infrastructures and livestock in the scheme area; (b) the estimated average net income per ha on the protected area in a normal year (without flood); and (c) assumptions regarding the percentage of infrastructures, livestock

and cropped area affected in a flood year (and corresponding damages/losses). The analysis was basin on a 1 in 4 year flood event for both basins.

Table 14: Estimated flood protection benefits

Scheme	District	Total cost (US$M)	Protected area (ha)	Protected HHs	Estimated avoided damages/ losses per annum (US$)			
					Infra-structure	Livestock pro-duction	Crop pro-duction	Total
Nari River Basin								
Agricultural land and villages on both banks of Loralai River	Loralai	1.92	3,440	2,200	193,341	90,575	31,550	315,466
Both sides of the Anambar River and allied active creeks Duki Area	Loralai	0.77	324	1,100	58,293	25,136	2,043	85,473
Mithri, Haji Shahar, Erri, Ghazi and Touk	Bolan	1.92	4,047	3,500	201,046	140,402	34,856	376,303
Village Doopasi along Bolan River	Bolan	0.19	32	240	14,519	63,816	481	78,816
Village Talli, Ghulam Bolak	Sibi	0.38	49	800	36,959	20,896	1,623	59,478
Village Tariq Abad and surrounding areas	Jhal Magsi	0.29	40	200	12,284	17,189	481	29,953
Baba Kot, Umrani village and surrounding areas	Naseer Abad	0.38	61	360	17,308	12,689	1,202	31,199
Total Nari River Basin		**5.87**	**7,993**	**8,400**	**533,750**	**370,702.5**	**72,235.6**	**976,688**
Porali River Basin								
Porali River Bela	Lasbela	2.64	6,070	1,600	199,279	64,456	47,821	311,556
Sathey Bent at Porali River Wadh	Khuzdar	0.19	89	80	5,457	5,887	962	12,305
Bizenjo Bent at Porali River Wadh	Khuzdar	0.29	101	60	5,180	6,019	1,683	12,882
Bent Mohammadzai at Porali River Wadh	Khuzdar	0.29	142	50	5,589	7,432	397	13,418
Sello Bent at Porali River Wadh	Khuzdar	0.34	162	30	4,627	7,774	1,623	14,024
Total Porali River Basin		**3.75**	**6,564**	**1,820**	**220,132**	**91,568**	**52,485**	**364,185**
Project Total		**9.62**	**14,557**	**10,220**	**753,882**	**462,271**	**124,720**	**1,340,873**

18. **Economic viability and sensitivity analysis.** The ERR of the Project for the base case is 26.3 percent with a net present value of PKR 53.22B (US$511.7M) using a discount rate of 6 percent. This result justifies the interventions on economic grounds.

19. The results of the sensitivity analysis are summarized in Table 15. The economic viability is robust to adverse changes in project costs and robust to changes in incremental benefits. The ERR only drops below 6 percent if incremental benefits are reduced by 75 percent. Even a combination of a 20 percent reduction in incremental benefits and a 20 percent increase in project costs, with a three-year delay in benefits, delivers satisfactory ERR of 12.6 percent. Numerous potential project benefits related to institutional, social and environmental outcomes, which are difficult to quantify in economic terms, were not included in the analysis. Thus it is safe to assume that the estimated economic benefits are conservative.

Table 15: Economic viability and sensitivity analysis (Base Case ERR= 26.3 percent)

Scenario			Resultant ERR (%)
Costs Increased by	**Benefits Reduced By**	**Benefits Delayed By**	
20%			23.1
40%			20.6
	20%		22.4
	40%		20.6
20%	20%		19.5
40%	40%		12.9
		1 year	22.5
		2 years	19.6
		3 years	17.2
		1 year	16.7
20%	20%	2 years	14.5
		3 years	12.6
Switching Values*			
Costs			+ 300%
Benefits			- 75%

*% change in cost and/or benefit streams to obtain ERR of 6 percent, i.e., economic viability threshold.

Annex 6: List of Documents in the Project File

1. Environmental Assessment
2. Social Impact Assessment and Mitigation Plan
3. Draft Operations Manual
4. 18-Month Procurement Plan
5. Detailed Project costing
6. Economic Analysis and Underlying Financial Analysis
7. Sub-component A Detailed Description
8. Sub-component B1 Scheme Descriptions

Annex 7: Map IBRD No. 42229