

Facility Administration Manual

Project Number: 48078-002

Loans: LXXXX, LXXXX

August 2016

Islamic Republic of Pakistan: Second Power Transmission Enhancement Investment Program and Tranche 1

ABBREVIATIONS

ADB	–	Asian Development Bank
	–	
CPPA-G	–	Central Power Purchasing Agency (Guarantee) Limited
DMF	–	Design and monitoring framework
EAD	–	Economic Affairs Division
EMS	–	energy management system
ESIC	–	Environmental and Social Impact Cell
FAM	–	facility administration manual
FMA	–	financial management assessment
FMC	–	facility management consultant
FMICRA	–	financial management internal control and risk assessment
GDP	–	gross domestic product
GWh	–	gigawatt-hour
IESCO	–	Islamabad Electric Supply Company
km	–	kilometer
kV	–	kilovolt
kV DC	–	kilovolt direct current
kWh	–	kilowatt-hour
LARP	–	land acquisition and resettlement framework
LCP	–	least-cost plan
MFF	–	multitranchise financing facility
MOF	–	Ministry of Finance
MTBF	–	Medium-Term Budgeting Framework
MVA	–	megavolt-ampere
MW	–	megawatt
NEPRA	–	National Electric Power Regulatory Authority
NTDC	–	National Transmission and Despatch Company
PEFA	–	Public Expenditure and Financial Accountability Assessment
PMU	–	project management unit
PPTA	–	project preparatory technical assistance
PRSP	–	poverty reduction strategy paper
RRP	–	Report and Recommendation to The President
SCADA	–	Supervisory Control And Data Acquisition
TA	–	technical assistance
TASF	–	technical assistance special fund

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Facility Administration Manual Purpose and Process

The facility administration manual (FAM) describes the administrative and management requirements to implement the investment program on time, within budget, and following the policies and procedures of the government and Asian Development Bank (ADB). The FAM includes references to templates and instructions.

The executing agency, National Transmission and Despatch Company Limited (NTDC), is implementing the investment program, as agreed jointly between the borrower and ADB. ADB supports implementation, including NTDC's compliance with their obligations and responsibilities for project implementation following ADB's policies and procedures.

At loan negotiations, the borrower and ADB agreed to the FAM and its consistency with the Framework Financing Agreement and Loan Agreements as reflected in the minutes. In the event of any discrepancy or contradiction between the FAM and the loan agreements, the provisions of the loan agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes to the program and project implementation arrangements are subject to approval following government and ADB administrative procedures (including the Project Administration Instructions). Upon such approval, they will subsequently be incorporated in the FAM.

I. PROGRAM AND TRANCHE 1 DESCRIPTION

A. Program

1. **Rationale.** The multitranche financing facility for the Second Power Transmission Enhancement Investment Program (MFF II) will expand and reinforce Pakistan's power transmission system, enabling the system to provide a reliable and quality service capable of meeting increasing customer demand and supporting economic growth. To achieve this objective, the investment program consists of staged physical investments in the high-voltage transmission system, including the rehabilitation, augmentation and expansion of transmission lines, substations, and supporting infrastructure. The physical investments will increase transmission capacity to meet growing demand, improve transmission efficiency and security, and evacuate additional sources of power. The capacity development component will focus on further improving the financial management, regulatory relations, planning, project management, and procurement capacities of both the transmission system owner and operator, the National Transmission and Despatch Company Limited (NTDC) and the sector's newly established commercial operator, the Central Power Purchasing Agency (Guarantee) Limited (CPPA-G). These investments will increase institutional efficiency, cost recovery, competition, transparency, and good governance within the sector.

2. **Impact and outcome.** MFF II's and Tranche 1's impact is improved (i) transmission infrastructure and management, and (ii) energy market transparency and efficiency. The outcome will be improved reliability and quality of the power transmission service in Pakistan improved.

3. **Outputs.** The outputs of the investment program will be: (i) the rehabilitation, augmentation, and expansion of the high voltage transmission network, and (ii) the strengthening of the operations and management of NTDC and CPPA-G. Tranche 1 will have the same physical output as the investment program. The non-physical output of Tranche 1 will be the strengthening of the operations and management of NTDC.

B. Tranche 1

4. Tranche 1 subprojects include the construction of new transmission lines, extension and augmentation of existing substations, and installation of shunt reactor and replacement of protection equipment at 11 grid stations. The technical justifications and contract packages are summarized in Table 1, with details in succeeding paras. Procurement for the contract packages are discussed in Chapter III.

Table 1: Technical Justifications and Contract Packages for Subprojects

Contract Package	Subproject		Technical Justification
Subproject 1: Expansion and augmentation of three 500/220 kV grid stations			
ADB-100	Extension of Sahiwal substation	Procurement and installation of one 600MVA, 500/220kV transformer along with allied equipment and accessories.	Allow the evacuation of power from new grid connected generation, reduce the loading on the existing grid stations and transmission losses, and improve the system reliability.
	Extension of Lahore South substation	Procurement and installation of one 750MVA 500/220kV transformer and two 500kV Line Bays, along with allied equipment and accessories.	
ADB-101	Extension and augmentation of Rewat substation	Procurement and installation of one 220/132kV 250MVA transformer along with allied equipment, and the replacement of one existing 220/132kV 160MVA	

Contract Package	Subproject		Technical Justification
		transformer by one 220/132kV 250MVA transformer.	
Subproject 2: Protection rehabilitation in south area			
ADB-102 and ADB-103	Protection rehabilitation in south area.	Procurement and installation of a shunt reactor (ADB-102); and additional protection equipment such as protection relays, fault recorders, fault locators & event recorders (ADB-103) in 11 substations in the southern region.	Improve the system reliability and reduce frequent tripping in southern region.
Subproject 3: Faisalabad West (Phase II) 500 kV substation			
ADB-104 and ADB-105	Faisalabad West (Phase-II) 500 kV substation	Procurement and installation of the: (i) 500 kV double circuit transmission line in/out of 500 kV Multan-Gatti transmission line at 500 kV Faisalabad West (30 km); (ii) 220 kV double circuit transmission line from 500 kV Faisalabad West to 220 kV Lalian New (80 km); and (iii) extension at 500 kV Faisalabad West substation for two 500 kV line bays and two 220 kV line bays, and extension at 220 kV Lalian substation for two 220 line bays.	Meet additional demand of Faisalabad electricity supply company (distribution) and reduced losses.
Subproject 4: Guddu power dispersal			
ADB-106 (ADB-80 in MFF I T4)	Guddu power dispersal	Installation of (i) 500kV transmission lines for looping in/out of the D. G. Khan – Multan 500kV Muzaffargarh substation (10 + 10km), and (ii) 500kV Guddu New – Muzaffargarh transmission line (261km)	Dispersal of power from the Guddu power station, reducing the severe load shedding in the country.

D/C =Double circuit, km = kilometer, kV = kilovolt, MVA = megavolt-ampere, MVAR = megavolt-ampere reactive, MW = megawatt.

5. **Subproject 1** involves upgrading and augmentation of three substations (Sahiwal, Lahore South, and Rewat) to transfer power from the grid to the distribution systems, complying with the security and reliability criteria indicated in the Grid Code.

6. The Sahiwal augmentation will connect additional transformation capacity to transmit power from the 500 kilovolt (kV) backbone network to the 220 kV network.

7. The Lahore South 500 kV substation is an extension of a newly built substation. It will install an additional 750 megavolt-ampere (MVA) 500/220 kV transformer with associated transformer breaker bays, and two 500 kV line bays to accommodate power transfer from a double circuit line coming into Lahore South.

8. The Rewat 500/220 kV substation is strategically positioned on the NTDC grid, at the heart of the hydropower plant region, and feeds the load centers in that region through the local distribution company, Islamabad Electric Supply Company (IESCO). It is in the mountainous northern part of the Punjab Province close to the catchment area for many of the hydro stations. Increasing the present 220/132 kV capacity is required to continue to supply IESCO to the required security standard.

9. **Subproject 2** will install event and fault recorders along with fault locators in strategic transmission substations in the south area of the transmission grid. Some modern digital protection relays will replace the original electromechanical relays which are no longer fit for their purpose. Finally, to ensure that the grid system stays intact as long as possible, but beyond that point splitting into active islands where surviving generation feeds reduce load in the island, under-frequency relays will be installed at strategic locations in Sindh and Baluchistan Provinces.

10. Subproject 2 will also replace a 500 kV 3x22 megavolt-ampere reactive (MVAR) shunt

reactor at Dadu 500 kV substation.¹ This is needed to improve the voltage stability of the 500 kV system around Dadu which is strategically situated in the southern part of the grid.

11. **Subproject 3** corresponds to the Phase II expansion of Faisalabad West 500 kV/220 kV substation. This phase will install approximately (i) 32 kilometers (km) of 500 kV double circuit quad conductor overhead line, along with the associated 500 kV line bay equipment at Faisalabad West; and (ii) 84 km of 220 kV double circuit twin conductor overhead line, along with the associated 220 kV line bay equipment at Faisalabad West and Lalian.

12. **Subproject 4** will install 500 kV transmission lines to transmit power from the major generating facilities to the load centers in central Pakistan. This subproject will allow dispersal of 747 megawatt (MW) of power generated from the Guddu thermal power plant to the load centers to help reduce severe load shedding in the country.²

13. Tranche 1 will include assistance for the preparation of a safety manual for NTDC, development and implementation of a professional third party project management and information system for NTDC, preparation of a capacity development program, and preparation of an action plan to meet the government mandated quota of 10% for the employment of women.^{3,4}

II. IMPLEMENTATION PLANS

A. Program and Project Readiness Activities

Table 2: Processing Schedule

Indicative Activities	2015	2016												Responsible Party
	D	J	F	M	A	M	J	J	A	S	O	N	D	
Advance contracting actions														ADB, NTDC
Establish implementation arrangements														
Development of preparatory documents (PPTA)														
Negotiations and FFA and PFR signing														ADB, EAD, NTDC
ADB Board consideration of Investment Program														ADB
ADB Management Consideration of Tranche 1														
Loan signing of Tranche 1														
Subsidiary onlending agreement														EAD
Loan effectiveness for Tranche 1														ADB, EAD, NTDC

ADB = Asian Development Bank, EAD = Economics Affairs Division, FFA = framework financing agreement, NTDC = National Transmission and Despatch Company Limited, PFR = periodic financing request, PPTA = project preparatory technical assistance.

¹ Because of the priority, the out-of-service shunt reactor at Dadu has been replaced by the one at Nokhar (Gujranwala) 500 kV substation. Therefore, the shunt reactor will be installed at Nokhar substation.

² The equipment for the Guddu transmission line, was procured under MFF 0007-PAK: Power Transmission Enhancement Investment Program Tranche 4 (L3203-PAK/ MFF I Tranche 4).

³ National Electric Power Regulatory Authority. 2015. *Power Safety Code for Transmission and Distribution Licensee*. Islamabad.

⁴ Government of Pakistan. 2006. OM No. 3/17/2005-R-2 dated 26 September 2006. Islamabad.

B. Overall Program and Project Implementation Plans

14. The implementation schedules for the investment program and Tranche 1 are in Tables 3 and 4, respectively. Details for the Tranche 1 schedule are in Appendix 1.

Table 3: Investment Program Implementation Schedule

Activities	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DMF Output 1										
Activity 1.1 Complete bidding process for Tranche 1 by June 2017.										
Activity 1.2 Start installation works by December 2017 (Tranche 1).										
Activity 1.3 Complete Tranche 1 implementation by June 2020.										
Activity 1.4 Complete Tranche 2 implementation by December 2022.										
Activity 1.5 Complete Tranche 3 implementation by June 2023.										
Activity 1.6 Complete Tranche 4 implementation by June 2025.										
DMF Output 2										
Activity 2.1 Facility management consultant hired by April 2017.										
Activity 2.2 Work on strengthening operations and management commenced by June 2017.										
Activity 2.3 Complete support component by December 2025.										

DMF = design and monitoring framework, Q = quarter.

Table 4: Tranche 1 Implementation Schedule

Activities	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
A. DMF										
Output 1										
Activity 1.1 Complete bidding process for Tranche 1 by June 2017.										
Activity 1.2 Start installation works by December 2017 (Tranche 1).										
Activity 1.3 Tranche 1 implementation complete by June 2020.										
Activity 1.4 Tranche 1 financial closure by December 2020.										
Output 2										
Activity 2.1 Facility management consultant hired by April 2017.										
Activity 2.2 Work on strengthening operations and management commenced by June 2017.										
Activity 2.3 Complete support component by December 2025.										
B. Management Activities										
Procurement plan key activities to procure contract packages										
Consultant selection procedures										
Environment management plan key activities										
Communication strategy key activities										
Midterm review										
Project completion report										

DMF = design and monitoring framework, Q = quarter.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Program and Project Implementation Organizations: Roles and Responsibilities

Table 5: Management Roles and Responsibilities

Implementation Organizations	Management Roles and Responsibilities
Executing Agency	The National Transmission and Despatch Company Limited (NTDC) will monitor the implementation of the investment program following the Framework Financing Agreement, and subsequent tranches following the loan and project agreements. The Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) will be responsible for subsequent tranches, as applicable.
Implementing Agencies	<p>The existing project management unit (PMU) established in NTDC under the first MFF 0007-PAK: Power Transmission Enhancement Investment Program (MFF I)⁵ will be responsible for day-to-day project implementation for the physical outputs relating to the transmission system and operation (as defined under their transmission license) under each tranche. The facility management consultant will support the PMU for both project preparation and implementation of subsequent tranches.</p> <p>A PMU to be established in the CPPA-G will be responsible for day-to-day project implementation for outputs relating to the market operation and contract registrar and power exchange administrator (as defined under the Market Rules) under subsequent tranches.</p> <p>Both PMUs will also be responsible for complying with the safeguards requirements (Chapter VII) and design and monitoring framework (Chapter IX), and loan covenants.</p>
Borrower	Islamic Republic of Pakistan
Financier	Asian Development Bank

⁵ ADB. November 2006. *Report and Recommendation of the President to the Board of Directors for the Proposed Loan to the Government of Pakistan for Power Transmission Enhancement Investment Program*, approved for \$800 million, comprising four tranches. Available in <http://www.adb.org/projects/documents/power-transmission-enhancement-investment-program-rrp>

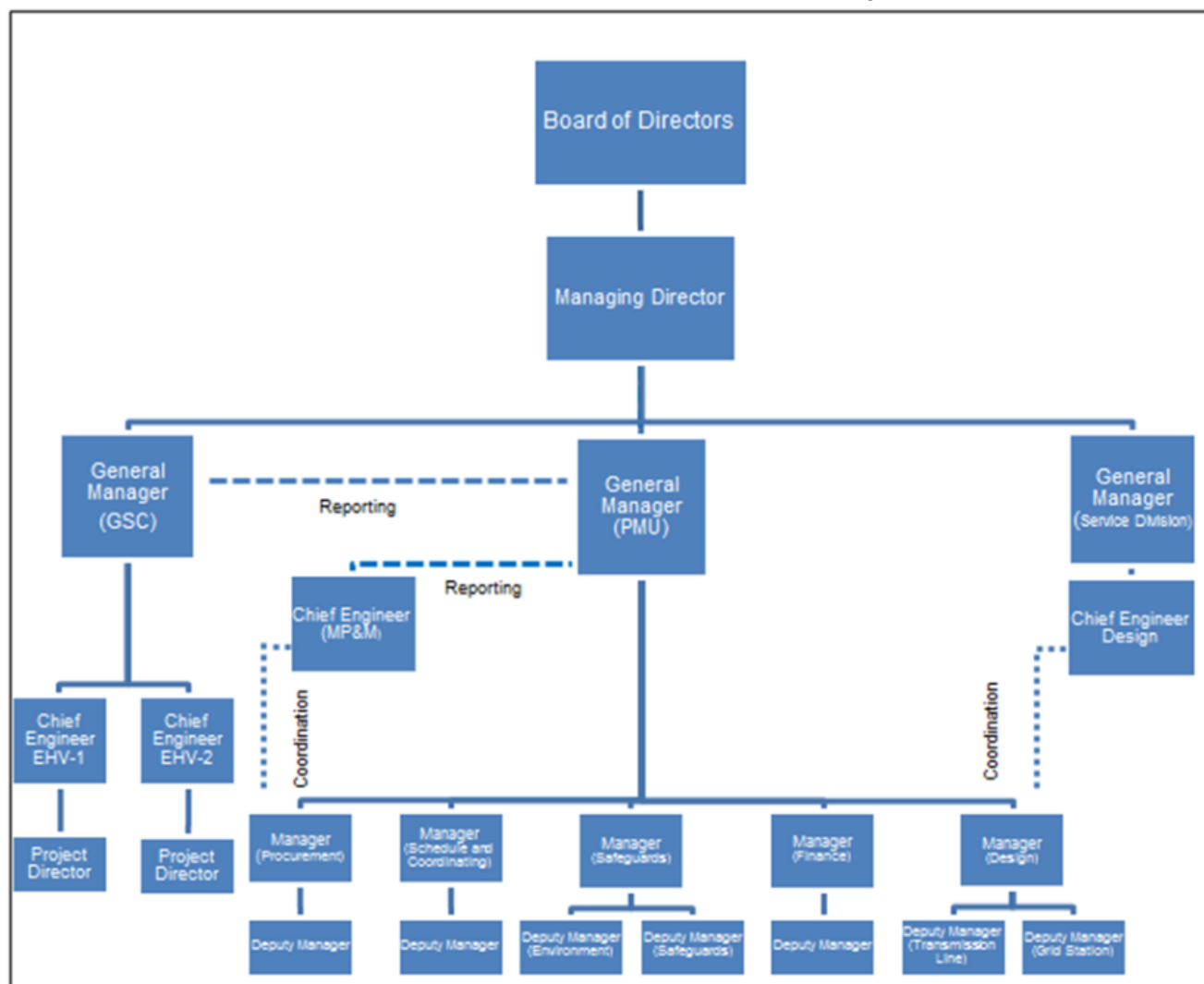
B. Key Persons Involved in Implementation

Table 6: Key Persons in Executing Agency and Financier

Executing Agency	National Transmission and Despatch Company
Managing Director	Fiaz Ahmad Ch. Managing Director Telephone: (92-42) 9920 2229 Facsimile: (92-42) 9920 2053 Email address: md.ntdc@ntdc.com.pk Office Address: #414 WAPDA House, Lahore
PMU	Abdul Rauf General Manager (Projects) Email address: pmu@ntdc.com.pk
Financier	Asian Development Bank
Energy Division	F. Cleo Kawawaki Director Telephone: (63-2) 632 6118 Email address: fkawawaki@adb.org
Mission Leader	Megan Wolf Energy Specialist, CWEN Telephone: (63-2) 632 4470 Email address: mwolf@adb.org Office address: 6 ADB Avenue, Mandaluyong City, Manila

C. Program and Project Organization Structure

Figure 1: Structure of Executing Agency and Project Implementation Unit (National Transmission and Despatch Company)



EHV = Extra High Voltage, GSC = grid station and construction, MP&M = materials, procurement and management, PMU = project management unit.

15. **Lessons from MFF 0007-PAK: Power Transmission Enhancement Investment Program (MFF I).** NTDC's PMU for MFF I will also be responsible for MFF II. The PMU, headed by NTDC's General Manager (GM) (Projects), was approved to include four functions, i.e., procurement, finance, monitoring and coordination, and environmental and social safeguards. However, due to under staffing, the PMU capacity severely hampered MFF I's implementation.

16. NTDC's Chief Engineer for Materials, Procurement, and Management, who reports to GM (Projects), is responsible for procurement. However, the Chief Engineer's role has been limited to attending bid openings and issuing notices of award. Since the position is not dedicated to PMU, the Chief Engineer also engages with many other projects not funded by ADB. The under resourcing contributed to some procurement delays and issues during MFF I.

17. NTDC's design department evaluates bids, and prepares and approves detailed

construction and installation layouts and drawings for each subproject. NTDC's field offices (Extra High Voltage [EHV]-1 and EHV-2) are responsible for construction, supervision, and reporting the physical progress to PMU, through the GM (Grid Station Construction). However, the PMU could not effectively coordinate with and manage the design department, EHV-1, and EHV-2 due to their lack of dedicated staff. This also delayed MFF I's procurement and implementation.

18. Likewise, the lack of dedicated staff in the PMU's Environmental and Social Impact Cell (ESIC), also frequently delayed the preparation of safeguards monitoring reports and updated land acquisition and resettlement plan (LARP), and compromised their quality.

19. **Improving the PMU for MFF II.** The issues during MFF I were thoroughly considered in designing MFF II's PMU structure (Figure 1), particularly the PMU's severe understaffing. The PMU will be fully resourced prior to commencing the MFF II and Tranche 1. The PMU will include additional positions for a Design Manager and two Deputy Design Managers to coordinate all of the design works. This is to avoid delays experienced during the bidding document preparation, detailed design, and evaluation during MFF I. To further strengthen the PMU, the program support component under Tranche 1 will finance a professional third party, project management and information system.

20. **Consultant support.** The project preparatory consultants⁶ will help NTDC prepare bidding documents and select contractors for Tranche 1. The facility management consultant (FMC) and individual consultants will help NTDC with procurement and construction supervision, and environmental and social safeguards for all tranches under the MFF, and preparing Tranches 2 to 4. The FMC will also include capacity development experts who will assist with preparing a capacity development plan aligned with MFF II. The planned consulting services are described in the Procurement Plan (Chapter VI).

21. **PMU for CPPA-G.** The appropriate structure and resourcing for the PMU to be established in the CPPA-G will be agreed under the subsequent tranche incorporating components to be executed by the CPPA-G, and reflected in the associated Project Administration Manual.

IV. COSTS AND FINANCING

22. **MFF.** The government requested an MFF in an amount of up to \$810.0 million from ADB's ordinary capital resources and Special Funds resources to help finance a part of the investment program. The MFF will consist of several tranches, subject to the government's submission of related periodic financing requests, execution of the related loan and project agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the framework financing agreement.

23. The MFF will combine ordinary capital resources and Special Funds resources, i.e., Asian Development Fund (ADF) resources, up to the aggregate MFF amount. The provision of any ADF resources will be balanced by a corresponding reduction in available ordinary capital resources (and vice versa), with total financing provided under the MFF not to exceed the aggregate MFF total of \$810.0 million. Any ADF allocation will be subject to (i) the availability of ADF resources, (ii) Pakistan's access to such resources pursuant to ADB's then applicable

⁶ The consultants were engaged through the *Technical Assistance to Pakistan for Power Transmission Enhancement Investment Program II (TA 8818-PAK)*. 2014. Manila.

Graduation Policy⁷ and the requirements of ADF donors, and (iii) the availability of such resources to Pakistan given ADB's then applicable policy on performance-based allocation of ADF resources.⁸

24. **Tranche 1.** Two loans are proposed for Tranche 1: (i) a loan of \$115.0 million from ADB's ordinary capital resources. The loan will have a 25-year term, including a grace period of 4 years, custom-tailored repayment schedule, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the loan and project agreements; and (ii) a loan in various currencies equivalent to SDR7,196,000 from ADB's Special Funds resources. The loan will have a 25-year term, including a grace period of 5 years, an interest rate of 2.0% per annum during the grace period and thereafter, and such other terms and conditions as set forth in the draft loan and project agreements.

25. **Counterpart funding.** NTDC will finance environmental mitigation measures; resettlement compensation; administration and audit; inland transportation; and insurance, taxes, and duties. ADB will finance the turnkey contracts, civil works, equipment, interest during construction (on ADB portion of financing), and contingency.

A. Cost Estimates Preparation and Revisions

26. The cost estimates for Tranche 1 were prepared based on the updated technical analysis by NTDC and the project preparatory consultants. The cost estimates were based on the most recent prices for Tranches 2, 3, and 4 of MFF 1 (updated to first quarter 2016 prices through indexation at international inflation rates), and a market assessment done by the consultants. These estimates were reviewed by ADB and endorsed by NTDC.

B. Key Assumptions

27. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: 1 USD = PRs104.7017 as of 17 April 2016.
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 7: Escalation Rates for Price Contingency Calculation (Tranche 1)

Item	2016	2017	2018	2019	2020	Average
Foreign rate of price inflation	1.5%	1.4%	1.5%	1.5%	1.5%	1.5%
Domestic rate of price inflation	4.7%	5.4%	6.0%	6.0%	6.0%	5.6%

Source: Asian Development Bank.

- (iii) All costs are expressed in March 2016 prices.
- (iv) Physical contingencies are computed at 10% of total base costs for equipment and civil works, 8.39% for turnkey contracts, 5% for project management, and 9% for taxes and duties.

⁷ Currently, ADB. 2008. *Review of the 1998 Graduation Policy of the Asian Development Bank*. Manila.

⁸ Currently, ADB. 2004. *Review of the Asian Development Bank's Policy on the Performance-Based Allocation of Asian Development Fund Resources*. Manila; and ADB. 2008. *Refining the Performance-Based Allocation of Asian Development Fund Resources*. Manila.

- (v) Financial charges during implementation consist of interest during construction of 15% per annum (government's on-lending rate to NTDC) calculated on the average outstanding amount, and commitment charges of 0.15% per annum calculated on the average undisbursed amount of ADB loan.⁹

C. Detailed Cost Estimates by Expenditure Category

Table 8. Detailed Cost Estimates by Expenditure Category for Tranche 1

(\$ million)							
Item	Local funds			Foreign funds			% of Base Costs
	Foreign currency	Local Cost	Total Cost	Foreign currency	Local Cost	Total Cost	
A. Investment Costs^b							
1. Equipment	-	-	-	1.60	-	1.60	1%
2. Civil works and installation	-	-	-	-	36.20	36.20	28%
3. Turnkey contract	-	-	-	39.37	15.98	55.35	45%
4. Environment and social mitigation	-	-	-	-	-	-	0%
5. Land acquisition and resettlement plan	-	0.81	0.81	-	-	-	1%
6. Project management	-	2.43	2.43	-	-	-	2%
7. Facility management	-	-	-	9.00	-	9.00	7%
8. Taxes and Duties	-	18.57	18.57	-	-	-	15%
Total Base Costs	-	21.81	21.81	49.97	52.18	102.15	100%
B. Contingency^c							
1. Physical	3.46	8.08	11.54	-	-	-	9%
2. Price	2.25	4.16	6.41	0.31	0.71	1.02	6%
Sub-Total (B)	5.71	12.24	17.95	0.31	0.71	1.02	15%
C. Financial Charges During Implementation^d							
1. Interest During Implementation	23.64	-	23.64	3.73	0.54	4.91	24%
2. Commitment Charges	-	-	-	0.15	0.01	0.29	0%
Sub-Total (C)	23.64	-	23.64	3.88	0.55	5.20	24%
Total Project Cost (A+B+C)	29.35	34.05	63.40	54.16	53.44	107.60	138%

^a Includes taxes and duties of \$19 million to be financed from NTDC's cash resources for Tranche 1.

^b In March 2016 prices.

^c Physical contingencies are computed at 10% for equipment and civil works; 8.39% for turnkey contracts; 5% for project management; and 9% for taxes and duties. Price contingencies computed at 1.5% in 2016, 1.4% in 2017, 1.5% in 2018 and onward on foreign exchange costs; and 4.7% in 2016, 5.4 in 2017, 6% in 2018 and onward on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate. The ADB loan will be on-lent at 15% per annum and carry the same repayment and grace periods. Commitment charges are calculated at 0.15% on average undisbursed amount. The financing charges of the ADB loan during the implementation will be capitalized to the loan account while the interest charges of on-lending will be financed by NTDC (refer Footnote 9).

^d Includes interest and commitment charges. Interest during construction for ADB loan is computed at the 5-year fixed swap rate plus a contractual spread of 0.5% and 0.10% of maturity premium.

Source: Asian Development Bank estimates.

⁹ It is acknowledged that Pakistan shall relend the proceeds of the Loan to NTDC under a Subsidiary Loan Agreement with terms and conditions as prescribed by the relending policy as may be satisfactory to ADB. The relending policy means the memorandum dated 23 January 2010 entitled "Re-Lending of Foreign Loans/Credits" issued by the Economic Affairs Division of the Ministry of Finance, Revenue, Economic Affairs, Statistics and Privatization of the Borrower.

D. Allocation and Withdrawal of Loan Proceeds

Table 9. Allocation and Withdrawal Loan Proceeds for Loan [XXXX]

Number	Item	Total Amount Allocated for ADB Financing (\$)	Basis for Withdrawal from the Loan Amount
		Category	
1	Works and Equipment**	93,100,000	100% of total expenditure claimed*
2	Interest and Commitment Charges	2,900,000	100% of amounts due
3	Unallocated	19,000,000	
	Total	115,000,000	

*Exclusive of taxes and duties imposed within the territory of the Borrower.

**Subject to the condition for withdrawal described in paragraph 7 of Schedule 3 to the Ordinary Operations Loan Agreement.

Source: Asian Development Bank.

Table 10. Allocation and Withdrawal Loan Proceeds for Loan [XXXX]

Number	Item	Total Amount (SDR)	Basis for Withdrawal from the Loan Amount
		Category	
1	Facility Management and Capacity Development**	6,476,000	100% of total expenditure claimed*
2	Interest Charge	720,000	100% of amounts due
	Total	7,196,000	

*Exclusive of taxes and duties imposed within the territory of the Borrower.

**Subject to the condition for withdrawal described in paragraph 7 of Schedule 2 to the Special Operations Loan Agreement.

Source: Asian Development Bank.

E. Detailed Cost Estimates by Financier

Table 11. Detailed Cost Estimates by Financier for Tranche 1

(\$ million)

Item	ADB (OCR)		ADB (ADF)		NTDC		Total Cost ^a
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	
	(A)	(A/D)			(B)	(B/D)	(D)
A. Investment Costs ^b							
1 Equipment	1.60	100%	-	0%	-	0%	1.60
2 Civil Works	36.20	100%	-	0%	-	0%	36.20
3 Turnkey Contract	55.35	100%	-	0%	-	0%	55.35
4 Environment and Social Mitigation	-	0%	-	0%	-	0%	-
5 Land Acquisition and Resettlement Plan	-	0%	-	0%	0.81	100%	0.81
6 Project Management	-	0%	-	0%	2.43	100%	2.43
7 Facility management and Capacity Development	-	-	9.00	100%	-	0%	9.00
8 Taxes and Duties	-	0%	-	0%	18.57	100%	18.57
Total Base Cost	93.15		9.00		21.81		123.96
B. Contingencies ^c	18.97	100%	-	0%	-	0%	18.97
C. Financing Charges During Implementation ^d	2.88	10%	1.00	4%	24.19	86%	28.07
Total Project Cost (A+B+C)	115.00		10.00		46.00		171.00
% Total Project Cost		67%		6%		27%	

ADB = Asian Development Bank, ADF = Asian Development Fund, NTDC = National Transmission and Despatch Company Limited, OCR = ordinary capital resources.

^a Includes taxes and duties of \$19.0 million to be financed from NTDC's cash resources for Tranche 1.

^b In March 2016 prices.

^c Physical contingencies are computed at 10% for Equipment and Civil Works; 8.39% for Turnkey Contracts; 5% for Project Management; and 9% for Taxes and Duties. Price contingencies computed at 1.5% in 2016, 1.4% in 2017, 1.5% in 2018 and onward on foreign exchange costs; and 4.7% in 2016, 5.4 in 2017, 6% in 2018 and onward on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year fixed swap rate plus a contractual spread of 0.5% and 0.10% of maturity premium. The ADB loan will be on-lent at 15.00% per annum and carry the same repayment and grace periods. Commitment charges are calculated at 0.15% on average undisbursed amount. (Refer Footnote 9)

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs

Table 12. Detailed Cost Estimates by Outputs
(\$ million)

Item	Total Cost ^a	Subproject 1 (Augmentations)		Subproject 2 (Rehab)		Subproject 3 (F West)		Subproject 4 (Guddu)		Facility Capacity Development	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs ^b											
1 Equipment	1.60	-	0%	1.60	100%	-	0%	-	0%		0%
2 Civil Works	36.20	-	0%	-	0%	-	0%	36.20	100%		0%
3 Turnkey Contract	55.35	23.90	43%	3.65	7%	27.79	50%	-	0%		0%
4 Environment and Social Mitigation	-	-	0%	-	0%	-	0%	-	0%		0%
5 Land Acquisition and Resettlement Plan	0.81	-	0%	-	0%	-	0%	0.81	100%		0%
6 Project Management	2.43	0.57	23%	0.09	4%	0.67	27%	1.11	46%		
7 Facility Management and Capacity Development	9.00									9.00	100%
8 Taxes and Duties	18.57	6.73	36%	1.23	7%	5.36	29%	5.25	28%		0%
Total Base Cost	123.96	31.20		6.56		33.82		43.38		9.00	
B. Contingencies ^c											
1 Physical	11.54	2.64	23%	0.58	5%	2.85	25%	5.47	47%	-	0%
2 Price	7.43	2.11	28%	0.43	6%	2.11	28%	2.78	37%	-	0%
Subtotal (B)	18.97	4.75		1.01		4.96		8.26		-	
C. Financial Charges During Implementation ^d											
1 Interest During Implementation	27.91	4.56	16%	1.01	4%	5.16	18%	6.44	23%	10.75	39%
2 Commitment Charges	0.16	0.04	27%	0.01	6%	0.05	30%	0.06	38%	-	0%
Subtotal (C)	28.07	4.60		1.02		5.21		6.50		10.75	
Total Project Cost (A+B+C)	171.00	40.55	0	8.59	0	43.98	0	58.13	0	19.75	0

^a Includes taxes and duties of \$19 million to be financed from NTDC's cash resources for Tranche 1.

^b In March 2016 prices.

^c Physical contingencies are computed at 10% for equipment and civil works; 8.39% for turnkey contracts; 5% for project management; and 9% for taxes and duties. Price contingencies computed at 1.5% in 2016, 1.4% in 2017, 1.5% in 2018 and onward on foreign exchange costs; and 4.7% in 2016, 5.4% in 2017, 6% in 2018 and onward on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year fixed swap rate plus a contractual spread of 0.5% and 0.10% of maturity premium. The ADB loan will be on-lent at 15.00% per annum and carry the same repayment and grace periods. Commitment charges are calculated at 0.15% on average undisbursed amount. (Refer Footnote 9)

Source: Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

Table 13. Detailed Cost Estimates by Year for Tranche 1
(\$ million)

Item	Total Cost	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
A. Investment Costs											
1 Equipment	1.60	0.16	0.64	0.80	-	-	-	-	-	-	-
2 Civil Works	36.20	3.62	14.48	18.10	-	-	-	-	-	-	-
3 Turnkey Contract	55.35	5.53	22.14	27.67	-	-	-	-	-	-	-
4 Environment and Social Mitigation	-	-	-	-	-	-	-	-	-	-	-
5 Land Acquisition and Resettlement Plan	0.81	0.08	0.32	0.41	-	-	-	-	-	-	-
6 Project Management	2.43	0.24	0.97	1.22	-	-	-	-	-	-	-
7 Facility Management and Capacity Development	9.00	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
8 Taxes and Duties	18.57	1.90	7.61	9.05	-	-	-	-	-	-	-
Total Base Cost (A)	123.96	12.44	47.07	58.15	0.90	0.90	0.90	0.90	0.90	0.90	0.90
B. Contingencies (B)	18.97	1.32	6.55	11.10	-	-	-	-	-	-	-
C. Financial Charges During Implementation (C)	28.07	0.87	5.05	12.29	0.71	0.93	1.16	1.39	1.63	1.88	2.14
Total Project Cost (A+B+C)	171.00	14.64	58.67	81.53	1.61	1.83	2.06	2.29	2.53	2.78	3.04
% Total Project Cost	100%	9%	34%	48%	1%	1%	1%	1%	1%	2%	2%

Source: Asian Development Bank estimates.

H. Contract Award and Disbursement Projections

Figure 2. Tranche 1 S-Curve

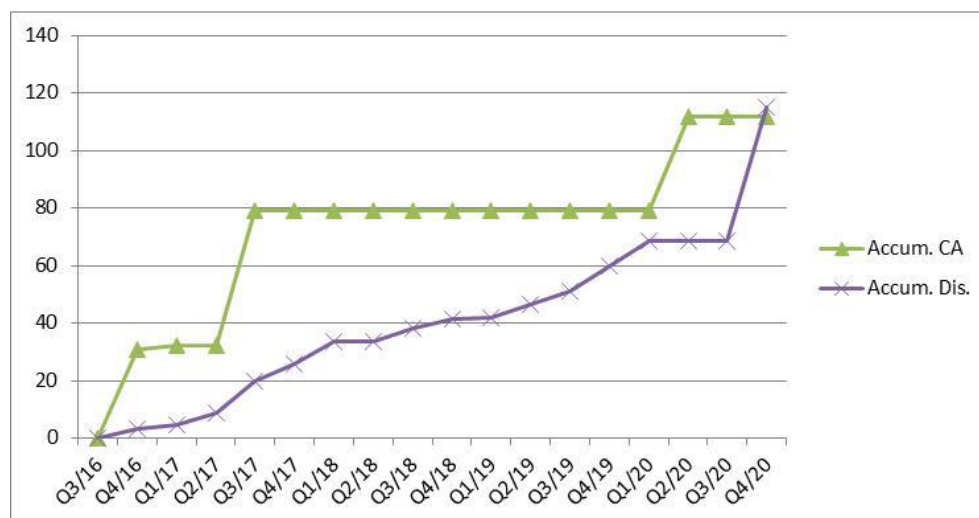


Table 14: Contract Award and Disbursement Projections for OCR Loan XXXX

	Contract Awards				Disbursements			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2016				30.770000				3.077000
2017	1.360000		47.047500		1.674500	4.102667	10.858750	6.154000
2018					7.618833	0.136000	4.683500	2.983500
2019					0.680000	4.394500	4.590000	8.925000
2020				32.922500	8.663200	0.000000	0.000000	
2021					0.000000	46.458550	0.000000	0.000000
IDC=\$2.9								
Unallocated = \$19m	Total				Total			
	112.100000				115.000000			

IDC = interest during construction, OCR = ordinary capital resources, Q = quarter
Source: Asian Development Bank estimates.

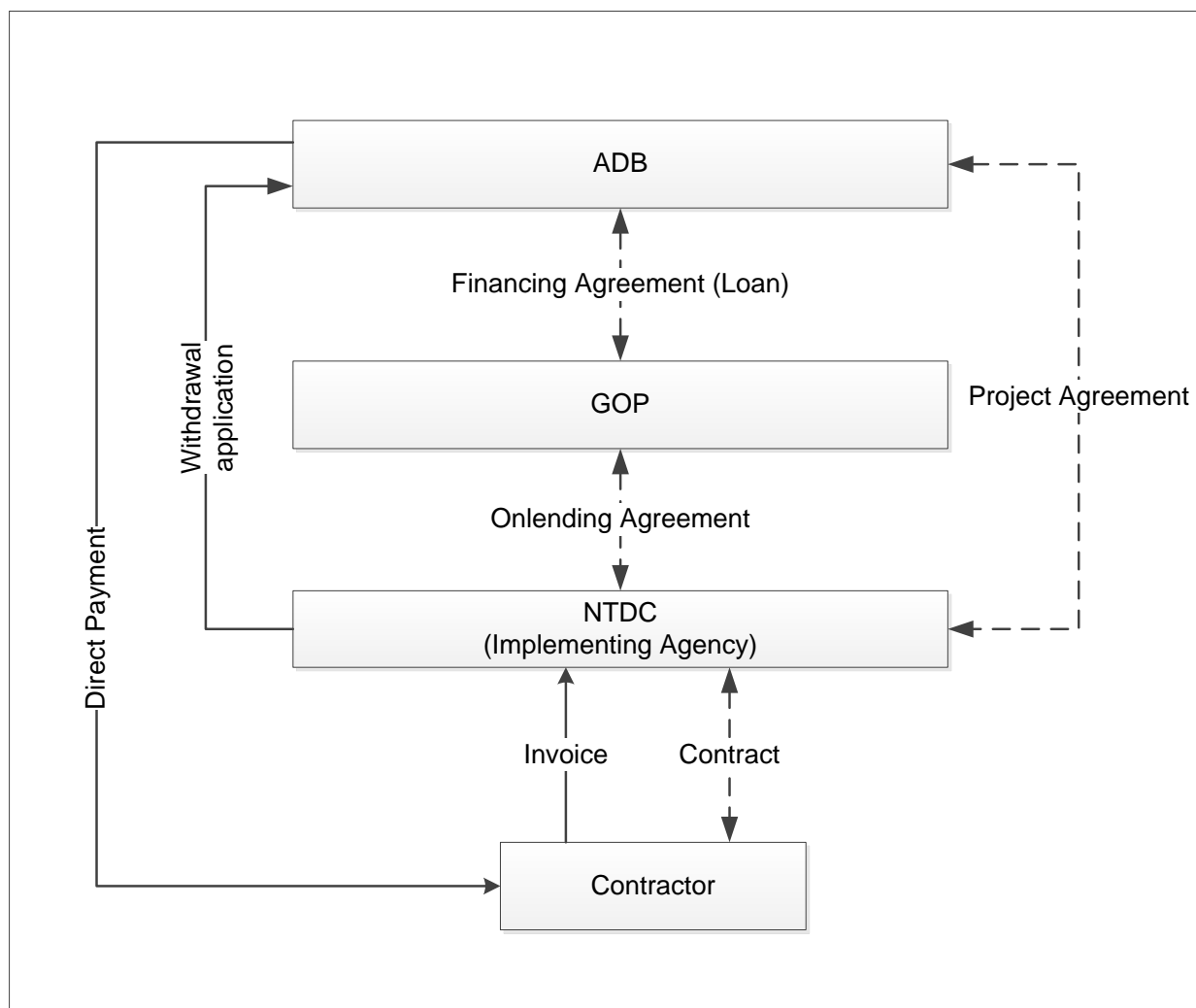
Table 15: Contract Award and Disbursement Projections for ADF Loan XXXX
(Program Support Component)

	Contract Awards				Disbursements			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2016								0.000000
2017	0.000000	7.650000	0.100000	0.500000	0.000000	0.765000	0.171053	0.291053
2018					0.182164	0.172164	0.172164	0.172164
2019					0.172164	0.172164	0.172164	0.172164
2020					0.172164	0.172164	0.172164	0.172164
2021					0.172164	0.172164	0.172164	0.172164
2022					0.172164	0.172164	0.172164	0.172164
2023					0.172164	0.172164	0.172164	0.172164
2024					0.172164	0.172164	0.172164	0.172164
2025					0.172164	0.172164	0.172164	0.172164
2026					0.172164	0.172164	0.172164	0.172164
2027		0.750000			0.815000	0.000000	0.000000	1.750000
IDC = \$1.0 m								
Unallocated = \$0.0m	Total				Total			
	9.000000				10.000000			

ADF = Asian Development Fund, IDC = interest during construction, Q = quarter
Source: Asian Development Bank estimates.

I. FUND FLOW DIAGRAM

Figure 4. Fund Flow



ADB = Asian Development Bank; GOP = Government of Pakistan; NTDC = National Transmission and Despatch Company Limited.

^a For commitment procedure, ADB loan proceeds go directly from ADB to a nominated bank of the supplier on a reimbursement basis.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

28. The financial management assessment (FMA) was conducted in March 2016 following ADB's *Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note*. The FMA considered the capacity of the NTDC, including funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements.

29. Based on the assessment, the key financial management risks identified are: (i) incomplete and inaccurate financial reports due to manual system; (ii) several days to collect

revenue which could cause cash flow issue to NTDC; and (iii) delaying in submission of NTDC's audited financial statements to ADB which could undermine NTDC's ability to meet financial covenant and NTDC's sustainability to implement the project.

30. It is concluded that the overall pre-mitigation financial management risk of NTDC is substantial. NTDC have agreed to implement an action plan to address the deficiencies (Table 16).

Table 16: Financial Management Action Plan

Action	Responsibility	Resources	Timing
Implement a computerized accounting software to automate the accounting and reporting processes to ensure that the financial statements are free of material errors and misstatements and for timely submission and resolution of issues.	NTDC	NTDC	By 2020 ¹⁰
Provide audited project financial statements to ADB within 6 months after each financial year ended.	NTDC	NTDC	After effectiveness
Submit NTDC's projected financial statements and capital expenditure plans (5 years projection).	NTDC	NTDC	Annually
Review auditor terms of reference to confirm audit scope.	NTDC	NTDC	Finance Director
Bill the CPPA-G in a timely manner and ensure payment is received within 6 months from the date of invoice.	NTDC	NTDC	Finance Director

ADB = Asian Development Bank, CPPA-G = Central Power Purchasing Agency (Guarantee) Limited, NTDC = National Transmission and Despatch Company Limited.

B. Disbursement

1. Disbursement Arrangements for ADB Funds

31. The loan proceeds will be disbursed following ADB's *Loan Disbursement Handbook* (2015, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.¹¹ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

32. **Statement of expenditure (SOE) procedure.**¹² The SOE procedure may be used for reimbursement of eligible expenditures up to \$100,000. Supporting documents and records for the expenditures claimed under the SOE should be made readily available for review by ADB's disbursement and review missions upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

33. Before submitting the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is set following the *Loan*

¹⁰ Pilot version to be implemented by 2016. Complete enterprise resource planning system expected by 2023.

¹¹ Disbursement eLearning available in http://wpqr4.adb.org/disbursement_elearning.

¹² SOE forms are available in Appendix 9B and 9C of ADB's *Loan Disbursement Handbook* (2015, as amended from time to time).

Disbursement Handbook. Individual payments below this amount should be paid by NTDC and subsequently claimed to ADB through reimbursement, unless otherwise accepted by ADB.

34. No withdrawals (other than in relation to interest and commitment charges ADB is entitled to withdraw from the loan account and pay to itself, on behalf of the borrower) shall be made from the loan account until ADB has received a certified copy of the duly executed and effective subsidiary loan agreement between the borrower and NTDC.

2. Disbursement Arrangements for Counterpart Fund

35. NTDC, as a revenue generating company, will pay taxes and duties following the government regulations.

C. Accounting

36. NTDC will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following International Public Sector Accounting Standard for cash-based accounting. NTDC will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

37. NTDC will cause the detailed project financial statements to be audited following International Standards for Supreme Audit Institutions, by an independent auditor acceptable to ADB. The audited project financial statements (APFS) together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by NTDC.

38. The APFS, together with the auditor's report and management letter, will be submitted in the English language no later than 6 months from the end of the fiscal year by NTDC.

39. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover whether the (i) project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) proceeds of the loan were used only for the purpose(s) of the project; and (iii) borrower or NTDC was in compliance with the financial covenants contained in the legal agreements (where applicable).

40. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

41. The government and NTDC have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the APFS.¹³ ADB

¹³ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue, and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement new reimbursement, and new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing requests for new contract awards and disbursement of new reimbursement, and new

reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits are not conducted satisfactorily to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used following ADB's policies and procedures.

42. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's *Public Communications Policy 2011*.¹⁴ After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and APFS will not be disclosed.¹⁵

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

43. All advance contracting and retroactive financing will follow ADB *Procurement Guidelines* (2015, as amended from time to time)¹⁶ and ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time).¹⁷ The issuance of invitations to bid will be subject to ADB approval. Approval of advance contracting and retroactive financing does not commit ADB to finance the project.

44. **Advance contracting.** All activities for procuring goods and works, and consultant recruitment prior to contract signing may be undertaken before loan effectiveness of each tranche.

45. **Retroactive financing.** Each tranche may finance eligible expenditures up to 20% of the ADB loan, incurred within 12 months before signing the loan agreement. Such financing will be subject to compliance with the requirements in the subproject LARPs (see Chapter VII).

B. Procurement of Goods, Works, and Consulting Services

46. All procurement of goods and works, and consultant recruitment for all tranches under the investment program will follow the ADB *Procurement Guidelines* and *Guidelines on the Use of Consultants*.

47. Each tranche will follow a procurement plan indicating the methods and review procedures for goods, works, and consulting services which will be updated at least every 18 months. The procurement plan for Tranche 1 is in Section C. The packages are summarized by subproject in Table 1, and described in the succeeding paras.

commitment letters. ADB will inform the NTDC of ADB's actions and advise that the loan may be suspended if the audit documents are not received within the next 6 months.

(iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

¹⁴ *Public Communications Policy*: <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

¹⁵ This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

¹⁶ Available in <http://www.adb.org/site/business-opportunities/operational-procurement/goods-services/documents#procurement>.

¹⁷ Available in <http://www.adb.org/documents/guidelines-use-consultants-asian-development-bank-and-its-borrowers>.

48. **Goods and works for Tranche 1.** Seven packages will be procured across the 4 subprojects. A maximum of 10 contracts will be awarded comprising (i) 1 goods contract for shunt reactors (package ADB-102); (ii) 5 turnkey contracts for 500/220 kV substations (ADB-100, ADB-101, ADB-104), protection relays (ADB-103), and 500/220 kV transmission lines (ADB-105); and (iii) 4 civil works contracts for installing 500 kV transmission lines (ADB-106). The detailed procurement and contract implementation schedules are in Appendix 1.

49. All packages will be tendered through international competitive bidding using ADB's standard bidding documents for Goods, Works-Large Contracts, and Plant: Design, Supply, and Installation.¹⁸ For the turnkey contract packages, the bidding documents for packages ADB-104 and ADB-105 will be used as master bidding documents to prepare the bidding documents for packages ADB-100, ADB-101, and ADB-103.

50. NTDC will also purchase IT equipment and systems for project management for the PMU through Shopping. Procurement will commence after the PMU is fully staffed.

51. Before the start of each tranche, ADB and the government will review the public procurement laws of the central and state governments to ensure consistency with ADB *Procurement Guidelines*.

52. **Consulting services for Tranche 1.** A FMC will assist NTDC in (i) preparing Tranches 2 to 4; (ii) implementing all tranches, including procurement, disbursement, construction supervision, and internal safeguards monitoring; and (iii) preparing the capacity development plan to strengthen NTDC's operations. The indicative terms of reference (Appendix 2) require 14 international key experts (minimum 140 person-months) and 15 national key experts (minimum 480 person-months) over 10 years.

53. To help ensure highly-competent experts throughout the investment program for this complex assignment, NTDC will engage the consulting firm using the quality- and cost-based selection method using 90:10 quality-cost ratio. During contract negotiations, NTDC will agree on indicators to assess the consultants' performance before the end of each tranche, and confirm their engagement for the next tranche.

54. Individual consultants will be recruited for external environmental and social safeguards monitoring, and for procurement advice and monitoring. The experts will report to ADB and the PMU in parallel. Other individual consultants, including a contract management expert, may also be recruited for Tranche 1 and other tranches. At the government's request, selection of individual consultants will be delegated to ADB before NTDC negotiates and signs the contracts.

C. Procurement Plan for Tranche 1

55. The Procurement Plan is in Appendix 3.

¹⁸ Available in <http://www.adb.org/site/business-opportunities/operational-procurement/goods-services/documents>.

VII. SAFEGUARDS

56. **Prohibited investment activities.** Pursuant to ADB's *Safeguard Policy Statement* (SPS 2009, as amended from time to time),¹⁹ ADB funds may not be applied to the activities described in the ADB Prohibited Investment Activities List in Appendix 5 of the SPS.

57. **Accessing safeguards documents.** Safeguards documents (e.g., land acquisition and resettlement framework [LARP] and environmental assessment review framework [EARF]) are available on the program and project records on the ADB website.

A. Land Acquisition and Resettlement

58. Land acquisition and income rehabilitation will follow the requirements in the SPS, and the same stipulations in the LARF for the respective tranche.

59. LARPs for each contract package will be finalized and submitted to ADB for review following the project implementation schedule. On approval of the LARPs, each sectional LARP will be implemented before notifying the contractor to commence construction activities, and internal monitoring reports will be submitted by the supervision consultant. For Category A subproject (in future tranches), NTDC will engage an external monitor and submit external monitoring and compliance reports. Clearance of the sectional LARP monitoring reports by ADB is a prerequisite for commencing civil works activities. All LARPs will be summarized and disclosed to the affected people in the relevant project implementation units and district libraries. The PMU will submit quarterly internal monitoring reports, and be responsible for complying the LARF, LARPs, and loan agreement.

60. No subproject in Tranche 1 involves permanent land acquisition. The Faisalabad West substation phase II and Guddu transmission line installation sub-projects will involve temporary impacts during the transmission line construction. Draft LARPs were prepared for each subproject, and will be updated as part of the detailed design process, where efforts will be made to minimize impacts. Cost will be determined considering fair market price, and include all transaction costs and associated charges. Crop and tree losses are based on yield and market value of crops, and on age and productivity of trees, respectively.

B. Environment

61. To ensure compliance with the SPS, NTDC, through the PMU, will implement the environmental assessment and resettlement framework. The PMU will:

- (i) complete the rapid environmental assessment checklists, and classify new subprojects;
- (ii) based on the completed rapid environmental assessment checklists and following the SPS, and national environmental rules and regulations, prepare as required either environmental impact assessment or initial environmental examination, and environmental management plans (EMPs);
- (iii) submit the checklists and environmental assessment reports to ADB as part of the approval of subprojects;
- (iv) include EMPs in bidding documents for future contracts;

¹⁹ Available at <http://www.adb.org/documents/safeguard-policy-statement>

- (v) obtain all regulatory clearances from the concerned environmental protection agency (provincial) before starting civil works;
- (vi) ensure that contractors prepare and implement site-specific EMPs;
- (vii) monitor implementation of the site-specific EMPs;
- (viii) disclose environment-related documents in the relevant project implementation units and on the project website;
- (ix) in case of unpredicted environmental impacts occurring during project implementation, prepare and implement a corrective action plan; and
- (x) submit semi-annual safeguard monitoring reports to ADB.

C. Indigenous Peoples

62. Sites that have impacts on indigenous peoples will be avoided. However, where this is not possible, due to no other reasonably viable alternative, an indigenous peoples plan (IPP) will be prepared and implemented following SPS 2009. All efforts will be made to select sites with unencumbered government land, before taking course of land acquisition.

VIII. GENDER AND SOCIAL DIMENSIONS

A. Gender

63. MFF II and all tranches will observe gender equality at an institutional level at NTDC. NTDC will ensure that the national anti-sexual harassment law at the workplace is implemented, and women benefit from new employment opportunities, and are included in training and career development.

B. Social Dimensions

64. The MFF II and Tranche 1 do not entail direct impacts on affordability, employment, HIV/AIDS, etc. However, the works contracts (in all tranches) will explicitly require equal opportunities for all social groups, and equal pay for equal work regardless of gender; and prohibit child labor. Monitoring will be done by the PMU.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Program and Project Design and Monitoring Frameworks

Table 17. Design and Monitoring Framework for the Investment Program

Impacts the Program is Aligned with:			
Transmission infrastructure and management improved (National Power Policy, 2013) ^a			
Energy market transparency and efficiency improved (Pakistan 2025: One Nation, One Vision) ^b			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Coverage, reliability, and quality of the power transmission service in Pakistan improved	a. 5.0 GW of additional peak power supplied (metered) through the grid by 2026 (2015 baseline: 22.9 GW) b. Transmission losses reduced to less than 2.5% in 2026 (2013 baseline: 2.9%) c. Full compliance with NEPRA Performance Standards Transmission Rules, 2005 by 2026 d. Full compliance with the Transmission License and Grid Code by 2026	a–b. NEPRA’s annual state of the industry report c. NTDC’s annual performance evaluation report d. NEPRA’s annual state of the industry report	Delayed progress on policy, regulatory, and institutional reforms Power demand does not continue to grow by at least 4.5% annually or grows by more than 7.0% annually. Power supplies and imports are not increased to meet demand.
Outputs 1. Rehabilitation, augmentation, and expansion of the high-voltage transmission network	1a. At least 1,000 km of new transmission lines operational by 2026 1b. At least 2,500 MW new substation capacity added to the network by 2026 1c. Capacity of existing substations increased by at least 3,500 MW through extension and augmentation of transformers by 2026 1d. Entire transmission system covered by SCADA system by 2026 (2015 baseline: less than 10% of total system covered)	1a–c. NEPRA’s annual state of the industry report 1d. NTDC’s annual report	The regulatory environment does not remain stable. Counterpart funds are not mobilized on time. High turnover among NTDC staff Modernization of NTDC’s manual accounting system is not completed by 2023.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
2. Strengthening of the operations and management of NTDC and CPPA-G	2a. NEPRA tariff determination completed before year of application by 2025 (2015 baseline: FY2015 tariff determined in April 2015)	2a. NEPRA website (tariff determination)	
	2b. Annual financial statements approved within 6 months of year-end by 2020 (2015 baseline: FY2014 +18 months after year-end)	2b. NTDC board resolution	
	2c. Market settlement system, based on grid code compliant data, operationalized by 2024 (2015 baseline: Nil)	2c. NEPRA's annual state of the industry report	
Key Activities with Milestones			
1. Rehabilitation, augmentation, and expansion of the high-voltage transmission network			
1.1 Complete bidding process for tranche 1 by June 2017			
1.2 Start installation works by December 2017			
1.3 Complete tranche 1 implementation by June 2020			
1.4 Complete tranche 2 implementation by September 2021			
1.5 Complete tranche 3 implementation by June 2023			
1.6 Complete tranche 4 implementation by June 2025			
2. Strengthening of the operations and management of NTDC and CPPA-G			
2.1 Facility management consultant hired by April 2017			
2.2 Work on strengthening operations and management commenced by June 2017			
2.3 Support component completed by December 2025			
Inputs			
ADB: \$800.0 million (OCR loan)			
ADB: \$10.0 million (ADF loan)			
NTDC: \$200.0 million			
Tranche 1			
ADB: \$115.0 million (OCR loan)			
ADB: \$10.0 million (ADF loan)			
NTDC: \$46.0 million			
Assumptions for Partner Financing			
Not applicable.			

ADB = Asian Development Bank, ADF = Asian Development Fund, CPPA-G = Central Power Purchasing Agency Guarantee Limited, GW = gigawatt, km = kilometer, MW = megawatt, NEPRA = National Electric Power Regulatory Agency, NTDC = National Transmission and Despatch Company Limited, OCR = ordinary capital resources, SCADA = Supervisory Control and Data Acquisition.

^a Government of Pakistan. 2013. *National Power Policy*. Islamabad.

^b Government of Pakistan. 2014. *Pakistan 2025: One Nation, One Vision*. Islamabad.

Source: Asian Development Bank.

Table 18. Design and Monitoring Framework for Tranche 1

Impacts the Project is Aligned with:			
Transmission infrastructure and management improved (National Power Policy, 2013) ^a			
Energy market transparency and efficiency improved (Pakistan 2025: One Nation, One Vision) ^b			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Coverage reliability and quality of the power transmission service in Pakistan improved.	a. 2 GW of additional peak power supplied (metered) through the grid by 2021 (2015 baseline: 22.9 GW). b. Transmission losses reduced to less than 2.8% in 2021 (2013 baseline: 2.92%). c. Full compliance with Power Safety Code for Transmission & Distribution Licensees Rules by 2021.	a-c. NEPRA's annual State of the Industry Report.	Delayed progress on policy, regulatory and institutional reforms. Power demand does not continue to grow by at least 4.5% annually, or grows by more than 7% annually. Power supplies and imports are not increased to meet demand.
Outputs 1. Rehabilitation, augmentation, and expansion of the high voltage transmission network. 2. Strengthening of the operations and management of NTDC.	1a. At least 390 km of new transmission lines constructed by 2020. 1b. Capacity of existing substations increased by at least 1,600 MVA through extension and augmentation of transformers by 2020. 1c. Installation of shunt reactor and replacement of protection equipment at 11 grid stations by 2020. 2a. Safety manual prepared by NTDC and submitted to NEPRA by December 2017. 2b. A professional third party project management and information system fully implemented by June 2018 (2016 baseline no systems in place).	1a-c. NEPRA's annual State of the Industry Report. 2a. NEPRA's annual State of the Industry Report. 2b. Facility management consultant's report.	The regulatory environment does not remain stable. Counterpart funds are not mobilized on time. High turnover among NTDC staff.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	<p>2c. Capacity development plan, tailored to meet MFF and Tranche 1 outcomes and outputs, incorporating target 10% women beneficiaries, approved by December 2017.</p> <p>2d. Action plan to meet government mandated 10% quota is reserved for women from the share of provinces/regions except merit quota approved by December 2017.</p>	2c-d. NTDC Board resolution.	

Key Activities with Milestones

1. Rehabilitation, augmentation, and expansion of the high voltage transmission network.
 - 1.1 Complete bidding process for Tranche 1 by June 2017.
 - 1.2 Start installation works by December 2017.
 - 1.3 Tranche 1 implementation complete by June 2020.
 - 1.4 Tranche 1 financial closure by December 2020.
2. Strengthening of the operations and management of NTDC.
 - 2.1 Facility management consultant hired by April 2017.
 - 2.2 Work on strengthening operations and management commenced by June 2017.
 - 2.3 Complete tranche 1 support component by December 2017.

Inputs

ADB: \$115.0 million (OCR Loan)
 ADB: \$10.0 million (ADF Loan)
 NTDC: \$46.0 million

Assumptions for Partner Financing

Not Applicable.

ADB = Asian Development Bank, ADF = Asian Development Fund, GW = gigawatt, km = kilometers, MVA = megavolt-ampere, NEPRA = National Electric Power Regulatory Agency, NTDC = National Transmission and Despatch Company Limited, OCR = ordinary capital resources.

^a Government of Pakistan. 2013. *National Power Policy*. Islamabad.

^b Government of Pakistan. 2014. *Pakistan 2025: One Nation, One Vision*. Islamabad.

^c NEPRA. 2015. *Power Safety Code for Transmission and Distribution Licensee*. Islamabad.

^d To be aligned with NTDC's capacity building program approved each year, and the associated training need assessment.

^e Government of Pakistan. 2006. *OM No. 3/17/2005-R-2 dated 26 September 2006*. Islamabad.

Source: Asian Development Bank.

B. Monitoring

65. **Project performance monitoring.** The indicators below will be monitored and reported on in NTDC's quarterly progress reports and ADB review missions. The financial indicators will be monitored annually during the audit of the financial statements:

- (i) annual power supplied through the grid (GW) and electricity (GWh);
- (ii) transmission losses (GWh);
- (iii) transmission capacity (MVA);
- (iv) annual net income after tax;
- (v) NTDC's annual debt-service coverage ratio (ratio of cash flow from operations to annual debt service obligations);
- (vi) receivable ratio (days in receivable is calculated by taking average account receivables for last year and current year multiply by 360 days and divide by revenues or sales); and
- (vii) annual self-financing ratio (ratio of cash flow from operations to average capital expenditures).

66. **Compliance monitoring.** Loan covenants—policy, legal, financial, economic, environmental, and others—will be monitored through the quarterly progress reports and review missions.

67. **Safeguards monitoring.** Safeguards compliance will be performed by NTDC's PMU ESIC, with the FMC's support and individual consultants to complete external monitoring requirements. The monitoring results will be included in the quarterly progress reports and semi-annual safeguards monitoring reports submitted to ADB.

68. **Gender and social dimensions monitoring.** Monitoring is not required for gender as the project does not have gender elements. Social dimensions, particularly equal employment opportunities for all social groups, equal pay for equal work regardless of gender, and prohibition of child labor will be monitored by NTDC's PMU. Social monitoring results will be included in the quarterly progress reports, and semi-annual safeguards monitoring reports.

C. Evaluation

69. **Inception mission.** ADB will field an inception mission after loan signing to re-establish the working relationship between ADB and NTDC, and ensure that the government understands ADB's procedures.

70. **Review missions.** ADB will field semiannual review missions to check overall project implementation, and update the project implementation schedule until the subprojects are complete.

71. **Midterm review mission.** ADB will field a midterm review mission within one year after loan effectiveness to assess whether attainment of the project's immediate objective (in terms of the design and monitoring framework) is still likely to be achieved.

72. **Project completion review mission.** ADB will also field a project completion review mission prepare ADB's project completion report (PCR). NTDC will also submit a PCR to ADB within six months of project completion.

D. Reporting

73. NTDC will provide ADB with (i) quarterly progress reports; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months; and (iii) a project completion report within 6 months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the executing agency audited financial statement together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

74. Project information will be strategically disseminated through media at main milestones including loan signing, contract awards and project completion. A grievance redress mechanism will be established on site for each subproject.

75. In compliance with the minimum requirements of ADB's *Public Communications Policy* (2011), NTDC will be responsible for (i) designating a focal point for regular contact with project-affected people and other stakeholders; (ii) identifying mechanisms for feedback during design and implementation; (iii) identifying details of types of information to be disclosed, and mechanisms for public notice including language and timing; and (iv) implementing and monitoring disclosure and dissemination.

76. Project documents will be disclosed on the ADB website. Table 19 outlines the framework communication strategy to be implemented by ADB.

Table 19: Disclosure of Project Documents

Project Document	Disclosure	Audience
Design and Monitoring Framework	Included in report and recommendations of the President	Project-affected people
Initial environmental examination	Post fact-finding mission, and as updated during project implementation	General public, project-affected people in particular
Resettlement planning documents	Post fact-finding mission, and as updated during project implementation	General public, project-affected people in particular
Report and recommendations of the President	Within 2 weeks of approval of the loan	General public
Legal agreements	No later than 14 days of approval of the project	General public
Facility administration manual	After loan negotiations	General public, project-affected people in particular
Social and environmental monitoring reports	Routinely disclosed, no specific requirements	General public
Major change in scope	Within 2 weeks of approval of the change	General public
Progress reports	Within 2 weeks of circulation to Board or management approval	General public
Completion reports	Within 2 weeks of circulation to Board for information	General public
Evaluation reports	Routinely disclosed, no specific requirements	General public

X. ANTICORRUPTION POLICY

77. ADB reserves the right to investigate, directly or through its agents, any violations of the **Anticorruption Policy** relating to the project.²⁷ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of NTDC and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contract under the project.²⁸ To support these efforts, relevant provisions will be included in the loan agreement/regulations and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

78. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's *Accountability Mechanism*. The *Accountability Mechanism* provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the *Accountability Mechanism*, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the *Accountability Mechanism*.²⁹

XII. RECORD OF CHANGES TO THE FACILITY ADMINISTRATION MANUAL

Fact Finding Draft
Loan Negotiation

21 April 2016
15 July 2016

²⁷ Anticorruption Policy: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

²⁸ ADB's Integrity Office web site: <http://www.adb.org/integrity/unit.asp>

²⁹ Accountability Mechanism. <http://www.adb.org/Accountability-Mechanism/default.asp>.

PROCUREMENT AND IMPLEMENTATION SCHEDULE FOR TRANCHE 1

PAK: MFF POWER TRANSMISSION ENHANCEMENT INVESTMENT PROGRAM II TRANCHE 1 - PROCUREMENT AND CONSTRUCTION SCHEDULES																																		
Package No.	Description	Goods and services	BD Sub		BD Approval		BD Submission and Evaluation										Contract Award and Effectiveness					Implementation												
			NTDC BOQ and Specifications (B) Section 4	ADB Receipt Draft Documents	ADB Receipt Final Documents	Shortlist, draft RFP, evaluation criteria (Submission 1)	ADB Approval Final Bidding Documents Submission 1	Invitation for Bids/ Request for Proposals	Technical Bid Opening	NTDC MD Approval	ADB NO Technical BER/ Submission 2	Price Bid Opening	NTDC MD Approval	Price Bid Evaluation (CCC approval)	NTDC Prepare Price BER	ADB NO Price BER/ Contract Award	NTDC MD Approval	NTDC BOD Approval	Public Notification	Notice of Award/ Letter of Acceptance	Negotiated contract (Submission 4)	Bid Validity Extension	Signing	ADB Receipt Signed Contract	Contract Effectiveness/ Commencement	Site Mobilization/ Commence Activities	Design	Erection	Stringing	Testing and Commissioning				
																															CSRN	Receive EOIs	Technical evaluation (Submission 2)	Financial evaluation and overall ranking (Submission 3)
ADB-100	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of extension work at 500/220 KV Sahiwal and Lahore South substations		15	10	10	7	7	60	60	21	15	15	10	30	15	15	10	20	16	7	270	30	15	60										
Contract (days)	730	Base	16-May-16	31-May-16	10-Jun-16	20-Jun-16	27-Jun-16	04-Jul-16	02-Sep-16	01-Nov-16	22-Nov-16	07-Dec-16	22-Dec-16	01-Jan-17	31-Jan-17	15-Feb-17	02-Mar-17	12-Mar-17	01-Apr-17	17-Apr-17	24-Apr-17	30-May-17	24-May-17	08-Jun-17	23-Jul-17							23-Jul-19		
ADB-101	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of extension and augmentation works at 500/220 KV Rewat Substation		15	10	10	7	7	60	60	21	7	15	10	30	15	7	10	20	16	7	270	30	15	60										
Contract (days)	730	Base	16-May-16	31-May-16	10-Jun-16	20-Jun-16	27-Jun-16	04-Jul-16	02-Sep-16	01-Nov-16	22-Nov-16	29-Nov-16	14-Dec-16	24-Dec-16	23-Jan-17	07-Feb-17	14-Feb-17	24-Feb-17	16-Mar-17	01-Apr-17	08-Apr-17	30-May-17	08-May-17	23-May-17	07-Jul-17							07-Jul-19		
ADB-102	Procurement of 500 KV Shunt Reactors of NTDC system		15	10	10	7	7							45	30	15	7	10	20	16	7	180	30	15	60	30		155		90		90		
Contract (days)	365	Base	31-May-16	15-Jun-16	25-Jun-16	05-Jul-16	12-Jul-16	19-Jul-16						02-Sep-16	02-Oct-16	17-Oct-16	24-Oct-16	03-Nov-16	23-Nov-16	#####	16-Dec-16	3-Mar-17	15-Jan-17	30-Jan-17	16-Mar-17	15-Apr-17	17-Sep-17	16-Dec-17		90		16-Mar-18		
ADB-103	Procurement of Plant-Design, Supply,		15	10	10	7	7	60	60	21	7	15	10	30	15	7	10	20	16	7	270	30	15	60	30		155		90		90			
Contract (days)	365	Base	31-May-16	15-Jun-16	25-Jun-16	05-Jul-16	12-Jul-16	19-Jul-16	17-Sep-16	16-Nov-16	07-Dec-16	14-Dec-16	29-Dec-16	08-Jan-17	07-Feb-17	22-Feb-17	01-Mar-17	11-Mar-17	31-Mar-17	16-Apr-17	23-Apr-17	16-Jun-17	23-May-17	07-Jul-17	22-Jul-17	23-Jan-18	23-Apr-18		90		22-Jul-18			
ADB-104	Procurement of Plant-Design, Supply,		15	10	10	7	7	60	60	21	15	15	10	30	15	15	10	20	16	7	270	30	15	60	60	510	130					30		
Contract (days)	730	Base	16-May-16	31-May-16	10-Jun-16	20-Jun-16	27-Jun-16	04-Jul-16	02-Sep-16	01-Nov-16	22-Nov-16	07-Dec-16	22-Dec-16	01-Jan-17	31-Jan-17	15-Feb-17	02-Mar-17	12-Mar-17	01-Apr-17	17-Apr-17	24-Apr-17	30-May-17	24-May-17	08-Jun-17	23-Jul-17	21-Sep-17	13-Feb-18	23-Jun-18		90		23-Jul-19		
ADB-105	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of 500 and 220 KV D/C T/L at Multan-Gatti and Faisalabad West to Lalian		15	10	10	7	7	7	60	60	21	15	15	10	30	15	15	10	20	16	7	270	30	15	60	60	420	70		90				
Contract (days)	730	Base	16-May-16	31-May-16	10-Jun-16	20-Jun-16	27-Jun-16	04-Jul-16	02-Sep-16	01-Nov-16	22-Nov-16	07-Dec-16	22-Dec-16	1-Jan-17	31-Jan-17	15-Feb-17	2-Mar-17	12-Mar-17	1-Apr-17	17-Apr-17	24-Apr-17	30-May-17	24-May-17	08-Jun-17	23-Jul-17	21-Sep-17	15-Nov-18	24-Jan-19	24-Apr-19				23-Jul-19	
ADB-106	Civil Works (Installation) for Transmission Lines - 500 KV Guddu-Muzaffargarh S/C T/L													Bids opened under L3203	30	15	15	10	20	16	7	270	30	15	60									
Contract (days)	365	Base												30-Mar-16	29-Apr-16	14-May-16	29-May-16	08-Jun-16	28-Jun-16	14-Jul-16	21-Jul-16	25-Dec-16	20-Aug-16	04-Sep-16	19-Oct-16							19-Oct-17		
ADB-107	Purchase of IT equipment and systems for project management					7	7							14	30	15	15	10			7	30	7	7	60			60		20		10		
Contract (days)	365	Base				15-Feb-17	22-Feb-17	1-Mar-17						15-Mar-17	14-Apr-17	29-Apr-17	14-May-17	24-May-17			31-May-17	14-Jun-17	07-Jun-17	14-Jun-17	06-Aug-17			05-Oct-17		25-Oct-17		04-Nov-17		
CON-1	Facility management consultant		30	21		21	7	45		30				7		21		21	10	20	16	38	180	7	9	14	21						3,468	
Contract (days)	3,468	Base	10-Jun-16	10-Jul-16	31-Jul-16	21-Aug-16	28-Aug-16	12-Oct-16	11-Nov-16	11-Nov-16	2-Dec-16	17-Dec-16	24-Dec-16			14-Jan-17	4-Feb-17	14-Feb-17	6-Mar-17	22-Mar-17	29-Apr-17	25-Jun-17	06-May-17	06-May-17	20-May-17	10-Jun-17							07-Dec-26	
CON-2	Individual consultants		30	21																	21		7	7	14	21							3,285	
Contract (days)	3,285	Base	1-Sep-17	1-Oct-17	22-Oct-17																	12-Nov-17		19-Nov-17	28-Nov-17	03-Dec-17	24-Dec-17							22-Dec-26

OUTLINE TERMS OF REFERENCE FOR FACILITY MANAGEMENT CONSULTANT

1. A facility management consultant (FMC) will be funded by the program support component under Tranche 1 of the Multitranche Financing Facility for the Power Transmission Enhancement Investment Program II (MFF II). The FMC will support the National Transmission and Despatch Company Limited (NTDC) in (i) preparing subsequent tranches under MFF II; (ii) project implementation and management of all tranches, including social and environmental plan management and monitoring; and (iii) capacity development.

2. NTDC will recruit the consulting firm using the quality- and cost-based selection method using 90:10 quality-cost ratio. The FMC is expected to be mobilized in June 2017, and the assignment will be for approximately 10 years, based on an initial three year contract, with NTDC retaining renewal options every three years. The consultants' performance will be assessed each year and prior commencing of each tranche. During contract negotiations, NTDC will agree on annual indicators to assess the consultant's performance. The consultants' performance will be assessed before each renewal option date, and prior to confirming the contract extension. The indicative implementation schedule of MFF II is in Attachment 1.

A. Scope of Works

1. Project Identification and Preparation of Tranches 2, 3, and 4 (Scope I)

3. The FMC will assist NTDC in preparing subsequent tranches, including assistance with preparing (i) technical due diligence, and analysis; (ii) advanced procurement, with risk assessment; (iii) financial analysis and financial management assessment; (iv) economic analysis; (v) assessment on land acquisition and resettlement; (vi) environmental assessment; and (vii) poverty and social assessment. The key tasks and related deliverables are in Table 1. Detailed tasks are in Table 2.

Table 1: Key Tasks and Deliverables – Scope I

Key Task	Deliverable
1. Technical due diligence, and analysis	
Update MFF roadmap, strategic context, policy framework, investment program and interventions, financing plan, undertakings, reporting requirements and monitoring, evaluating, and measuring results.	Inception report including detailed work plan, methodology, and resourcing proposed to undertake the study and deification of key risk items.
Prepare project feasibility study in the format required by the government for its internal approval.	Government-approved feasibility study report including technical, financial, economic and social due diligence on the Tranche and subprojects.
2. Advanced procurement, with risk assessment	
Update FAM, prepare RAMP, and risk mitigation plans	Procurement risk assessment including the project procurement risk assessment questionnaire and the project risk assessment and management plan. A summary of the risks and actions will be incorporated in the RAMP, PP, and FAM as required.
	PAM including project management arrangements, costs and financing, financial management, procurement, and consulting services and safeguards.

Key Task	Deliverable
	Risk Assessment and Management Plan including a consolidated list of risks and mitigation measures associated with each tranche.
Prepare bidding documents and technical specifications, as required.	PP including the contract packaging strategy, lotwise cost estimates, implementation arrangements and project schedule.
	Bidding documents including all required details, such as the technical specifications and bill of quantities; and bid evaluations.
3. Financial analysis	
Conduct financial analysis of tranches	Financial analysis report & model including the financial analysis and cash flow projections for the tranche and each sub-project. The report, or summarized version, will be incorporated into the feasibility study report.
Updating financial management assessment of NTDC.	Financial management assessment
	Financial projections including 15 years pro-forma financial statements for NTDC
4. Economic analysis	Economic analysis report and Model including the required analysis of the tranche and subprojects as required. The report, or summarized version, will be incorporated into the Feasibility Study Report.
5. Assessment on land acquisition and resettlement	Updated LARF, LARP, corrective actions plans, LAR due diligence reports and internal monitoring reports of safeguard plans.
6. Environmental assessment	Updated EARF and environmental assessment reports, as required.
7. Poverty and social assessment, including gender	Summary poverty reduction and social strategy
8. Climate Change	Review design/materials to ensure they are sufficient for future expected climate change.
9. Others Other works as required to assist NTDC in meeting the due diligence and project preparation required for applications for ADB funding under future tranches	Periodic financing request

EIA = environmental impact assessment, EARF – environmental assessment and review framework, IEE = initial environmental examination, LAR = land acquisition and resettlement; LARP = land acquisition and resettlement plan, LARF = land acquisition and resettlement framework, MFF = multitranchise financing facility, NTDC = National Transmission and Despatch Company Limited, FAM = facility administration manual, PP = procurement plan, RAMP = risk assessment and management plan.

Table 2: Detailed Tasks – Scope I

1. Technical due diligence, analysis, and assessment
<ul style="list-style-type: none"> • review and update of the MFF roadmap, strategic context, policy framework, investment program and interventions, financing plan, undertakings, reporting requirements and monitoring, evaluating, and measuring results; • a detailed risk assessment and proposed mitigation measures for the sector, and each Tranche 2-4; • conduct technical due diligence on each of the subprojects, including the related transmission system studies, justification of the selected subprojects to determine whether the proposed subproject provide the least cost solution for meeting the required transmission enhancement capability, the alignment of subprojects with the least-cost generation plan and regulatory approvals (investment plan approved by NEPRA) ; • develop detailed cost estimates, required technical specifications and bill of quantities for each subproject,

<ul style="list-style-type: none"> • detailed project implementation plan, including the resourcing, processes and detailed schedules for each tranche, and each subproject; • assess the performance and lessons learnt from the previous investment program and projects; and • any other technical study and analysis to assure the technical feasibility of the succeeding tranches, and subprojects required for the approval of the same from ADB.
2. Advanced procurement, analysis, and assessment
<ul style="list-style-type: none"> • the procurement plans for each tranche, including appropriate procurement strategy and bid packaging; • the procurement risk assessment and project P-RAMP, including procurement capacity assessment of NTDC; • the project administration manual for each succeeding tranche, including project management arrangements, costs and financing, financial management, procurement and consulting services, safeguards and performance monitoring, evaluation, reporting and communication; • the collection of information on unit costs of materials, machinery and equipment, cost of civil works and metal works, transportation, labor cost, etc. based on recent similar projects in Pakistan that may be made available from NTDC and estimate project costs; • the preparation of bidding documents in accordance with ADB's <i>Procurement Guidelines</i> (2015, as amended from time to time), including the commercial and technical requirements of the bidding documents, such that they are ready to be issued; • issuing of bidding documents, organizing site visits, assisting pre-bid meetings, responding to requests for clarification on bidding documents; carrying out the evaluation of bids; • participation in the evaluation committee for reviewing the procurement documents; and • facilitation of contract negotiation.
3. Financial analysis and assessment
<ul style="list-style-type: none"> • conducting a financial management assessment of the executing and implementing agencies, including (a) assessing whether previous financial management assessments have been conducted by ADB or other agencies and, if so, reviewing the results and ascertaining whether these can be used as input, (b) assessing capacity for planning and budgeting, management and financial accounting, reporting, auditing, internal controls, and information systems (c) reviewing proposed disbursement and funds-flow arrangements, and (d) concluding on the financial management risk rating and identifying and confirming measures for addressing identified deficiencies; • supporting the preparation and agreement of cost estimates and a financing plan, which are based on verifiable data and are sufficient to support project implementation. As a minimum the cost estimates shall include the assumptions and supporting documentation, separate foreign exchange and local currency, physical and price contingencies, interest during construction, commitment fee and other financing charges, and identify applicable local taxes and duties; • preparing financial projections and conducting financial analyses of the executing agency and incremental recurrent costs, to determine financial sustainability, and reviewing proposed cost-recovery and tariff policies, including affordability. This will include as a minimum 15 years pro-forma financial statements and recommend financial indicators and covenants for each tranche; • conducting financial evaluations (financial cost-benefit analyses) including sensitivity analyses of project components that have a cost-recovery objective, including financial net incremental benefits to the overall project and each sub-project and calculation of the financial internal rate of return and financial net present value for the project and each sub-project; • the calculation of the weighted average cost of capital for the overall Project and each sub-project (as required) of each tranche; • where significant risks are identified to project financial sustainability or viability, proposing relevant financial performance indicators to be incorporated in financial covenants; • assessing and reaching agreement on financial reporting, auditing and public disclosure arrangements for the project, and, as appropriate, identifying and agreeing arrangements for receiving financial statements from executing and/or implementing agencies; • assist with the preparation of the draft PFR report appendix for financial analysis and the

<p>preliminary tables and analyses including, but not limited to, project cost estimates table, financing plan, cash flow projections and sensitivity analysis;</p> <ul style="list-style-type: none"> • update the PFR Report appendix and the tables and analyses to reflect ADB and NTDC comments and suggestions; • the preparation of the PFR Report supplementary appendix on financial management assessment and financial performance review and projection in accordance with ADB's <i>Financial Management and Analysis Guidelines</i> (2007); and • assess the performance and lessons learnt from the previous MFF and projects.
<p>4. Economic analysis</p> <ul style="list-style-type: none"> • the economic analysis of each tranche, and each sub-project and assess their economic viability, provide the economic rationale, including a review of historical electricity demand and supply, projections for the sector nationally and regionally, and an alternatives and least-cost options analysis, in accordance with ADB <i>Guidelines for Economic Analysis of Projects</i> (1997); • the evaluation of the proposed project's direct and indirect impacts and carry out economic analysis of these impacts in terms of economic net present value and economic internal rates of return in accordance with ADB's <i>Guidelines for the Economic Analysis of Projects</i> (1997); • a cost-benefit analysis should be conducted to assess the economic benefits of the project. For the economic analysis of the project the following tasks will need to be carried out: <ul style="list-style-type: none"> ○ calculation of appropriate opportunity costs and conversion factors including but not limited to standard conversion factor, shadow exchange rate factor, shadow wage rate factor and any other which may be considered applicable for the project and each sub-project; ○ estimation of the capital expenditure and operating costs of the overall project and each sub-project in economic prices; the economic costs should be exclusive of taxes and subsidies; ○ estimation and recommendation of an appropriate proxy to account for the economic price of electricity by way of conducting a survey to assess consumer surplus and willingness-to-pay by the consumers; ○ calculation of incremental benefits and costs arising from the project and each sub-project by comparing the "with-project" scenario to the "without-project" scenario in accordance with guidance provided in ADB's <i>Guidelines for Economic Analysis of Projects</i> (1997); ○ estimation of direct incremental benefits and costs (including but not limited to operational cost savings and decrease of technical and non-technical losses) in economic prices; ○ estimation of indirect incremental benefits and costs (including but not limited to energy cost savings, indirect energy savings, increase of overall power system efficiency and avoided investment in power generation assets due to reduced demand and environmental benefits (e.g., CO2 emission reduction), national energy security, etc.) in economic prices; ○ calculation of economic net incremental benefits of each of tranche 2-4 and each sub-project undertaken and calculation of the economic internal rate of return and economic net present value for the each tranche and each sub-project; ○ sensitivity analysis of the economic viability of each of tranche 2-4 to key input parameters; and ○ analysis identifying the expected benefits and cost implications to all stakeholder groups • in consultation with the social development specialist, incorporate poverty reduction impacts in accordance with ADB's <i>Handbook on Integrating Poverty Impact Assessment in the Economic Analysis of Projects</i> and estimate the poverty reduction impact ratio (according to ADB's relevant guidelines and requirements); • the development of Microsoft Excel spreadsheet models for the economic analysis to make them transparent and self-explanatory before handing over the same to ADB; and • preparation of the draft PFR Report appendix for economic analysis and update the appendix and the tables and analyses to reflect ADB and NTDC comments and suggestions.
<p>5. Assessment on land acquisition and resettlement</p> <ul style="list-style-type: none"> • update land acquisition and resettlement framework prepared for the entire MFF; • identify all subprojects with LAR and IP impacts for succeeding tranches; • prepare a due diligence report for subprojects which are without LAR impacts and those with government/state land to be used; • for subprojects with LAR impacts, (i) conduct social impact assessment, (ii) prepare

socioeconomic survey (sample study), (iii) conduct/prepare census of DPs and inventory of losses, (iv) facilitate/undertake consultation with DPs and key project stakeholders, (v) coordinate valuation of affected assets to be reflective of the ADB's Safeguards Policy Statement 2009 replacement costs for acquired assets, and (vi) prepare/update draft LARP and CAPs, as required, and (vii) prepare involuntary resettlement and indigenous peoples impacts screening checklists of the subprojects;

- update LARPs based on final engineering and construction plan;
- lead discussions with relevant government officials and consultations with key project stakeholders' related to calculation of full replacement costs and implementation of LARP consistent with SPS requirements;
- carry out due diligence review of potential impacts on indigenous peoples and update IP framework, and plans where applicable;
- review the current complaints and grievances redress mechanism and update it if needed;
- support data collection needed to carry out a rapid social and poverty analyses following ADB Operations Manual C3 (Incorporation of Social Dimensions Into ADB Operations) and the ADB *Handbook on Social Analysis* (2007) and update Summary Poverty Reduction and Social Strategy;
- recommend measures for (i) facilitating employment of local people (DPs in particular) in the project construction opportunities and (ii) ensuring application and compliance of labor laws and core labor standards by the contractors;
- prepare LARP monitoring mechanisms; indicators, to be monitored and reporting template/outline; and
- provide social safeguards input to relevant sections of the *Project Administration Manual* and other safeguards related tranche/project documents for the succeeding tranches.

6. Environmental assessment

- prepare a REA checklist, accompanied by a one page description for each subproject in accordance with the relevant REA templates, based on findings from field visits regarding potential environmental impacts caused by the project activities. Perform a careful screening of the proposed transmission lines using maps to show their alignment in relation to declared/notified protected areas in Pakistan. These should be appended to the REA checklist for the transmission line subprojects. This information on screening will be submitted to ADB to be used to assist the ADB project team in categorizing the tranche as environment category A, B, or C;
- review existing environmental assessment documents related to the project;
- prepare an environmental impact assessment report depending on the categorization of the project initial environmental examination for the project components, following the requirements of the ADB's SPS 2009, and any applicable procedures or guidelines for environmental assessment required by the government. A sample outline for the environmental assessment report will be given to the team during mobilization. The assessment will take into account the likely impacts associated with the project locations, designs, construction activities, and replacements of existing equipment and facilities, as well as the long-term impacts during operation;
- undertaking public consultations in accordance with ADB SPS 2009 and government guidelines during the preparation of environmental assessment report to ensure that records and feedback from the public consultation are incorporated in the assessment and considered in the technical design;
- prepare a fully-costed EMP as part of the environmental assessment report, in accordance with the SPS 2009 requirements;
- ensure that components such as any access roads, hazardous waste management, and an emergency response plan, are properly addressed together with respective plans;
- ensure that the costs for implementation of EMP, including recommended mitigation measures, environmental monitoring plan, and any capacity strengthening measures, are included in the proposed project's investment costs; and
- prepare the updated environmental framework for each of the succeeding tranches in line with ADB SPS 2009.

7. Poverty and social (including gender) assessment
<ul style="list-style-type: none"> • assist in preparing design measures and/or plans to address relevant issues in the project, as required; • prepare updated summary poverty reduction and social strategy; • assess opportunities to design gender project interventions, such as (i) promoting employment and career development for women in the energy sector, (ii) inclusion of public facilities, such as kindergartens and schools, in the large substation developments, and (iii) training on maximizing benefits; from the improved electricity supply, e.g., in home production, food processing, and other livelihood options; • provide relevant inputs to the technical, economic, and other analyses; and • assess the performance and lessons learnt from the previous MFF and projects.
8. Climate assessment
<ul style="list-style-type: none"> • Develop simplified scenarios for the key hydro-meteorological parameters and associated hazards under climate change for the lifetime of the project, using most current and relevant regional climate projections available; • Assess vulnerabilities of the project design and the associated risks to the project under the scenarios, including implications for performance, operation, and maintenance; • Assess and recommend adaptation options feasible and appropriate to project conditions and design objectives, including structural and non-structural approaches and interventions. The assessment should include estimation of incremental additional adaptation costs and where feasible monetary benefits; and • Prepare final climate risk and vulnerability assessment report, through an iterative process of obtaining and addressing review comments on draft reports from ADB project team.

ADB = Asian Development Bank, CO₂ = carbon dioxide, DP = displaced persons, EMP = environmental management plan, IP = indigenous peoples, LAR = land acquisition and resettlement, LARP = land acquisition and resettlement plan; MFF = multitranchise financing facility, NEPRA = National Electric Power Regulatory Authority, NTDC = National Transmission and Despatch Company Limited, PFR = periodic financing request, PP = procurement plan, RAMP = Risk Assessment and Management Plan, REA = Rapid Environmental Assessment.

2. Project Implementation and Monitoring of Tranches 1, 2, 3, and 4 (Scope II)

4. The FMC will assist NTDC in (i) project management and reporting; (ii) construction supervision; (iii) financial management; and (iv) safeguards compliance. The key tasks and deliverables are in Table 3.

Table 3: Key Tasks and Deliverables – Scope II

Overall Project Management and Reporting
<ul style="list-style-type: none"> • prepare a project implementation manual covering the project organization, payment procedures, and project time schedule and quality assurance program; monitor NTDC's compliance with the loan agreement and project agreement covenants and report to ADB, track tranche outputs, outcomes, and impacts against each tranche's design and monitoring framework; • prepare monthly progress reports/quarterly reports/project completion report for each subproject under each tranche, quarterly investment program progress report, annual investment program performance report, and other reports deemed necessary by NTDC and/or ADB; • address shortcomings in any of these areas; and • provide additional services as reasonably requested by NTDC to complete the tranches.
Construction Supervision
<ul style="list-style-type: none"> • develop and implement a construction quality assurance program; • review and approve the engineering design drawings, calculations, delivery program, and documents submitted by the contractors; • reconfirm technical specifications and update if deemed deficient; • monitor implementation progress and identify what actions and resources are required to address the contractors needs to achieve the schedule;

- inspect materials before shipment upon arrival and upon erection;
- review the contractor's test procedures for compliance with manufacturers' requirements and design criteria, witness selected tests and review the test results and submit a report;
- monitor the execution of the subprojects in line with the time schedules and the work programs provided by the contractors;
- prepare and advise NTDC on the outage planning of existing facilities during implementation;
- coordinate safety measures between components in operation and components under construction. Advise and, when required, provide training to NTDC staff on safety planning and safety measures;
- verify contractor's work and issue certification of payment to the contractor;
- identify any problem areas during project implementation, proposing remedial actions, and promptly report any outstanding issues to the executing agency;
- conduct field visits and appropriate tests at regular and appropriate times during construction, testing and commissioning;
- compare as-built drawings to design,
- assist in commissioning activities;
- review and certify the commissioning test reports submitted by the contractors/ suppliers; attend the commissioning phase; establish the list of deficiencies after commissioning; and prepare a time frame for the contractors/suppliers to remedy the deficiencies. Establish a monitoring program for NTDC; and
- take any action under civil works contract designating the consultant as "Engineer", for which action, pursuant to such civil works contract, the written approval of the client as "Employer" is required.

Financial Management

- prepare the overall disbursement plan, monitor costs, and maintain project accounts;
- certify invoices, prepare withdrawal applications and keep records of any disbursement. Prepare and regularly update the forecast disbursement schedules;
- prepare quarterly payment reports, ensure claim management, manage project account and analyze the causes of delay, if any;
- prepare project financial statements recording the project expenditures, prepare annual financial reports ready for auditing by independent auditors; manage cash flows and set up financial management information system; and
- prepare and issue completion certificates for the works, as well as for spare parts. Prepare the operational acceptance certificate, along with the final payments to be issued by NTDC after guarantee test. Release performance security after the end of the warranty period and the remedy of all deficiencies.

Safeguards Compliance

Grievance Redress Mechanism (GRM)

- review and update the current complaints and GRM; and maintain a community grievance complaints register, to be updated on monthly basis, and prepare/deliver training module on GRM to the relevant stakeholders within NTDC and DPs including; Project Director and relevant staff at project implementation unit, staff and consultants of NTDC's ESIC, and DPCs, and provide training reports to NTDC and ADB.

Social safeguards

- ensure that any land acquisition and involuntary resettlement are fully compensated and other requirements stipulated in the LARP are fully implemented before assisting NTDC with the implementation and, if necessary, periodic revisions of the LARPs and ensure timely reporting of LARP implementation on quarterly basis. Assist NTDC in holding necessary public consultations with relevant government departments, district revenue authority/department and displaced persons;
- liaise with NTDC, district revenue department, land acquisition collector, and other members of district price assessment committee for projects requiring acquisition of land and assets to ensure compensation for affected land and assets meets ADB's

- requirement of full replacement costs;
- ensure that all compensations (social and environmental under the LARP and EMP) are paid in a timely manner and that the right-of-way is cleared from all social and environment requirements before start of construction;
- monitor implementation of LARPs, CAPs, DDRs and EMP implementation and provide early warning of any potential safeguard risks;
- ensure the establishment and effective implementation of complaints and grievances redress mechanism, maintain a grievance log of, and track and report status of complaints;
- develop and maintain a database of DPs with information on their socioeconomic profile, amount and status of compensation and concerns;
- conduct regular field visits to (a) monitor contractors' compliance on the LARP provisions, including restoration of temporarily used land, and prioritization of DPs in employment, (b) identify and report on emerging issues and complaints during project implementation, and (c) obtain feedback from DPs;
- facilitate local disclosure of LARP brochures/PIBs and SMR results to DPs and key stakeholders;
- design and deliver IR training module, customized to the needs of NTDC's staff and consultants and DPCs, and provide training reports to NTDC and ADB;
- review implementation of LARPs, CAPs and DDRs to ensure this is consistent with LAR requirements of the loan/project and SPS's requirement of full payments made to the DPs before start of construction;
- in case of section-by-section or phased construction approach, prepare linear maps of subproject's approved transmission line route illustrating by RDs/kms the sections with and without LAR impacts and the status of payments made to the DPs; and
- prepare plan of implementation of LARP and payments to DPs in a manner synchronized with section-by-section or phased construction approach and construction plan.

Environmental safeguards:

- monitor the EMP/SSEMP implementation progress onsite by field visits;
- monitor the availability of environmental staff and resources of the contractor as per EMP/SSEMP, EPA Environmental Approval, and Contract Conditions;
- assess the progress as per the requirements given EMP/SSEMP/Environmental Approval from EPA and address the gaps to ensure compliance;
- undertake capacity building activities as stipulated in the IEE/EIA;
- submit environmental monitoring reports on the prescribed format to ADB on a six monthly basis;
- update safeguards documents if required; and
- any other environmental safeguards tasks deemed necessary.

ADB = Asian Development Bank, DP = displaced persons, DDR = due diligence reports, DPC = Displaced Persons Committee, EIA = environmental impact assessment, EMP = environmental management plan, ESIC = Environment and Social Impact Cell, IEE = initial environmental examination, IPs = indigenous peoples, LAR = land acquisition and resettlement, LARP = land acquisition and resettlement plan, NTDC = National Transmission and Despatch Company Limited, SSEMP = site specific environmental management plan.

3. Preparation of Capacity Development Plan (Scope III)

5. Following a needs assessment, the FMC will prepare a capacity development plan to assist NTDC in meeting the MFF and Tranche 1 intended outputs and outcomes in the design and monitoring frameworks (Attachment 2).

4. Preparation of Gender Equality Plan (Scope IV)

6. Prepare action plan to meet government mandated 10% quota for women from the share of provinces/regions except merit quote. The action plan is expected to be approved by NTDC's Board of Directors by December 2017.³⁰

5. Safety Manual (Scope V)

7. Assist NTDC to prepare and submit a safety manual to NEPRA by December 2017.³¹

6. Project Management and Information System (Scope VI)

8. Assist NTDC to acquire and install a professional third party project management and information system, to be fully implemented by June 2018.

B. Experts' Required Qualifications and Tasks

9. The assignment will require a minimum 140 person-months (pm) of international experts and 480 pm of national experts over 10 years. The indicative inputs for each expert are summarized in Table 4. The FMC may be required to mobilize multiple teams in parallel during the contract period.

Table 4: Minimum Required Consultant Inputs (pm)

	Expert	Inputs (pm)	
		International	National
	Electrical Engineer/Team Leader (Scopes I, II, III)	40	
Scope I - Project Identification and Preparation of Tranche 2, 3 and 4			
1	Transmission Engineer/Deputy Team Leader - preparation		15
2	Electrical Engineer	6	8
3	Power System Engineer/Analyst	9	6
4	Civil Engineer	6	6
5	Supervisory Control And Data Acquisition (SCADA)/telecommunication Engineer	3	3
6	Protection Engineer	3	3
7	Procurement Expert	15	30
8	Financial Expert	7	6
9	Energy Economist	5	6
10	Social Safeguards Specialist		40
11	Environmental Safeguards specialist		40
12	Gender Expert		6
13	Climate change expert	6	
Scope II - Project Implementation and Monitoring of Tranches 1, 2, 3, and 4			
1	Transmission Engineer/Deputy Team Leader - implementation		85
2	Electrical Engineer	6	24
3	Civil Engineer	6	24
4	SCADA /telecommunication Engineer	6	3
5	Protection Engineer	6	12
6	Contract Management Expert	9	30
7	Financial Expert	6	36
8	Social Safeguards Specialist		60
9	Environmental Safeguards specialist		60

³⁰ Government of Pakistan. 2006. OM No. 3/17/2005-R-2 dated 26 September 2006. Islamabad.

³¹ NEPRA. 2015. *Power Safety Code for Transmission and Distribution Licensee*, Islamabad.

	Expert	Inputs (pm)	
		International	National
10	Gender Expert	4	4
11	Monitoring and Evaluation Expert		36
Scope III - Preparation of Capacity Development Plan			
	Capacity Development Expert	4	
	Total	140	480

10. The experts' required qualifications and detailed tasks are in Table 5. Previous work experience in Pakistan and other developing countries, as well as with ADB and other international finance institutions financed projects, is desirable. The experts may carry out other tasks, as reasonably requested by NTDC.

Table 5: Required Qualifications and Detailed Tasks

Qualifications	Detailed Tasks
Electrical Engineer/Team Leader (International) for Scopes I - VI	
Bachelor's degree in a relevant engineering discipline and minimum 15 years experience in transmission projects, the consultant shall have experience a minimum of 10 years of relevant managerial/supervisory experience in power transmission projects. The consultant shall also preferably have experience in capacity development.	<ul style="list-style-type: none"> • supervise all activities under the consultancy contract; • coordinate tasks among different teams, prepare the detailed mobilization schedule of each team, coordination amongst teams for a well-coordinated effort; • act as the FMC's point of contact with NTDC and ADB; • coordinate with ADB on all project related matters including ADB missions, preparation of new tranches and data/reports required by ADB; • ensure that all reports required under the project are submitted in time with required quality and standards; • prepare capacity development plan with the assistance of the capacity development consultant; and • conduct other duties as reasonably requested by ADB project officer.
Scope I, IV, V and VI – Including Project Identification and Preparation of Subsequent Tranches	
1. Transmission Engineer/Deputy Team Leader - Preparation (National)	
At least Bachelor's degree in engineering with at least 20 years of experience in the preparation and delivery of transmission projects, and a minimum of 5 years of relevant managerial/supervisory experience in power transmission projects.	<ul style="list-style-type: none"> • supervise and coordinate the activities of other consultants under Scope I, develop detailed work plan and implementation schedule; • manage the consultant's team and ensure the quality and timely delivery of outputs; • prepare project development strategies and plan, and ensure subprojects proposed for each tranche are in line with the project qualification criteria provided in the RRP of the MFF and the FFA; • coordinate project development activities and provide all relevant information to NTDC and ADB during the preparation stage; • prepare a detailed schedule covering all stages of the project design for each component, from field survey and investigations to acceptance of PFR; • assess NTDC's progress on ongoing Tranches and their compliance with the implementation schedule and submit a report along with the PFR; • prepare PFR following ADB's standard format along with

Qualifications	Detailed Tasks
	<p>all attachments as required by ADB. Prepare all other documents for government required for project processing by ADB;</p> <ul style="list-style-type: none"> • assist NTDC in preparation of PCIs in accordance with format and needs of Planning Commission of Pakistan, by managing all the individual experts available under the Scope I assignment; • with support of procurement consultant and other team members, assist NTDC in preparing bidding documents until approval by ADB, issuance of bidding documents, clarification during bids preparation, evaluation of bids until recommendations approval By NTDC Board, and contract negotiations; • ensure all deliverables for each succeeding tranche to be provided timely with acceptable quality; • perform other functions as may be assigned or delegated by Team Leader from time to time during the time of assignment; and • <p>conduct other duties as reasonably requested by ADB project officer.</p>
2. Electrical Engineer (International and National):	
<p>At least Bachelor's degree in engineering, with minimum 10 years' experience in the design of transmission and substation structures.</p>	<ul style="list-style-type: none"> • make necessary inputs and advice to the project team and to NTDC on transmission line and transmission substation technical matters, to ensure proper technical due diligence • coordinate the preparation of project designs, documentation, bidding documents; • assist team and NTDC in evaluation of technical and financial bids; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
3. Power System Engineer/Analyst (International and National)	
<p>At least Bachelor's degree in electrical engineering, with minimum 10 years' experience in the field with proven abilities in modelling, performing power system analysis with simulation software, with the extensive knowledge in power system standards. The scope of power system analysis includes but not limited to load flow analysis, stability analysis, and short circuit analysis. Experience in using PSS/E software would be an advantage.</p>	<ul style="list-style-type: none"> • review the system analysis result conducted by NTDC, and make necessary inputs and advice to the project team and to NTDC on the project design; • perform the system analysis by himself/ herself with simulation software to verify the NTDC's analysis result and/or to analyze different scenarios as necessary; • assess NTDC's existing and planned power system and prepare design concepts for meeting the required transmission enhancement capability, and the alignment of subprojects with the investment plan; • coordinate the preparation of project designs, documentation, bidding documents; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
4. Civil Engineer – (International and National):	
<p>At least Bachelor's degree in civil engineering, with minimum 10 years'</p>	<ul style="list-style-type: none"> • make necessary inputs and advice to the project team and to NTDC on transmission line, transmission

Qualifications	Detailed Tasks
experience in the design of foundations for substation towers and substation structures.	substation, SCADA, communications and control center technical matters, to ensure proper technical due diligence <ul style="list-style-type: none"> • coordinate the preparation of project designs, documentation, bidding documents; • assist team and NTDC in evaluation of technical and financial bids; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
5. SCADA/Communications Engineer (International and National)	
At least Bachelor's degree in electrical, communications or other relevant discipline, with minimum 7 years' recent experience in the selection and specification of SCADA and communication systems for transmission lines, substations and control center interfacing.	<ul style="list-style-type: none"> • make necessary inputs and advice to the project team and to NTDC on communication and SCADA requirement for transmission line and transmission substation, to ensure proper technical due diligence assess NTDC's existing SCADA and communications systems and prepare design concepts for maintaining optical link and interfacing with the transmission line and substations; • coordinate the preparation of project designs, documentation, bidding documents; • assist NTDC in evaluation of technical and financial bids; and • P\perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
6. Protection Engineer (International and National)	
At least Bachelor's degree in electrical engineering with protection specialization and/or further qualifications and training in protection for transmission systems and substations, with minimum 10 years' experience.	<ul style="list-style-type: none"> • make necessary inputs and advice to the project team and to NTDC on protection system coordination for transmission line and transmission substation, to ensure proper technical due diligence • assess NTDC's existing protection systems and prepare design concepts for protection of the transmission line and substations; • coordinate the preparation of project designs, documentation, bidding documents; • assist NTDC in evaluation of technical and financial bids; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
7. Procurement Expert (International and National)	
At least Bachelor's degree in engineering, finance, economics, law or relevant discipline with preferably at least 10 years of relevant work experience in the power sector. The expert shall have experience in procurement for a broad range of transmission projects, IFI financed projects, and developing	<ul style="list-style-type: none"> • assist the team and NTDC to complete the scope of work outlined in the advanced procurement, analysis and assessment section in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.

Qualifications	Detailed Tasks
appropriate contracting strategy.	
8. Financial Expert (International and National)	
Degree in accounting, finance, or a related field, with a recognized professional accountancy qualification. The expert will have 10 years of work experience in the power sector, including in financial due diligence. The expert shall have experience in preparing investment plan, financial plan, financial analyses and undertaking financial management assessment in power transmission utilities.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the financial analysis and assessment scope of work in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time.
9. Energy Economist (International and National)	
Degree in economics, or relevant discipline with at least 10 years of work experience, including at least five years in power transmission projects and operations. The expert shall have work experience in conducting economic analyses in line with the requirements of ADB or similar IFI, including but not limited to electricity tariff analysis in power transmission utilities.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the economic analysis scope of work in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
10. Social Safeguard Specialist (National)	
At least Bachelor's degree in a relevant social science discipline with at least 10 years of relevant work experience (or a master's degree in a relevant social science discipline with at least 5 years of relevant work experience), preferably with experience in the power transmission sector. The expert shall have at least 5 years of experience in designing and preparing social safeguards requirements of ADB (or similar) financed projects, and full familiarity with IFIs social safeguard policies, (ADB's <i>Safeguard Policy Statement 2009</i> in particular) and Pakistan's Land Acquisition Act of 1894 and Telegraphic Act of 1885 and past performance of consultant acceptable to ADB.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the poverty and social assessment scope of work in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
11. Environmental Safeguards Specialist (National)	
Bachelor's degree or higher, in Environmental Science, Environment Management, Environmental Engineering (or closely related field), and minimum of 7 years of relevant professional experience, preferably with experience in the power transmission sector.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the environmental assessment scope of work in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
12. Gender Expert (National)	

Qualifications	Detailed Tasks
At least Bachelor's degree in a relevant social science discipline with particular expertise in the area of gender and development. The expert will have at least 10 years of relevant work experience, preferably with experience in the power transmission sector. The expert shall have at least 5 years of experience in the planning and design of projects with gender-related objectives and in mainstreaming gender considerations in other projects, and broad work experience throughout Pakistan.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the gender scope of work timely and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment.
13. Climate Change Expert	
Bachelor's degree or higher, in Environmental Science, Environment Management, Environmental Engineering (or closely related field), and minimum of 7 years of relevant professional experience, preferably with experience in the power transmission sector.	<ul style="list-style-type: none"> • assist the team and NTDC to complete the climate assessment scope of work in a timely manner and with good quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Preparation) from time to time during the time of assignment. •
Scope II - Project Implementation and Monitoring of Tranche 1, 2, 3, and 4	
1. Transmission Engineer/Deputy Team Leader - Implementation (National)	
At least Bachelor's degree in electrical engineering with at least 15 years of experience in implementation of transmission projects, and a minimum of 5 years of relevant managerial/ supervisory experience in power transmission projects.	<ul style="list-style-type: none"> • supervise and coordinate the activities of other consultants, develop detailed work plan and implementation schedule, and ensure quality and timely project deliverables from all the team members; • prepare project implementation strategies, and coordinate project implementation activities, to ensure implementation without delays; • prepare and identify project management procedures for organization and responsibilities, reporting, and cost and time control propose program to address training needs; • monitor and control quality, and report to NTDC and ADB through Team Leader; • ensure work scope for each tranche to be completed timely with acceptable quality; • perform other functions as may be assigned or delegated by Team Leader from time to time during the time of assignment; and • conduct other duties as reasonably requested by ADB project officer.
2. Electrical Engineer (International and National)	
At least Bachelor's degree in engineering, with minimum 8 years' experience in the design and implementation of transmission and substation structures for 400 kV or higher.	<ul style="list-style-type: none"> • assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
3. Civil Engineer – (International and National):	
At least Bachelor's degree in civil	<ul style="list-style-type: none"> • assist the team and NTDC to ensure his or her work

Qualifications	Detailed Tasks
engineering, with minimum 8 years' experience in the design and implementation of foundations for substation towers and substation structures for 400 kV or higher.	scope as indicated for each tranche to be completed timely with acceptable quality; and <ul style="list-style-type: none"> perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
4. SCADA/Communications Engineer (International and National)	
At least Bachelor's degree in electrical, communications or other relevant discipline, with minimum 7 years' experience in the selection and specification of SCADA and communication systems for transmission lines, substations, and control center interfacing.	<ul style="list-style-type: none"> assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
5. Protection Engineer (International and National)	
At least Bachelor's degree in electrical engineering with protection specialization and/or further qualifications and training in protection for 400 kV transmission systems and substations, with minimum 8 years' experience.	<ul style="list-style-type: none"> assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
6. Contract Management Expert (International and National)	
At least Bachelor's degree in engineering, finance, economics, law, or relevant discipline with preferably at least 10 years of relevant work experience in the power sector. The expert shall have experience in management of FIDIC EPC/turnkey, design-build, works, and ADB's Plant contracts for a broad range of power sector projects.	<ul style="list-style-type: none"> assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
7. Financial Expert (International and National)	
Degree in accounting, finance, or a related field, with a recognized professional accountancy qualification	<ul style="list-style-type: none"> assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
8. Social Safeguard Specialist (National)	
At least Bachelor's degree in a relevant social science discipline with at least 10 years of relevant work experience, preferably with experience in the power transmission sector. The expert shall have at least 5 years of experience in designing and/or implementing social components of development projects, with broad work experience throughout Pakistan.	<ul style="list-style-type: none"> assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.

Qualifications	Detailed Tasks
9. Environmental Safeguards Specialist (National)	
Bachelor's degree or higher in Environmental Science, Environment Management, Environmental Engineering (or closely related field), and minimum of 7 years of relevant professional experience, preferably with experience in the power transmission sector.	<ul style="list-style-type: none"> • assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
10. Gender Expert (International)	
At least Bachelor's degree in a relevant social science discipline with particular expertise in the area of gender and development. The expert will have at least 7 years of relevant work experience, preferably with experience in the power transmission sector. The expert shall have at least 5 years of experience in the planning and design of projects with gender-related objectives and in mainstreaming gender considerations in other projects.	<ul style="list-style-type: none"> • prepare action plan to meet government mandated 10% quota for women from the share of provinces/regions except merit quote. The action plan is expected to be approved by government by December 2017.
11. Monitoring and Evaluation Expert (National)	
Experience in developing, and implementing monitoring and evaluation strategies and plans for large-scale power projects, preferably with experience in the power transmission sector.	<ul style="list-style-type: none"> • assist the team and NTDC to ensure his or her work scope for each tranche to be completed timely with acceptable quality; and • perform other functions as may be assigned or delegated by Team Leader and Deputy Team Leader (Implementation) from time to time during the time of assignment.
Scope III - Preparation of Capacity Development Plan (Scope III)	
Capacity Development Expert (International)	
At least Bachelor's degree in engineering, finance, economics, law or relevant discipline with at least 10 years of relevant capacity development experience in the power sector.	<ul style="list-style-type: none"> • prepare capacity development plan following NTDC's capacity development plan and needs assessment, tailored to meet the delivery of the MFF and Tranche 1 DMF outputs and outcomes; and • perform other functions as may be assigned or delegated by Team Leader.

ADB = Asian Development Bank, BD = bidding document, DMF = design and monitoring framework, EPC = engineering, procurement, and construction, FIDIC = International Federation of Consulting Engineers, FFA = framework financing agreement, FMC = facility management consultant, IFI = international finance institutions, kV = kilovolt, MFF – multitranchise financing facility, NTDC = National Transmission and Despatch Company Limited, PFR = periodic financing request, PIU = project implementation units, PSS/E = power system simulation software, RRP = report and recommendation to the President, SCADA = supervisory control and data acquisition.

C. NTDC's Counterpart Support

11. NTDC will assist the FMC in onsite coordination, data gathering and report writing and in liaising with other government ministries and agencies.

12. NTDC will provide the consultants, free of charge, the following as required by the consultants for carrying out the assignment:

- (i) Counterpart staff/technical support;
- (ii) Office space: sufficient office space for the consultants with national and international telephone lines, electricity, air conditioning/heating, and internet connections; and
- (iii) Organizational support: assistance in all arrangements for workshops, meetings, and field visits; and access to required data, maps and other relevant information.

13. FMC will be responsible for their personal computers, office furniture, other facilities for producing reports.

PROCUREMENT PLAN FOR TRANCHE 1

Basic Data

Project Name: PAK: MFF Power Transmission Enhancement Investment Program II, Tranche 1	
Project Number: 48078-003	Approval Number:
Country: Pakistan	Executing Agency: National Transmission & Despatch Company Limited
Project Procurement Classification: Category B	Implementing Agency: National Transmission and Despatch Company Limited
Project Procurement Risk: High	
Project Financing Amount: ADB Financing: US\$115,000,000 Cofinancing (ADB Administered): NA Non-ADB Financing: US\$46,000,000	Project Closing Date: 30 June 2020
Date of First Procurement Plan: 20 April 2016	Date of this Procurement Plan: 20 April 2016

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 1,000,000 and Above	
National Competitive Bidding for Goods	Between US\$ 100,001 and US\$ 999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Goods	Up to US\$ 99,999	
International Competitive Bidding for Works	US\$ 1,000,000 and Above	
National Competitive Bidding for Works	Between US\$ 100,001 and US\$ 999,999	The first NCB is subject to prior review, thereafter post review.
Shopping for Works	Up to US\$ 99,999	

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection for Consulting Firm	
Individual Consultants Selection for Individual Consultant	

2. Goods and Works Contracts Estimated to Cost \$1 Million or More

2. The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
ADB-100	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of extension at Lahore South and Sahiwal substations	18,800,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Plant

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
ADB-101	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of extension and augmentation works at 500/220 kV Rewat Substation	5,100,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Plant
ADB-102	Procurement of Supply of 500 kV Shunt Reactors of NTDC system in Dadu Substation	1,600,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Goods
ADB-103	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of Protection Relays, Fault Recorders, Fault Locators and Event Recorders of NTDC system in south area	3,650,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Plant
ADB-104	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of 500 kV and 220 kV line bays for Faisalabad West and Lalian substations	2,300,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Plant
ADB-105	Procurement of Plant-Design, Supply, Installation, Testing and Commissioning of 500 and 220 kV D/C T/L at Multan-Gatti and Faisalabad West to Lalian	25,500,000.00	ICB	Prior	1S1E	Q3 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Plant
ADB-106	Civil Works (Installation) for Transmission Lines - 500 KV Guddu-Muzaffargarh S/C T/L (261 km) Lot 1: 500 kV S/C T/L Guddu-Muzaffargarh from Location 1 to 199 (75 km) Lot 2: 500kV S/C T/L Guddu-Muzaffargarh from Location 200 to 394 (72 km) Lot 3: 500 kV S/C T/L Guddu-Muzaffargarh from Location 395 to 597 (69 km) Lot 4: (i) 500 kV S/C T/L Guddu-Muzaffargarh (50 km); and (ii) 500 kV D/C T/Line In/Out of 500 kV D.G. Khan-Multan T/L (10 km +10 km), and interfacing of proposed and existing 500 kV Circuits at Muzaffargarh end	36,200,000.00 7,500,000.00 6,100,000.00 7,200,000.00 15,400,000.00	ICB	Prior	1S1E	Q1 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: Y Bidding Document: Works

ADB = Asian Development Bank, km = kilometer, kV = kilovolt, N = No, S/C = single circuit, T/L = transmission lines, Y = Yes.

3. Consulting Services Contracts Estimated to Cost \$100,000 or More

3. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
CON-1	Facility management consultant	8,500,000.00	QCBS	Prior	Q3 / 2016	FTP	Assignment: International Quality-Cost Ratio: 90:10 Comments: 90:10 quality-cost ratio helps ensure highly competent consultant for this complex assignment

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
ADB-107	IT equipment and systems for project management	100,000.00	tbd	Shopping	Prior	N/A	Q1 2017	Procurement to commence after PMU is fully staffed

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
CON – 2	Project management consultants	500,000.00	3	Individual consultant selection	Prior	Q3 2017	N/A	To be engaged throughout the MFF; other experts to be confirmed.

B. Indicative List of Packages Required Under the Project

4. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
None							

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None.								