

Document of  
The World Bank

**FOR OFFICIAL USE ONLY**

Report No.: PAD1450

AFGHANISTAN RECONSTRUCTION TRUST FUND

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT

IN THE AMOUNT OF US\$83 MILLION

TO THE

ISLAMIC REPUBLIC OF AFGHANISTAN

FOR A

NAGHLU HYDROPOWER REHABILITATION PROJECT - PHASE I

NOVEMBER 22, 2015

Energy & Extractives Global Practice  
South Asia Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS  
(Exchange Rate Effective as of July 01, 2015)

Currency Unit = Afghani (AFN)  
AFN 1,000 = US\$16.72  
US\$1.00 = AFN 60.15

FISCAL YEAR  
December 21 – December 20

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFMIS	Afghanistan Financial Management Information System
ANDS	Afghanistan National Development Strategy
ARTF	Afghanistan Reconstruction Trust Fund
CDC	Community Development Council
CEO	Chief Executive Officer
CFO	Chief Financial Officer
COO	Chief Operating Officer
DA	Designated Account
DABS	Da Afghanistan Breshna Sherkat
EPRP	Emergency Power Rehabilitation Project
ERR	Economic Rate of Return
ESAP	Environmental and Social Advisory Panel
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESIA	Environmental and Social Impact Assessment
FGD	Focus Group Discussion
FM	Financial Management
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoA	Government of Afghanistan
GoP	Government of Pakistan
GPN	General Procurement Notice
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
ICB	International Competitive Bidding
IFR	Interim Financial Report
MEW	Ministry of Energy and Water
MoF	Ministry of Finance
M&E	Monitoring and Evaluation
NCB	National Competitive Bidding
NEPS	North East Power System
NESP	National Energy Supply Program
NGO	Nongovernmental Organization

NHPP	Naghlu Hydropower Plant
NHRP	Naghlu Hydropower Rehabilitation Project
NPV	Net Present Value
NSP	National Solidarity Program
O&M	Operations and Maintenance
PDO	Project Development Objective
PFMRP	Public Financial Management Reform Project
PMO	Project Management Office
PSC	Project Steering Committee
PTAP	Project Technical Advisory Panel
REoI	Request for Expression of Interest
RFP	Request for Proposal
RPF	Resettlement Policy Framework
SA	Supervisory Agent
SAO	Supreme Audit Office
SBD	Standard Bidding Document
SCD	Systematic Country Diagnostic
SDU	Special Disbursement Unit
SORT	Systematic Operations Risk-Rating Tool
TA	Technical Assistance
ToR	Terms of Reference
USAID	United States Agency for International Development
UXOS	Unexploded Ordnance

Regional Vice President:	Annette Dixon
Country Director:	Robert J. Saum
Senior Global Practice Director:	Anita Marangoly George
Practice Manager:	Julia Bucknall
Task Team Leader(s):	Abedalrazq Khalil/Fanny Missfeldt-Ringius



**AFGHANISTAN**  
Naghlu Hydropower Rehabilitation Project – Phase I (P132944)

**Table of Contents**

<b>PAD DATA SHEET</b> .....	<b>i</b>
<b>I. STRATEGIC CONTEXT</b> .....	<b>1</b>
A. Country Context.....	1
B. Sectoral and Institutional Context.....	2
C. Higher Level Objectives to which the Project Contributes .....	6
<b>II. PROJECT DEVELOPMENT OBJECTIVES</b> .....	<b>8</b>
A. PDO.....	8
Project Beneficiaries .....	8
PDO Level Results Indicators.....	8
<b>III. PROJECT DESCRIPTION</b> .....	<b>8</b>
A. Project Components .....	8
B. Project Financing .....	11
Project Cost and Financing .....	11
C. Lessons Learned and Reflected in the Project Design .....	12
<b>IV. IMPLEMENTATION</b> .....	<b>14</b>
A. Institutional and Implementation Arrangements .....	14
B. Results Monitoring and Evaluation .....	15
C. Sustainability.....	15
<b>V. KEY RISKS</b> .....	<b>15</b>
A. Overall Risk Rating and Explanation of Key Risks.....	16
<b>VI. APPRAISAL SUMMARY</b> .....	<b>17</b>
A. Economic and Financial Analysis.....	17
B. Technical.....	19
C. Financial Management.....	20
D. Procurement .....	21
E. Environment (including Safeguards) .....	22
F. Social (including Safeguards).....	24

G. Consultation, Communications and Community Relations.....	25
H. World Bank Grievance Redress Mechanisms.....	26
<b>Annex 1: Results Framework and Monitoring .....</b>	<b>27</b>
<b>Annex 2: Detailed Project Description.....</b>	<b>30</b>
<b>Annex 3: Implementation Arrangements .....</b>	<b>36</b>
<b>Annex 4: Implementation Support Plan .....</b>	<b>62</b>
<b>Annex 5: Economic and Financial Analysis .....</b>	<b>64</b>

# PAD DATA SHEET

AFGHANISTAN

*Naghlu Hydropower Rehabilitation Project- Phase I (P132944)*

## PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

GEE06

Report No.: PAD1450

Basic Information			
Project ID P132944	EA Category A - Full Assessment	Team Leader(s) Abedalrazq F. Khalil	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ X ]		
	- Fragile States	- Post-Conflict	
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date 01-Dec-2015	Project Implementation End Date 30-Sep-2022		
Expected Effectiveness Date 31-Dec-2015	Expected Closing Date 30-Sep-2022		
Joint IFC No			
Practice Manager/Manager Julia Bucknall	Senior Global Practice Director Anita Marangoly George	Country Director Robert J. Saum	Regional Vice President Annette Dixon
Approval Authority			
Approval Authority RVP Decision Please Explain The proposed grant will be formally approved by the country director for Afghanistan, on behalf of the World Bank and as the chair of the Management Committee (MC) of the Afghanistan Reconstruction Trust Fund (ARTF).			
Borrower: Islamic Republic of Afghanistan			
Responsible Agency: Da Afghanistan Breshna Sherkat (DABS)			

Contact:	Eng. Shekeeb Nessar	Title:	Chief Operations Officer							
Telephone No.:	0093-700294722	Email:	shekeeb.nessar@dabs.af							
<b>Safeguards Deferral (from Decision Review Decision Note)</b>										
Will the review of Safeguards be deferred? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
<b>Project Financing Data (in US\$, millions)</b>										
<input type="checkbox"/> Loan	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Guarantee								
<input type="checkbox"/> Credit	<input checked="" type="checkbox"/> Grant	<input type="checkbox"/> Other								
Total Project Cost:	83.00	Total Bank Financing:	0.00							
Financing Gap:	0.00									
<b>Financing Source</b>			<b>Amount</b>							
Borrower			0.00							
Afghanistan Reconstruction Trust Fund			83.00							
Total			83.00							
<b>Expected Disbursements (in US\$, millions)</b>										
Fiscal Year	2016	2017	2018	2019	2020	2021	2022			
Annual	0.50	2.50	5.00	12.00	15.00	23.00	25.00			
Cumulative	0.50	3.00	8.00	20.00	35.00	58.00	83.00			
<b>Institutional Data</b>										
<b>Practice Area (Lead)</b>										
Energy & Extractives										
<b>Cross Cutting Topics</b>										
<input checked="" type="checkbox"/> Climate Change										
<input checked="" type="checkbox"/> Fragile, Conflict & Violence										
<input type="checkbox"/> Gender										
<input checked="" type="checkbox"/> Jobs										
<input type="checkbox"/> Public Private Partnership										
<b>Sectors / Climate Change</b>										
Sector (Maximum 5 and total % must equal 100)										
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %						
Energy and mining	Hydropower	70	0	100						
Water, sanitation and flood protection	General water, sanitation and flood protection sector	30	100	0						
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	%
Financial and private sector development	Infrastructure services for private sector development	90
Environment and natural resources management	Other environment and natural resources management	5
Social dev/gender/inclusion	Other social development	5
Total		100

**Proposed Development Objective(s)**

The project development objective (PDO) is to improve dam safety and sustainability of hydropower and to increase the supply of domestically generated hydroelectricity at the Naghlu Hydropower Plant (NHPP).

**Components**

Component Name	Cost (US\$, millions)
Component 1: Mechanical, Electrical, and Electromechanical Works	30.00
Component 2: Dam Safety and Power Generation Improvement	33.00
Component 3: Environmental and Social Sustainability, Project Management Support, and Future Project Preparation	20.00

**Systematic Operations Risk-Rating Tool (SORT)**

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	High
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	High
8. Stakeholders	Substantial
9. Other	–
<b>OVERALL</b>	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 [ ]	
<b>Safeguard Policies Triggered by the Project</b>		<b>Yes</b>	<b>No</b>	
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	
<b>Legal Covenants</b>				
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>	
<b>Description of Covenant</b>				
<b>Conditions</b>				
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>		
<b>Description of Condition</b>				
<b>Team Composition</b>				
<b>Bank Staff</b>				
<b>Name</b>	<b>Role</b>	<b>Title</b>	<b>Specialization</b>	<b>Unit</b>
Abedalrazq F. Khalil	Team Leader (ADM Responsible)	Senior Water Resources Specialist	Water Specialist	GWADR
Fanny Missfeldt-Ringius	Team Leader	Senior Energy Specialist	Energy Economist	GEEDR

Richard Spencer	Team Member	Lead Energy Specialist	Energy Specialist	GEEDR
Hung Tan tran	Power Engineer	Senior Energy Specialist	Power Engineer	GEEDR
Saturo Ueda	Dam Safety	Lead Dam Specialist	Dam Safety	GWADR
Asif Ali	Procurement Specialist	Senior Procurement Specialist		GGODR
Asha Narayan	Financial Management Specialist	Senior Financial Management Specialist		GGODR
Afsana Afshar	Team Member	Consultant		GEEDR
Asta Olesen	Safeguards Specialist	Senior Social Development Specialist		GSURR
Inayatullah Changezi	Team Member	Team Assistant		SACKB
Boonsri Prasertwaree Kim	Team Member	Team Assistant		GEEDR
Chau-Ching Shen	Finance Officer	Senior Finance Officer		WFALN
Jie Li	Team Member	Environmental Specialist		GSURR
Juan Carlos Alvarez	Counsel	Senior Counsel		LEGES
Mariam Haidary	Team Member	Program Assistant		SACKB
Mohammad Yasin Noori	Safeguards Specialist	Social Development Specialist		GSURR
Obaidullah Hidayat	Safeguards Specialist	Environmental Specialist		GENDR
Parwana Wawreena Nasiri	Team Member	Program Assistant		SACKB

#### Extended Team

Name	Title	Office Phone	Location
Peter Meier	Lead Consultant (Economic Analysis)		

#### Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Afghanistan	Kabul	Surobi District		X	
Afghanistan	Kabul	Tagab District		X	

#### Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required?      Consultants will be required



## **I. STRATEGIC CONTEXT**

### **A. Country Context**

1. Afghanistan continues to remain one of the least-developed countries in the world. The pace of economic recovery has been slow, with real gross domestic product (GDP) growth in 2015 estimated at 1.9 percent (from an average of 9 percent during 2003–12 and 3.7 percent in 2013), largely attributed to the long protracted process of political transition, a deteriorating security situation, and erosion in investor and consumer confidence. Domestic revenue declined considerably over the transition period, falling to about 8.2 percent of GDP in 2014, a level inadequate to finance the current level of spending (around 36 percent of GDP), particularly in the areas of security, service delivery, essential infrastructure, and operation and maintenance (O&M). However, domestic revenue collection increased marginally in the first half of 2015 to about 12 percent (about US\$820 million), due to an increase in tariffs and tax compliance.

2. Lack of security is perceived as the most important constraint for public service delivery in Afghanistan. The country continues to confront a state of fragility and conflict that is undermining economic prospects as well as social cohesion and stability. Insecurity is affecting growth and poverty by damaging human capital, constraining productive economic activities, increasing social unrest, promoting unequal access to basic services, and increasing political instability. Socioeconomic indicators continue to remain at low levels: poverty incidence nationwide was 35.8 percent in 2011–12, compared to 36.3 percent in 2007–08. The bottom 40 percent of the population commands only 21 percent of total consumption, and more than 50 percent of the population risks descending into poverty.

3. International donors have committed to continue providing financial assistance to Afghanistan contingent on satisfactory reform progress. At the December 2014 London Conference, the international community reaffirmed its Tokyo commitment of providing US\$16 billion in developmental assistance for Afghanistan over 2012–15, sustaining support through 2017 at or near the levels of the past decade, and providing continuing but declining support through the ‘Transformation Decade’ (2015–24). These funds will allow Afghanistan to progress toward sustainability and development of its infrastructure targets. Contingent upon a relatively stable political and security environment, the medium-term economic growth outlook is projected at about 5 percent per year during 2016–18.

4. The government’s development vision focuses on tackling corruption and building better governance, restoring fiscal sustainability, bolstering private sector confidence, promoting growth, and improving security and political stability. The government’s development budget for 2015 has an allocation of about US\$2.675 billion to address the deficit in infrastructure needs such as roads, hydropower and irrigation dams, power networks, mines and the petroleum sector, airports, and urban development.

5. Infrastructure investments, and especially energy investments, play a critical role in contributing to economic growth and stabilization. Indeed, getting access to electricity is a major barrier to growth in Afghanistan, which ranks only 141 of 189 countries worldwide for access to

electricity.<sup>1</sup> As in any country, access to modern energy services, and especially to electricity, is a key factor for fostering economic growth and equitable development in Afghanistan. Better energy services will help meet the development goal objectives of the government of Afghanistan (GoA) by stimulating job growth and production and improving the quality of life for millions. The importance that the GoA accords energy is reflected in the fact that after the security sector, infrastructure has the second largest share in the government budget.

6. The energy sector in Afghanistan has suffered serious neglect, resulting from decades of devastating civil war and insurgency. Challenges mainly relate to the physical condition of equipment resulting from delays in O&M and inadequate institutional capacity. This has led to large parts of the electricity infrastructure either having been destroyed or having become dilapidated (for example, 65 percent of the transmission lines were destroyed) and has eroded the capacity of operations and investment management at Afghanistan's power utility 'Da Afghanistan Breshna Sherkat' (DABS). However, unlike in other countries affected by similar warfare, the main infrastructure has remained in place.

7. Identifying opportunities for reliable and sustainable energy generation in Afghanistan is urgent: US fuel subsidies for electricity generation are expected to be phased out by the end of 2015, which is expected to adversely affect the financial viability of the country's power system, further damage the economy, and worsen the quality of life for many. On the other hand, cost recovery remains a pivotal issue for the financial sustainability of the sector.

## **B. Sectoral and Institutional Context**

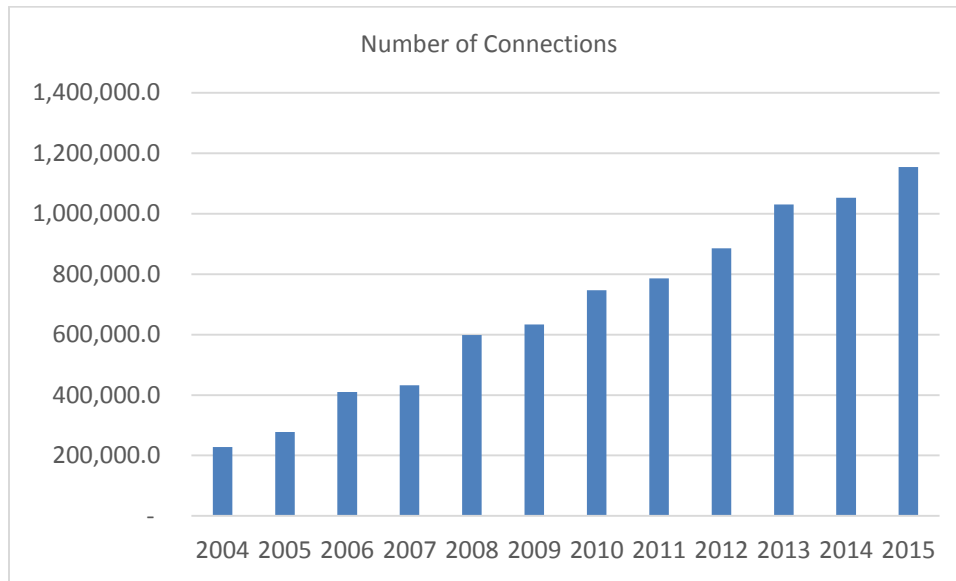
### **Energy Sector Background**

8. **Access to electricity.** In June 2015, Afghanistan's access to electricity rate was estimated at about 25–30 percent. Electricity is available mainly in the urban areas and along a few transmission corridors. At approximately 497 kWh per person per year, Afghanistan's electricity consumption compares unfavorably with the South Asia average of 667 kWh per person in 2012 and the average electricity usage of 3,100 kWh per person worldwide in 2012. Nevertheless, electricity access has significantly improved in recent years, increasing from a level of only about 6 percent in 2005. Figure 1 shows the increase in customers served in absolute numbers. It is estimated that 91.6 percent of all customers are residential and 6.6 percent are commercial. Less than 10 percent of rural areas are connected to the grid.

---

<sup>1</sup> However, this is an improvement from 2014, where Afghanistan's rank was only 145. Survey result of 2015 from 'Doing Business' database (<http://www.doingbusiness.org/data/exploreeconomies/afghanistan#getting-electricity>).

**Figure 1. DABS Growth of Customers (Source: DABS)**

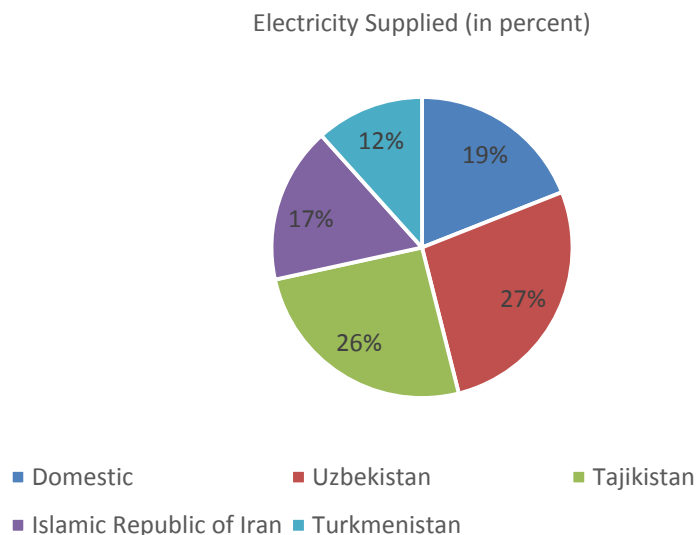


9. **Transmission system.** The Afghan power system remains small, fragmented, and underdeveloped. The transmission system consists of four major working islands linking the different generation sources to the grids: (a) the North East Power System (NEPS), which consists of multiple small islands and connects 17 load centers including Kabul, Mazar-e-Sherif, and Jalalabad with Tajikistan and Uzbekistan (at 220 kV, 110 kV, and 35 kV); (b) the South East Power System consisting of Khandar and linking with Kajaki (110 kV); (c) the Herat System linking with the Islamic Republic of Iran and the Republic of Turkmenistan (132 kV and 110 kV); and (d) the Turkmenistan System linking Herat Faryab, JawzJan, Sar-e-Pul, and Andkhoy Districts (110 kV).

10. **Energy mix.** The Afghan energy system is closely integrated with some of its neighboring countries. Electricity imports (in GWh) make up 81 percent of electricity supplied to Afghans, as projected for 2015–16 (see figure 2). Imported electricity largely comes from the Islamic Republic of Iran, Tajikistan, Turkmenistan, and Uzbekistan and delivers the equivalent of about 1,200 MW in capacity to Afghanistan. The regional interconnections have helped Afghanistan meet unserved demand at a low cost, increasing demand served from 1,289 GWh in 2006 to 3,086 GWh in 2011. This has contributed significantly to reducing the load shedding previously experienced in Kabul.

11. Hydropower provides 94.6 percent of domestically generated electricity with an installed capacity of 254 MW (and an absolute share of domestically installed capacity of 49 percent). In mid-2015 there were 12 hydropower plants in Afghanistan, not counting the over 5,000 off-grid micro hydropower plants constructed under the National Solidarity Program (NSP). The two largest among those are Naghlu Hydropower Plant at 94 MW installed capacity and Mahipar Hydropower Plant at 66 MW installed capacity. The power generation mix is run to minimize costs by favoring cheap power sources from abroad and the use of domestic hydropower over thermal and diesel power plants. The government plans to continue increasing import capacity through projects set out in the National Energy Supply Program (NESP).

**Figure 2. Electricity Supplied to Afghanistan from Domestic and Foreign Sources (as estimated for 2015)**  
 (Source: DABS)



12. **Options for future domestic power generation.** While there is significant potential for domestic generation in the longer term, the options in the short term are limited. The only new domestic generation project in the last five years (the 105 MW diesel project at Tarakhil completed in 2010) has not been used to full capacity due to high operating cost and fuel shortages. Also under development, but much delayed, are 18 MW of additional capacity at the Kajaki Hydropower Plant in the south of the country (supplying the SEPS) and the 42 MW Selma Hydropower Plant in the west of the country (supplying the Herat system). Among the most feasible options in the short term for improving availability of low cost domestic generation sources is the rehabilitation of NHPP.

13. The 2013 Power Sector Master Plan prepared for Afghanistan’s Ministry of Energy and Water (MEW) with financing from the Asian Development Bank (ADB)<sup>2</sup> on the longer term options for power generation identified 15 potential hydropower plants ranging from 18.5 MW to 4,000 MW with a total potential capacity of 23,000 MW. However, further geological surveys, feasibility assessments, and other ancillary assessments are required to assess the prospects of these potential hydropower plants.

14. The development of the mining and gas sectors also offers opportunities for domestic generation. Natural gas is found in the north of Afghanistan; in the longer term, there is a possibility of domestic gas discoveries in commercial quantities being available for large-scale generation. The U.S. Geological Survey and the Afghan Ministry of Mines and Industry estimated 444 billion m<sup>3</sup> of undiscovered, technically recoverable natural gas in addition to the identified reserves. All identified reserves and productive wells are located in the vicinity of Shebergan, where a gas field project is being developed and a 40 MW gas-fired power plant is planned by a private promoter with support by the International Finance Corporation (IFC).

<sup>2</sup> Islamic Republic of Afghanistan MEW/ADB/Fichtner. Power Sector Master Plan. Final Report. April 2013.



Blocks in two basins, namely the Amu Darya and the Afghan-Tajik—both multibillion-dollar foreign investments—have been tendered. The Amu Darya project started operations in 2012 but suspended oil production in 2013. In addition, three oil basins (Tripul and Kushka in the northwest and Katawaz in the southeast) could potentially be in the pipeline for tender over the next 3–5 years. The development of coal mines, though with some uncertainty, could provide fuel for a 400 MW coal-fired power plant at Ispushta linked to the copper mining concession at Aynak, of which about 100 MW would be available to the NEPS.

15. **Energy institutions.** The Ministry of Energy and Water (MEW) oversees the energy sector in Afghanistan. Up until 2009, Afghanistan’s power utility was a department of the MEW under the name of Da Afghanistan Breshna Moasessa. Since the power utility was spun off, the MEW has been increasingly focused on policy, strategy, and planning issues. The MEW has taken the lead on the preparation of the NESP and the Power Sector Master Plan. The MEW is also leading the dialogue with Afghanistan’s neighbors and donors. The power utility, which currently remains vertically integrated, was set up under the name of the DABS. The DABS has been able to establish itself as a financially independent and commercially viable entity while remaining under state ownership. Initially, the DABS was only responsible for the daily operation of the transmission and distribution system, but it is increasingly also carrying out its own investment program.

16. The DABS is incorporated and governed by an independent board, which is constituted by different government agencies, with the Ministry of Finance (MoF) holding 45 percent of the ownership of the DABS, the MEW holding 35 percent, and 10 percent each with the Ministry of Economy and Ministry of Urban Affairs. The DABS’ financial performance has improved significantly since it was spun off from the MEW, and in 2014 it did not need subsidies from the government to support its operations. Over the past seven years, energy losses were reduced from 54 percent to 26 percent. The DABS nevertheless faces significant challenges, including overstaffing and under-qualification of staff; poor customer management, billing, and collection; and tariffs that do not fully recover costs. Support to strengthen its institutional, financial, and human capacity is needed to improve the power system of the country.

17. **The road ahead.** Afghanistan has to overcome three major obstacles to improve energy service delivery: (a) ensure implementation of its investment plans (NESP) in spite of a general deterioration in security over the last few years; (b) recover its full costs while ensuring that electricity is affordable for residential consumers and businesses; and (c) enhance sector knowledge and stakeholder capacity to adequately inform investment decisions.

### **The Naghlu Hydropower Rehabilitation Project**

18. The NHPP is located on the confluence of the Panjshir and Kabul Rivers in the Surobi District, Kabul Province, about 80 km east of Kabul. Naghlu was first commissioned in 1967 and financed by the former Soviet Union. The equipment was manufactured by Technopromexport, a Russian engineering company founded in 1955. Its reservoir is dammed up by a concrete gravity wall. Due to the small reservoir capacity and high inflow, reservoir operation is limited, and the hydropower plant’s operation is comparable with a run-of-river plant. The head is 61 m. The four Francis turbines of the plant have an overall rated capacity of 94 MW (23.5 MW each). In mid-

2015, the NHPP is of strategic importance to Afghanistan's power generation portfolio as it provides more than half of Kabul's electricity (see annex 2).

19. By 2001, when political power changed, only two turbines remained operational. To remedy the situation, the World Bank prepared an Emergency Power Rehabilitation Project (EPRP) in 2004 in the amount of US\$105 million. The EPRP financed the rehabilitation of three of the four turbines and the auxiliary plant as well as substantial rehabilitation of transmission and distribution networks in the Kabul area. The rehabilitation of unit 1 could, however, not be completed. O&M continued to be lacking, and as a result, some of the other units may also now require overhaul.

20. Improving and restoring the physical infrastructure of power systems in Afghanistan is a low-cost option for enhancing domestic electric capacity as long as the gains in restoring this infrastructure are sustained through improved O&M processes. However, the EPRP was unable to change O&M practices at Naghlu, which has contributed significantly to the deficiencies that are to be addressed under the proposed project and as discussed below. While short-term restoration projects are critical for addressing current needs, promoting long-term sustainability of the power sector mandates an ongoing learning process that mainstreams best industrial practices into hydropower plant management.

21. Analysis undertaken in 2014/15 concluded that the dam safety management of the Naghlu is unsatisfactory and requires immediate attention. Issues include the following:

- Sediment management. The extent of sedimentation in the reservoir has never been measured. The DABS estimates that sediment has accumulated at a level of 7 m above the low-level outlet, rendering it inoperable. This has serious ramifications on the hydrological safety and flood discharge.
- Potential presence of the unexploded ordnance (UXOS) in the reservoir complicates sediment management in the dam.
- There is a need for a dynamic stability analysis to determine structural safety under earthquake loading.
- Unavailability of auxiliary methods of operating spillway gates, independent operation of power intake gates, and lack of essential instrumentation render the dam unsafe.

22. Poor O&M at the plant does not allow for safe and sustainable plant operation. While training had been provided under EPRP, further capacity building and training support is therefore needed, not only for Naghlu but for the sector as a whole.

### **C. Higher Level Objectives to which the Project Contributes**

23. The proposed project contributes to several important higher-level objectives, particularly economic growth and human development. Access to electricity and electricity consumption are not only critical for improving livelihoods but also key in spurring private sector growth and investment. The proposed project will contribute to enhancements in the reliability of the electric power system and help benefit both households and industries, hence stimulating economic development and growth. The Afghanistan National Development Strategy (ANDS) recognized

this relationship by noting "Energy is (Afghanistan's) top economic development priority, and (its) economy's hope," singling out electricity as "the motor that powers (Afghanistan's) growth." The Project also contribute to the Services Delivery, identified as one of the three priority areas identified in the 2015/2016 Systematic Country Diagnostic (SCD), prepared by the World Bank for Afghanistan.

24. The project will also contribute to mitigating climate change by enhancing power generation from hydropower, which emits close to zero greenhouse gas (GHG) emissions and no carbon dioxide. The project therefore contributes to Afghanistan's international commitment under the United Nations Climate Change Convention (1992) and its Kyoto Protocol (1998/2013).

### **Rationale for Bank Involvement**

25. The proposed project is crucial to address critical rehabilitation needs at the Naghlu Plant and is fully consistent with the ANDS (2008–2013), which addresses the state of energy security. The ANDS acknowledges the lack of energy as an important cause of poverty. The country's objective for the energy sector is to increase reliable energy and to improve the distribution system. The Bank has been in the forefront of supporting this effort from the beginning of its Afghan support program. The NHRP is one of the few projects that have been identified as a priority in the recent Afghanistan Reconstruction Trust Fund (ARTF) Financing Strategy.

26. The Bank's program in Afghanistan is based on an Interim Strategy Note for the period covering fiscal years 2012 through 2014. The program is built around three interlocking themes or pillars: (a) building the legitimacy and capacity of institutions; (b) equitable service delivery; and (c) inclusive job growth. The proposed project will support all three pillars. Pillar One will be supported by improving the capacity of the electricity sector institutions to deliver better quality and more reliable services to consumers and doing so more efficiently and sustainably. Pillar Two will be supported by the fact that the impact of the service improvements will be widespread and benefit almost all segments of the society and the economy. In addition, the eventual benefits of lower-cost hydro-powered electricity should be widespread and eventually filter down to even the lowest socioeconomic groups, many of whom are not currently served by the grid. Further, Pillar Three will also be supported by the increased economic growth that more efficient electricity services will facilitate.

27. The rehabilitation and improvement of the energy sector is a high priority for the GoA and a critical part of its national development program. Over the past decade, the World Bank has undertaken numerous operations to help develop Afghanistan's power sector, including the EPRP in 2004. During this period, the Bank has gathered considerable experience and made significant progress in addressing the physical as well as the institutional problems of the sector through its support for the implementation of four projects and the preparation of important and well-received sector development studies over the last decade. Moreover, the Bank's support is intended to mainstream sustainability practices in the power sector through capacity building and training support. The Bank is thus well positioned to continue to lead and contribute to the development of this critically important sector that touches and supports almost all aspects of economic development and socioeconomic life.

28. Finally the Bank's support is complementary to the efforts of other donors such as ADB and USAID, who in the context of short-term rehabilitation of generation assets have focused on other plants, such as the Kajaki hydropower plant.

## **II. PROJECT DEVELOPMENT OBJECTIVES**

### **A. PDO**

29. The project development objective (PDO) is to improve dam safety and to increase the supply of electricity at the Naghlu Hydropower Plant.

#### **Project Beneficiaries**

30. The project will help realize the full generating potential of the NHPP and thus provide considerable benefits to most sectors of the economy in the Kabul region. The population as a whole will also benefit directly and indirectly. The direct beneficiaries will be the electricity users, including industry, households, and farmers who will get more electricity at lower cost and suffer fewer blackouts.

31. The project will also contribute to the socioeconomic development of the communities in the project area. The local population is also expected to benefit to a certain extent from employment opportunities during the project repair and rehabilitation phase. The DABS, the main implementing agency, will also benefit significantly by improving its capacity to plan, develop, manage, and maintain existing hydropower systems and services and, consequently, from increasing the ability to deliver better, more reliable, and cost-effective services to customers.

#### **PDO Level Results Indicators**

32. The key indicators for the proposed project will track the increase in reliability of the units to be rehabilitated, completion of the design and operationalization of the dam safety plan, and the improvement of the generation capacity. In particular, the following key indicators are proposed:

- (a) Improvement in the generation capacity (in MW) of Unit 1 in the NHPP
- (b) Reduction in the total number of forced power outages in the NHPP
- (c) Establishment of dam safety plans and periodic audits in accordance with international best practices
- (d) Implementation of dam safety measures as recommended in dam safety audit reports
- (e) Development of O&M procedures and guidelines that are in line with international best practices

## **III. PROJECT DESCRIPTION**

### **A. Project Components**

33. The proposed NHRP is estimated to cost a total of US\$83 million and comprises three main components.

34. **Component 1: Mechanical, Electrical, and Electromechanical Works (US\$30 million).** This component complements the rehabilitation of the electrical and electromechanical parts of the plant previously undertaken and ensures their sustainable operation. It consists of two subcomponents:

- (a) **Subcomponent 1(a): Rehabilitation of Unit 1 and Balance of Plant.** This includes the completion of electromechanical rehabilitation work focused on Unit 1, particularly (i) testing of the existing bent rotor shaft followed by repair if possible or replacement if not and (ii) completion of the rehabilitation of the existing plant.
- (b) **Subcomponent 1(b): Enhancing Maintenance of the Powerhouse.** Other units of the powerhouse are in need of regular maintenance to ensure that NHPP will not again fall into disrepair. This will also include advisory services to put in place a sustainable mechanism that will ensure O&M is undertaken according to required technical standards, and that any emerging technical issues can be remedied quickly. An example is Unit 3 overhaul. Unit 3 has been running for over 20,000 hours and should have been overhauled at 7,000 hours of operation. Similarly, pipes, valves, and pumps for inlet valve control have been in service for over 45 years and need immediate attention. This subcomponent will also support the provision of spare parts and consumables for three to five years to ensure the sustainable operation and normal maintenance of the existing plant as well as the development of warehouses to provide secure storage for equipment.

35. **Component 2: Dam Safety and Power Generation Improvement (US\$33 million).** This component aims to ensure the safe operation of the dam through the two subcomponents:

- (a) **Subcomponent 2(a): Dam Safety Audit and Safety Improvement Measures.** This component will finance technical assistance (TA) and studies including (i) audit of the dam's structural and operational safety; (ii) preparation of plans and bidding documents for works to improve safety to acceptable standards, focused on reactivating the bottom outlet, adequacy of auxiliary power and other systems, improvements to the head gates closing system, installation of instrumentation, and clearance of the UXOS from the dam structure; (iii) studies on structural and operational safety considering updated hydrological and seismic data and following relevant international/national standards/guidelines; and (iv) flood routing through Naghlu Dam to Surobi Dam, including adequacy of its spilling arrangements.

The dam safety audit will identify immediate measures to improve dam safety to be implemented before the completion of the dam safety audit. Specifically, this will focus on supporting the DABS in introducing modern dam safety measures that do not require major structural changes, particularly:

- (i) setting up a procedure and staffing for independent dam safety inspections;
- (ii) preparation of dam safety plans including O&M and surveillance manuals for civil works, emergency preparedness plans, and post-earthquake response plans;
- (iii) revision of operating manuals for the electrical and electromechanical works;

- (iv) detailed maintenance planning for equipment;
- (v) training of dam staff;
- (vi) reactivation of the low-level outlet;
- (vii) introduction of the independent operation of the power intake gates;
- (viii) installation of a standby generator for emergency opening of the spillway gates and closing of the power intake gates; and
- (ix) installation of other essential instrumentation for dam safety monitoring.

Experts indicate that the UXOS present are not expected to pose major structural risk to the body of the dam. However, the UXOS will present risks to the sediment cleanup required for reactivating the low-level outlet. The dam safety review will assess the different options to conduct sediment cleanup and the procedures to treat the present UXOS.

- (b) **Subcomponent 2(b): Optimization of Power Generation.** This component aims to examine the potential for increasing power generation at the NHPP. This will identify options for sustainable sediment management and for increasing the amount of electricity produced by the dam. It consists of two activities as follows:

**Feasibility study.** This study examines the feasibility of various options to increase power generation, including but not limited to (i) appropriate dam operation and better management; (ii) additional storage upstream of the dam; (iii) additional siphon spillway/floating barge mechanism for controlled flushing of sediments; (iv) raising the dam crest; and (v) catchment area treatment.

**Detailed design.** This supports the preparation of detailed designs should the feasibility study return a positive result and will be closely guided by the findings of the Environmental and Social Impact Assessment (ESIA), resettlement and livelihoods restoration, environment and social management plans (ESMPs), health, and other related action plans.

36. **Component 3: Environmental and Social Sustainability, Project Management Support, and Future Project Preparation (US\$20 million).** This component includes two subcomponents.

- (a) **Subcomponent 3(a): Environmental and Social Sustainability.** This subcomponent aims to ensure the environmental and social sustainability of the dam through the following activities:

- (i) **Local development assistance.** Partly in support of benefit sharing with local communities, this subcomponent will provide electrification in the project area and improved access to skills and training to help local people gain employment at the plant and elsewhere. Special plans to target women skills development will also be devised. Other activities identified by local development communities that aim to improve the communities' livelihood surrounding the dam will also be financed under this subcomponent, for

example, road development. This will ensure continued community support for the dam and the proposed rehabilitation.

- (ii) **Supporting environmental and social management.** This will support monitoring of the existing ESMP for Component 1 and the preparation, implementation, and independent monitoring of an ESMP, Resettlement Action Plan (RAP), and Livelihoods Development Plan for Subcomponent 2(c) of Component 2.

(b) **Subcomponent 3(b): Project Management Support and Future Project Preparation.** This subcomponent aims to ensure that the DABS receives advice on good international practices. It will consist of the following activities:

- (i) Financing the training programs, development of operational manuals for generation, distribution planning, O&M, and translation of management and control software and technical documents into Pashto and Dari to ensure adequate capacity for the safe and sustained operation of the existing plant
- (ii) Consulting services to support the implementation of the project which include technical (hydropower specific), environmental, social, procurement, financial management (FM), and monitoring and evaluation (M&E) aspects
- (iii) Financing support for an Environmental and Social Advisory Panel (ESAP) and a Project Technical Advisory Panel (PTAP)
- (iv) Pursuing future projects identified for hydropower development and management under this component to support the DABS in expanding domestically generated power

37. In sum, Components 1 and 2 focus on addressing the technical issues related to electromechanical rehabilitation of the NHPP and improving safety and power supply from the NHPP, while Component 3 focuses on building institutional and managerial capacity. A detailed project description is presented in annex 2.

## B. Project Financing

### Project Cost and Financing

38. **Lending instrument.** The Bank’s support will be through Investment Project Financing, a grant in the amount of US\$83 million from the ARTF. Project costs are summarized in Table 1. The cost estimate includes provisions for physical and pricing contingencies of a total of 25 percent.

**Table 1. Project Costs**

Project Cost by Component and Subcomponent	Total (US\$, millions)
<b>Component 1. Mechanical, Electrical, and Electromechanical Works</b>	<b>30.00</b>
1(a) Rehabilitation of Unit 1 and Balance of Plant	22.00
1(b) Enhancing Maintenance of the Powerhouse	8.00
<b>Component 2. Dam Safety and Power Generation Improvement</b>	<b>33.00</b>

2(a)	Dam Safety Audit and Safety Improvement Measures	25.00
2(b)	Optimization of Power Generation	8.00
<b>Component 3. Environmental and Social Sustainability, Project Management Support, and Future Project Preparation</b>		<b>20.00</b>
3(a)	Environmental and Social Sustainability	8.00
3(b)	Project Management Support and Future Project Preparation	12.00
<b>Total Project Cost</b>		<b>83.00</b>

### C. Lessons Learned and Reflected in the Project Design

39. The project design has, to the extent possible, reflected lessons learned from Bank engagement in the rehabilitation and development of large dams. The lessons taken into account are from early Bank-funded operations in Afghanistan such as the EPRP and other donor-funded projects in hydropower in Afghanistan such as the Darunta and Kajaki hydropower rehabilitation schemes post-conflict over the past ten years. Lessons from similar large dam rehabilitation projects include the following:

- (a) **Initiating early procurement activities.** The design (and bidding documents) of key works should be completed before project approval and procurement should start early. These elements can become a major bottleneck for the advancement of the project and lead to greatly delayed disbursement. There are many examples for which the procurement of hydropower rehabilitation and supervision has taken a number of years, leading to low disbursements for long periods. For the Naghlu project, procurement of key activities has started in early 2014 to ensure that project implementation can start once the financing of the project becomes effective.
- (b) **Development of contingency plans.** There should be adequate planning for contingencies in case of unanticipated events (including a deterioration in security conditions, unforeseen plant conditions, floods, or other electromechanical failures during the project lifetime) to deal with cost overruns. In the years between 2005 and 2010, a significant number of projects in the energy portfolio were affected by cost overruns as procurements concluded with higher-than-estimated costs. This was generally remedied by means of additional financing and often led to delays in project implementation. While some of these overruns were due to unusual price hikes in the (metal) market, the costing of projects often did not include adequate provisions for physical and price contingencies. The costing of this project uses 25 percent of physical and price contingencies, which are considered adequate to respond to this risk.
- (c) **Increasing project support and approval from local communities.** Many successful hydropower projects have included inputs from local communities during the project design phase. Adequate community support programs should be an integral element of the project design to ensure benefit sharing with local communities. The NHPP provides opportunities to establish social programs that can provide long-term benefits to affected communities, including electrification in the



area and vocational training to allow local populations to secure employment at the plant during the project and elsewhere. The sharing of direct benefits emanating from the project can hence help avert conflict between local communities and project staff while concurrently stimulating socioeconomic development in the region. Past experience also suggests that the design of benefit-sharing schemes must be tailored to the country context, including the prevailing governance and political conditions. Under the proposed project sub-component 3(a)(i) is entirely dedicated to the community support around NHPP.

- (d) **Ensuring strong project leadership.** Strong government guidance and properly staffed project management offices are indispensable to effective project preparation and implementation. The project will leverage international consultants and an independent panel of experts to provide invaluable international expertise in overseeing the technical designs and analysis. Moreover, clearly defining the implementation arrangements upfront and throughout the project implementation phase can help prevent disagreements and thus facilitate project success.
- (e) **Increasing institutional capacity of key project stakeholders.** Hydropower rehabilitation projects are complex to manage and require strong institutional capacity. Sound knowledge of procurement and contract management of the implementing agency are key to ensuring the success of the project. A lesson learned in this context is that the capacity of agencies in this respect should be enhanced before beginning plant rehabilitation to prevent project setbacks. Training programs for the implementing agency and dam staff as well as cooperation between workers and contractors have proven to be crucial elements for project success. During preparation of project, technical assistance both for procurement and project management has been provided to DABS under a project preparation grant, and will be reinforced once the project is effective.
- (f) **Ensuring project sustainability.** Lessons learned to ensure the NHPP's sustainability include (i) developing frameworks for O&M, emergency preparedness plans, and instrumentation plans; (ii) undertaking periodic reviews during the course of project implementation; (iii) procuring additional spare parts; and (iv) building institutional capacity and competencies through comprehensive training programs to ensure effective O&M. Collaboration between operators of the hydropower plant and manufacturers can also promote knowledge transfer aimed at enhancing the performance of the plant at Naghlu.
- (g) **Sensitivity to external environment.** Lessons learned from operating in an insecure environment indicate that the project should have a narrow scope and that capacity improvement of the implementing agency to undertake oversight of large and complex projects should be an integral element of the project design. Hydropower projects are also largely vulnerable to changes, particularly in an insecure environment. Careful planning and management of logistics is necessary to prevent project delays and cost overruns. The aforementioned contingency plans can help provide flexibility to overcome unanticipated and adverse events that may affect project success.

40. In addition to the above lessons, Afghanistan's difficult security environment has been a serious challenge for years. The Bank and the government have learned important lessons from other similar projects in Afghanistan for working in this type of an environment. The most important lesson is that projects can be implemented successfully only if local communities in the project area are convinced that the project brings benefits to them. Consultations with local communities must be part of project preparation. Second, effective security-related coordination between different government entities is key for addressing security issues and challenges in a timely manner. An effective tool has been to include security-related government agencies in the high-level Project Steering Committees (PSCs). It has been demonstrated that this at least partially mitigates security risks and improves the response mechanisms to security incidents if and when they occur.

#### **IV. IMPLEMENTATION**

##### **A. Institutional and Implementation Arrangements**

41. Overall responsibility for project implementation will rest with the DABS, whose chief executive officer (CEO) will delegate day-to-day management to heads of departments. Implementation will be grounded in the operation departments of the DABS. Oversight of technical and safeguards issues will rest with the chief operating officer (COO) and oversight of fiduciary issues will be with the chief financial officer (CFO).

42. To implement the project, the DABS has appointed a project manager for day-to-day project management. The project manager, who reports directly to the COO, has overall implementation responsibility for the project, coordinating project work within the DABS, reporting to the DABS management on progress and challenges, and cooperating with the Bank on the project.

43. Within the DABS, key project staff with adequate qualification and appropriate skills have been identified or hired. They include a civil works supervisor, an electromechanical and electrical supervisor, a knowledge and learning specialist, an FM specialist, a procurement specialist, an environmental specialist, a social specialist, and an M&E specialist.

44. All project staff will be sitting within their respective departments in the DABS to ensure close and continued integration in the organization. An international procurement specialist and technical and safeguards consultants have been hired for specific assignments to support and mentor concerned DABS staff. Capacity building for DABS staff started under the project preparation grant and will continue during implementation. MEW staff will also be eligible for training under the proposed project.

45. Independent advisors, the PTAP and ESAP, have been recruited to support the DABS in project implementation. The PTAP and ESAP will have an important role to play beyond the formal functions required under safeguard policies. The ESAP will participate in the independent grievance process while the PTAP will be involved mainly in the dam safety review. A PSC will provide the forum for overall guidance, policy advice, coordination of the project activities, and addressing of interagency issues as well as the security situation. The PSC will be chaired by the deputy minister of finance and will include deputy ministers for energy and water from the

MEW and will have representatives from the agriculture and environment ministries, the president’s office, and the Afghanistan National Security Forces. The PSC will oversee the project and provide policy-level guidance and interagency coordination for the project. The COO of the DABS will act as the secretary of the PSC.

46. Details of the implementation arrangements are provided in annex 3 and the implementation support plan is presented in annex 4.

### **B. Results Monitoring and Evaluation**

47. Monitoring of project implementation progress, as well as progress toward the achievement of project objectives and results indicators will mainly be the responsibility of the DABS. To carry out the task, an M&E specialist has been appointed within the DABS to be supported and mentored by an international consultant. They will develop a monitoring framework and system in accordance with the DABS systems, collect data, establish baselines for indicators, and manage the M&E aspects of the project. The details of this arrangement are provided in annex 3.

### **C. Sustainability**

48. Four areas of this project are particularly important for its long-term sustainability, as given below.

- (a) Ensuring that the NHPP is operating efficiently and in a stable manner.
- (b) Ensuring that dam safety requirements are in accordance with international standards. Not only does this contribute to the plant’s sustainability, but it will also set the standard for both existing and future dams in Afghanistan.
- (c) Strong ownership is required to ensure sustainability of project results. The DABS has demonstrated its commitment and ownership of the project as evidenced by its proactive response during the preparation of the project.
- (d) The project will set in place O&M, emergency preparedness plans, and training programs for the plant staff. These are expected to contribute to the overall sustainability of the NHPP.

## **V. KEY RISKS**

**Table 2. Risk Ratings Summary**

<b>Risk Category</b>	<b>Rating</b>
1. Political and Governance	Substantial
2. Macroeconomic	High
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	High

8. Stakeholders	Substantial
9. Other	–
<b>Overall Risk</b>	<b>High</b>

### A. Overall Risk Rating and Explanation of Key Risks

49. The overall implementation risk is considered High mainly due to the extremely uncertain operating environment in Afghanistan; the low capacity of the implementing agency; and the environmental, human, and health risks associated with the operation of a large dam.

50. Both political and governance risks are Substantial. The high uncertainties in the operating environment are likely to affect project delivery. Escalating insurgency-related violence has increased the level of fragility in the political and governance environment while also impacting the ability of the government to deliver services and programs.

51. Key risks include impact on project implementation and ability to supervise in parts of the country. The DABS is not completely insulated from political pressures, including possible changes to senior management. This risk is partly mitigated by the fact that the DABS operation is relatively autonomous and therefore less affected by changes in government.

52. A deteriorating security environment could seriously affect project implementation, including proper supervision and the limited number of contractors and consultants willing to partake in projects in sensitive areas. The expected withdrawal of most U.S. troops by the end of 2016 may potentially worsen the security situation. An unstable environment will affect project implementation (by the DABS and contracting firms) and supervision (by the Bank). In particular, an insecure environment may (a) create difficulties in securing and maintaining contracting firms, including potentially leading to the early termination or abandonment of assignments; (b) lead to delays in the rehabilitation of the plant; (c) limit movement, including creating logistical problems for Bank staff to go to the field to supervise and monitor the project; and (d) increase the demand for additional financial resources to meet security needs.

53. While the security situation is beyond the control of the Bank, the project proposes several risk mitigation measures to aid in the success of the project. Given that the security situation curtails the ability of Bank staff to undertake on-site visits, the Bank will rely on a third-party monitoring agent, such as the ARTF Supervisory Agent (SA) program, to assist with project supervision. The SA program, created in 2011, has been used by the Bank to supervise several development projects in Afghanistan. The SA program conducts periodic on-site visits to supervise and monitor project implementation, collects data and information related to the project using advanced technology (including General Packet Radio Service), develops a monitoring database that captures and tracks project-related information, prepares comprehensive supervision reports, and maintains overall quality assurance. The third-party agent will report directly to the Bank and work closely with government agencies and other stakeholders involved in project implementation. Additionally, the proposed benefit-sharing activities with regard to electrification and vocational training will ensure local communities' support to the project. Moreover, a grievance redress committee will be created that will be responsible for promptly addressing and resolving complaints filed by affected persons and

maintaining a complaint record database to systematically track complaints. The committee will consist of the affected person(s), representatives from the local government, nongovernmental organizations (NGOs), Community Development Councils (CDCs), and the DABS. The team will also explore the use of IT-based technology during supervision.

54. While the project is not complex or technically risky, the DABS' capacity is likely to remain weak. Senior management has strong ownership, but significant risks remain. These will be mitigated through thorough support for preparation, ensuring readiness for implementation at the time of approval. The DABS has also identified a project team within its organization and hired the necessary technical specialists to support implementation. Due to the DABS' lack of direct experience in implementing projects financed by international financial institutions like the Bank, the risk of institutional capacity for implementation and sustainability is high and fiduciary risk is rated substantial.

55. The DABS' low initial capacity results in uncertainties about the ability of the DABS to adapt to good international utility practices. The risks of the DABS' ability to address dam safety and social and environmental issues are considered manageable but will remain challenging. To mitigate these risks, international consultants will support and advise DABS staff on these issues throughout project implementation. Capacity building for DABS staff began during project preparation and will continue during the implementation phase.

56. From a safeguards perspective, the social risks are especially high as the project could result in loss of assets and land; and also involve temporary land acquisition and resettlement in neighboring communities. An Environmental and Social Management Framework (ESMF), including a Resettlement Policy Framework (RPF), has already been developed and will be applied across all components implemented under the project. The Bank team will ensure a continued focus on safeguards issues throughout implementation, provide close supervision, and work with the DABS to ensure that these risks are properly understood and addressed.

57. During rehabilitation and safety improvement, power production may have to be reduced. Due to Afghanistan's high dependence on energy imports, rehabilitation could be delayed to ensure domestic supply, as has happened in the past. This risk can only be partly mitigated by ensuring a strong focus on safety from the outset of implementation.

## **VI. APPRAISAL SUMMARY**

### **A. Economic and Financial Analysis**

58. Drawing up a credible counterfactual for a rehabilitation project is the critical assumption. In the interest of being conservative, the analysis assumes that all the incremental off-peak energy supplied by the rehabilitated project will displace imported electricity and displace diesel self-generation only during peak hours. It is also assumed that in the absence of rehabilitation, the most likely fate is that each of the four units will be operated until some failure makes it completely inoperable, at which point it will be abandoned until the last unit fails when the entire NHPP ceases to generate power (that is, sequential failures being modeled in a Monte Carlo simulation to derive an expected value of generation for the counterfactual). Annex 5 further describes the other key assumptions.

59. The economic returns for the total rehabilitation of the plant, including all of the dam safety and environmental safeguards are 42.6 percent (net present value [NPV] - US\$103 million). The inclusion of environmental benefits increases these returns. With the consideration of the avoided local environmental impacts (associated with the health effects of self-generation), the returns increase to 47.1 percent (NPV - US\$121 million) and when the benefit of avoided GHG emissions are included (and valued at US\$30 per ton of CO<sub>2</sub>), the returns increase further to 52.6 percent (NPV - US\$140 million). The lifetime (undiscounted) GHG emissions calculate to 1.84 million tons of CO<sub>2</sub>.

60. The sensitivity analysis shows that the economic returns are robust with respect to the main project uncertainties. For many of the important variables, switching values are undefined (that is, even if these variables were at their minimum values, the economic rate of return [ERR] still exceeds the acceptable rate), which is true of the various scenarios for the counterfactual, the electricity import price, and the diesel price. The switching values for capital costs is 263 percent of the baseline estimate, and the switching value for the maximum energy generation achieved after rehabilitation is 64 GWh compared to the 438 GWh in the baseline and the 295 GWh actual generation in 2011–12.

61. The financial analysis shows that all stakeholders benefit from the project. The key assumption is that the project is provided to the government as a grant but that the MoF on-lends the proceeds to the DABS under typical concessionary terms. The resulting incremental cash flows to the DABS show a consistent surplus (relative to the counterfactual of importing gas-based electricity), with an NPV (at 10 percent over the lifetime that extends to 2052 in consequence of the concessionary terms) of US\$83 million. **Error! Reference source not found.** shows the distribution of benefits—the US\$67 million of Afghanistan trust funds generate US\$170 million in benefits for Afghanistan, including US\$65 million to consumers (who avoid the costs of peak-hour diesel self-generation).

62. The financial benefits to the various stakeholders are also robust with respect to the main uncertainties. For example, a three-year delay in completion of the rehabilitation project will reduce the NPV of the net cash flows to the DABS from US\$103 million to US\$69 million. Even in the worst case that the additional costs of delay were to come from the DABS, sufficient cash benefits (from the avoidance of imports) would have been generated since the start of rehabilitation for the DABS to provide for the necessary funds without serious impact.

63. In summary, the economic and financial benefits of the proposed project are large and robust with respect to the main risk factors.

**Table 3. Beneficiaries (as NPV at 10%)**

<b>Beneficiary</b>	<b>US\$, millions</b>
DABS	83
MoF	21
Consumers	65
Total benefit to Afghanistan	170
Afghanistan trust funds	-67
Net benefits	103

## **B. Technical**

64. The rehabilitation of mechanical and electromechanical works under Component 1 shall follow the same standard as other units in the NHPP and shall bring the equipment to the same quality and performance as the original installation. Bidding documents for the rehabilitation works were received from the market and are under evaluation. Two bidders from Russia showed interest in the rehabilitation work of Unit 1, overhaul of Unit 3, and provision of spare parts for the O&M of the NHPP for five years. A contract is being negotiated for a Project Engineer to supervise the rehabilitation work and to provide hands-on training to the DABS.

65. The safety audit, as well as the feasibility and design studies on increasing reservoir regulation capacity under Components 2 and 3, will be carried out by international consultants. Their recommendations are expected to be in accordance with the latest international standards and practices. The reports and studies will be reviewed by the independent PTAP of experts linked to the DABS, which consists of highly qualified specialists within the relevant areas. It is worth noting here that the plant was constructed using Russian standards. Russian safety standards prevailing at the time of Naghlu's construction are not considered to meet modern international safety requirements. Hence, the dam's safety issues need to be dealt with in the proposed project, starting with conducting a full dam safety audit. The last independent dam safety assessment was performed by Fichtner in 2006; other than that, no other independent assessment has been carried out.

66. However, a preliminary dam safety assessment was carried out by the Bank's team in May 2012, and it was concluded that given the age of the dam, civil works are generally in good condition. That is probably due to the generous size of the concrete structures, the good quality of the concrete, and the very good foundation conditions. There is no evidence of structural cracking resulting from overstresses or differential movements. There are widespread superficial cracks, most likely due to shrinkage and temperature effects, but they are not expected to extend to any significant depth in the concrete mass. In the absence of deposits of rock or concrete debris downstream of the dam toe, it seems that scouring in the plunge pool area should not be significant. However, the dam safety audit will include a bathymetric survey to more accurately ascertain the conditions. Inspection of the drainage gallery at elevation 1103.6m, showed very minor signs of seepage; no leaching of salts from the concrete mass was observed either. The assessment revealed that dam safety management is lacking with regard to drawing management, instrumentation and monitoring, spillway operations, and powerhouse safety, and operation procedures in case of an emergency or earthquake.

67. The flood discharge management at the dam assumes full operation of all spillway gates, low-level outlets, and turbine units operating at full capacity. This is different from current international practice which assumes at least one gate out of operation and no generation during large floods. The studies will review discharge capacity of existing waterways, design flood, and safety check flood.

68. Additionally, the extent of sedimentation in the reservoir has never been measured. Investigation by divers and operational staff reports that sediments have reached up 7–10 m above the low-level outlet. Given the evidence in the area, a significant amount of coarse sediments should be included in the deposits. A factor that severely complicates the problem is

the almost certain presence of UXOS within the sediments. Ensuring safety during desilting operations will be top priority. The detailed assessment will provide a more detailed description of the safety issues and remediation measures to bring the plant to acceptable safety standards.

69. Another important aspect of the project is to provide electrification through the dam to surrounding villages and vocational training to enhance employment opportunities at the plant for the population of the villages near the dam. A pre-feasibility social survey is currently being conducted in villages close to the dam to inform the scope of electrification and vocational training activities. The survey has two components: a household survey and focus group discussions (FGDs). The household survey component of the social survey was completed at the end of June 2014. The terms of reference (ToR), discussed and agreed between the DABS and the Bank, set the scope of the social survey in all villages within 3 km from the edge of the dam in both Sarobi and Tagab Districts. The preliminary survey report shows that the household survey coverage had been extended to 64 villages and included not only the 28 villages (an estimated 2,856 households) lying within the 3 km zone but also an additional 36 villages (an estimated 2,842 households) in Sarobi District lying within 5–25 km from the edge of the dam. The project will support procurement of electrification goods for the villages within 3 km of the dam site; villages beyond 3 km will be the responsibility of the DABS. The implementation of the electrification works will be carried out by the DABS.

### **C. Financial Management**

70. The fiduciary arrangements have been assessed and found adequate for the purposes of the project, subject to implementation of mitigation measures agreed with the DABS. The residual FM risk, after applying the risk mitigation measures, is rated as Substantial.

71. The FM arrangements are at two levels—the central level and the implementing agency level. Country systems are used for budgeting, accounting, funds flow, internal audit, and external audit.

72. At the central level, accounting and audit functions for the proposed project will be undertaken by the MoF and the Supreme Audit Office (SAO), respectively, with TA supported under the ARTF-financed Public Financial Management Reform Project (PFMRP) II. The project activities will be implemented by the DABS. At the implementing agency level, the overall responsibility for project FM will rest with the CFO, and the day-to-day functions will be carried out through the finance department of the DABS. An FM specialist has already been hired by the DABS, who will be the focal point for this project and he will work closely with other finance staff to carry out the FM functions. The FM specialist will have dual reporting lines. He will report functionally to the head of the Finance Department, who has recently been hired. The latter has significant experience working on Bank-funded projects in other line ministries. He will also report to the NHRP Project Manager for all project-related FM matters. While the DABS has not implemented a Bank-funded project before, it has sufficient experience working on an ADB-funded project that has similar requirements and procedures as under Bank-funded projects. The current capacity is sufficient to carry out the FM functions under this project. The Bank will provide necessary support and training to DABS finance staff to familiarize them with Bank requirements.



73. Project transactions will be recorded in the Afghanistan Financial Management Information System (AFMIS) by the MoF. Simultaneously, the DABS Finance Department will maintain subsidiary books of records for the project and will prepare interim financial reports (IFRs) on a quarterly basis to be submitted to the Bank within 45 days from the end of the quarter. The DABS will follow the Afghan fiscal year (December 21 to December 20) for project accounting and reporting. The DABS Finance Department uses the Great Plains accounting software for its accounting; this will also be used for project accounting. The FM focal person will be responsible for facilitating the internal and external audit process, providing necessary documentation for review, and responding to audit queries.

74. Project funds will be channeled through a segregated designated account (DA) in U.S. dollars to be opened at the Da Afghanistan Bank. The DA will be maintained and controlled by the MoF; however, the DABS Finance Department will be responsible for managing the DA and carry out periodic reconciliation. All project payments will be centralized in Kabul, and no project funds are expected to flow to the provinces. Disbursements from the grant will be made using advances, reimbursements, direct payments, and special commitments. The project will follow the traditional statement-of-expenditure-based disbursement method. All withdrawal applications to the Bank, including advances, reimbursement, direct payment, and special commitment applications, will be prepared by the DABS and submitted by the MoF. Copies of supporting documentation for all project payments will be maintained at the DABS.

75. Internal audit for the project will be carried out by the Internal Audit Department of the DABS. The annual project audit will be carried out by the SAO, with TA from an audit agent; the project financial statements will be prepared by the MoF using the AFMIS. Annual audited project financial statements will be submitted within six months of the close of the GoA's fiscal year. Entity audited financial statements will also be required under this project. The entity audits will be carried out by private auditors engaged by the DABS; this arrangement is currently in place. The entity audit will follow the DABS fiscal year (March 21 to March 20).

76. There are no overdue audit reports and no ineligible expenditures under ongoing or closed projects implemented by the DABS. Further details on the arrangement are presented in annex 3.

#### **D. Procurement**

77. Procurement for the project will be administrated in accordance with the Bank's 'Guidelines: Procurement under IBRD Loans and IDA Credits', dated January 2011 and revised January 2014; 'Guidelines: Selection and Employment of Consultants by World Bank Borrowers', dated January 2011 and revised January 2014; and the provisions stipulated in the Financing Agreement. In addition, the Bank's 'Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006 and revised in January 2011, have been shared with the recipient. The Bank's standard bidding documents (SBDs), requests for proposals, and forms of consultant contract will be used. Goods following National Competitive Bidding (NCB) procedures shall be procured using the agreed SBDs for Afghanistan. In case of conflict or contradiction between the Bank's procurement procedures and any national rules and regulations, the Bank's procurement procedures will take precedence as per Article 4(2) of the Procurement Law July 2008

(amendments in January 2009 incorporated). A detailed procurement plan has been prepared for the project as part of the procurement arrangement.

78. The DABS will have overall responsibility for all procurement under the project. An assessment of the capacity of the DABS to implement procurement actions for the project has been carried out. While there is an established Procurement Department with clear lines of responsibility and clear document procurement processes, including service standards for various types of procurement, the assessment shows a reasonable setup of procurement processes of the DABS. There is a procurement manual and regular staff trainings are carried out. While there is assistance from USAID and the ADB for institutional development of the DABS—which includes a procurement and inventory management system—it does not have direct experience of procuring or managing large and complex projects and relies on donor-provided consultants to execute and supervise such projects. The assessment also found some gaps in staff competencies, understanding of the market for power equipment, internal audit system, and decentralization.

79. Proceeds up to US\$5,000,000 of the grant could be used retroactively to finance eligible expenditures incurred during the period between December 1, 2015, and the signing of the grant agreement, provided that (a) the government makes any such expenditures entirely as its option and without commitment from IDA; (b) the payments are for eligible expenditures under the Grant Agreement using agreed payment procedures (using the banking system except for petty cash); and (c) the procedures for procurement and the use of consultants, and processing and clearances are subject to IDA Procurement and Consultant Guidelines.

#### **E. Environment (including Safeguards)**

80. The severity and intensity of the potential environmental impacts during implementation will vary according to the component. The impacts of Component 1 will be associated with the electromechanical works and will mainly be noise, dust, and storage, and handling and disposal of used oils and the removed parts. These impacts which are expected to be small, localized, and temporary, and thus effectively managed with tangible and easily applied mitigation measures, will occur during implementation of the proposed project. Component 2 will finance studies, plans, and other TA activities and recommended physical activities. The physical activities will be identified based on the completed studies. The physical investments, including civil works, associated with the Naghlu Dam, which when implemented will have the following impacts. Subcomponent 2(a) will most likely be associated with the removal and disposal of sediment material, and managing public safety concerns during handling and disposal of the UXOS. Additionally, management of large construction equipment and the plant, including on access roads due to the movement of heavy construction vehicles, will also be a concern. Furthermore, there may be downstream impacts on aquatic species and on downstream water users, such as with irrigation facilities. Subcomponent 2(b) will be associated with the power optimization activities of the dam, which might involve an increase in dam height and storage. This will potentially result in flooding of marginally more land and therefore, may possibly further require enhanced water quality control measures in the reservoir. Impacts associated with Component 3 are likely to be almost negligible as these will be mostly associated with grid connections to surrounding villages in the project area.

81. Therefore, the project has been assigned an environmental assessment Category A, consistent with the Bank's policy on Environmental Assessments (OP/BP 4.01). Furthermore, the following safeguards policies have also been triggered: Natural Habitats (OP/BP 4.04), Safety of Dams (OP/BP 4.37), Project on International Waterways (OP/BP 7.50), and Physical Cultural Resources (OP/BP 4.11).

82. Consistent with the requirements of OP 4.01, the borrower (DABS) has adopted a framework approach to ensure that the environmental and social issues associated with each component are fully analyzed and understood and that the requisite mitigation and other management measures are agreed and put in place. Therefore, the DABS has prepared an ESMF which also requires the preparation of the following instruments: (a) an ESMP for Component 1; (b) a separate and stand-alone ESIA and corresponding ESMP for Subcomponent 2(a); (c) a separate and stand-alone ESIA and corresponding ESMP for Subcomponent 2(b); and (d) a simplified ESMP for Subcomponent 3(a).

83. Also, consistent with the requirements of OP 4.01, the DABS has appointed a panel of experts, known as the ESAP, to provide independent advice and oversight on all aspects of the environmental and social management of the proposed project. The ToR of the ESAP and its composition agreed with the Bank will, among others, provide the DABS with advice on good international practices, adapted to Afghanistan's circumstances, on managing the environment and social impacts of the proposed project. In addition, the DABS has appointed another panel, which is a separate and stand-alone panel, referred to as the PTAP, whose ToR includes dam safety advice in line with the requirements of OP 4.37.

84. The two ESIA's—one for Subcomponent 2(a) and the other for Subcomponent 2(b)—will examine, among others, the following in detail: (a) disturbances to the natural environment and biodiversity in the project influence area; (b) impacts on the potential water use downstream; (c) induced erosion and sedimentation in the project area and its vicinity as well as safety-related issues from the UXOS during the construction stage; (d) impacts from the project's associated facilities; and (e) construction-related impacts, including health, hygiene, and safety.

85. A preliminary dam safety analysis has concluded that the dam safety management of Naghlu Dam is unsatisfactory and requires immediate attention. As stated above, the DABS has appointed an independent PTAP during project implementation to advise on associated dam safety risks and will review the dam safety plan that will also be prepared. An essential factor of safety is associated with inappropriate sediment management. Also, the preliminary safety assessment recommended, among others, that a dynamic stability analysis of Naghlu Dam be carried out to determine structural safety under earthquake loading. The PTAP will advise the DABS on all these issues.

86. The project is located on the Kabul River, which is an international waterway for the purposes of the Bank's policy for Projects on International Waterways (OP 7.50). Given the investments envisaged under the proposed project and its location on the Kabul River, the policy is applicable to the project. On behalf of the GoA, the Bank notified the Government of Pakistan (GoP) on April 14, 2015. The GoP responded requesting additional information and clarifications regarding the scope of the project which were responded to by the Bank in coordination with the GoA on September 28, 2015 with a request that any further comments be

provided by October 12, 2015. Since no other communication from the GoP was received and in accordance with OP 7.50, on October 28, 2015 the Regional Vice-President approved the Task Team's request to proceed with processing the proposed project for negotiations. In requesting the Regional Vice President's approval, the Task Team confirmed that (a) the rehabilitation nature of the proposed project will not adversely affect the quality or quantity of water flows to other riparian and (b) the project will not be adversely affected by other riparian's water use.

#### **F. Social (including Safeguards)**

##### **Social Impacts**

87. Potential social impacts will vary from component to component. The process of removing sediment from the reservoir may result in permanent asset loss and temporary land acquisition. A decision to increase the storage capacity of the dam as discussed in Subcomponent 2(b) could result in the unavoidable resettlement of people; disruption of community life and networks; and permanent or temporary loss of land, assets, livelihoods, and communal, social, and cultural facilities (for example, cemeteries, shrines, mosques, and grazing land). OP 4.12 (Involuntary Resettlement) is triggered in view of possible land acquisition, asset loss, and resettlement in connection with Subcomponents 2(a) and 2(b).

88. An RPF has been developed as part of the ESMF for the NHRP and will be applied to all project components where it is not feasible to avoid land acquisition, asset loss, and/or resettlement. The RPF clarifies resettlement principles, organizational arrangements, and design criteria to be applied to all components implemented under the project. In this way, a consistent approach to resettlement practice will be ensured. Separate ESIA's will be carried out for Subcomponents 2(a) and 2(b). Findings from these assessments will inform the development of the ESMPs and RAPs (if required).

89. Subcomponent 3(a) of the NHRP includes provision for the electrification of villages in the immediate project area. This will be a direct, tangible benefit to communities in the Naghlu vicinity and should help counter a major grievance voiced by communities—that, to date, they have not received any benefit from the Naghlu Dam. Very small areas of land may be bought outright (willing buyer-willing seller) to facilitate the siting of electricity poles and pylons. Vocational or skills training for local communities also forms part of the local development assistance under this component. The aim is to enhance the skills of men and women living close to the dam so that they can more easily find employment either at the plant or in the local area. A pre-feasibility social survey is currently being conducted in villages close to the dam to inform the scope of electrification and vocational training activities. These activities will be restricted to villages within 3 km of the dam site.

##### **Consultation and Disclosure**

90. An advanced draft ESMF was consulted upon in a workshop of relevant stakeholders in Kabul on November 18, 2013.

91. The final draft ESMF and RPF were made available online on the DABS' website. These documents were also disclosed at the InfoShop of the Bank on March 11, 2013. The ESMF was

disclosed on February 19, 2014, by the DABS in Afghanistan in both Dari and Pashto through many outlets in the country.

### **G. Consultation, Communications and Community Relations**

92. **Community consultations.** Existing village-level CDCs are one of the primary vehicles used by the DABS' NHRP team to inform local communities about the project and mobilize their participation in it. The CDCs, formed under the NSP, are regarded as one of the most effective forums for seeking communities' views on, and enlisting their support for, project activities in an extremely fragile security environment. Consultations on the draft ESMF, including the RPF, took place with community representatives, including leaders from the CDCs and local government officials, as well as other indirect stakeholders. Consultations were also held with various stakeholders, including community representatives, on the draft ToR for the ESIA for Sub-components 2 (a) and 2(b). The NSP's implementing partners in Sarobi District (ActionAid) and Tagab District (UN Habitat) participated in discussions on both the draft ESMF and the ESIA ToR. In practical terms, this has meant the provision of written, audio, and visual materials in form, substance, and language appropriate for the primary audiences the project is targeted at. The consultations and information provision about the project have been held at village levels following local customs. Communities will continue to have opportunities to voice concerns during the project implementation.

93. To ensure effective communications with a large and diverse group of stakeholders, the project implementation departments will develop and put in place a communication and outreach plan aimed at maintaining the understanding and building ownership of the project throughout its cycle. The plan will take into account the characteristics of the target population, namely socioeconomic, cultural, and health conditions; access to media in all formats; and land ownership. During project preparation, the DABS' social safeguards officers periodically update local government officials and the local community representative from the Sarobi District on the project progress. A template is created by the DABS for recording main points of meetings with local communities and other stakeholders in Dari and Pashto.

94. **ESAP.** The panel has been constituted and international environment and social specialists reviewed and provided comments on the draft ESIA ToR.

95. **Grievance Redress Mechanism (GRM).** Following consultations between the DABS and local community representatives and local government officials, a project-level Grievance Redress Committee (GRC) comprising 12 members nominated by communities has been established in the Sarobi District. There have been some changes to the composition of the GRC due to some of the original nominees, while still having links to the villages in the project area, living in Kabul and Jalalabad. The DABS is in the process of developing a GRM training manual and will train GRC members on the role of the GRM and the responsibilities of its members.

96. **Benefit sharing.** Early consultations with local community representatives indicated that they did not consider that villages close to the dam had benefited from it. Two key benefit-sharing elements embedded in the NHRP are (a) support for electrification in the project area and (b) improved access to skills and training to enable local people to gain employment at the plant and elsewhere in the locality. A pre-feasibility social assessment to inform the scope of benefit-

sharing activities—electrification and vocational training—has been completed. The consultancy company has hired and trained women from the local area to ensure that women’s views are captured in the survey.

97. The social assessment conducted 20 FGDs and surveyed 1,000 households. The surveys took place in 63 villages (that is, eight villages within 3 km from the dam). The surveys focus on the Surobi and Tagab Districts (that is, 45 villages from Surobi and the remaining from Tagab). The FGDs and surveys aimed to solicit feedback on the proposed project and identify the best benefit-sharing mechanisms. The survey also examined the willingness of the communities to pay for the proposed electrification program. The survey indicated the preference of some communities for solar systems as opposed to wide-scale electrification. The social benefits of electrification are expected to include less expensive and expanded use of lighting, less time spent collecting firewood and on other household tasks, improved return on education as children will be able to read and study in the later hours of the day, and increased productivity of household businesses.

98. The survey also indicated that rural youth lack vocational training opportunity. Nearly 92 percent of the people have expressed a need to receive more training in employment generation activities. These include dressmaking (30 percent), technical skills (22 percent), poultry farming (20 percent), dairy businesses (10 percent), value addition for agriculture products (7 percent), production of handicrafts (7 percent), and dessert and restaurant shops (4 percent). A vocational training specialist is recruited to develop a vocational training program taking into account inputs from surveys.

## **H. World Bank Grievance Redress Mechanisms**

99. Communities and individuals who believe that they are adversely affected by a Bank-supported project may submit complaints to existing project-level GRMs or the Bank’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project-affected communities and individuals may submit their complaint to the Bank’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the Bank’s attention, and the Bank management has been given an opportunity to respond. Information on how to submit complaints to the Bank’s corporate GRS are available at <http://www.worldbank.org/GRS>. Information on how to submit complaints to the Bank Inspection Panel are available at [www.inspectionpanel.org](http://www.inspectionpanel.org).

## Annex 1: Results Framework and Monitoring

**Country: Afghanistan**

**Naghlu Hydropower Rehabilitation Project – Phase I (P132944)**

### Results Framework

---

#### Project Development Objectives

---

##### PDO Statement

The PDO is to improve dam safety and sustainability of hydropower and to increase the supply of domestically generated hydroelectricity at the Naghlu Hydropower Plant.

---



---

#### Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values						
		YR1	YR2	YR3	YR4	YR5	YR6	End Target
Installed capacity of Unit 1 ready for utilization (Megawatt)	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0
Total number of unplanned power outages due to deficiency of the NHPP (Number)	100.0	100.0	100.0	90.0	70.0	50.0	30.0	20.0
Dam safety procedures developed and maintained (Yes/No)	No	No	No	No	Yes	Yes	Yes	Yes
Number of villages in the immediate vicinity of the dam provided with access to electricity by the project (Number)	0.0	0.0	0.0	0.0	2.0	5.0	8.0	8.0

---

#### Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values						
		YR1	YR2	YR3	YR4	YR5	YR6	End Target
Overhaul of Unit 3 completed	No	No	No	No	Yes	Yes	Yes	Yes

(Yes/No)								
Dam safety audit in place (Yes/No)	No	No	No	No	Yes	Yes	Yes	Yes
Number of staff trained in hydropower operation and maintenance under the project (Number)	0.00	0.00	20.00	40.00	60.00	90.00	130	130.00
Feasibility study of options to increase power generation at the NHPP completed (Yes/No)	No	No	No	Yes	Yes	Yes	Yes	Yes
Number of local people receiving vocational training through the project (Number)	0.00	0.00	0.00	10.00	25.00	40.00	60.00	60.00
Out of which the percentage of women trained (Percentage - Subtype: Supplemental)	0.00	0.00	0.00	5.00	10.00	15.00	20.0	20.00
Grievances reported related to delivery of project benefits that are addressed (Percent)	0.00	5.00	10.00	15.00	20.00	30.00	50.00	50.00

### Indicator Description

<b>Project Development Objective Indicators</b>				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Installed capacity of Unit 1 ready for utilization	No description provided	Annual	Annual Report of the DABS	DABS
Total number of unplanned power outages due to deficiency of the NHPP	No description provided	Annual	Annual Report of the DABS	DABS
Dam safety procedures developed and maintained	No description provided	Annual	Annual Report of the DABS	DABS
Number of villages in the immediate vicinity of the dam provided with access to	No description provided	Annual	Project implementation M&E	DABS



electricity by the project				
----------------------------	--	--	--	--

---

**Intermediate Results Indicators**

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Overhaul of Unit 3 completed	No description provided	Annual	Annual Report of the DABS	DABS
Dam safety audit in place	No description provided	Annual	Annual Report of the DABS	DABS
Number of staff trained in hydropower operation and maintenance under the project	No description provided	Annual	Project implementation M&E	DABS
Feasibility study of options to increase power generation at the NHPP completed	No description provided	Annual	Project implementation M&E	DABS
Number of local people receiving vocational training through the project	No description provided	Annual	Project implementation M&E	DABS
Out of which the percentage of women trained	No description provided	Annual	Project implementation M&E	DABS
Grievances reported related to delivery of project benefits that are addressed (Percent)	No description provided	Annual	Project implementation M&E	DABS

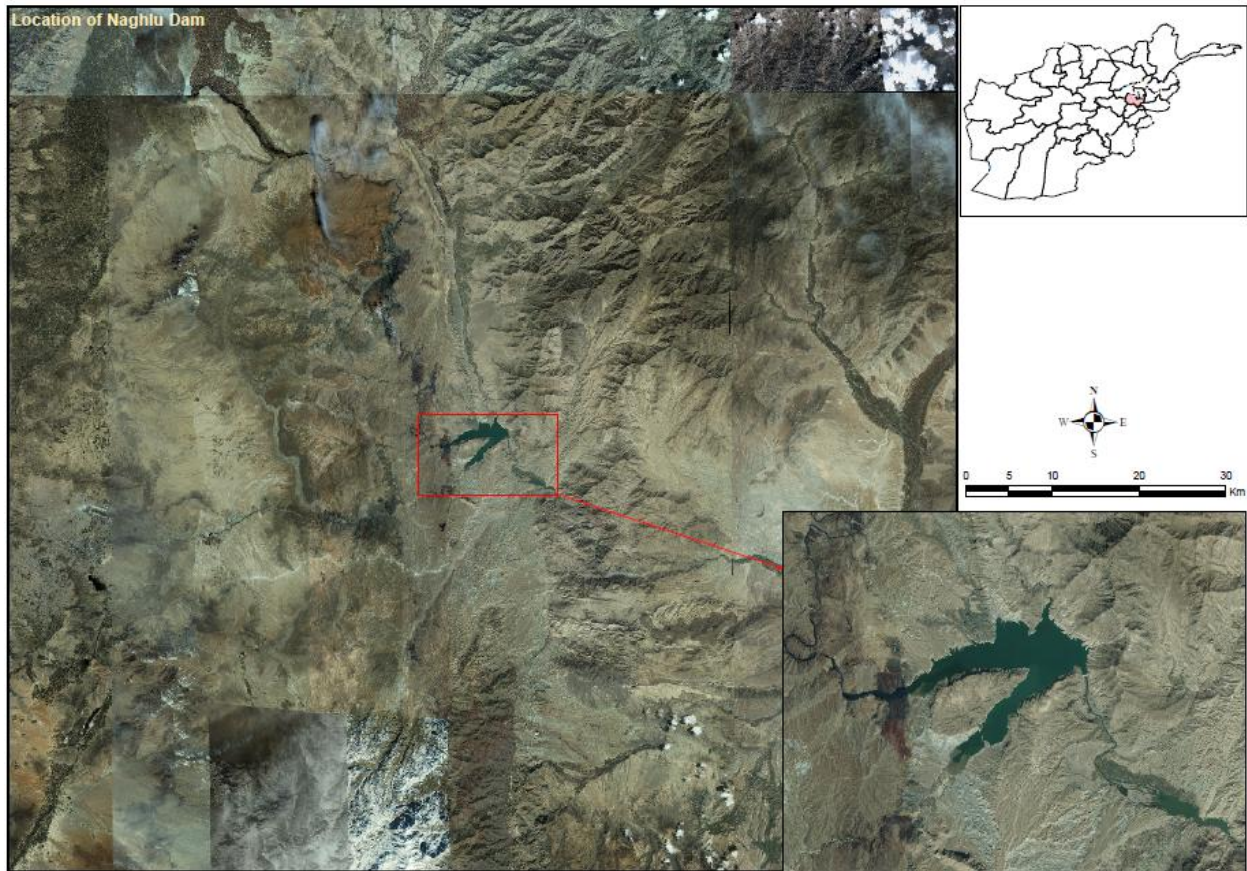
## Annex 2: Detailed Project Description

### AFGHANISTAN: Naghlu Hydropower Rehabilitation Project – Phase I

#### Background

1. The Naghlu Dam is a gravity dam on the confluence of the Panjshir and Kabul Rivers in Surobi District, Kabul Province, 80 km east of the Kabul (see figure 2.1). The dam is 110 m tall and 280 m long, and its reservoir has a design storage capacity of 550 million cubic meter (the current live storage is significantly lower due to a 7 m sediment accumulation). The primary purpose of the dam is hydroelectric power generation with a design capacity of 100 MW. It is the largest hydropower plant in Afghanistan and it produced about 6.5 percent of the total supply in 2012.

Figure 2.1. Dam Location (Source: Google Earth)



2. Construction of the dam and the power plant was financed and supervised by the Soviet Union between 1960 and 1968—the dam’s characteristics are provided in table 2.1. The first generator was commissioned in 1967. During the civil war, the opposition used the NHPP as a tool to deprive the Kabul people of electricity. The power station fell into disrepair and by the 2001 change in political power, only two generators were operational. In August 2006, the MEW awarded a US\$32.5 million contract financed by the Bank to rehabilitate the NHPP, including the two inoperable turbine generators, and replaced two banks of generator transformers, but the

project closed in March 2013 before the completion of the rehabilitation of Unit 1.

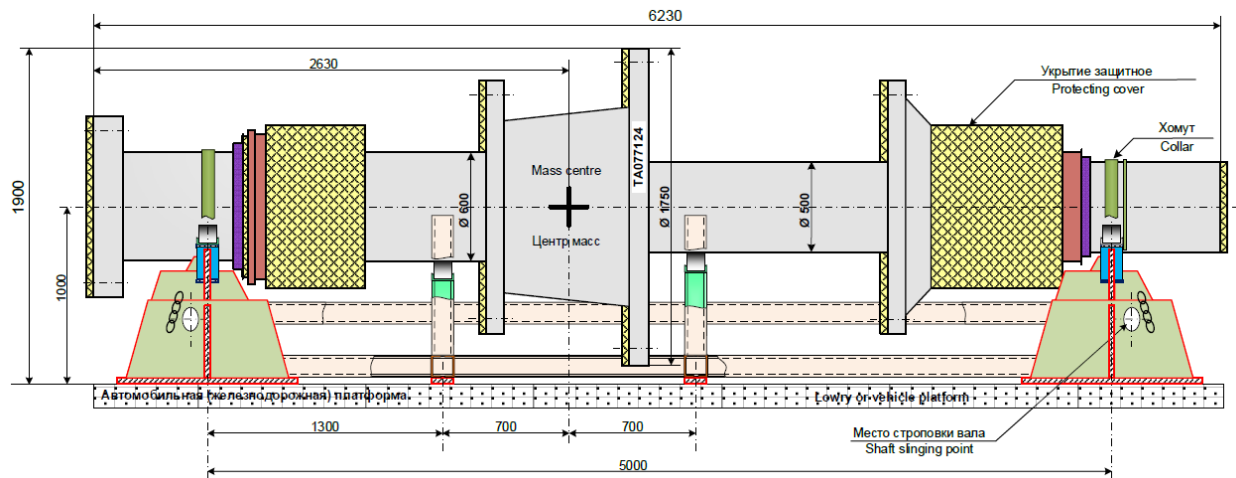
**Table 2.1. Main Technical Data of the Naghlu Hydroelectric Power Station**

<b>Dam, Reservoir, Tail Water</b>		
Dam height		110 m
Extreme maximum reservoir water level		El. 1,192.50 m asl.
Maximum regulated reservoir water level		El. 1,190.00 m asl.
Minimum reservoir water level		El. 1,160.00 m asl.
Effective storage volume		380 x 10 <sup>6</sup> m <sup>3</sup>
Total volume		550 x 10 <sup>6</sup> m <sup>3</sup>
Tail water level at:	Q = 43 m <sup>3</sup> /s	El. 1,116.25 m asl.
	Q = 129 m <sup>3</sup> /s	El. 1,116.85 m asl.
	Q = 4,350 m <sup>3</sup> /s	El. 1,124.15 m asl.
<b>Powerhouse</b>		
Number and type of units		4 vertical Francis turbines
Rates power		4 x 23.5 MW
Rated net head		61 m
Rated speed		250 rpm
Maximum runaway speed		500 rpm
Generators		4 x 29.4 MVA/10.5 kV/PF = 0.8
Transformers		110/10.5 kV
Step-up capacity		126 MVA

*El., asl, PF stand for elevation, above sea level, plant factor respectively. .*

3. The proposed project will, therefore, provide financing for completion of the rehabilitation of Unit 1 and provision of spare parts for the NHPP—schematic of Unit 1 is shown in figure 2.2. During the rehabilitation, further problems emerged. Sediment had built up on the face of the dam and blocked the bottom outlet and there was no auxiliary power source, leaving only manual opening and closing of the spillway gates or inlet valves in the event that the plant is not generating. Overall, under the status quo, without additional Bank financing, there is a grave risk to Naghlu not being able to continue to generate and also a significant safety risk. In addition, inoperability of the bottom outlet, unavailability of auxiliary methods of operating spillway gates and independent operation of power intake gates, presence of the UXOS on parts of the structure, and lack of essential instrumentation render the dam unsafe. Specifically, a diving inspection of the dam was conducted in 2009 and the inspection revealed that the water basin is silted up to an elevation of 1,132.0–1,132.5 m. The intake is 9 m below the surface of the sedimentation level. This indicated there is approximately 15,000 m<sup>3</sup> of sediments that should be removed for intake cleaning to provide adequate plain gate operation.

**Figure 2.2. Schematic of the Shaft**



*Note:* Shaft net weight is 2,300 kg; shaft gross weight including support platform is 30,000 kg. Length is 6,300 mm.

## Project Description

4. The proposed NHRP, with a total estimated cost of US\$83 million, will comprise three components: (a) mechanical, electrical, and electromechanical works; (b) dam safety and power generation improvement; and (c) environmental and social sustainability, project management support, and future project preparation. The description and objectives of each of these components are summarized below.

5. **Component 1: Mechanical, Electrical, and Electromechanical Works (US\$30 million).** This component aims at rehabilitation of the electrical and electromechanical parts of the plant and ensure their sustainable operation. It will consist of three subcomponents as follows:

- (a) **Subcomponent 1(a): Rehabilitation of Unit 1 and Balance of Plant.** This subcomponent will finance electromechanical rehabilitation work focused on Unit 1. In particular, the bent rotor shaft will be tested and repairs will be undertaken, if possible, or replacement will be ordered. Remaining plant rehabilitation, which is not yet complete, will also be financed.
- (b) **Subcomponent 1(b): Enhancing Maintenance of the Powerhouse.** This component will finance O&M equipment including spare parts and development of warehouses to provide secure storage for equipment. Specifically, this includes supplying spare parts and consumables for three to five years for normal maintenance. This will also include Unit 3 overhaul. Unit 3 has been running for over 20,000 hours and should have been overhauled at 7,000 hours of operation. Similarly, pipes, valves, and pumps for inlet valve control have been in service for over 45 years and need immediate attention. This will also include advisory services to put in place a sustainable mechanism that will ensure O&M is undertaken according to required technical standards, and that any emerging technical issues can be remedied quickly.

6. **Component 2: Dam Safety and Power Generation Improvement (US\$33 million).**

This component aims to ensure the safe operation of the dam and consists of three subcomponents as follows:

- (a) **Subcomponent 2(a): Dam Safety Audit and Safety Improvement Measures.** This component will finance TA and studies including (i) audit of the dam's structural and operational safety; (ii) preparation of plans and bidding documents for works to improve safety to acceptable standards, focused on reactivating the bottom outlet, adequacy of auxiliary power and other systems, improvements to the head gates closing system, installation of instrumentation, and clearance of the UXOS from the dam structure; (iii) studies on structural and operational safety considering updated hydrological and seismic data and following relevant international/national standards/guidelines; and (iv) flood routing through Naghlu Dam to Surobi Dam, including adequacy of its spilling arrangements.

The dam safety audit, to improve dam safety, will identify quick measures to be implemented before the completion of the dam safety audit. Specifically, this will focus on supporting the DABS in introducing modern dam safety measures that do not require major structural changes, particularly (i) setting up a procedure and staffing for independent dam safety inspections; (ii) preparation of dam safety plans including operations, maintenance, and surveillance manuals for civil works, emergency preparedness plans, and post-earthquake response plans; (iii) revision of operating manuals for the electrical and electromechanical works; (iv) detailed maintenance planning for equipment; (v) training of dam staff; (vi) reactivation of the low-level outlet; (vii) introduction of independent operation of the power intake gates; (viii) installation of standby generator for emergency opening of the spillway gates and closing of the power intake gates; and (ix) installation of other essential instrumentation for dam safety monitoring.

Experts indicate that the UXOS present is not expected to pose any major structural risk to the body of the dam. However, the UXOS will present risks to the sediment cleanup of the dam. The dam safety audit will assess the different options to conduct sediment cleanup and the procedures to treat the present UXOS.

- (b) **Subcomponent 2(b): Optimization of Power Generation.** This component aims to examine the potential for increasing power generation at the NHPP. This will identify options for sustainable sediment management and for increasing the amount of electricity produced by the dam. It consists of two activities as follows:

**Feasibility study.** This study examines the feasibility of various options to increase power generation, including but not limited to (i) appropriate dam operation and better management; (ii) additional storage upstream of the dam; (iii) additional siphon spillway/floating barge mechanism for controlled flushing of sediments; (iv) raising the dam crest; and (v) catchment area treatment.

**Detailed design.** This supports the preparation of detailed designs should the feasibility study return a positive result, and will be closely guided by the findings of the ESIA, resettlement and livelihoods restoration, the ESMPs, health, and other related action plans.

7. **Component 3: Environmental and Social Sustainability, Project Management Support, and Future Project Preparation (US\$20 million).** This component includes two subcomponents.

(a) **Subcomponent 3(a): Environmental and Social Sustainability.** This subcomponent aims to ensure the environmental and social sustainability of the dam through the following activities:

**Local development assistance.** A preliminary social survey (see table 2.2 for some of the villages surveyed and considered for electrification) revealed that there is overwhelming support among the project population for the implementation of the hydropower project due to the problem of unreliable electricity supply in the project area. Stakeholders have also expressed a high degree of willingness to pay for obtaining electricity connections and the monthly tariff expected from them. The survey has also revealed that electrification is not the most urgent livelihood issue facing this traditional rural society which is beset with other important issues such as accessibility to public services and markets and the problem of increasing the current skills of their youth of both sexes to overcome the shortfalls in agricultural incomes, which are presently at a subsistence level.

Partly in support of benefit sharing with local communities, this subcomponent will support (i) electrification in the project area and (ii) improved access to skills and training to enable local people gain employment at the plant and elsewhere. Other activities such as road development, identified by local development communities that aim to improve the communities' livelihood surrounding the dam, will also be financed under this subcomponent. This will ensure continued community support for the dam and the proposed rehabilitation.

**Table 2.2. List of Tentative Villages Surrounding Naghlu Considered for Electrification**

No.	Villages	Number of Households
1.	Sherkhan kas	150
2.	Mullah klay	40
3.	Doulatzai bala	150
4.	Dalatzai payeen	200
5.	Mano clay	50
6.	Gogamonda clay	50
7.	Momin khan and sherinai clay (masjid Umer faroq)	200
8.	Dahn quol Village	85
9.	Kota gai clay	80
10.	Zila tangai Village	80
11.	Oria kheel clay	120
12.	Aroki and dada naghlo	70
13.	Jala wanan clay	40
14.	Loy clay	80
15.	Husain khile clay	70
16.	Bandol and samer gul clay	40
17.	Qalah abib clay	70
18.	Momandi clay	70

**Supporting environmental and social management.** This will support (i) the monitoring of the existing ESMP for Component 1; (ii) the preparation, implementation, and independent monitoring of an ESMP, an RAP, and a Livelihoods Development Plan for Subcomponent 2(c).

(b) **Subcomponent 3(b): Project Management Support and Future Project Preparation.** This subcomponent aims to ensure that the DABS receives advice on good international practices. It will consist of the following activities:

- (i) Financing the training programs, development of operational manuals for generation, distribution planning, O&M, and translation of management and control software and technical documents into Pashto and Dari to ensure adequate capacity for the safe and sustained operation of the existing plant
- (ii) Consulting services to support the implementation of the project which include technical (hydropower specific), environmental, social, procurement, FM, and M&E aspects
- (iii) Financing support for an ESAP and a PTAP
- (iv) Pursuing future projects identified for hydropower development and management under this component to support the DABS expanding domestically generated power

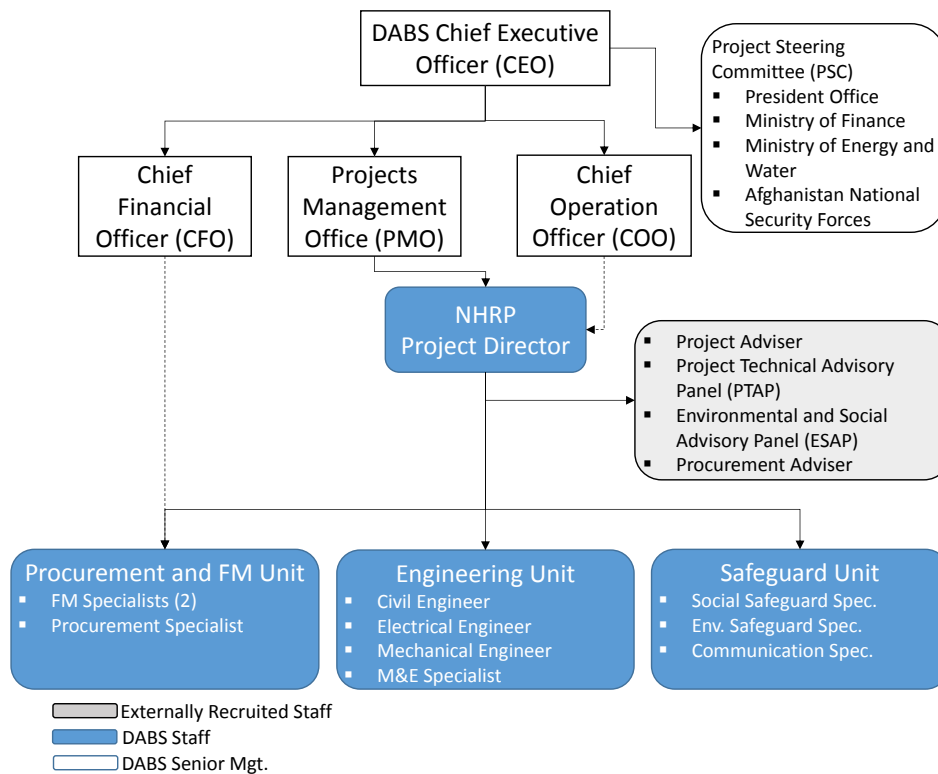
## Annex 3: Implementation Arrangements

### AFGHANISTAN: Naghlu Hydropower Rehabilitation Project – Phase I

#### Project Institutional and Implementation Arrangements

1. Overall responsibility for project management will rest with the DABS. The organizational structure of the DABS and the departments involved in the project are shown in Figure 3.1, and the responsibilities are described below.

**Figure 3.1: Implementation Arrangements of the DABS**



2. **DABS.** The DABS is established under The Corporations and Limited Liabilities Law of the Islamic Republic of Afghanistan. The management of the DABS includes a CEO who is appointed by the board of directors, and the senior management group, which is composed of three members heading its three divisions: (a) the COO is responsible for technical operations; (b) the CFO is responsible for billing, revenue collection, loss reduction, tariffs, and customer care; (c) the CFO is responsible for FM, accounting, procurement, IT, and human resources; and (d) the PMO is responsible for implementation of new initiatives and projects.

3. In general, the overall responsibility for project management will rest with the CEO of the DABS, who will delegate day-to-day management to heads of divisions. Oversight of technical and safeguards issues will rest with the COO and the manager of the NHPP. Consultants and contractors will be hired as necessary to carry out specialized tasks.



Procurement and FM will be the responsibility of the PMO and CFO, again delegating to functional heads in the financial division.

4. To implement the project, the DABS has set up a Project Implementation Team (PIT). A project manager for day-to-day project management has been appointed. The project manager, who reports directly to the PMO on operational issues and to the COO on technical issues, has overall managing responsibility for the project; coordinating the project work within the DABS; reporting to the DABS management on progress and challenges; and cooperating with the Bank for the project. In addition, within the DABS, the key project staff with adequate qualification and appropriate skills from multiple departments have been identified or hired. They consist of a civil works supervisor, an electromechanical and electrical supervisor, a knowledge and learning specialist, an FM specialist, a procurement specialist, an environmental specialist, a social specialist, and an M&E specialist. All these staff will be sitting within their respective departments in the DABS to ensure close and continued integration within the organization. International consultants have been hired for some specific assignments to support and mentor concerned DABS staff. Capacity building for DABS staff started during preparation and will continue during implementation. Independent advisors, particularly the ESAP and PTAP, will have an important role to play beyond the formal functions required under safeguard policies. The ESAP will participate in the independent grievance process, while the PTAP will be involved mainly in the dam safety review.

5. A PSC will provide the forum for overall guidance, policy advice, coordination of the project activities, and addressing of interagency issues. The PSC will be chaired by the deputy minister of finance and will include deputy ministers for energy and water from the MEW and will have representatives from the agriculture and environment ministries, the president's office, and the Afghanistan National Security Forces. The DABS through the CEO and Project Director will act as the secretary of the PSC.

### **Integrated Fiduciary Assessment for Project Preparation**

6. **Background.** The Bank has gained substantial experience and understanding of the FM environment in Afghanistan through the large number of projects under implementation over the past years. The PFMRP II (under the series of PFMRPs) is the primary instrument to continue and enhance the fiduciary measures put in place during the past years to help ensure transparency and accountability for the funding provided by the Bank and other donors.

7. A public financial management performance rating system using 28 high-level indicators that was developed by the Public Expenditure and Financial Accountability multiagency partnership program was applied in Afghanistan in June 2005 and updated in 2008 and 2013. Afghanistan's ratings against the public financial management performance indicators generally portray a public sector where financial resources are, by and large, being used for their intended purposes. This has been accomplished with very high levels of support from international firms; this assistance will continue to be needed over the medium term if these ratings are to be maintained.

8. The Bank is financing an FM advisor to assist the MoF, and an audit advisor to assist the SAO. An internal audit function is being developed within the MoF with Bank financing. The

activities carried out under the series of PFMRFs have helped the government to ensure that appropriate fiduciary standards are maintained for public expenditures, including those supported by the Bank and the donor community.

9. The overall fiduciary risk for the project is rated as Substantial based on the assessment of the fiduciary arrangements in the DABS and related mitigating measures. The details of the assessment are in the following paragraphs. This rating will be reviewed at every implementation support mission and will be adjusted as necessary.

#### ***Joint Fiduciary Aspects (FM and Procurement)***

10. **Fiduciary capacity.** The overall responsibility for project FM will rest with the CFO and the day-to-day FM functions will be carried out through the Finance Department of the DABS. An FM specialist has already been hired by the DABS, who will be the focal point for this project and he will work closely with other finance staff to carry out the FM functions. The FM specialist will have dual reporting lines: (a) He will report functionally to the head of the Finance Department who has recently been hired. The latter has significant experience working on Bank-funded projects in other line ministries. (b) He will also report to the NHRP Project Manager for all project-related FM matters. While the DABS has not implemented a Bank-funded project before, it has sufficient experience working on an ADB-funded project that has similar requirements and procedures as Bank-funded projects. Necessary training and hands-on support will be provided by the Bank to DABS FM staff on FM and disbursement aspects to familiarize them with the requirements.

11. **Planning and budgeting.** Annual budgets will be prepared in line with MoF regulations and according to the Afghanistan fiscal year. Project budget will be prepared on the basis of the procurement plan and work plan. The annual budget will be broken by quarters for effective monitoring. The quarterly financial reports will compare actual expenditures to budgeted expenditures, and explain significant variances. A system to track all financial commitments shall be established to monitor the total commitments against available grant funds at any given point in time.

12. **Internal control (including internal audit).** The internal control mechanism at the central and implementing agency levels is acceptable. There is a proper segregation of duties. DABS has an accounting manual that lays down its internal procedures. The manual in its current form is sufficient to begin project implementation. This manual will be updated from time to time as needed during the course of project implementation. Records of project transactions and copies of supporting documents will be maintained at the DABS, while the original supporting documents will be submitted to the MoF. Periodic reconciliation of project records with the bank statement and AFMIS records will be done by the DABS Finance Department.

13. The internal audit for Bank-funded/administered projects is currently being carried out by the Internal Audit Department of the MoF. However, given that the capacity in the DABS is significantly better than in other government agencies, the internal audit will be carried out by the Internal Audit Department of the DABS. This audit will be done at least biannually and the reports will be shared with the Bank during implementation support missions.

14. A fixed assets register will be maintained by the DABS for assets purchased from project funds. Assets will be coded and a system of physical inventory will be maintained.

15. **Contract management.** The DABS has a Contract Management Department that has the responsibility to follow up on all signed contracts through their implementation.

***Governance and Oversight Arrangements***

16. **Audit arrangements - external audit of project financial statements.** The SAO, with support from the Audit Agent, carries out the annual audit for all Bank-funded/administered projects; it will also be responsible for audits of this project. The audits will cover all project transactions. Annual audited project financial statements will be submitted within six months of the close of the GoA’s fiscal year<sup>3</sup> (December 21 to December 20). The financial statements for the project audit will be prepared by the MoF based on AFMIS records. There is a common ToR for the audit of all projects that is reviewed by the Bank on a yearly basis.

17. **Entity audit.** The DABS entity audits will also be required on a yearly basis. The entity audits will be carried out by private auditors engaged by the DABS; this arrangement is currently in place. The entity audit will follow the DABS fiscal year (March 21 to March 20).

18. **Technical audit reviews.** In addition to prior review, Bank staff or Bank-appointed consultants shall carry out post procurement audit once per year.

**Table 3.1. 19. Matrix of Actions for Mitigating fraud and corruption, transparency accountability and participation.**

S No.	Procurement Process/step	Process Indicator	Sources of Information and Means of Verification	Use of Information for Risk Mitigation	Performance Target to be Achieved
1	General Procurement Notice (GPN)	GPN published	Documentary evidence filled within the DABS	To ensure the GPN is widely published to increase transparency	100%
		Number of responses received against the GPN	Existence of the updated responses registration file within the DABS	To increase competition	100%
2	Request for Expression of Interest (REoI)/Invitation for Bid and bidding process	REO/Invitation for Bid published	Copy to be available in the file. 10% of the procurement files will be verified.	To ensure supervision/REoI is widely published to increase transparency	100%

<sup>3</sup> Current fiscal year is 1394 and covers the period December 21, 2014 to December 20, 2015.

<b>S No.</b>	<b>Procurement Process/step</b>	<b>Process Indicator</b>	<b>Sources of Information and Means of Verification</b>	<b>Use of Information for Risk Mitigation</b>	<b>Performance Target to be Achieved</b>
		Minimum bidding time provided (4 weeks in NCB and Request for Proposal [RFP] and 6 weeks in International Competitive Bidding [ICB] and RFP with complex assignments)	Deviations to be collected from procurement files	To ensure competition	100%
		Attention of the firms/individuals who expressed interest against the GPN while issuing REoI/supervision was called	Copy to be available in the file. 10% of the procurement files will be verified.	To ensure competition	100%
		Number of bid documents sold and number of firms confirmed participation against RFP issued	Sale of bid documents register and confirmation from consultants about receipt of RFP. 10% procurement files will be verified.	To ensure competition	100%
		Clarifications/addendums issued	Copy to be available in the file. 10% of the procurement files will be verified.	To ensure transparency	100%
3	Preparation of bid documents/RFPs	Cleared by IDA without seeking clarifications/comments	Number of cases to be collected from procurement files	Capacity-building measures initiated by international procurement specialist	Continued progress
4	Bid submission	Bid opening minutes sent to all bidders	Timeliness to be verified from procurement files. 10% of the procurement files will be verified.	To ensure transparency	100%
5	Bid Evaluation/REoI and proposal evaluation	Formation of bid evaluation committee before bid closing	Deviations to be collected from procurement files	To expedite finalizing of bids/proposal evaluation	100%

<b>S No.</b>	<b>Procurement Process/step</b>	<b>Process Indicator</b>	<b>Sources of Information and Means of Verification</b>	<b>Use of Information for Risk Mitigation</b>	<b>Performance Target to be Achieved</b>
		Timeliness of evaluation: (a) 5–7 working days following Shopping procedure; (b) 15–20 working days following NCB/ICB procedures; (c) 10 working days for individual consultants; and (d) 15 working days for firms for REoI evaluation, 21 working days for TER (Technical Evaluation Report) and 20 working days to conclude the contract negotiations after commencement of contract negotiations	Deviations to be collected from Procurement Activity Schedule	Finalizing of bids/proposal evaluation in timely manner	Compliance and continuous improvement for reduction in timelines for all activities
		Number of re-bids	Procurement files		Continuous improvement for reduction in number of re-biddings
6	Bid Evaluation Report and Technical Evaluation Report	Cleared by IDA without seeking clarifications/comments	Data to be collected from procurement files	To improve procurement process	
7	Contract Award	Contract award within the original bid validity	Deviations to be collected from Procurement Activity Schedule	To improve procurement process	100%
		(a) Contract award published within 14 days of NOA (b) Average time taken for publication of award (c) Number of cases award not published	Data to be collected from procurement files	To ensure transparency	100%
8	Delivery/ Completion	Delivery time: Percentage of contracts completed/ delivered within the original schedule as mentioned in contract	Data to be collected from procurement files	To improve procurement process	
		Liquidated damage: Percentage of contracts having liquidated damage imposed for delayed delivery/completion	Data to be collected from procurement files	To improve procurement process	60%
		Completion rate: Percentage of contracts fully completed and accepted	Data to be collected from procurement files	To improve procurement process	90%

S No.	Procurement Process/step	Process Indicator	Sources of Information and Means of Verification	Use of Information for Risk Mitigation	Performance Target to be Achieved
9	Payment	Average number of days taken to release payment	Data to be collected from procurement files	To improve procurement process	15 days
		Late payment: Percentage of cases (considering each installment as a case) with delayed payment	Data to be collected from procurement files	To improve procurement process	20%
10	Complaints	Procurement complaints pending over 60 days	Complaint register	To ensure transparency	90%
		Resolution of complaints resulted in modification of contract award	Complaint register and procurement files	To ensure transparency	0%
		Resolution of complaints within 15 working days	Complaint register	To ensure transparency	70%
		Complaints forwarded to the MoF for independent review	Complaint register	To ensure transparency	100%
11	Contract dispute resolution	Unresolved disputes over 60 days	Procurement files	To ensure transparency	10%
12	Procurement capacity building	Number of procurement staff trained in the Civil Service Institute	Procurement training plan	To improve procurement process	80% staff to be trained during first year and 100% by second year
		Number of staff trained outside Afghanistan		To improve procurement process	One staff during first 18 months

19. *Grievance Redress Mechanisms.* The DABS has developed a procurement manual that includes a process for grievance handling, in addition to complaints handling processes under Afghan Procurement Law.

#### ***Procurement Considerations in the Fiduciary Assessment***

20. The DABS is a state-owned company that has good management committed to best practice and capacity building. A procurement capacity assessment of the DABS was carried out in October 2013. While there is an established procurement department with clear lines of responsibility and clearly documented procurement processes including service standards for various types of procurement, the assessment shows a reasonable setup of procurement processes of the DABS. There is a Procurement Manual and regular staff trainings are carried out. While there is close assistance from USAID and the ADB for institutional development of the DABS—which includes a procurement and inventory management system—they do not have direct experience of procuring or managing large and complex projects and rely on donor-provided consultants to execute and supervise such projects. This will also need to be the approach adopted for the purposes of this project. The assessment also found some gaps in staff competencies, understanding of the market for power equipment, internal audit system, and decentralization.

21. With the above arrangements in place, the risk is rated as High. Review of the risks will be carried out in subsequent implementation support missions with a view to adjust the risk ratings if necessary.

22. To mitigate some of the risks presented to the smooth implementation, the following actions will be taken:

- Preparing a Procurement Manual for the project (by appraisal)
- Acquiring the services of an international consultant to build capacity of staff
- Hiring a consultant to assist with the large value and complex procurements
- Setting up a complaints handling mechanism that tracks complaints received until their final disposal

23. **Governance and accountability agenda.** All the contract opportunities and contract awards will be widely published on the internet, Afghanistan Reconstructions and Development Services website, Procurement Policy Unit/MoF website, and when required on the UNDB-Bank external website. The DABS will set up a system to ensure that the staff or consultants who handled the procurement process, contract management, or the contract execution do not join the consultants or contractors, to guide against conflict of interest and allow for transparency. This will be reviewed during supervision missions.

24. **Procurement plan.** The borrower, at appraisal, developed a procurement plan for project implementation that provides the basis for the procurement methods. This plan has been agreed between the client and the IDA task team on [TBA] and is available at the DABS. It will also be available in the project's database and on 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.

25. **Frequency of procurement supervision.** In addition to the prior review supervision, implementation support missions shall be carried out from Bank offices. There will be two implementation support missions per year.

### ***FM Considerations in the Fiduciary Assessment***

26. **Funds flow.** Project funds will be channeled through a segregated DA in U.S. dollars to be opened at the Da Afghanistan Bank. The DA will be maintained and controlled by the MoF; however, the DABS Finance Department will be responsible to manage the DA and carry out periodic reconciliation. Advances will be made to the DA with a fixed ceiling calculated based on a 4-months' worth of expenditures to be paid out of the DA. Disbursements from the grant will be made using advances, reimbursements, direct payments, and special commitments. The project will follow traditional transaction-based disbursement arrangement. Further details of disbursement arrangements for the project, including supporting documentation requirements (such as summary sheet or statement of expenditures), are spelled out in the Disbursement Letter. All project payments will be made centrally in Kabul, and no project funds are expected to flow to the provinces.

27. All payments from the DA will be made through check or bank transfer. Requests for payments from DA funds will be made to the Special Disbursement Unit in the Treasury

Department of the MoF by the DABS. In addition to payments from DA funds, the DABS can also request the Special Disbursement Unit to request for direct payments from the grant. All withdrawal applications to the Bank, including advances, reimbursement, direct payment, and special commitment applications, will be prepared by the DABS and submitted by the MoF. DA replenishment applications will be submitted preferably on a monthly basis, and at least on a quarterly basis, to ensure sufficient liquidity. The project will be 100 percent financed by the ARTF grant (as per table 3.2), inclusive of taxes, covering goods, works, non-consulting services, consulting services, training and workshop, and incremental operating costs.

**Table 3.2. ARTF Financing by Category of Expenditure**

<b>Category</b>	<b>Amount of ARTF Grant (in US\$, millions)</b>	<b>Percentage of expenditures to be financed</b>
1. Goods, works, non-consulting services, consultants' services, training and incremental operating costs for the project	83	100
<b>TOTAL</b>	<b>83</b>	

28. Retroactive financing of US\$5,000,000 will be provided for eligible expenditures paid before the signing date but on or after December 1, 2015.

29. Further advances from the DA up to a maximum of US\$15,000 may be withdrawn and maintained by the DABS. The actual amount of funds to be maintained as imprest, if needed, will be based on project needs and will be reviewed by the Bank. Such imprest funds will be subject to adequate petty cash management procedures (for custody, control, limits, physical cash verification, and replenishment) that will be detailed in the accounting manual. The custodian of the imprest cash will be the cashier of the DABS.

30. **Accounting.** All accounting is centralized in the AFMIS in the MoF. Subsidiary books of project records such as bank book, cash book, contract register, asset register, and so on will be maintained by the DABS. The Finance Department of the DABS uses Great Plains accounting software for its accounting, this will also be used for project records. The accounting software is currently being upgraded to a newer version. Cash basis of accounting will be followed for the project.

31. **Financial reporting.** Quarterly IFRs will be required for the project. These reports will be submitted in form and substance agreed with the Bank. The reports will have to be submitted within 45 days from the end of the quarter following the government fiscal year. The IFRs will include Statement of Cash Receipts and Payments, Statement of Uses of Funds by Project Activity, bank and advances reconciliation, and the bank statements.

32. With the above arrangements in place, the residual FM risk is rated as Substantial. Review of the risks will be carried out in subsequent implementation support missions with a view to adjust the risk ratings if necessary.



33. There are no overdue audit reports and no ineligible expenditures under ongoing or closed projects implemented by the DABS.

34. **Monitoring of fiduciary performance and implementation support plan.** While the DABS has experience working on donor-funded projects, it has not implemented a Bank-funded project before. The FM capacity of the DABS is good; this is supplemented through the hiring of an FM specialist for the purposes of this project. The head of the Finance Department was recently hired and has significant Bank experience working in other line ministries. The accounting manual of the DABS will be updated to reflect the FM requirements under this project. The limiting factor is the lack of knowledge of Bank FM procedures and requirements among DABS finance staff. The Bank will provide the needed training and hands-on support to enable DABS FM staff to familiarize with the requirements. To this end, three DABS FM staff attended a three-day FM/disbursement workshop conducted by the Bank in September 2015.

35. The fiduciary performance will be assessed through the following indicators: (a) timely and quality submission of quarterly IFRs; (b) maintenance of adequate books of records and supporting documents of project transactions; (c) timely submission of audited financial statements; (d) timely resolution of FM issues raised during Bank supervision, internal audit, external audit, and any other reviews; (e) maintenance of adequate internal controls; and (f) timely processing of payment of invoices. The Bank will carry out two FM reviews annually. The implementation support will include monitoring of fiduciary performance based on identified indicators, review of IFRs and audit reports, review of compliance with legal covenants, review of progress on agreed actions, and review of FM risks.

**Table 3.3. Integrated Fiduciary Assessment of FM and Procurement Risk (PR)**

<b>Fiduciary Element</b>	<b>Responsibility FM, PR, or Joint</b>	<b>Risk Rating</b>	<b>Comments and Risk Mitigation</b>	<b>Residual Risk Rating</b>	<b>Key Performance Indicator</b>
<b>1. Joint Fiduciary Aspects</b>	–	–	–	–	–
<b>1.1 Fiduciary Capacity (PRAMS RF4 and FME 7)<sup>4</sup></b>	<b>Joint</b>	<b>High</b>	<p>The DABS will hire the services of an international procurement advisor to augment capacity and to fill gaps in understanding of procurement under bank procedures. Payment-linked capacity building and knowledge transfer will be included in the ToR. In three years, the civil servant will fully takeover.</p> <p>Annual training calendar for procurement and contracts management will be developed. This will be updated in July every year. Procurement staff and procurement decision makers and the evaluation committee members will attend the two weeks training in procurement by June 2016.</p>	<b>Substantial</b>	<p>Code of ethics is published</p> <p>PCMC is set up with agreed manpower</p> <p>Training calendar is prepared and all the PCMC members, procurement decision makers have received training</p>
1.1.1 Is there adequate fiduciary staff based on the profile of the project, with regard to numbers and experience, to implement the project, with clear definition and segregation of functions between Procurement and FM?	Joint	High	<p>Yes</p> <p>There are experienced procurement staff, who have been operating under an acceptable procurement regime. What is lacking is an understanding of Bank procurement procedures and documents.</p> <p>The FM capacity in the DABS is good. While there is insufficient experience of working on Bank projects, they have experience of other donor-funded projects that had fairly similar requirements. A national FM specialist has been hired by the DABS. He will be the focal person for this project. The head of the accounting</p>	Substantial	<p>PCMC is set up and manpower deployed</p> <p>Consultants are hired as per agreement</p>

<sup>4</sup> References are to the 11 PRAMS Risk Factors and the 7 FM Elements. See Attachments 3 and 4.

<b>Fiduciary Element</b>	<b>Responsibility FM, PR, or Joint</b>	<b>Risk Rating</b>	<b>Comments and Risk Mitigation</b>	<b>Residual Risk Rating</b>	<b>Key Performance Indicator</b>
			department has been recently hired and has significant experience of working on Bank-funded projects.		
<b>1.2 Planning and Budgeting (PRAMS RF5 and FME 1)</b>	<b>Joint</b>	<b>Substantial</b>	–	<b>Moderate</b>	–
1.2.1 Are realistic budgets and procurement plans prepared and reconciled?	–	Substantial	<p>Require periodic reviews to identify/remove the cause of the variances between planned and actual and agree on recommendations to avoid occurrence into the procurement and delivery schedule - intensify supervision</p> <p>Annual budgets will be prepared based on the procurement plan and work plan. The quarterly financial reports will include comparison of actual expenditures to budgets, and provide explanation thereof, and should lead to budget revision as necessary.</p>	Moderate	<p>50% contracts awarded within original plan</p> <p>Periodic review of the procurement plan in year 1 to suggest corrective measures to ensure timely procurement</p> <p>Variances are reported in the financial reports and explained</p>
<b>1.3 Internal Control (including Internal Audit)(PRAMS RF 1, 2, and 3; FME 3)</b>	<b>Joint</b>	<b>High</b>	–	<b>Substantial</b>	–
1.3.1 Are effective internal controls in place, as jointly assessed by FM and procurement staff? These include internal audit, clearly defined accountability, quality control processes, and availability of complete records of the procurement and FM processes.	–	High	<p>Ensure the procurement and contracts management decision making is fully covered in the manual of the agency and is available/known to staff</p> <p>The DABS has an accounting manual; this will be updated to reflect the arrangements for this project. Payments follow the centralized arrangements, and controls in the DABS and MoF over these payments are fairly robust. The DABS will be mandated to submit original copies of payment documents to the MoF, and retain copies. Internal audit will be carried out by the</p>	Substantial	<p>Complete manual is ready by negotiations</p> <p>The accounting manual will be disseminated to the FM staff engaged on the project</p> <p>Audits and other reviews do not reveal anomalies in project payments</p>

<b>Fiduciary Element</b>	<b>Responsibility FM, PR, or Joint</b>	<b>Risk Rating</b>	<b>Comments and Risk Mitigation</b>	<b>Residual Risk Rating</b>	<b>Key Performance Indicator</b>
			Internal Audit Department of the DABS.		Internal audit is done biannually and corresponding reports submitted  Monthly reconciliation of the project DA is carried out and any unidentified transactions are resolved in a timely manner
<b>1.4 Contract Management (PRAMS RF10, FME 2 and 3)</b>	<b>Joint</b>	<b>High</b>	Further strengthen the contract management system and processes	<b>Substantial</b>	Contracts management manual is ready for use
<b>1.5. Project Management and Governance</b>	<b>Joint</b>	–	–	–	–
<b>1.5.1 Audit Arrangements</b>	<b>Joint</b>	<b>High</b>	–	<b>Substantial</b>	–
<b>1.5.1.1 External Audit of Project Financial Statements (PRAMS RF 11, FME 6)</b>	Joint	High	Require audit by independent private auditors  Annual project audit will be done by the SAO with support from an audit agent, similar to the arrangement for other projects. There is occasional possibility of delays due to delay in contracting of the audit agent and/or mobilization of audit team, and sometimes due to the security situation.  Entity audit report of the DABS will also be submitted. This audit will be done by private auditors engaged by the DABS.	Substantial	Combined fiduciary, technical, and contracts management audit  Submission of acceptable audit report within six months from the GoA fiscal year end  Submission of acceptable audit report within six months from the DABS fiscal year end
<b>1.5.1.2 Technical Audits (PRAMS RF 11, FME 6)</b>	Joint	High	Include appropriate coverage of procurement aspects to meet project requirements in the audit ToR. Need to distinguish between compliance and performance audits so that auditors know what to do - provide appropriate guidance.	Substantial	Combined fiduciary, technical, and contracts management audit

<b>Fiduciary Element</b>	<b>Responsibility FM, PR, or Joint</b>	<b>Risk Rating</b>	<b>Comments and Risk Mitigation</b>	<b>Residual Risk Rating</b>	<b>Key Performance Indicator</b>
<b>1.5.2 Mitigating Fraud and Corruption - Transparency, Accountability and Participation (PRAMS RF 7 and 11, FME 6)</b>	Joint	High	Negotiate arrangements for safe-keeping of bids/proposals with the Bank	Substantial	The DABS will propose and establish a credible system for safeguarding the bids with adequate checks and balances
<b>1.5.3 Grievance Redress Mechanisms - Complaints Handling (PRAMS RF 9) and Grievance Redress (PRAMS RF 11, FME 6)</b>	Joint	High	Establish/improve and implement complaint management system	Moderate	The DABS will develop a credible procurement complaints handling system and mechanism. Will adequately display on the notice boards and on their website. The efforts will be made to develop an online, SMS-linked complaint handling system. The PMO will include the relevant contacts in the procurement plan.
<b>2. Procurement Processes and Procedures (PRAMS RF 6, 7, and 8)</b>	<b>PR</b>	<b>High</b>	Agency to increase due diligence of winning bidder before awarding. Bank staff use online Fraud and Corruption Red Flag Tool and/or discuss with RPM/INT.	<b>Substantial</b>	The agency to conduct due diligence including the online check for debarred/cross debarred list and temporary suspension through internet and Client Connection
<b>3. FM Considerations</b>	–	–	–	–	–
<b>3.1 Funds Flow (FME 4)</b>	<b>FM</b>	<b>High</b>	<p>The annual budget will have to be approved on time. However, historically there has been delay in approval of annual budgets. There is a procedure to obtain carry-forward budget while the new budget is awaited.</p> <p>Project funds will flow through the single DA. However, there are some inefficiencies in the processes that impact timely payments.</p>	<b>Substantial</b>	<p>DABS makes use of the carry forward budget to make project payments while awaiting the new budget</p> <p>Bottlenecks are addressed in MoF. Payments are made within the timeline stipulated in the contracts.</p> <p>All local currency payments are made only from the DA</p>

<b>Fiduciary Element</b>	<b>Responsibility FM, PR, or Joint</b>	<b>Risk Rating</b>	<b>Comments and Risk Mitigation</b>	<b>Residual Risk Rating</b>	<b>Key Performance Indicator</b>
			While direct payments is also an option, local currency direct payments take longer to make. The project should aim to make local currency payments only from the DA to avoid delays.		
<b>3.2 Accounting and Financial Reporting (FME 2 and 5)</b>	<b>FM</b>	<b>Substantial</b>	All accounting is centrally done in the MoF using the AFMIS. Subsidiary books of records will be maintained by the DABS using Quick Books that is already in use in the DABS Accounting Department.  Acceptable financial reports should be submitted on a quarterly basis. This will be facilitated by the DABS's books of records and the centralized accounting system.	<b>Moderate</b>	All accounting is done in the AFMIS, and the DABS maintains subsidiary books of records.  The financial reports are submitted within 45 days from the end of the quarter, show accurately project receipts and payments, and balances are reconciled.
<b>FM risk rating</b>	<b>FM</b>	<b>High</b>	–	<b>Substantial</b>	<b>H, S, M, L</b>
<b>Procurement risk rating</b>	<b>PR</b>	<b>High</b>	–	<b>Substantial</b>	<b>H, S, M, L</b>
<b>Overall fiduciary risk rating</b>	<b>Joint</b>	<b>High</b>	–	<b>Substantial</b>	<b>H, S, M, L</b>

*Note:* PRAMS = Procurement Risk Assessment and Management System.

## **Environmental and Social (including safeguards)**

### ***Social***

36. **Land acquisition and resettlement.** OP 4.12 Involuntary Resettlement is triggered in view of possible land acquisition, asset loss, and resettlement in connection with Subcomponents 2(a) and 2(b). An RPF has been developed as part of the ESMF for the NHRP and will be applied to all project components where it is not feasible to avoid land acquisition, asset loss, and/or resettlement. The RPF clarifies resettlement principles, organizational arrangements, and design criteria to be applied to all components implemented under the project. In this way, a consistent approach to resettlement practice will be ensured. There will be a separate ESIA carried out by consultant firm(s) as a core element of Subcomponents 2(a) and 3(b) of the NHRP. Findings from this assessment will inform the development of the ESMPs and RAPs (if required). The RAPs will comply with the resettlement principles, with regard to eligibility criteria for identifying affected persons and compensation categories and rates, and organizational arrangements set out in the RPF. There was a public consultation meeting conducted with stakeholders on March 11, 2015 to consult draft ToRs for the ESIA for Subcomponents 2(a) and 3(b). The ESIA and the RAP(s) (if required) will be reviewed by the project's ESAP and the Bank.

37. **Indigenous people and ethnic minority development plans.** People living in the project area belong to different tribe groups, none of which can be classified as 'indigenous people'. The consultant firm which will be responsible for carrying out the ESIA will pay special attention to identify those groups, including vulnerable households (for example, female-headed households, pastoral nomad groups). Vulnerable groups will be given priority for project-related employment opportunities under the NHRP.

38. **Implementation arrangements.** The COO of the DABS will have overall responsibility for ensuring effective compliance with the requirements set out in the ESMF. The COO has appointed safeguard officers with clear ToRs, who have specific responsibilities for overseeing the implementation of the ESMF provisions during preparation, implementation, and M&E of the projects. The safeguards officers will be supported in their work by the Bank's social and environmental specialists, especially during the initial stages of the project. They will liaise closely with the DABS management at the NHPP and representatives of local communities at each stage of project development.

39. **GRM.** The key elements of the project's GRM are (a) efforts to resolve issues at the local level, (b) GRC, and (c) appeal to the DABS management. As outlined in the ESMF for the NHRP, the DABS has already established a project-level GRC. The project-level GRM comprises community representatives, local government officials, and a local NGO representative.

40. The DABS is working to develop a complaint record database to enable complaint tracking and review. The complaint handling system for Naghlu will provide the affected communities and laborers a formal venue for raising their grievances and concerns, as well as a mechanism for timely and adequate solutions or mitigation of these. The DABS will conduct public awareness programs to inform local communities to utilize grievance services.

## *Environment*

41. The severity, intensity, and location of the potential environmental and when they will occur will vary by component, as follows.

42. Component 1: Impacts will be associated with the electromechanical works taking place in the powerhouse only and will be associated with managing removal, storage, handling, and disposal of used oils and lubricants, petroleum products, and the removed parts. Other impacts may be due to loud noises and dust. These impacts are expected to be small, localized, short-lived and thus readily reversed or effectively managed with tangible mitigation measures, and are not expected to have lasting effects.

43. Subcomponent 2(a): Impacts will most likely be associated with removal and disposal of sediment material, and from managing public safety concerns during the removal, handling, and disposal of UXOS, both from the reservoir area. Other concerns will include management of large construction equipment and plant, possible expansion and heavier use of the road networks in the area, including on access roads due to the movement of heavy construction vehicles plying these roads during construction. Furthermore, there may be downstream impacts on aquatic species and on downstream water users, such as sedimentation of irrigation facilities, and so on. These impacts are likely to be of concern, and their intensity and scale will be evaluated in a full ESIA.

44. Subcomponent 2(b): Following completion of proposed studies and plans, impacts will be potentially associated with increasing the area of the reservoir and/or the raising of the dam crest, either or both of which will potentially lead to flooding of more land, and therefore, as a consequence an increase in area of the reservoir will occur. This will potentially result in flooding of marginally more land, and therefore, may possibly further require enhanced water quality control measures in the reservoir. Early environmental scoping based on desk reviews and from field visits do not indicate the presence of endangered fauna or flora species or any significant natural habitat concerns. On the contrary, the evidence points to an already severely degraded landscape in the project area and with little or no vegetative cover at all. Hence the ongoing concerns with severe soil erosion and sediment transportation and deposition in the reservoir and downstream of the dam, which will continually have to be effectively managed going forward. Therefore, similar to Subcomponent 2(a), downstream impacts on aquatic species and irrigation facilities may be of some concern. The severity of these potential impacts both with regard to their intensity and scale will be evaluated as part of the feasibility studies in a stand-alone ESIA.

45. Subcomponent 3(a): Following completion of the proposed studies and plans, impacts are likely to be almost negligible as these will be mostly associated with grid connections to surrounding villages in the project area. For some villages, off-grid connections may be the only feasible choice, and for these cases, the concerns would be how to manage lead batteries that may be used to store solar power during the day for use at night. These low-scale impacts will be managed in a stand-alone ESMP for this subcomponent.

46. Therefore, taking the potential environmental and social impacts into consideration, the proposed project triggers the following Bank safeguards policies;



- OP 4.01 Environmental Assessment
- OP 4.04 Natural Habitats
- OP 4.11 Physical Cultural Resources
- OP 4.14 Involuntary Resettlement
- OP 4.37 Safety of Dams
- OP 7.50 Projects on International Waterways

47. **ESMF.** Given that the activities being proposed for financing, with the exception of the electromechanical works in Component 1, will first be studies, analytical reports, and project documentation, to determine and prepare physical works that would then be ultimately financed by this project and/or subsequent projects, a project-level ESMF has been prepared by the DABS to provide the guidelines and measures to be taken for each component to comply with the environmental and social requirements of both the GoA and the above triggered Bank policies.

48. The ESMF has been approved and disclosed locally and through the Bank’s InfoShop on March 11, 2014.

49. During the process of developing the ESMF for the NHRP, consultations were held with representatives from local communities located upstream and downstream of Naghlu Dam as well as other stakeholders, including representatives from local government and the NGOs to inform them about the proposed project, and receive their comments and recommendations on social and environmental issues related to it.

50. The ESMF prescribes guidelines and procedures that would avoid, mitigate, or minimize adverse environmental and social impacts of supported activities and interventions. Specifically, the ESMF requires the following as described in table 3.4.

**Table 3.4 ESMF requirements.**

<b>Components (with Summary Description of Civil Works)</b>	<b>Activities to be Financed by the Project</b>	<b>Safeguards Documents Required</b>	<b>Timing for Preparation and Implementation of Safeguards Documents</b>
<b>Overall project level</b>	Components 1–4	ESMF and RPF Pre-Feasibility Social Assessment	ESMF and RPF prepared during project preparation, implemented in project. Pre-feasibility stage, social assessment of entire project area to be prepared during project preparation
<b>Component 1</b> (Electro mechanical works)	TA and civil works	ESMP	Detailed environmental and social guidelines applied during the EPRP will be updated during project preparation.
<b>Subcomponent 2(a)</b> Dam safety works (including removal of sediment material in reservoir)	TA services and civil works	Dam safety audit, ESIA, ESMP, RAP	Dam safety audit, ESIA, and ESMP prepared and implemented during the project.  RAP will be prepared if dam safety audit and ESIA indicate requirement of land.

<b>Subcomponent 2(b)</b> (feasibility study for potential raising of dam)	TA services	Feasibility Study, ESIA, ESMP, and RAP	Step 1: FS, ESIA prepared during project implementation. Step 2: If power optimization, requiring civil works or other activities that may have potential environmental and social impacts, is deemed feasible, an ESMP and an RAP will also be prepared during the project. <b>End of activities in Component 3.</b> Step 3: Actual civil works will <b>not</b> be implemented in this project, but in a potential follow-on project.
<b>Subcomponent 3(a)</b> (electrification of surrounding villages, among other things)	TA services and civil works	ESMP	ESMP, informed by findings from pre-feasibility social assessment
<b>Subcomponent 3(b)</b> (project management, supervision, dam safety panel, ESAP)	TA Services	None	n.a.
<b>Subcomponent 3(c)</b> (capacity building and scale-up)	TA services	None	n.a.

51. **ESIA.** As stated in table 3.4, a detailed ESIA and the corresponding ESMP will be prepared for the dam safety improvement Subcomponent 2(a), based on the findings of the dam safety audit. The ESIA for Subcomponent 2(b) will, among other things, examine how the different options for power optimization, including raising the dam crest will potentially impact flora, fauna, ecological changes in downstream water flow and impacts on water quality and will be carried out, in parallel with the technical feasibility study. The Subcomponent 2(b) ESIA will include an assessment of the cumulative impacts on the Kabul River Basin, and of the downstream impacts and will likewise also include the corresponding ESMP.

52. **Public consultation and disclosure.** Public consultation is a key and integral part of preparation and implementation of the NHRP. The objectives of the consultations are to:

- Inform the affected households and communities, local authorities, and civil society organizations about the project, its potential impacts, and proposed mitigation measures;
- Collect opinions/feedback to enable the preparation of resettlement plans and frameworks, and, in the later stages to complete the NHRP ESIA/ESMPs;
- Promote stakeholder involvement and improve transparency and accountability; and
- Obtain broad support for the project.

53. **ESMF stage consultations.** In this regard, consultations were held with communities from the area of influence in Surobi and Tagab Districts as well as in Kabul. To disclose and consult on the draft ESMF, a larger consultation was conducted in Kabul, where, community members, stakeholders from districts level, representatives from NGOs, civil society, and relevant government authorities participated in discussions about the contents of the ESMF.

54. **Consultation on the ESIA.** In relation to public consultation, OP 4.01 requires a two-stage process: (a) shortly after environmental screening and before the ToR for the ESIA are finalized and (b) once a draft ESIA report is prepared. In addition, the borrower will consult with stakeholder groups throughout project implementation as necessary to address ESIA-related issues that affect them, as is recommended for various aspects of environmental management in the present ESIA report. There were consultations conducted in connection with draft ToR for the ESIA.

55. Compliance with OP 4.01 will require the following additional future actions:

- For consultation after the two draft ESIA reports are prepared, the borrower should provide a summary of the minutes of these consultations, in their conclusions, in annexes of the final draft ESIA reports. In addition, for this Category A project, the borrower should make the draft ESIA reports available at a public place that is accessible to project-affected groups and other stakeholders. The project implementation unit has agreed to make arrangements for these actions.
- During implementation of the proposed project, the borrower should report on (a) compliance with measures agreed with the Bank on the basis of the findings and results of the two ESIA reports, and implementation of their corresponding ESMPs; (b) the status of mitigation measures; and (c) the results of monitoring programs.

56. All environment and social safeguards instruments will be disclosed at the project site in the Surobi and Tagab Districts, through the DABS website, both in local languages and English, and through the Bank's Public Information Center (InfoShop) in English, providing adequate time in advance of consultations for each draft of the instruments.

57. **Safeguard implementation and capacity building.** Subcomponent 4(b) will aim to build and strengthen the institutional capacity of the DABS to better support the development and integration of social and environmental measures into the project. An assessment will be carried out by the DABS, supported by the Bank, to identify training needs of DABS staff on environment and social issues at the national and local levels. A capacity-building strategy will be developed to meet identified training and other capacity-building needs. The NHRP has already taken a number of steps to augment the capacity of the environmental and social safeguard focal officers, including face-to-face trainings and online ESIA training modules.

58. For medium-term capacity building, a capacity-building plan will be prepared as part of the ESIA reports. The training plan will include the development plan for dedicated safeguard staff, monitoring the day-to-day activity, and site supervision. Additionally, a detailed training plan will also be developed, which will comprise training of the relevant staff, training of contractors, as well as training of the corporate and project-level managerial staff on environmental safeguards management.

### ***Monitoring and Evaluation for Social and Environmental Implementation***

59. M&E for social and environmental implementation will be done at two levels: (a) internal monitoring and reporting and (b) external monitoring and reporting.

60. **Internal monitoring and reporting.** At the local level, DABS safeguards officers, together with the DABS local project management team, local government, and local communities will be responsible for monitoring to ensure that all required environmental and social mitigation measures, set out in the ESMPs and RAPs (if required) for each project component, are implemented satisfactorily. Information collected from various stakeholders (for example, representatives of men and women's CDCs, farmers, shopkeepers, local government officials from Surobi District, local NGOs, and contractors) together with observations of project activities will be reported monthly to the DABS national office in Kabul using standard reporting forms. At the national level, the DABS COO will take responsibility for overseeing progress in implementing the ESMF and assessing the effectiveness of mitigation measures against agreed indicators and parameters. Where the RAPs are in place, the safeguards officers will also submit short monitoring reports describing the delivery of the compensation package to each affected person as per the entitlement matrix.

61. **External monitoring and reporting.** External assessment of compliance with mitigation measures will also be carried out on a regular basis by an external agency/independent party to be appointed by the DABS and agreed to by the Bank with the results communicated to the DABS and the Bank. The independent third party monitoring agency will be responsible for the preparation of the semiannual compliance report on the RAPs (if required) and the ESIA/ESMPs which will (a) update the status of project-affected persons against the socioeconomic baseline of the RAP, (b) review how compensation and related resettlement assistance in cash or kind are being delivered to affected households, and (c) ensure that the ESIA/ESMP measures and commitments are adequately implemented.

## **Monitoring & Evaluation**

62. **Project coordination and monitoring.** The CEO in the DABS will be responsible for overall project coordination and monitoring, while the day-to-day project management responsibility will rest with the PIT led by the project manager who has been appointed for the purpose and will be reporting to the COO. In the MEW, the responsibility for coordination and monitoring will rest with the deputy minister for energy. The PIT of the DABS consolidates the financial and physical progress reports for the different activities, including that of Subcomponent 4(c) to be implemented by the MEW, and is responsible for overall monitoring and reporting to the ARTF. The Bank task team conducts regular supervision missions, and the project status reports are submitted to the ARTF every three months/a quarter. As appropriate and as required, an independent M&E of specific component activities may be carried out to assess the implementation progress and outcome of some components of the project.

## Procurement Plan

### General Project Information:

**Country/Borrower:** Islamic Republic of Afghanistan  
**Project Name:** Naghlu Hydropower Rehabilitation Project – Phase I

Implementing Agency: DABS  
 Grant No: TF014861

Bank's approval Date of the Procurement Plan: [XXX]

Date of GPN: 13, July, 2013

Period covered by this procurement plan: 18 months

### *Goods and Works and Non-Consulting Services*

**Table 3.5. Procurement Methods and Thresholds**

	Procurement Method	Threshold for Methods (US\$)	Comment
1.	ICB (Works, Turnkey and Supply and Installation of Plant and Equipment)	5,000,000	Equivalent or more
2.	ICB (Goods)	200,000	Equivalent or more
3.	NCB (Works)	5,000,000	Equivalent or less
4.	NCB (Goods)	200,000	Equivalent or less
5.	Shopping (Goods )	50,000	Equivalent or less
6.	Shopping (Works)	100,000	Equivalent or less
7.	ICB (Non-Consultant Services)	200,000	Equivalent or more
8	Commercial practices (Goods)	200,000	Equivalent or less

63. **Prior Review Threshold:** Table 3.5 shows the procurement decisions subject to prior review by the Bank as stated in Appendix 1 to the Guidelines for Procurement.

**Table 3.6. Prior Review Thresholds for Procurement Methods**

	Procurement Method	Prior Review Threshold (US\$)	Comments
1.	Works, Turnkey and Supply and Installation of Plant and Equipment	5,000,000	Equivalent or more
2.	Goods	500,000	Equivalent or more
3.	IT Systems and Non-Consulting Services	500,000	
4.	Direct Contracting	50,000	Equivalent or more

Prequalification: NIL

**Table 3.7: Procurement Packages with Methods and Time Schedule<sup>5</sup>**

<sup>5</sup> This table together with the whole Procurement Plan will be updated based on discussion in project appraisal.

Ref. No.	Contract (Description)	Estimated Cost (US\$)	Procurement Method	PQ (Yes/No)	Domestic Preference (Yes/No)	Review by Bank (Prior/Post)	Expected Bid-Opening Date	Comments
NHRP-12-NCB-O-DABS/WB/NGLU/WORKS/003	Design ,Supply and Installation of the Warehouse	549,580	ICB	N	N	Prior	Complete	
NHRP-11-LPI-O-DABS/WB/NGLU/WORKS/002	Plant Design, supply and installation of substation and equipment	1,500,000	ICB	N	N	Prior	02/16/2015	
NHRP-1-CD-B-DABS-WB-NAGHLU-GOODS-001	Procurement of Spare Parts for Naghlu Power Plant	2,194,817	ICB	N	N	Prior	Complete	
NHRP-13-LPI-B-DABS/WB/NGLU/GOODS/002	Procurement of Spare Parts for Naghlu Power Plant	375,000	ICB	N	N	Prior	Complete	
NHRP-14-LPI-B-DABS/WB/NGLU/GOODS/003	Supply of Goods for Electrification of Sarobi district Area around Naghlu HPP	1,576,422.	ICB	N	N	Prior	Complete	
Rehabilitation of Units No. I & 3	NHRP-46-LPI-B-4	2,000,000	ICB	N	N	Prior	06/07/2015	

### *Selection of Consultants*

**Table 3.8: Selection Methods and Thresholds**

	Selection Method	Threshold (US\$)	Comments
1.	CQS for Firms	300,000	Equivalent or less
2.	QCBS,QBS, FBS, LCS	Depending on the nature and complexity of assignment	

*Note:* CQS = Selection Based on the Consultants' Qualifications; QCBS = Quality- and Cost-Based Selection; QBS = Quality-Based Selection; FBS = Selection under a Fixed Budget; LCS = Least-Cost Selection.

64. **Prior Review Threshold:** Table 3.8 shows the selection decisions subject to prior review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants.

**Table 3.9: Prior Review Thresholds for Selection Methods**

	<b>Selection Method</b>	<b>Prior Review Threshold (US\$)</b>	<b>Comments</b>
1.	Competitive Methods (Firms)	200,000	Equivalent or more
2.	Competitive Methods (Individuals)	100,000	Equivalent or more
3	Single Source (Firms/Individuals)	50,000	Equivalent or more

**Table 3.10: Consultant Packages with Methods and Time Schedule**

<b>Ref. No.</b>	<b>Contract (Description)</b>	<b>Estimated Cost (US\$)</b>	<b>Procurement Method</b>	<b>Review by Bank (Prior/Post)</b>	<b>Expected Proposal Submission date</b>	<b>Comments</b>
NHRP-2-SBCC-CF-DABS-WB-NGLU-CON-FIRM-001-002	Consultancy Services for Naghlu Dam Safety and Capacity Improvements	7,000,000	QCBS	Prior	12/15/2015	
NHRP-8-SBCC-CF-DABS/WB/NGLU/CON/FIRM/007	Consultancy services of training program for operation and maintenance of Naghlu Dam Hydropower plant	1,750,000	QCBS	Prior		
NHRP-47-CCIN-CI-21	Project Director for Naghlu Hydro Power Rehabilitation Project (NHRP).	240,000	IC	Prior		
NHRP-47-CCIN-CI-22	Environmental Specialist	150,000	IC	Prior		
NHRP-47-CCIN-CI-23	Social Specialist	150,000	IC	Prior		
NHRP-47-CCIN-CI-24	Knowledge and Learning Specialist	150,000	IC	Prior		
NHRP-47-CCIN-CI-25	Monitoring and Evaluation Specialist	150,000	IC	Prior		
NHRP-47-CCIN-CI-26	Communication Specialist	150,000	IC	Prior		
NHRP-47-CCIN-CI-27	Civil Engineer Supervisor	120,000	IC	Prior		
NHRP-47-CCIN-CI-28	Electrical and Electro-Mechanical Specialist	120,000	IC	Prior		
NHRP-47-CCIN-CI-29	Financial Specialist	150,000	IC	Prior		
	Procurement Specialist	150,000	IC	Prior		

65. **Short list comprising entirely national consultants:** Short list of consultants for services, estimated to cost less than US\$200,000 equivalent per contract, may comprise entirely of national consultants in accordance with the provisions of Paragraph 2.7 of the Consultant Guidelines.

***Agreed Procedures for National Competitive Bidding***

- (a) SBDs approved by the Association shall be used.
- (b) Invitations to bid shall be advertised in at least one widely circulated national daily newspaper and bidding documents shall be made available to prospective bidders, at least 28 days prior to the deadline for the submission of bids.
- (c) Bids shall not be invited on the basis of percentage premium or discount over the estimated cost.
- (d) Bidding documents shall be made available, by mail or in person, to all who are willing to pay the required fee.
- (e) Foreign bidders shall not be precluded from bidding.
- (f) Qualification criteria (in case pre-qualifications were not carried out) shall be stated on the bidding documents, and if a registration process is required, a foreign firm determined to be the lowest evaluated bidder shall be given reasonable opportunity of registering, without any hindrance.
- (g) Bidders may deliver bids, at their option, either in person or by courier service or by mail.
- (h) All bidders shall provide a bid security or a bid security declaration form as indicated in the bidding documents. A bidder's bid security or the declaration form shall apply only to a specific bid.
- (i) Bids shall be opened in public in one place preferably immediately, but no later than one hour, after the deadline for submission of bids.
- (j) Evaluation of bids shall be made in strict adherence to the criteria disclosed in the bidding documents, in a format, and within the specified period, agreed with the Association.
- (k) Bids shall not be rejected merely on the basis of a comparison with an official estimate without the prior concurrence of the Association.
- (l) Split award or lottery in award of contracts shall not be carried out. When two or more bidders quote the same price, an investigation shall be made to determine any evidence of collusion, following which: (i) if collusion is determined, the parties involved shall be disqualified and the award shall then be made to the next lowest evaluated and qualified bidder; and (ii) if no evidence of collusion can be confirmed, then fresh bids shall be invited after receiving the concurrence of the Association.
- (m) Contracts shall be awarded to the lowest evaluated bidders within the initial period of bid validity so that extensions are not necessary. Extension of bid validity may be sought only under exceptional circumstances.
- (n) Extension of bid validity shall not be allowed without the prior concurrence of the Association (i) for the first request for extension if it is longer than four weeks, and (ii) for all subsequent requests for extensions irrespective of the period in case of prior review.
- (o) Negotiations shall not be allowed with the lowest evaluated or any other bidders.



- (p) Re-bidding shall not be carried out without the Association's prior concurrence in case of prior review.
- (q) All contractors or suppliers shall provide performance security as indicated in the contract documents. A contractor's or a supplier's performance security shall apply to a specific contract under which it was furnished.

### **Role of Partners**

66. The proposed project will be fully financed by the ARTF. The four main donors working with the power sector in Afghanistan are the ADB, Kreditanstalt für Wiederaufbau (KfW), USAID, and the Bank. All are supporting DABS. There is a risk that different donors may advocate different approaches/systems for hydropower rehabilitation and that the sheer volume of donor support may overwhelm DABS. This is best mitigated by maintaining contact with donors and ensuring careful coordination.

67. At the strategic level, activities are coordinated through the ARTF. Both USAID and the Kreditanstalt für Wiederaufbau (KfW) are key donors to the ARTF and as such the Bank maintains close relations to those partners. The ADB is a member of the ARTF management committee, which approves all funding allocations under the trust fund.

68. Outside the scope of the ARTF, the Bank is maintaining a close contact to relevant donors to ensure information sharing and alignment of activities. To support the implementation of an ADB-financed project at DABS, a project implementation unit has been set up as a separate unit within the general structure of DABS. The proposed project to be financed by the ARTF will thus take a different approach as staff mapped to the project will remain within their respective department to ensure close and continued integration in the organization, while coordinating closely with the project manager. The differences in implementation models have been carefully discussed with DABS to ensure that they understand and support the alternative implementation model.

**Annex 4: Implementation Support Plan**  
**AFGHANISTAN: Naghlu Hydropower Rehabilitation Project – Phase I**

**Strategy and Approach for Implementation Support**

1. The overall supervision complexity rating is Low to Medium. See more details in table 4.1.

**Table 4.1. Supervision Complexity Matrix<sup>6</sup>**

Criterion	Factors to Take into Consideration	Low	Medium	High
Transaction volume	<ul style="list-style-type: none"> <li>• Total number of transactions over project lifetime</li> <li>• Total number of contract awards expected in a year</li> <li>• The size of the project and the number of transactions and contract awards (both being low)</li> </ul>	X		
Geographic spread/scope and security factor	<ul style="list-style-type: none"> <li>• Number of provinces covered by the project</li> <li>• Proportion of project provinces considered to be high risk (as defined by the Bank’s security team)</li> </ul>		X	
Implementing agency capacity	<ul style="list-style-type: none"> <li>• Could link to the Systematic Operations Risk-Rating Tool (SORT) rating from the PAD (resources, processes, and systems) and/or ministry/implementing agency procurement and FM risk ratings done during preparation (proxy for overall capacity/competence)</li> <li>• Number of implementing agencies</li> </ul>			X
Governance risks	Could link to the SORT rating from the PAD (ownership and commitment; accountability and oversight; decision making; and fraud and corruption)		X	
Safeguards rating	Safeguards category (A, B, C, or FI)			X
Complexity/innovation	Number of different specializations needed for supervision	X		
Donor coordination	<ul style="list-style-type: none"> <li>• Whether ARTF- or IDA-financed</li> <li>• Whether co-financed by other donors</li> </ul>	X		

2. The project is expected to have about 20 contracts (4 goods, 2 works, and 14 consultant services), with about 80 percent of the total project value in just 4 or 5 contracts. The contracts will mainly be ICB with several stage payments. The project safeguards rating is Category A, which means that it will require close supervision from safeguards colleagues.

<sup>6</sup> The Supervision Complexity Matrix is a country management unit requirement in Afghanistan to ensure improved consistency between supervision complexity and supervision budget.

3. The project is limited to only one area, close to Sarobi in Kabul Province, which allows easy access for supervision purposes. However, this is a high-risk area as Sarobi is characterized by security problems.

4. The DABS is working with the working with the Bank on two other operations. The agency is becoming more familiar with the Bank's policies and procedures. However, given the complexity associated with this project, close supervision from the Bank's team with respect to procurement, FM, and safeguard issues under the project is essential.

### **Implementation Support Plan**

5. The project supervision will be done jointly by Kabul-based staff and international staff from Dubai and Washington, D.C. External technical expertise is needed and the technical experts are expected to have regular site visits.

6. Procurement can, for the most part, be supported by procurement-accredited members of the team with support from the Kabul-based procurement team for larger contracts above the procurement thresholds. While the DABS will hire a procurement specialist to support implementation, the Bank will, especially during the early days of implementation, support the DABS in procurement.

7. The team will need to go to Naghlu approximately once every quarter. The site is about a two-hour drive from Kabul. Due to security constraints, the entire team may not be able to go together. The team will therefore have to break up and go in smaller groups, which will probably result in about two visits every three months.

## Annex 5: Economic and Financial Analysis<sup>7</sup>

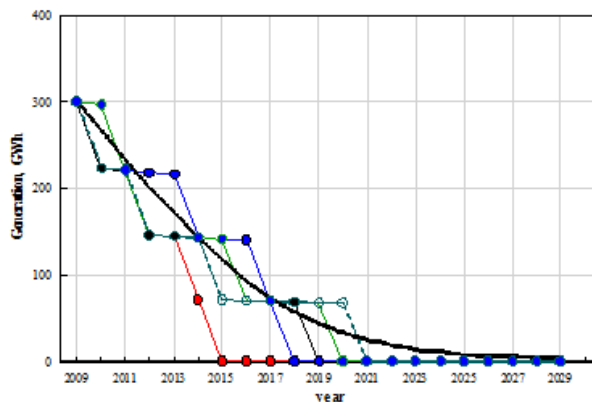
### AFGHANISTAN: Naghlu Hydropower Rehabilitation Project – Phase I

1. Much of the information needed for reliable calculation of the economic returns will only become available upon the completion of the proposed project's Component 2, which will prepare a detailed reservoir operation simulation model. Nevertheless, despite significant gaps in the available information, there is confidence in the robustness of the economic returns of the proposed NHRP.

#### The Counterfactual

2. Drawing up a credible counterfactual for a rehabilitation project is the critical assumption, for nobody can be sure of what will be the outcome of a project already in serious difficulty in the absence of rehabilitation. In the interests of being conservative, it is assumed that all the incremental off-peak energy supplied by the rehabilitated project will displace imported electricity and only during peak hours will displace diesel self-generation.<sup>8</sup> It is also assumed that in the absence of rehabilitation, the most likely fate is that each of the four units will be operated until some failure makes it completely inoperable, at which point it will be abandoned until the last unit fails when the entire project ceases to generate power (sequential failures being modeled in a Monte Carlo simulation to derive an expected value of generation for the counterfactual).

Figure 5.1. Failure Trajectories for Unit Failures



3. Figure 5.1 illustrates the analysis; each line shows one sequence of serial machine failure (for example, the red curve shows one trajectory that sees plant abandonment in 2015). The

<sup>7</sup> This annex summarizes the results of the detailed background report on the economic and financial analysis included in the project files.

<sup>8</sup> During the past few years, even during the peak winter months, the Kabul diesel plants (mainly the relatively modern and efficient plant at Tarakhil, commissioned in 2009) are rarely used because of fuel shortages and the fact that for the NEPS/DABS, the incremental fuel cost of running a diesel plant is far greater than the tariff and higher still when compared to what is actually collected. So running the diesel plants aggravates the DABS' financial problems. The result is that peak demands are simply not supplied by the grid, resulting in greater use of standby generators.

average of the 1,000 simulations (the bold black curve in Figure 5.1) can be taken as the expected value of generation used in the economic and financial analysis as the no-project counterfactual. The second set of important assumptions relates to what energy will be displaced. In the EPRP Implementation Completion Report, it was assumed that the entire incremental generation (that is, the difference between the output of Naghlu in the absence of rehabilitation and Naghlu generation without the rehabilitation project) will avoid the construction of a new DABS diesel project (similar to the Tarakhil project). This results in an extremely high avoided cost and a corresponding high ERR. However, given that the Tarakhil project has been used little since its completion and that increases in power demands in the Kabul region have been met by imports of gas-based electricity (from Uzbekistan), it may be more reasonable (and certainly more conservative from the standpoint of estimating economic returns) to assume that the incremental Naghlu production will result in a reduction in such imports—particularly since the bulk of the Naghlu energy is produced in summer, whereas the peak load in Kabul is in winter and Naghlu has only limited storage.

4. However, Kabul suffers from severe power shortages during the winter, with extensive use of diesel self-generation during peak hours. There are also many times during the summer when there is evidence of diesel self-generation in Kabul. Consequently, it is assumed that peak-hour electricity from Naghlu will replace diesel self-generation, which results in lower economic returns to a certain extent (around 40 percent rather than the 118 percent ERR reported in the EPRP Implementation Completion Report). Moreover, the sensitivity analysis establishes that even if none of the incremental energy displaced diesel, (that is, the entire incremental Naghlu output displaced imported gas), the economic returns are still significantly above the hurdle rate.

5. The current import price of gas is around US\$0.06 per kWh, but this is expected to increase as the degree of surplus in Uzbekistan declines, and the export price to Afghanistan will inevitably include a capacity cost once additional gas plants are built. This will also be true for gas-based power imports from Turkmenistan, as assumed by the Afghanistan power sector master plan. However, under the assumption that the capacity charge will be geared to the peak demands (in winter), the avoided cost that applies to additional hydro generation in summer will be just the energy charge.

6. Similar considerations apply to summer hydro imports to be delivered to Kabul by the Central Asia-South Asia-1,000 project. The economic analysis in the recent assessment of power transit options for Afghanistan uses an avoided cost of US\$0.636 per kWh, a value used here.<sup>9</sup> This is adjusted by 3 percent for differential transmission losses (the distance from the point of import to Kabul is significantly longer than the distance from Kabul to Naghlu), so the avoided cost at the point of import, per kWh delivered to Kabul from Naghlu, is US\$0.066 per kWh. This is much more likely to increase than decrease in the future and is conservative as a basis for estimating the economic returns of the NHRP.

7. The avoided cost of diesel self-generation is just the avoided variable cost of diesel fuel, for which we use the current Kabul retail price of US\$1.09 per liter. Given the likely condition of

---

<sup>9</sup> Irving, John, Peter Meier, and Vijay Prasher. 2013. *Technical and Economic Options for Power Transit Operations through Afghanistan*. Washington, DC: World Bank.

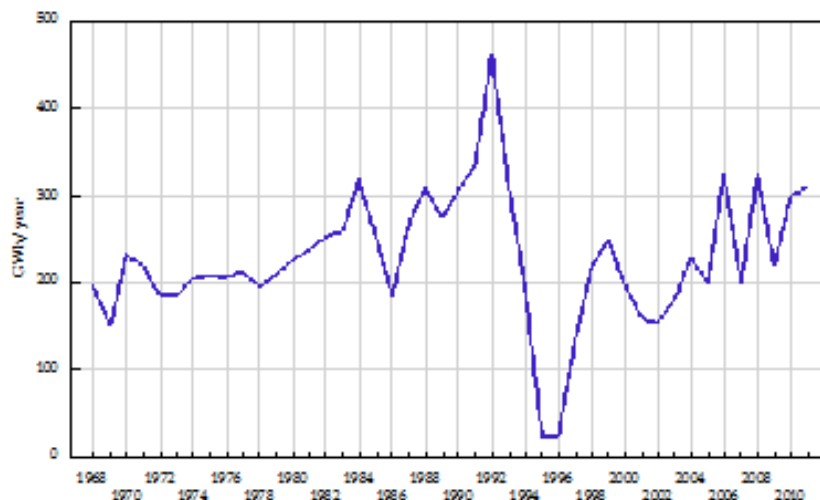
equipment, 0.3 liters per kWh will be a conservative consumption rate, leading to an avoided cost of US\$0.327 per kWh.

### The Impact of Rehabilitation

8. In general, one expects that rehabilitation of the electromechanical works of a hydro plant results in an improvement in turbine efficiency and a reduction in forced maintenance hours (with its attendant loss of generation). Both are difficult to estimate for Naghlu because detailed maintenance logs are not available (therefore, it is difficult to estimate what improvements may be likely) and there are no hill charts for the turbines.<sup>10</sup> However, the general global experience (as reflected in the opinions of the Norconsult evaluation of the project in 2003) is that a 4–6 percent increase in efficiency can be expected, with the capacity increasing to 27–28 MW.<sup>11</sup>

9. In addition, optimization of power production by changes to the operating rule and sediment management measures will add additional benefits (pursuant to Component 3), but such benefits are not claimed in this analysis (mainly because they cannot be reliably estimated in the absence of the reservoir optimization model that Component 3 will develop).

Figure 5.2. Generation at Naghlu 1968–2010 (Source: DABS)



10. Annual generation at Naghlu is shown in Figure 5.2. Annual output during the 1970s was around 200 GWh, reflecting a load factor of just 23 percent. This increased gradually during the 1980s, with a peak generation of 438 GWh in 1992. After the disruptions of the following decade, since 1998, generation has gradually increased to around 300 GWh per year. In the last two years, with units offline for rehabilitation, generation has been somewhat lower, but even at 300 GWh per year, this implies a load factor of 34 percent. At 438 GWh, the project has a load factor of 50 percent, which appears to be a reasonable load factor in the light of Russian design

<sup>10</sup> These show turbine efficiency as a function of discharge and head and allow assessment of the so-called best efficiency point.

<sup>11</sup> Norconsult for the Ministry of Water and Power, *Existing Hydropower Plants Field Notes*, October 2004.

practice. In the 1970s, lower load factors may have been the consequence of lack of load in Kabul.

11. More recent problems may be connected with transmission line constraints and units out of service for repairs, but with detailed daily generating logs available only since 2011, it is hard to be precise. Therefore, it is conservatively assumed that following rehabilitation—including the rehabilitation of the switchyards and the transmission line (completed in the EPRP)—generation will increase gradually to 438 GWh in 2020. The sensitivity analysis described below shows that this is not a critical assumption and that even if there is no increase in generation, the economic returns are only slightly below the baseline estimate.

### **Assumptions for the Economic Analysis**

12. The other main assumptions for the economic analysis are as follows:

- Total rehabilitation cost of US\$118.5 million (EPRP - US\$32.6 million, NHRP - US\$77.5 million, and an additional US\$8.4 million for switchyard rehabilitation), with disbursements over the period 2009–2016.
- A counterfactual of no rehabilitation as described in Figure 5.1 (sequential failure of units, leading to abandonment of the plant when the last unit fails).
- With rehabilitation, a gradual increase in annual generation equivalent to an annual capacity factor of 0.5 by 2020 (438 GWh per year) but thereafter declining at the same rate as the counterfactual, with an assumed abandonment—and absence of another life-extension project—by 2028.
- For both the rehabilitation and no rehabilitation cases, peak hour generation is valued at the avoided cost of diesel self-generation and off-peak generation is valued at the cost of gas-fired imports.
- Discount rate for the NPV calculations is 10 percent.
- The avoided GHG emissions are valued at US\$30 per ton (emission factors for gas generation - 0.4 kg per kWh, for diesel - 0.6 kg per kWh).
- Local environmental externalities as associated with air pollution from diesel self-generation are based on the Bank Environment Department Six Cities study, which notes that damage costs from diesel self-generation, at ground level in typically densely populated areas, are two orders of magnitude greater than from utility projects (generally with modern emission controls, in remote areas, and with tall stacks).
- Given the age of the four units currently under rehabilitation, even with rehabilitation one cannot expect a life extension much beyond 10–12 years—and indeed one of the units already rehabilitated is currently again out of service following a major problem. Consequently, it is assumed that starting in 2021 and in the absence of a further extension project, the rehabilitated unit will experience the same rate of decline that a unit which is not rehabilitated would have experienced starting in 2009—that is, be subject to the same expected decline in generation over time as shown in Figure 5.1 for the no rehabilitation counterfactual. This is a fairly pessimistic assumption, although as noted below, again it has a relatively small

impact on the ERR of the rehabilitation project as a whole (that is, the EPRP plus NHPR) because of the benefits already locked in.

### Economic Analysis

13. The economic returns for the total rehabilitation of the plant, including all of the dam safety and environmental safeguards, and including the costs of the EPRP are 42.6 percent (NPV - US\$103 million). The inclusion of environmental benefits increases these returns. With the consideration of the avoided local environmental impacts (associated with the health effects of self-generation), the returns increase to 47.1 percent (NPV - US\$121 million), and when the benefit of avoided GHG emissions are included (and valued at US\$30 per ton CO<sub>2</sub>), the returns increase further to 52.6 percent (NPV - US\$140 million). The lifetime (undiscounted) GHG emissions calculate to 1.84 million tons of CO<sub>2</sub>.

**Table 5.1. Sensitivity Analysis Switching Values**

	Unit	Baseline	Switching Value	Ratio
Counterfactual abandonment year	Year	2018	None	–
Gas import price	US\$/kWh	0.07	None	–
Diesel price	US\$/liter	1.09	None	–
Capital cost multiplier	US\$, million	86	226	263%
Maximum generation	GWh	438	64	15%
Delay	Years	0	None	–

14. The sensitivity analysis shows that the economic returns are robust with respect to the main project uncertainties (Table 5.1). For many of the important variables, switching values are undefined (which means that even if these variables were at their minimum values, the ERR still exceeds the hurdle rate), which is true of the various scenarios for the counterfactual, the electricity import price, and the diesel price. The switching values for capital costs is 263 percent of the baseline estimate and the switching value for the maximum energy generation achieved after rehabilitation is 64 GWh compared to the 438 GWh in the baseline, and the 295 GWh actual generation in 2011–2012. One of the reasons for the robustness of the rehabilitation is that a significant share of the project benefits has already been locked in (since the start of the EPRP). Even if there was no improvement in generation over the current level of around 300 GWh, the incremental energy at this level, compared to the counterfactual, is enough to generate economic returns of 37.8 percent. In other words, just keeping the plant running at 300 GWh per year is the principal benefit of the rehabilitation.

**Table 5.2. Impact Delay on Economic Returns**

Delay (Years)	Delay penalty (US\$, millions)	Maximum Energy (2020) (GWh)	ERR (%)
0	0.0	438	43
1	4.3	405	40
2	9.0	374	38
3	14.2	345	36



4	19.9	319	33
5	26.2	295	31

15. Arguably the greatest risk is delay in completion of the electromechanical works, which will not just delay the additional energy generation but may also increase costs. However, because a significant fraction of the benefits of rehabilitation have already been locked in, the impact on economic returns is small; a three-year delay will reduce the returns from 42.6 percent to 36 percent (Table 5.2).

16. The economic returns are also robust with respect to the various dimensions of the counterfactual. Table 5.3 shows the impact of the assumed date of abandonment of the no rehabilitation project counterfactual on economic returns—any abandonment of the project before the baseline assumption of 2020 will increase the ERR.

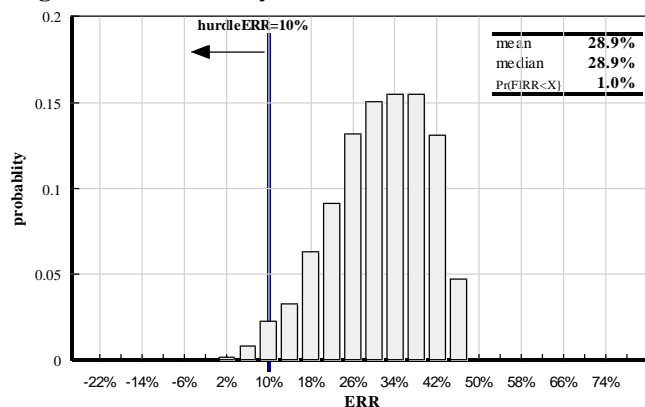
**Table 5.3. Impact of Counterfactual Abandonment Date**

Year of Closure	ERR (%)
2020	42.2
2018	42.6
2015	45.6
2013	53.7
2012	63.0

### Risk Assessment

17. A formal Monte Carlo risk analysis, in which uncertainty in the input variables are considered in combination (rather than one at a time as in the switching values analysis), confirms this assessment. Based on pessimistic assumptions about the probability distributions of the input variables, which are skewed toward the unfavorable, the probability of not meeting the hurdle rate is assessed as 1 percent.

**Figure 5.3. Probability Distribution of Financial Returns**



18. This is a low-risk project, though that characteristic is true of many hydro-rehabilitation and life-extension projects. Figure 5.3 shows the probability distribution of economic returns. Because the probability distributions chosen for the input variables are purposely skewed toward

unfavorable outcomes, the expected value of 28.9 percent is significantly below the baseline estimate of 42.6 percent.<sup>12</sup>

### Assumptions for the Financial Analysis

19. The additional assumptions for the financial analysis are as given below:

- Capital investments for the NHRP are provided by the ARTF, and considered as grants.
- The grant funds are on-lent by the MoF to the DABS under regular IDA terms: 38 years maturity, 6 years grace, 0.75 percent service charge on the disbursed and outstanding credit balance (in effect the interest rate), and repayment of principal in 32 equal annual instalments).<sup>13</sup> Similar arrangements are assumed for the EPRP.
- The financial benefit to the DABS is therefore the cost of avoided electricity imports (with a corresponding benefit to foreign exchange requirements) plus the additional sales revenue of electricity that can now be supplied during off-peak hours, minus the debt service obligations of the on-lent funds. The additional sales revenue derives from the fact that consumers who were previously curtailed and used diesel self-generation, now buy electricity from the DABS.
- The corresponding benefit to consumers is the difference between the cost of diesel for self-generation and the cost of electricity from the DABS.

### Financial Analysis

20. The financial analysis shows that all stakeholders benefit from the project. The key assumption is that the funding is provided to the government as a grant but that the MoF on-lends the proceeds to the DABS under typical concessionary terms. The resulting incremental cash flows to the DABS show a consistent surplus (relative to the counterfactual of importing gas-based electricity), with an NPV (at 10 percent over the lifetime that extends to 2052 in consequence of the concessionary terms) of US\$83 million. Table 5.4 shows the distribution of benefits: the US\$67 million of Afghanistan trust funds generate US\$170 million in benefits for Afghanistan, including US\$65 million benefit to consumers (who avoid the costs of peak-hour diesel self-generation).

**Table 5.4. Beneficiaries (NPV at 10%)**

	US\$, millions
DABS	83
MoF	21
Consumers	65
Total benefit to Afghanistan	170
Afghanistan trust fund	-67
Net benefits	103

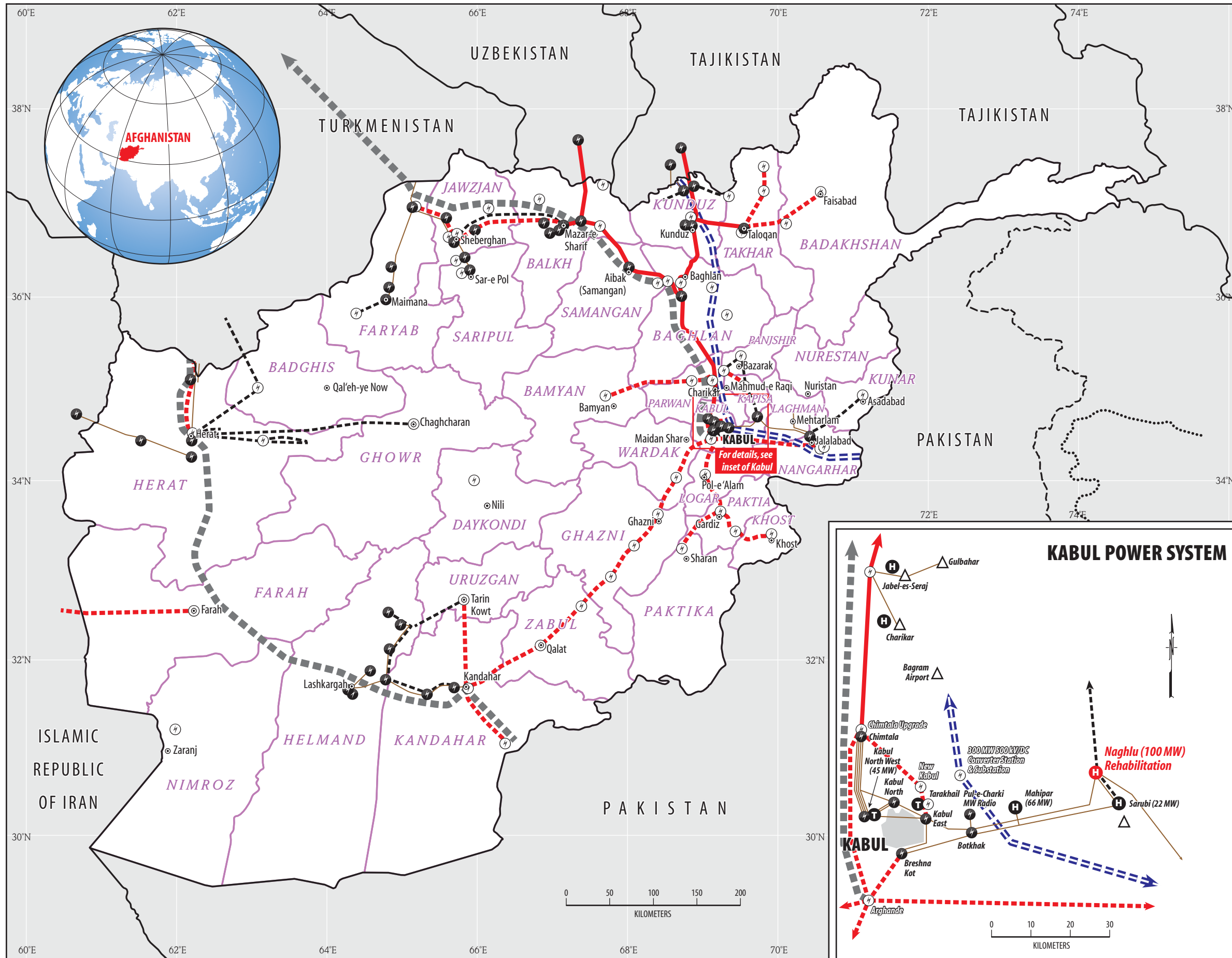
<sup>12</sup> For example, in the probability distribution for delay, the mode of the distribution is assumed at one-year delay, with delays of as much as seven years (rather than the baseline assumption of a two-year implementation period).

<sup>13</sup> <http://www.worldbank.org/ida/articles-agreement/IDA-terms-July-14.pdf>.

21. The financial benefits to the various stakeholders are also robust with respect to the main uncertainties. For example, a three-year delay in completion of the rehabilitation project will reduce the NPV of the net cash flows to the DABS from US\$103 million to US\$69 million. Even in the worst case that the additional costs of delay were to come from the DABS, sufficient cash benefits (from the avoidance of imports) will have been generated since the start of rehabilitation for the DABS to provide for the necessary funds without serious impact.

22. In summary, the economic and financial benefits of the proposed project are large and robust, with respect to the main risk factors.





# AFGHANISTAN NAGHLU HYDROPOWER PLANT

**Future Existing**

**TRANSMISSION LINES:**

- CASA 1000
- 500 kV
- 220 kV
- 110 kV
- 35/20 kV

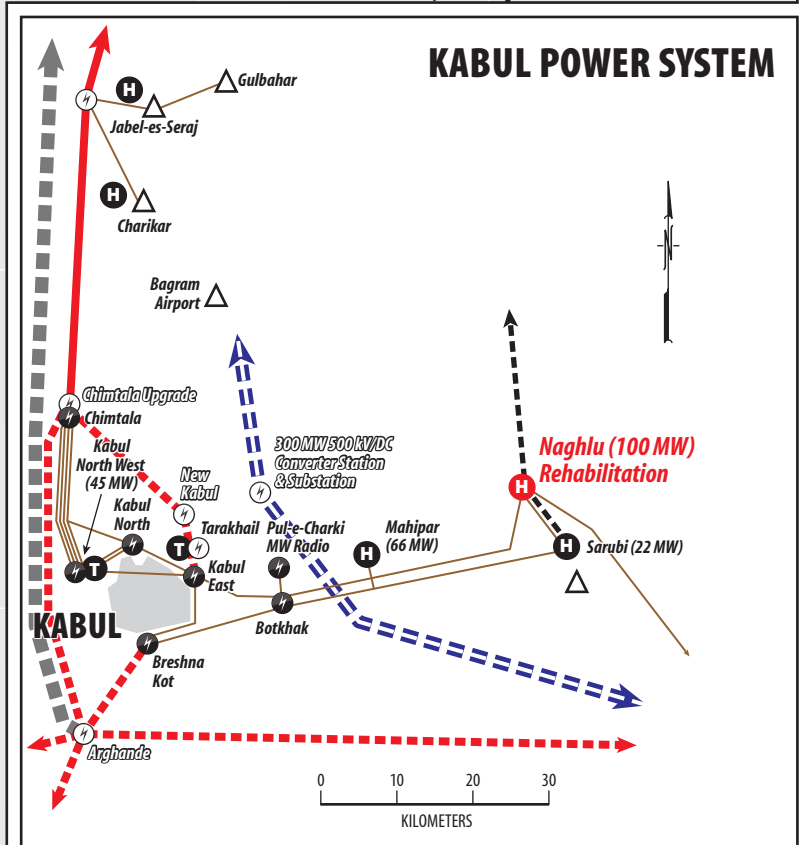
**Substations** (H) **Electrified Centers** (Δ)

**Project Future Existing**

**GENERATING STATIONS:**

- Hydro Plants (H)
- Thermo Plants (T)
- Diesel Plants (D)

○ PROVINCE CAPITALS  
★ NATIONAL CAPITAL  
— PROVINCE BOUNDARIES  
— INTERNATIONAL BOUNDARIES



IBRD 41892 | FEBRUARY 2016  
 This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

